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Final Independent External Peer Review Report Jacksonville Harbor, Florida Navigation Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS)

Prepared by
Battelle Memorial Institute

Prepared for
Department of the Army
U.S. Army Corps of Engineers
Deep Draft Navigation Planning Center of Expertise
Mobile District

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Final Independent External Peer Review Report
Jacksonville Harbor, Florida Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS)

by

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EXECUTIVE SUMMARY

Project Background and Purpose

Jacksonville Harbor is a part of the St. Johns River, and deep draft navigation vessels transit the harbor from the Atlantic Ocean to the Main Street Bridge in downtown Jacksonville. The harbor has an authorized project depth of 40 feet from mile 0 to mile 20 and an authorized project depth of 34 feet to mile 22. The purpose of this study is to determine the economic and environmental feasibility of widening and deepening Jacksonville Harbor from the existing project depth of 40 feet up to a possible 50-foot project depth from the entrance channel to river mile 20. The Environmental Impact Statement (EIS) is integrated within the document.

The Water Resources Development Act (WRDA) of 1999 authorized the harbor to be deepened to 40 feet from the Entrance Channel to river mile 14.7. The House of Representatives Energy and Water Appropriations Act, 109 Congress, 1st Session, Report 109-275, Conference Report, printed November 7, 2005, authorized deepening to 40 feet from river mile 14.7 to 20. House Document 214 (in 1992) and House Report 107-681 (in 2003) authorize a General Reevaluation Report to study the harbor. Specific planning objectives for the reevaluation of Jacksonville Harbor include:

- Decrease transportation costs associated with existing commercial ship delays from light loading, use of high tides
- Provide for the navigational safety
- Develop the most cost-effective means for disposal of new construction and maintenance dredged material over the 50-year project evaluation period
- Integrate beneficial uses of dredged material such as manufactured soils, recycling of dredge material for construction fill, development of artificial reefs, or use of beach quality material for placement along adjacent beaches as part of a least-cost dredged material management plan over the economic life of the project;
- Identify the National Economic Development (NED) plan for Jacksonville Harbor that most efficiently and safely accommodates existing and larger commercial ship and barge traffic while avoiding or minimizing impacts to environmental resources.

Independent External Peer Review Process

The U.S. Army Corps of Engineers (USACE) is conducting an Independent External Peer Review (IEPR) of the Jacksonville Harbor, FL Navigation Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS) (hereinafter:

Jacksonville Harbor). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, is free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in USACE (2012). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate the IEPR of the Jacksonville Harbor. Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses. The IEPR was external to the agency and conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2012) and OMB (2004). This final report describes the IEPR process, describes the panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel (the Panel).

Based on the technical content of the Jacksonville Harbor review documents and the overall scope of the project, Battelle identified candidates for the Panel in the following key technical areas: hydraulic engineering, geotechnical engineering, economics, environmental, and plan formulation. Five panel members were selected for the IEPR. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel.

The Panel received an electronic version of the 3,159 page Jacksonville Harbor IEPR documents, along with a charge that solicited comments on specific sections of the documents to be reviewed. Battelle developed charge questions. USACE was given the opportunity to provide comments and revisions, and subsequently approved the final charge questions.

The USACE Project Delivery Team briefed the Panel and Battelle during a kick-off meeting held via teleconference prior to the start of the review to provide the Panel an opportunity to ask questions of USACE and clarify uncertainties. In addition to this teleconference, there was a mid-review teleconference to allow the Panel to ask clarifying questions prior to preparing final panel comments. No other direct communication occurred between the Panel and USACE during the peer review process. The Panel produced more than 400 individual comments in response to the 64 charge questions.

IEPR panel members reviewed the Jacksonville Harbor documents individually. The panel members then met via teleconference with Battelle to review key technical comments, discuss charge questions for which there were conflicting responses, and reach agreement on the Final Panel Comments to be provided to USACE. Each Final Panel Comment was documented using a four-part format consisting of (1) a comment statement; (2) the basis for the comment; (3) the significance of the comment (high, medium, or low); and (4) recommendations on how to resolve the comment. Overall, 13 Final Panel Comments were identified and documented. Of these, two were identified as having high significance, seven had medium significance, and four had low significance.

Results of the Independent External Peer Review

The panel members agreed among themselves on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2010, 2012; p. D-4) in the Jacksonville Harbor, Florida Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS) review

documents. Table ES-1 lists the Final Panel Comments statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following summarizes the Panel's findings from the review.

Hydraulic Engineering

The overall integration of results from multiple study components has thus far been accomplished in a thorough, understandable manner. This is a significant accomplishment requiring superior coordination and multidisciplinary thinking and effort. The Advanced Circulation (ADCIRC) modeling for boundary conditions, storm surge, and sea level rise predictions was exceptionally well done, with carefully constructed analyses of the model results that provided understanding, not just numbers.

Two aspects of the hydraulic engineering studies require special attention: (1) validating and re-running the main stem river channel sedimentation model and interpreting the results in terms of deposition and benthic habitat changes in order to accurately estimate future dredging costs and complete the environmental evaluation, and (2) revisiting the decision to change to a different model for the tributary analyses, since using two different models complicates salinity intrusion evaluation.

Geotechnical Engineering

The geotechnical engineering discussions within the document and associated appendices are fairly comprehensive and generally provide an adequate justification for the Tentatively Selected Plan (TSP). However, the text does not clearly address how data gaps and uncertainty in geotechnical parameters that affect slope stability analyses were accounted for. This can be addressed by performing a sensitivity analysis of key slope stability parameters that are not currently well understood. Similarly, the text addressing the available data for unconfined compressive strength of the rock and associated assumed pre-treatment needs should be more accurately addressed with consideration of previous site-specific experience. Finally, the document lacks adequate detail on the basis of the costs estimates for some line items including dredging costs and annual operation and maintenance (O&M) costs. The basis for these costs can be addressed through narrative text and/or tables in Appendix N.

Economics

The appropriate methods and models appear to have been employed in the economic justification of the NED plan and the TSP; however, the Panel has significant concern that a system-based analysis demonstrating Federal interest in the project was not provided. This issue could be addressed through the conduct of a multi-port analysis or by providing sound rationale for excluding such analysis. In addition, a lack of documentation of the economic analysis prevents the Panel from accurately assessing the project's economic performance. This could be resolved by providing descriptions of the methods and assumptions used to develop the commodity and fleet forecasts and total voyage costs by trade route, as well as the methods used to quantify risk and uncertainty related to key economic variables used to calculate transportation cost savings.

Environmental

A thorough description and discussion of the range of environmental issues related to implementation of the proposed Jacksonville Harbor Project has been presented. The integration of the St. Johns River Water Management District's models and database into the research for this project was well done. The results of the hydrodynamic and environmental modeling, the analyses of the diverse potential environmental impacts, and the mitigation for these impacts indicate that there will be minimal impact on the resources in the project area. However, the Mitigation and Adaptive Management Plans generally lack specific success criteria, thresholds, standards, and procedures that reinforce the commitment to mitigating for environmental impacts. The Panel believes that this omission can be remedied by compiling the appropriate information from the relevant appendices, explaining it clearly, and presenting it in the Adaptive Management Plan.

Plan Formulation

The plan formulation process follows the USACE six-step planning process and is consistent with guidance contained in Engineer Regulation (ER) 1105-2-100 (USACE, 2000). The process was modified to incorporate the USACE SMART planning criteria. Development of the without-project condition and the formulation of alternative plans is straightforward and well-written. However, including the unauthorized and unbudgeted Mile Point training wall project in the without-project condition could have a negative impact on the overall formulation and project benefits if not constructed. That issue needs to be further developed in the GRR2 and can be addressed by explaining the probability of that project being constructed and functional when the deepened main channel becomes operational.

Table ES-1. Overview of 13 Final Panel Comments Identified by the Jacksonville Harbor IEPR Panel

No.	Final Panel Comment
	Significance – High
1	Federal interest has not been demonstrated in the General Reevaluation Report II (GRR2) because a multi-port analysis assessing competition among regional ports is not provided.
2	The tentatively selected plan (TSP) assumes that the proposed construction of a training wall at the Mile Point area of the main navigation channel is included in the without-project condition, but the wall construction is neither authorized nor budgeted.
	Significance – Medium
3	The methods and assumptions used to develop the economic analysis are not sufficiently documented.
4	Use of different salinity models for the main stem versus the tributary evaluations makes evaluating salinity effects very difficult
5	The adaptive hydraulics (ADH) sediment modeling results do not provide a reliable estimate of the annual sedimentation rates necessary to establish environmental effects and sediment management requirements.
6	It is unclear how the factors of safety for the slope stability analyses were selected given the acknowledged uncertainty in the sediment strength data.
7	The accuracy of the cost estimate for the tentatively selected plan (TSP) is unclear without a comparison of annual operation and maintenance (O&M) costs for the with- and without-project conditions.
8	The National Economic Development (NED) benefits identified in the economic analysis cannot be verified because the economic risk and uncertainty analysis is not documented.
9	The analysis and presentation of salinity results in the General Reevaluation Report II (GRR2) provide an incomplete understanding of the impacts of channel enlargement.
	Significance – Low
10	Rock strength data collected within the Jacksonville Harbor Project site suggest that proposed pretreatment methods may be unnecessary for the type of rock typically found there, which is contrary to previous experience at the site.
11	The General Reevaluation Report II (GRR2) and appendices do not clearly characterize the actual Ocean Dredged Material Disposal Site (ODMDS) site as new or existing, which could affect costs and environmental impacts.
12	The Regional Economic Development (RED) benefits are incorrectly attributed to the harbor deepening and therefore overemphasize regional benefits of the Jacksonville Harbor Project.
13	The Adaptive Management Plan (Appendix G of the General Reevaluation Report II [GRR2]) does not include key elements such as trigger thresholds and specific actions to correct deficiencies.

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LIST OF ACRONYMS

ADCIRC	Advanced Circulation model
ADH	Adaptive Hydraulics
ARO	Army Research Office
ATR	Agency Technical Review
CEDEP	Corps of Engineers Dredge Estimating Program
COI	Conflict of Interest
DMMP	Dredged Material Management Plan
DrChecks	Design Review and Checking System
EFDC	Environmental Fluid Dynamics Code
EIS	Environmental Impact Statement
ER	Engineer Regulation
GRR	General Reevaluation Report
IEPR	Independent External Peer Review
NED	National Economic Development
NEPA	National Environmental Policy Act
ODMDS	Ocean Dredged Material Disposal Site
OEO	Outside Eligible Organization
O&M	operation and maintenance
OMB	Office of Management and Budget
P&G	Principles and Guidelines
PDT	Project Delivery Team
RED	Regional Economic Development
TSP	Tentatively Selected Plan
USACE	U.S. Army Corps of Engineers
WRDA	Water Resources Development Act

1. INTRODUCTION

Jacksonville Harbor is a part of the St. Johns River, and deep draft navigation vessels transit the harbor from the Atlantic Ocean to the Main Street Bridge in downtown Jacksonville. The harbor has an authorized project depth of 40 feet from mile 0 to mile 20 and an authorized project depth of 34 feet to mile 22. The purpose of this study is to determine the economic and environmental feasibility of widening and deepening Jacksonville Harbor from the existing project depth of 40 feet up to a possible 50-foot project depth from the entrance channel to river mile 20. The Environmental Impact Statement is integrated within the document.

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- Identify the National Economic Development (NED) plan for Jacksonville Harbor that most efficiently and safely accommodates existing and larger commercial ship and barge traffic while avoiding or minimizing impacts to environmental resources.

The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Jacksonville Harbor, Florida Navigation Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS) (hereinafter: Jacksonville Harbor) in accordance with procedures described in the Department of the Army, U.S. Army Corps of Engineers (USACE) Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214) (USACE, 2012) and Office of Management and Budget (OMB) bulletin *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses.

This final report details the IEPR process, describes the IEPR panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel on the existing environmental,

economic, and engineering analyses contained in the Jacksonville Harbor. The full text of the Final Panel Comments is presented in Appendix A.

2. PURPOSE OF THE IEPR

To ensure that USACE documents are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review (ATR), as described in USACE (2012).

In general, the purpose of peer review is to strengthen the quality and credibility of the USACE decision documents in support of its Civil Works program. IEPR provides an independent assessment of the economic, engineering, and environmental analysis of the project study. In particular, the IEPR addresses the technical soundness of the project study's assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the Jacksonville Harbor was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC 1165-2-214) under Section 501(c)(3) of the U.S. Internal Revenue Code with experience conducting IEPRs for USACE.

3. METHODS

This section describes the method followed in selecting the members for the IEPR Panel (the Panel) and in planning and conducting the IEPR. The IEPR was conducted following procedures described by USACE (2012) and in accordance with OMB (2004) guidance. Supplemental guidance on evaluation for conflicts of interest (COIs) was obtained from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003).

3.1 Planning and Schedule

After receiving the pre-award funding authorization, Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., clarify expertise areas needed for panel members). Any revisions to the schedule were submitted as part of the final Work Plan. In addition, 64 charge questions were provided to USACE for review and approval and included in the draft and final Work Plans. The final charge also included general guidance for the Panel on the conduct of the peer review (provided in Appendix B of this final report).

Table 1 is based on receipt of pre-award funding from the USACE Contracting Officer's Representative and the Army Research Office's (ARO) Contracting Officer to begin initial work on the project (i.e., pre-award funding receipt) on May 30, 2013. The review documents were provided by USACE on May 29, 2013. Note that the work items listed in Task 6 occur after the submission of this report. Battelle will enter the 13 Final Panel Comments developed by the Panel into USACE's Design Review and Checking System (DrChecks), a Web-based software system for documenting and sharing comments on reports and design documents, so that USACE

can review and respond to them. USACE will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All USACE and Panel responses will be documented by Battelle. Battelle will provide USACE and the Panel a pdf printout of all DrChecks entries, through comment closure, as a final deliverable and record of the IEPR results.

Table 1. Jacksonville Harbor IEPR Schedule

Task	Action	Due Date
1	Pre-Award Funding Authorization	5/30/2013
	Official Award	6/20/2013
	Review documents available	5/29/2013
	*Battelle submits draft Work Plan[a]	6/10/2013
	USACE provides comments on draft Work Plan	6/12/2013
	*Battelle submits final Work Plan[a]	6/18/2013
2	Battelle requests input from USACE on the conflict of interest (COI) questionnaire	6/4/2013
	USACE provides comments on COI questionnaire	6/4/2013
	*Battelle submits list of selected panel members[a]	6/6/2013
	USACE confirms the panel members have no COI	6/6/2013
	Battelle completes subcontracts for panel members	6/10/2013
3	Battelle submits draft charge questions to USACE	6/6/2013
	USACE approves charge questions	6/7/2013
4	Battelle convenes kick-off meeting with USACE	6/10/2013
	Battelle sends review documents to panel members	6/11/2013
	Battelle convenes kick-off meeting with panel members	6/11/2013
	Battelle convenes kick-off meeting with USACE and panel members	6/11/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	6/20/2013
5	Panel members complete their individual reviews	6/24/2013
	Battelle provides panel members with talking points for Panel Review Teleconference	6/26/2013
	Battelle convenes Panel Review Teleconference	6/27/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	6/27/2013
	Panel members provide draft Final Panel Comments to Battelle	7/2/2013

Table 1. Jacksonville Harbor IEPR Schedule (continued)

Task	Action	Due Date
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	7/2-7/8/2013
	Battelle finalizes Final Panel Comments	7/8/2013
6	Battelle provides Final IEPR Report to panel members for review	7/9/2013
	Panel members provide comments on Final IEPR Report	7/10/2013
	*Battelle submits Final IEPR Report to USACE[a]	7/12/2013
7[b]	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	7/12/2013
	Battelle convenes teleconference with USACE to review the Post-Final Panel Comment Response Process	7/15/2013
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	7/15/2013
	USACE provides draft Project Delivery Team (PDT) Evaluator Responses to Battelle	7/19/2013
	Battelle provides the panel members the draft PDT Evaluator Responses	7/22/2013
	Panel members provide Battelle with draft BackCheck Responses	7/24/2013
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	7/25/2013
	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/26/2013
	USACE inputs final PDT Evaluator Responses to DrChecks	7/31/2013
	Battelle provides PDT Evaluator Responses to panel members	8/1/2013
	Panel members provide Battelle with final BackCheck Responses	8/5/2013
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	8/6/2013
	*Battelle submits pdf printout of DrChecks project file[a]	8/6/2013
CWRB	Civil Works Review Board (CWRB)	12/17/2013
	Contract End	10/9/2013[c]

a Deliverable.

b Task 7 occurs after the submission of this report.

c This is the contractual end of the period of performance. The period of performance will be extended via a no-cost extension (NCE) to accommodate participation in the Civil Works Review Board. The estimated end of period of performance date is 2/2/2014.

3.2 Identification and Selection of IEPR Panel Members

The candidates for the Panel were evaluated based on their technical expertise in the following key areas: hydraulic engineering, geotechnical engineering, economics, environmental, and plan formulation. These areas correspond to the technical content of the Jacksonville Harbor IEPR and overall scope of the Jacksonville Harbor.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle evaluated these candidate panel members in terms of their technical expertise and potential COIs. Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected five experts for the final Panel.

The five selected reviewers constituted the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

The candidates were screened for the following potential exclusion criteria or COIs.[1] These COI questions were intended to serve as a means of disclosure and to better characterize a candidate's employment history and background. Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit.

- Previous and/or current involvement by you or your firm[2] in the Jacksonville Harbor, FL Navigation Project Integrated General Reevaluation Report (GRR2) And Environmental Impact Statement (EIS) (hereinafter: Jacksonville Harbor) and/or technical appendices.
- Previous and/or current involvement by you or your firm[2] in deep draft navigation projects in the greater Jacksonville, Florida region.
- Previous and/or current involvement (conceptual or actual design, construction, or O&M) by you or your firm[2] in projects related to the Jacksonville Harbor GRR2 and EIS.
- Current employment by the U.S. Army Corps of Engineers (USACE).
- Previous and/or current involvement with paid or unpaid expert testimony related to the Jacksonville Harbor GRR2 and EIS.
- Previous and/or current employment or affiliation with members of the cooperating agencies or local sponsors notably the Jacksonville Port Authority (JAXPORT), the non-Federal sponsor; (for pay or pro bono).
- Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to the City of Jacksonville or Duval County.

[1] Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. See OMB (2004, p. 18), "….when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects."

[2] Includes any joint ventures in which a panel member's firm is involved and if the firm serves as a prime or as a subcontractor to a prime.

- Current personal involvement in other USACE projects, including authorship of any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Jacksonville District.
- Previous or current involvement in the development or testing of models that will be used for or in support of the Jacksonville Harbor GRR2 and EIS, including EFDC (water circulation and salinity), EFDC/CE-QUAL-ICM (water quality), ADCIRC (hydrodynamic), SWAN (wave), MIKESHE/Mike11; MIKE FLOOD; MIKE 21; MIKE 11; MIKE Zero; and HEC-RAS 4.1.
- Current firm[2] involvement in other USACE projects, specifically those projects/contracts that are with the Jacksonville District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please also clearly delineate the percentage of work you personally are currently conducting for the Jacksonville District. Please explain.
- Any previous employment by USACE as a direct employee, notably if employment was with the Jacksonville District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Any previous employment by USACE as a contractor (either as an individual or through your firm[2]) within the last 10 years, notably if those projects/contracts are with the Jacksonville District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning deep draft navigation or harbor deepening studies, and include the client/agency and duration of review (approximate dates).
- Pending, current, or future financial interests in the Jacksonville Harbor GRR2 and EIS-related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm[2] revenues within the last three years from USACE contracts.
- A significant portion (i.e., greater than 50%) of personal or firm[2] revenues within the last three years from contracts with the non-Federal sponsor (Jacksonville Port Authority).
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to the Jacksonville Harbor Navigation project.
- Participation in prior Federal studies relevant to the Jacksonville Harbor Navigation project and/or the Jacksonville Harbor GRR2 and EIS.
- Previous and/or current participation in prior non-Federal studies relevant to the Jacksonville Harbor Navigation project and/or the Jacksonville Harbor GRR2 and EIS.
- Is there any past, present, or future activity, relationship, or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project?

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. All five panel members are affiliated with a consulting company. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel. Section 4 of this report provides names and biographical information on the panel members.

3.3 Conduct of the IEPR

Prior to beginning their review and within one day of their subcontracts being finalized, all members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel. Battelle planned and facilitated a second kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge, as well as the Jacksonville Harbor review documents and reference materials listed below. The documents and files in bold font were provided for review; the other documents were provided for reference or supplemental information only.

- **Integrated General Reevaluation Report II and Supplemental Environmental Impact Statement (337)**
- **Appendix A: Engineering (2,432)**
- **Appendix B: Economic (80)**
- **Appendix C: Real Estate (19)**
- **Appendix E: Mitigation Plan (88)**
- **Appendix F: Draft Monitoring Plan (17)**
- **Appendix G: Adaptive Management Plan (7)**
- **Appendix H: Coastal Zone Management (6)**
- **Appendix I: 404(b)(1) (25)**
- **Appendix J: Air Emissions Report (108)**
- **Appendix L: Essential Fish Habitat (45)**
- **Appendix M: Draft Coordination Act Report (75)**
- USACE guidance Civil Works Review, (EC 1165-2-214) dated 15 December 2012
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* released December 16, 2004.

The Panel received several supplemental documents at the start of the review, and additional documents throughout the review period. USACE provided Battelle with the documents requested by panel members during the mid-review conference. Battelle sent the documents to the Panel as additional information only; they were not part of the official review. A list of these additional supplemental documents and requested documents is provided below.

- Appendix D: Ecological Models

- Appendix N: Cost Appendix
- Appendix O: Pertinent Correspondence and Mailing List
- Appendix P: Dredged Material Management Plan
- Attachment A: Assessment of the Interconnection Between the St. John's River and the Shallow Aquifer System, East-Central Duval County, Florida by the US Geological Survey
- Commodity Forecasts for the Port of Jacksonville
- Appendix A: Attachment J, Engineering-Hydrodynamic Modeling for Storm Surge and Sea Level Change
- Appendix A: Attachment F, Engineering - ADCIRC Boundary Conditions for Project Design and Impact Analysis

About half way through the review of the Jacksonville Harbor review documents, a teleconference was held with USACE, the Panel, and Battelle so that USACE could answer any questions the Panel had concerning either the review documents or the project. Prior to this teleconference, Battelle submitted 20 panel member questions to USACE. USACE was able to provide responses to all of the questions during the teleconference.

3.4 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response table provided by Battelle. At the end of the review period, the Panel produced more than 400 individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring themes, areas of potential conflict, and other overall impressions. As a result of the review, Battelle summarized the more than 400 comments into a preliminary list of 15 overall comments and discussion points. Each panel member's individual comments were shared with the full Panel in a merged individual comments table.

3.5 IEPR Panel Teleconference

Battelle facilitated a 3-hour teleconference with the Panel so that the panel members could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the Final IEPR Report and decide which panel member would serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of high-level importance to the findings, and merged any related individual comments. In addition, Battelle confirmed each Final Panel Comment's level of significance to the Panel.

At the end of these discussions, the Panel identified 13 comments and discussion points that should be brought forward as Final Panel Comments.

3.6 Preparation of Final Panel Comments

Following the teleconference, Battelle prepared a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum provided the following detailed guidance on the approach and format to be used to develop the Final Panel Comments for the Jacksonville Harbor:

- Lead Responsibility: For each Final Panel Comment, one Panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed the merged individual comments table, a summary detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.
- Directive to the Lead: Each lead was encouraged to communicate directly with the other panel member as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.
- Format for Final Panel Comments: Each Final Panel Comment was presented as part of a four-part structure:
    1. Comment Statement (succinct summary statement of concern)
    2. Basis for Comment (details regarding the concern)
    3. Significance (high, medium, low; see description below)
    4. Recommendation(s) for Resolution (see description below).
- Criteria for Significance: The following were used as criteria for assigning a significance level to each Final Panel Comment:
    1. High: Describes a fundamental problem with the project that could affect the recommendation, success, or justification of the project. Comments rated as high indicate that the Panel analyzed or assessed the methods, models, and/or analyses and determined that there is a “showstopper” issue.
    2. Medium: Affects the completeness of the report in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium indicate that the Panel does not have sufficient information to analyze or assess the methods, models, or analyses.
    3. Low: Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information (tables, figures, equations,

discussions) that was mislabeled or incorrect or data or report sections that were not clearly described or presented.

- Guidance for Developing Recommendations: The recommendation section was to include specific actions that USACE should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).
- Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel's overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. At the end of this process, 13 Final Panel Comments were prepared and assembled. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Final Panel Comments are presented in Appendix A of this report.

4. PANEL DESCRIPTION

Candidates for the Panel were identified using Battelle's Peer Reviewer Database, targeted Internet searches using key words (e.g., technical area, geographic region), searches of websites of universities or other compiled expert sites, and referrals. Battelle prepared a draft list of primary and backup candidate panel members (who were screened for availability, technical background, and COIs), and provided it to USACE for feedback. Battelle made the final selection of panel members.

An overview of the credentials of the final five members of the Panel and their qualifications in relation to the technical evaluation criteria is presented in Table 2. More detailed biographical information regarding each panel member and his area of technical expertise is presented in the text that follows the table.

Table 2. Jacksonville Harbor IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	McAnally	LaRosa	Maher	Staiger	Sanford
Hydraulic Engineering					
Minimum 10 years of experience in hydraulic engineering	X				
Experience in deep draft navigation channels	X				
Experience in dredged material disposal	X				
Experience in erosion	X				

Technical Criterion	McAnally	LaRosa	Maher	Staiger	Sanford
Experience in coastal currents	X				
Experience in channel modifications	X				
Active participation in related professional societies	X				
Registered Professional Engineer	X				
M.S. degree or higher in civil, hydraulic, or related engineering field	X				
Geotechnical Engineering					
Minimum 10 years of experience in geotechnical design analysis involving confined and open water dredged material disposal sites		X			
Active participation in related professional societies		X			
M.A./M.S./M.B.S. degree or higher in an appropriate field of study		X			
Economics					
Minimum 10 years of experience in deep draft navigation economic analysis			X		
Experience in evaluating and comparing alternative plans for USACE			X		
Experience in evaluating and conducting National Economic Development (NED) analyses of deep draft navigation or inland navigation transportation-related projects			X		
Experience working for or with USACE in applying Principles and Guidelines (P&G) to Civil Works projects			X		
Active participation in related professional societies			X		
M.A./M.S./M.B.S. degree or higher in related field			X		
Environmental					
Minimum 10 years of experience in environmental, estuarine, and coastal processes				X	
Understanding of ecological responses to navigation channel improvements				X	
Understanding of environmental impacts associated with dredging				X	
Experience preparing National Environmental Policy Act (NEPA) compliance documents				X	

Technical Criterion	McAnally	LaRosa	Maher	Staiger	Sanford
Active participation in related professional societies				X	
M.S. degree or higher in appropriate field of study				X	
Plan Formulation					
Minimum 10 years of experience in deep draft navigation analysis					X
Experience in evaluating and comparing alternative plans for USACE					X
Experience in evaluating and conducting National Economic Development (NED) analyses of deep draft navigation or inland navigation transportation-related projects					X
Experience working for or with USACE in applying Principles and Guidelines (P&G) to Civil Works projects					X
Active participation in related professional societies					X
M.A./M.S. degree or higher in related field					Waiver [a]

[a] *Waiver statement presented as part of Task 2 deliverable and approved by USACE*

William McAnally, P.E., Ph.D., D.CE

Role: Hydraulic engineering
Affiliation: Dynamic Solutions, LLC

Dr. McAnally is a Water Resources Consultant for Dynamic Solutions, LLC, in Columbus, Mississippi, with over 40 years of experience in the field of navigation and coastal currents. He earned his Ph.D. in coastal and oceanographic engineering from the University of Florida in 1999. He is a registered professional engineer (P.E.) in Mississippi and an Academy of Coastal, Oceans, Port and Navigation Engineers (ACOPNE) Diplomate in both navigation engineering and coastal engineering. He has taught undergraduate or graduate courses in hydraulic engineering, navigation engineering, including deep-draft navigation, and sedimentation engineering, including erosion problems and solutions. Dr. McAnally is a recognized expert in hydraulics, sediment transport, and navigation effects, with expertise in hydraulic modeling, hydrodynamic modeling, sediment transport analysis and modeling, and coastal and inland navigation studies. As chief of three successive divisions at Waterways Experiment Station (WES), he directed planning and execution of research and development in surface and groundwater hydrology; hydro environmental modeling of watersheds, rivers, waterways, and estuaries; sedimentation engineering; and dredging technology.

He worked at the USACE WES from 1969 to 2001. From 1999 to 2001, he was the Technical Director for Navigation Research at the USACE Engineer Research and Development Center (ERDC). He performed deep-draft navigation-related research on the Mayport Navy Basin

(Florida), the Columbia Estuary, Mississippi River, San Francisco Bay, Savannah Harbor, and other sites. He led studies of dredged material placement for the Alcatraz site, Corpus Christi, Mississippi River Delta, and others, and has consulted on disposal studies for Atchafalaya Bay (Louisiana), New York Harbor, and Chesapeake Bay.

His experience in sedimentation includes both river and estuarine sediment transport studies including erosion of sill in the Mississippi River, Mill Cove (Florida), and the Indian River Inlet (Delaware). He has experience in sediment transport flume studies of deposition and erosion. He has performed channel modification studies of the John F. Baldwin Ship Channel (California), the Houston Ship Channel (Texas), New York Harbor, Savannah Harbor, and Charleston Harbor. His experience in coastal currents includes the Mississippi Sound (Alabama, Mississippi, and Louisiana), the Louisiana-Texas coastline and inlets, Biscayne Bay, and the Pacific Northwest coastline; in addition, he has taught courses in tidal hydraulics.

Dr. McAnally served on the USACE and ASCE committees on Tidal Hydraulics, was Chair of the Joint Coastal Engineering Research Board Committee on Tidal Hydraulics, and was the 2009 Hans Albert Einstein Award recipient from the American Society of Civil Engineers (ASCE) for sediment-related work. He is co-author of the ASCE Manuals on Navigation and the Sedimentation Engineering Manual 110. He has written or contributed to more than 120 publications, including eight book chapters/journal papers on navigation channels, 12 book chapters/journal papers on sedimentation/erosion, five book chapters/journal papers on coastal currents, and four book chapters/journal papers on channel modifications. Dr. McAnally is an ASCE Fellow; a member of the ASCE Environmental and Water Resources Institute and the Coastal, Ocean, Ports, and Rivers Institute; a member of the World Association for Waterborne Transport Infrastructure; and a Board of Trustees member of the ACOPNE. He currently teaches ASCE webinars on navigation engineering and sedimentation engineering.

Paul LaRosa, P.E.

Role: Geotechnical engineering
Affiliation: Anchor QEA, LLC

Mr. LaRosa is a partner and Principal Ocean and Geotechnical Engineer for the consulting firm Anchor QEA, LLC. He is a registered professional engineer in Massachusetts, Ohio, and Michigan. He earned an M.S. in ocean engineering (marine geotechnical) from the University of Rhode Island in 2000. He has 13 years of experience specializing in engineering projects in aquatic environments, including coastal processes and sediment transport. He has significant experience evaluating erosional characteristics such as waves, currents, propeller wash, and hydrodynamic flows in support of sediment transport evaluations and remediation design.

Mr. LaRosa's geotechnical design experience includes a wide range of in-water sediment remediation, including confined disposal facility (CDF) design, subaqueous cap design, sediment stability and erosion analyses, dredging design, integration of remedial and habitat improvement designs, development of construction plans and specifications, and cost estimating. His geotechnical design experience with deep draft navigation channels includes design of in situ capping and dredging remedies within the Federally authorized navigation channel in the Fox River (Green Bay, Wisconsin) and he is performing similar ongoing design evaluations for other

projects in Michigan. He currently serves as project manager for a major sediment remediation and habitat restoration project on Onondaga Lake in New York that involves significant focus on ecological/habitat response/improvements.

Mr. LaRosa has extensive experience in dredged material projects that include CDF design,[2] subaqueous cap design, sediment stability and erosion analyses, dredging design, integration of remedial and habitat improvement designs, development of construction plans and specifications, and cost estimating. He has significant experience in evaluating, designing, and implementing capping and dredging remedies over soft sediment. He developed construction plans and specifications for two Superfund sediment remediation projects that involved two separate CDFs in Commencement Bay, Washington: the Blair Waterway CDF and the St. Paul Waterway CDF. For the Blair Waterway project, he performed a variety of geotechnical analyses, including slope stability, time rate of settlement, and bearing capacity. For the St. Paul Waterway project, he performed field investigations in support of the CDF design, which included a containment berm and a separate habitat restoration berm. In addition, he performed slope stability, settlement analysis, pile capacity, and other engineering calculations in support of dredging, CDF, and in situ cap designs. He also evaluated the sediment filling and settlement schedule for both projects using USACE's Automated Dredging and Disposal Alternatives Modeling System (specifically, the Primary Settlement and Desiccation of Dredged Fill [PSDDF] model and the Short-term Fate of Dredged Material Disposed in Open Water [STFATE] model).

Mr. LaRosa is a member of the American Society of Civil Engineers (ASCE) and of the Boston Society of Civil Engineers.

Daniel Maher

Role: Economics
Affiliation: DSM Contracting, LLC

Mr. Maher serves as Senior Economist/Project Manager with DSM Contracting, LLC. He has 24 years of experience conducting large water resource planning studies, including deep-draft and shallow-draft navigation feasibility studies, for USACE districts throughout the United States. He earned his M.S. in agricultural economics from Louisiana State University in 1988.

He has worked with USACE and with architect/engineering project teams on various Civil Works projects, including numerous navigation projects, to identify, screen, and evaluate alternative plans in accordance with USACE's *Planning Guidance Notebook* (ER 1105-2-100; USACE, 2000). His experience in evaluating and conducting NED analyses of deep draft navigation or inland navigation transportation-related projects includes 24 years of developing

[2] Carroll, S., P. LaRosa, and G. Horvitz. Design and Construction of a Nearshore Confined Disposal Facility. Port Development in the Changing World - Proceedings of Ports Conference 2004. Houston, Texas. May 2004.

LaRosa, P. C. Patmont, and R. Desrosiers. Designing a Dredge Plan to Accommodate Anticipated Residuals. Proceedings of the Fourth International Conference on Remediation of Contaminated Sediments. Savannah, Georgia. January 2007.

benefits and costs for NED large water resource planning efforts. Representative projects demonstrating his navigation and NED experience include the Calcasieu River Dredged Material Management Plan, Louisiana; the San Diego Harbor Economic Feasibility Report; Rock Removal Interim Report, Initial Appraisal; and Forecast of Commodity Flows, Northern Sea Route Reconnaissance Study, Alaska. For the Economic Feasibility Report, San Diego Harbor, prepared for USACE, Mr. Maher was responsible for evaluating the economic feasibility of increasing the current authorized depth of the Federal central harbor and navigation channels to the Tenth Avenue Marine Terminal in San Diego, California. The primary benefits of deepening the harbor are the reduction in vessel operating costs by allowing deeper draft vessels to traverse the channel fully loaded, and the reduction or elimination of vessel tidal delays.

Mr. Maher has served as Project Manager/Economist on more than 50 USACE Civil Works planning studies. His responsibilities have included economic analysis, applying USACE Principles and Guidelines (P&G) to flood risk management, ecosystem restoration, navigation, recreation, and economic impact studies of varying size and complexity. Mr. Maher also participated as the economics panel member for the IEPR of the Major Rehabilitation of the Jetty System at the Mouth of the Columbia River. Mr. Maher maintains Project Management Professional certification through the Project Management Institute.

Jon Staiger, Ph.D.

Role: Environmental
Affiliation: Coastal Engineering Consultants, Inc.

Dr. Staiger is a Senior Scientist for Coastal Engineering Consultants, Inc. He received his Ph.D. in marine biology from the University of Miami in 1970. Dr. Staiger has 43 years of ecological experience working in Florida, the Gulf of Mexico, the Caribbean Sea, and the tropical Atlantic and Eastern Tropical Pacific Oceans.

For 19 years, he served as Natural Resources Manager for the City of Naples, Florida. In that capacity, he was responsible for two beach restoration projects, two inlet management plans, and 10 inlet, pass, bay, and waterways dredging projects. He provided local coordination and liaison with USACE for its periodic dredging of the Federal channel into Naples Bay (Gordon Pass) and facilitated permitting and permit compliance for the City's frequent dredging of a second channel (Doctors Pass) into a separate waterway system. As Natural Resources Manager, he demonstrated understanding of ecological responses to navigation channel improvements, coordinating marine turtle and marine mammal protection with regulatory agencies and was involved in permitting and monitoring channel dredging projects and the environmental impacts on the affected habitats. Of particular concern were the effects of turbidity plumes and inadvertent spoil discharge on seagrass beds, mangrove and marsh areas, and hard-bottom and infauna assemblages. He was also responsible for ensuring that public and private projects were compliant with NEPA, the Endangered Species Act, essential fish habitat, and the Marine Mammals Protection Act.

In Louisiana, Dr. Staiger was involved in various barrier island design, permitting, restoration, and construction projects. Each project required an understanding of coastal and estuarine processes, including tidal dynamics, and storm-induced island geomorphic change. He is familiar

with mechanical and hydraulic dredging techniques, ecological responses associated with dredging, and the impacts of dredging on dredging sites and spoil disposal areas, including designated Offshore Dredged Material Disposal Sites. He is also familiar with beneficial use for beach and upland restoration, which can involve impacts on shorebirds, migratory birds, marine turtles, and other listed species. Dr. Staiger's work on two completed Louisiana projects—the Terrebonne Basin Barrier Shoreline Restoration project and the Barataria Basin Barrier Shoreline Restoration project—demonstrates his experience in the preparation of NEPA-compliant documents. Both projects required close coordination with USACE staff to develop the documents, and both have launched construction projects that are currently in the final stages of permitting and contract award.

Dr. Staiger is a member of the Coasts, Oceans, Ports, and Rivers Institute of the ASCE. He also was an officer and board member of the Florida Shore and Beach Preservation Association for seven years and was an Ecological Society of America Certified Senior Ecologist and American Fisheries Society Certified Fisheries Biologist until retiring from city government in 2005. His professional affiliations include the ASCE, the American Chemical Society, the Ecological Society of America, the Estuarine Research Federation, and the Society of Wetland Scientists.

David Sanford

Role: Plan formulation
Affiliation: Manchester Maritime Associates, LLC

Mr. Sanford is Principal of Manchester Maritime Associates, LLC, a government relations consulting firm based in New Hampshire specializing in maritime and water resources development. He earned his B.A. in geography from Concord University in Athens, West Virginia, in 1970 and has more than 40 years of experience in water resources development. His experience ranges from flood damage prevention and emergency management to inland and coastal navigation, planning, policy, operations, and construction.

He served 32 years with USACE, where he was directly involved at the district, division, and Headquarters levels in all aspects of plan formulation and alternative development and analysis. In 1995, Mr. Sanford was appointed to the Senior Executive Service (SES) at USACE Headquarters by the Secretary of Army. His SES assignments included serving as Chief of Civil Works Policy from 1994 to 2000. In that capacity, he was responsible for developing policy for the Assistant Secretary of Army—Civil Works, disseminating Administration policy to field offices and ensuring compliance, and providing guidance to all field elements on plan formulation, P&G, and application of the NEPA and other applicable Federal laws and regulations. He also led a division of nearly 50 staff, provided liaison to Congressional offices, and produced the Administration's recommended Water Resources Development Acts (WRDAs) in 1996, 1999, and 2000.

Prior to serving as Chief of Policy, he was selected in 1992 for a legislative fellowship to the office of the late Senator Daniel Patrick Moynihan, where he worked as Water Resources Advisor. His work for Chairman Moynihan covered a broad range of topics, from restoring the Erie Canal to writing the Senate version of the 1992 WRDA. Mr. Sanford also served as Headquarters Chief of the Interagency and International Services Division, where he managed a

$3.1 billion portfolio of work and was responsible for providing USACE engineering services to other Federal agencies and foreign governments. He was involved in the successful development and funding of water resources projects in the Commonwealth of Puerto Rico, working directly with the Commonwealth Secretaries of Environment and Transportation.

Following his USACE career, Mr. Sanford worked at the George Washington University Institute for Crisis, Disaster and Risk Management from 2002 to 2005, where he served as Lead Research Scientist and Visiting Scholar advising Institute leadership on navigation and natural disaster and emergency preparedness in Eastern European former Soviet Republics. From 2005 to 2012, he served as Director of Navigation Policy and Legislation at the American Association of Port Authorities, where he was the primary advocate for waterside issues involving navigability, dredging, and harbor maintenance tax.

Mr. Sanford has extensive experience working with ports in the development and management of dredged material placement facilities for both contaminants and clean material. He provided advice to port industry members on Federal legislation and policy and on USACE planning, policy, channel maintenance, and dredged material management. In that role, he worked extensively with port professionals, members of Congress and their staffs, Congressional committees, and the Administration.

5. SUMMARY OF FINAL PANEL COMMENTS

The panel members agreed among themselves on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2010, 2012; p. D-4) in the Jacksonville Harbor, FL Project Integrated General Reevaluation Report (GRR II) and Environmental Impact Statement (EIS) review documents. Table ES-1 lists the Final Panel Comments statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following summarizes the Panel's findings from the review.

Hydraulic Engineering

The overall integration of results from multiple study components has thus far been accomplished in a thorough, understandable manner. This is a significant accomplishment requiring superior coordination and multidisciplinary thinking and effort. The Advanced Circulation (ADCIRC) modeling for boundary conditions, storm surge, and sea level rise predictions was exceptionally well done, with carefully constructed analyses of the model results that provided understanding, not just numbers.

Two aspects of the hydraulic engineering studies require special attention: (1) validating and re-running the main stem river channel sedimentation model and interpreting the results in terms of deposition and benthic habitat changes in order to accurately estimate future dredging costs and complete the environmental evaluation, and (2) revisiting the decision to change to a different model for the tributary analyses, since using two different models complicates salinity intrusion evaluation.

Geotechnical Engineering

The geotechnical engineering discussions within the document and associated appendices are fairly comprehensive and generally provide an adequate justification for the Tentatively Selected Plan (TSP). However, the text does not clearly address how data gaps and uncertainty in geotechnical parameters that affect slope stability analyses were accounted for. This can be addressed by performing a sensitivity analysis of key slope stability parameters that are not currently well understood. Similarly, the text addressing the available data for unconfined compressive strength of the rock and associated assumed pre-treatment needs should be more accurately addressed with consideration of previous site-specific experience. Finally, the document lacks adequate detail on the basis of the costs estimates for some line items including dredging costs and annual operation and maintenance (O&M) costs. The basis for these costs can be addressed through narrative text and/or tables in Appendix N.

Economics

The appropriate methods and models appear to have been employed in the economic justification of the NED plan and the TSP; however, the Panel has significant concern that a system-based analysis demonstrating Federal interest in the project was not provided. This issue could be addressed through the conduct of a multi-port analysis or by providing sound rationale for excluding such analysis. In addition, a lack of documentation of the economic analysis prevents the Panel from accurately assessing the project's economic performance. This could be resolved by providing descriptions of the methods and assumptions used to develop the commodity and fleet forecasts and total voyage costs by trade route, as well as the methods used to quantify risk and uncertainty related to key economic variables used to calculate transportation cost savings.

Environmental

A thorough description and discussion of the range of environmental issues related to implementation of the proposed Jacksonville Harbor Project has been presented. The integration of the St. Johns River Water Management District's models and database into the research for this project was well done. The results of the hydrodynamic and environmental modeling, the analyses of the diverse potential environmental impacts and the mitigation for these impacts indicate that there will be minimal impact on the resources in the project area. However, the Mitigation and Adaptive Management Plans generally lack specific success criteria, thresholds, standards, and procedures that reinforce the commitment to mitigating for environmental impacts. The Panel believes that this omission can be remedied by compiling the appropriate information from the relevant appendices, explaining it clearly, and presenting it in the Adaptive Management Plan.

Plan Formulation

The plan formulation process follows the USACE six-step planning process and is consistent with guidance contained in ER 1105-2-100 (USACE, 2000). The process was modified to incorporate the USACE SMART planning criteria. Development of the without-project condition and the formulation of alternative plans is straightforward and well-written. However, including the unauthorized and unbudgeted Mile Point training wall project in the without-project

condition could have a negative impact on the overall formulation and project benefits if not constructed. That issue needs to be further developed in the GRR and can be addressed by explaining the probability of that project being constructed and functional when the deepened main channel becomes operational.

Table 3. Overview of 13 Final Panel Comments Identified by the Jacksonville Harbor IEPR Panel

No.	Final Panel Comment
	Significance – High
1	Federal interest has not been demonstrated in the General Reevaluation Report II (GRR2) because a multi-port analysis assessing competition among regional ports is not provided.
2	The tentatively selected plan (TSP) assumes that the proposed construction of a training wall at the Mile Point area of the main navigation channel is included in the without-project condition, but the wall construction is neither authorized nor budgeted.
	Significance – Medium
3	The methods and assumptions used to develop the economic analysis are not sufficiently documented.
4	Use of different salinity models for the main stem versus the tributary evaluations makes evaluating salinity effects very difficult.
5	The adaptive hydraulics (ADH) sediment modeling results do not provide a reliable estimate of the annual sedimentation rates necessary to establish environmental effects and sediment management requirements.
6	It is unclear how the factors of safety for the slope stability analyses were selected given the acknowledged uncertainty in the sediment strength data.
7	The accuracy of the cost estimate for the tentatively selected plan (TSP) is unclear without a comparison of annual operation and maintenance (O&M) costs for the with- and without-project conditions.
8	The National Economic Development (NED) benefits identified in the economic analysis cannot be verified because the economic risk and uncertainty analysis is documented.
9	The analysis and presentation of salinity results in the General Reevaluation Report II (GRR2) provide an incomplete understanding of the impacts of channel enlargement.
	Significance – Low
10	Rock strength data collected within the Jacksonville Harbor Project site suggest that proposed pretreatment methods may be unnecessary for the type of rock typically found there, which is contrary to previous experience at the site.
11	The General Reevaluation Report II (GRR2) and appendices do not clearly characterize the actual Ocean Dredged Material Disposal Site (ODMDS) site as new or existing, which could affect costs and environmental impacts.
12	The Regional Economic Development (RED) benefits are incorrectly attributed to the harbor deepening and therefore overemphasize regional benefits of the Jacksonville Harbor Project.
13	The Adaptive Management Plan (Appendix G of the General Reevaluation Report II [GRR2]) does not include key elements such as trigger thresholds and specific actions to correct deficiencies.

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APPENDIX A

Final Panel Comments

on the

Jacksonville Harbor

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Final Panel Comment 1

Federal interest has not been demonstrated in the General Reevaluation Report II (GRR2) because a multi-port analysis assessing competition among regional ports is not provided.

Basis for Comment

A system-based (multi-port) approach to navigation economic analysis that demonstrates how national resources are efficiently allocated to navigation projects is not included in the documents provided for review. This type of analysis would assess and prioritize national needs of port development and expansion. It would take into account geographic, intermodal, and cost issues to determine which U.S. east coast ports require deepening in order to accommodate the anticipated increase in deeper-draft vessel traffic associated with the expansion of the Panama Canal.

During the scoping process, a commenter asked whether there would be an analysis showing the hierarchy of ports (GRR2, p. 302, fourth bullet). In response to that comment, USACE indicated that a multi-port analysis would be conducted.

Significance – High

A systems approach to evaluating the national navigation infrastructure needs is required to accurately and completely demonstrate Federal interest in the proposed project.

Recommendations for Resolution

1. Conduct a system-based analysis to demonstrate Federal interest in the proposed project.

Final Panel Comment 2

The tentatively selected plan (TSP) assumes that the proposed construction of a training wall at the Mile Point area of the main navigation channel is included in the without-project condition, but the wall construction is neither authorized nor budgeted.

Basis for Comment

U.S. Army Corps of Engineers (USACE) planning guidance (USACE, 2000) states:

> "The without-project condition is the most likely condition expected to exist in the future in the absence of a proposed water resources project." (Chapter 2-4b(1))

The General Reevaluation Report II (GRR2) includes, as a component of the without-project condition, the reconstruction and repositioning of an existing training structure in the section of main channel known as Mile Point where the Intracoastal Waterway intersects the main navigation channel. However, the Mile Point training wall is neither authorized nor budgeted for construction. If the new wall is not constructed, the navigability of the St Johns River Main Channel in the Training Wall Reach may be impacted. Alternatively, The Jacksonville Port Authority has the option to construct the Mile Point training wall as a non-Federal project and has indicated a willingness to do so before the deepening of the channel.

Project benefits may be impacted if the wall is not constructed. Vessels transiting the reach that are either slowed or require assistance reduce the efficiency of the project and could add time, cost, and risk to pass through the reach.

Significance – High

The reconstructed Mile Point training wall is a critical element of this project. The current status of this wall and its impact on the project benefits if not constructed need to be described in more detail and should include the option for construction by the Jacksonville Port Authority.

Recommendations for Resolution

1. If the Mile Point training wall construction moves forward as a Federal project, revise the GRR2 to indicate that construction of the Mile Point training wall has a signed Chief of Engineers Report and is awaiting authorization.
2. State the basis for including the construction of the Mile Point training wall in the without-project condition and describe the impact on the navigability of the improved channel and project benefits if the wall is not constructed.

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USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) 1105-2-100. April 22.

Final Panel Comment 3

The methods and assumptions used to develop the economic analysis are not sufficiently documented.

Basis for Comment

Accurate and documented commodity and fleet forecasts and total voyage costs are essential for calculating transportation cost savings and benefit-to-cost ratios and for selecting a recommended plan. The documents provided for review do not describe: (1) the methods and assumptions used to develop the commodity and fleet forecasts; (2) the methods and assumptions used to calculate total voyage costs by trade route; and (3) the variables and assumptions incorporated into the HarborSym model simulations. The Panel is thus unable to determine whether the commodity and fleet forecasts and the total voyage costs accurately reflect future conditions in the study area. These calculations could significantly impact the findings and understanding of the economic analysis.

According to Appendix B, Section 3.3, the commodity and fleet forecasts are based on Global Insight (GI) and Maritime Strategies International (MSI) forecasts, respectively. Descriptions of methods and assumptions used to develop these forecasts are not provided, and the GI and MSI reports are not cited in the references.

Commodity and Fleet Forecasts. The Panel finds a discrepancy between stated commodity growth rates and projected increases in commodity movements. For instance, in Table 22 of the General Reevaluation Report II (GRR2), growth rates for the FE-ECUS-PAN trade route are stated as 10.27% for 2010-2020 and 3.67% for 2020-2060 (the table does not indicate whether growth rates are annual or for the total period). However, in Tables 19 and 23 of the GRR2, the number of 20-foot equivalent units (TEUs) projected to move through the port on that route increase by 184% from 2010-2020, 79% from 2020-2030, 30% from 2030-2040, and 31% from 2040-2050.

Assumptions associated with the transition of the Jacksonville with-project fleet to post-Panamax vessels (Appendix B, Table 3-8) over the period of analysis are not provided.

Total Voyage Costs. The methods and assumptions used to develop total voyage costs for each trade route/vessel class (i.e., vessel time at sea, idle and productive port times, with- and without-project cargo handling, transfer, and in-port charges, Panama versus Suez canal toll costs, etc.) are not provided.

Total transportation costs (mean, standard deviation, median, min, max, etc.) are only presented in aggregate, by alternative channel depths. Details used to develop the total costs, such as total transportation costs by trade routes, are not provided.

Cost savings attributable to the individual components of the project (i.e., channel deepening, channel widening, turning basins, and reduced congestion) are not provided.

HarborSym Model. The critical parameters entered into the HarborSym model and the assumptions used to define those parameters are not described in sufficient detail to allow an informed judgment of the conclusions drawn.

Significance – Medium

A lack of understanding of the methods and assumptions used to calculate the National Economic Development (NED) benefits affects the calculation of the benefit-to-cost ratio and the selection of the recommended plan.

Recommendations for Resolution

1. Describe the methods and assumptions used to develop the commodity and fleet forecasts and cite the GI and MSI reports in the references.
2. Clarify the apparent discrepancy between stated commodity growth rates, by trade routes (Table 22, GRR2) and the projected increases in commodity movements (Table 23, GRR2) from 2010 to 2060.
3. Describe the assumptions associated with the transition of the Jacksonville with-project fleet to post-Panamax vessels over the period of analysis.
4. Describe the methods and assumptions used to develop total voyage costs for each trade route/vessel class.
5. Provide additional description of how the total transportation costs were developed, such as total transportation costs by trade routes.
6. Describe the cost savings attributable to the different components of the project (i.e., channel deepening, channel widening, turning basins, reduced congestion).
7. Describe the critical parameters entered into the HarborSym model and the assumptions used to define those parameters.

Final Panel Comment 4

Use of different salinity models for the main stem versus the tributary evaluations makes evaluating salinity effects very difficult

Basis for Comment

The General Reevaluation Report II (GRR2) states that the tributary and marsh salinity effects modeling, which is incomplete as of this review, is being conducted with a MIKE hydrodynamic model (pp. 181 and 293). (The MIKE version is not specified, but is assumed to be either MIKE21 or MIKE3.) Replacing the original model, Environmental Fluid Dynamics Code (EFDS), with a MIKE hydrodynamic model will cause confusion and may reduce confidence in the results already produced as described below.

The EFDC selection was appropriate and commendable because (1) St Johns Water Management District had chosen the EFDC model for its water supply study; (2) the EFDC model is endorsed by the U.S. Environmental Protection Agency (EPA) and the state as a suitable model for environmental studies, (3) the EFDC model provides an adequate validation of main stem circulation and salinity, and (4) the EFDC model clearly meets the Daubert Rule requirements for use in Federal court. Changing to any other model raises a question, if EFDC was the most appropriate choice for the St Johns River circulation and salinity modeling, it is unclear why it is not the most appropriate model choice for the extension of that study into the tributaries. In essence, changing models reduces confidence in the earlier decision to use EFDC and, therefore, reduces confidence in its results.

Changing to another model requires either that the new model be validated in the main stem of the river (a task that is already complete for EFDC), or that the boundary conditions be matched at awkward interior locations. Either choice adds time and cost to the study. It will also confuse salinity intrusion issues and raise questions concerning how the EFDS and the new model results compare and, if they are different, which results are correct. These and other questions will impede decision-making in mitigation studies and adaptive management.

The rationale for changing models is not explained, and results are unavailable for review. In light of the well-informed selection of multiple models in the rest of the project, in which each model was chosen for its strengths in addressing specific issues, using a different model for the tributary salinity and marsh modeling is ill-advised.

Significance – Medium

If the new model results are incompatible with the prior model results, additional analysis will be required to define the salinity intrusion and main stem circulation.

Recommendations for Resolution

1. Perform the tributary salinity and marsh modeling with an EFDC model using the approaches used by Sucsy et al. (2011b).

Literature Cited:

Sucsy, P., E. Carter, D. Christian, M. Cullum, K. Park, J. Stewart, and Y. Zhang (2011b). River Hydrodynamics Results. *Water Supply Impact Study*, Chapter 6. St. Johns River Water Management District, Palatka, Florida.

Final Panel Comment 5

The adaptive hydraulics (ADH) sediment modeling results do not provide a reliable estimate of the annual sedimentation rates necessary to establish environmental effects and sediment management requirements.

Basis for Comment

Standard sediment transport model validation consists of comparing deposition and erosion rates and/or suspended solids concentration between model and prototype (field) observations for a representative time period (Thomas and Chang, 2007; Ganju and Schoellhamer, 2009). Unvalidated sediment models are suitable only for sensitivity studies and preliminary examinations.

Figure 27 (Appendix A, Attachment G) shows observed and modeled ending bed elevations, but not starting bed elevations for either, so the observed sedimentation rate is indiscernible. Therefore, the ADH model validation is limited to a comparison of final bed elevations (instead of deposition rates) for a single 3-month period that was not shown to be representative of expected river conditions.

The model also used a single 3-month period to predict sedimentation rates for the existing channel and the 46-foot channel. Because the period was not shown to be representative of typical conditions and the model is not considered validated, the results are assumed to be unreliable indicators of future conditions.

Given the above observations, the General Reevaluation Report II (GRR2) ADH model predictions of sedimentation rates are considered insufficient for estimating dredging requirements, benthic burial rates, or changes in suspended sediment concentrations in the river. For these reasons, they cannot be used to identify or evaluate mitigation and adaptive management measures.

Significance – Medium

A validated sedimentation model applied according to standard practice is necessary to reliably evaluate sediment management measures, including maintenance dredging quantities.

Recommendations for Resolution

1. Validate the ADH model by comparing the modeled deposition rates in a year with representative freshwater flows, tides, and storms (including data from a recent hurricane, such as 2012's *Sandy*) to average annual dredging quantities by section of channel. Show initial and ending bed elevations and rates of change for both model and prototype. Ensure that the overall volume and distribution of sediment are in general agreement and generate error bounds to be applied to the future estimates.

2. Use the representative year or a representative series of years (wet, dry, stormy, etc.) as base test and plan tests, including the Tentatively Selected Plan, in order to define changes in sedimentation rates attributable to the plans.
3. Interpret the results in terms of the error bounds and in light of salinity and circulation changes predicted by the Environmental Fluid Dynamics Code (EFDC) model to ensure that the two-dimensional approach of ADH is appropriate.

Literature Cited:

Ganju, N.K., and D.H. Schoellhamer (2009). Calibration of an estuarine sediment transport model to sediment fluxes as an intermediate step for simulation of geomorphic evolution. Cont. Shelf Res. 29:148–158.

Thomas, W.A., and H. Chang (2007). Computational Modeling of Sedimentation Processes. Chapter 4 in *Sedimentation Engineering,* Manual 110, pp. 649-682. M.H. Garcia, ed. American Society of Civil Engineers, Reston, Virginia.

Final Panel Comment 6

It is unclear how the factors of safety for the slope stability analyses were selected given the acknowledged uncertainty in the sediment strength data.

Basis for Comment

According to Appendix A (paragraph 22) and Appendix A, Attachment B (pp. 6 and 7), the slope stability analyses indicate that the predicted factors of safety meet the minimum factor of safety for the Jacksonville Harbor Project, but the minimums are not provided. The Panel assumes they are based on the referenced guidance (USACE, 2003) and include 1.3 for end of construction and 1.5 for long-term/steady state conditions. The text also notes in several places that (1) gaps exist in bathymetric survey data and structure elevations, (2) boring information is limited, and (3) no laboratory samples are available. It is unclear to the Panel how the acknowledged uncertainties related to bathymetry and geotechnical properties were accounted for in selecting the appropriate factor of safety. For instance, the guidance states the following:

> "Factors of safety for slopes other than the slopes of dams should be selected consistent with the uncertainty involved in the parameters such as shear strength and pore water pressures that affect the calculated value of factor of safety and the consequences of failure. When the uncertainty and the consequences of failure are both small, it is acceptable to use small factors of safety, on the order of 1.3 or even smaller in some circumstances. When the uncertainties or the consequences of failure increase, larger factors of safety are necessary."

Significance – Medium

Without an understanding of the assumed minimum factor of safety and sensitivity to data gaps, the Panel cannot fully review the results of the slope stability analyses.

Recommendations for Resolution

1. State what the minimum factor(s) of safety are assumed to be for the project.
2. Provide a sensitivity analysis to key slope stability parameters that are not well understood at this stage.

Literature Cited:

USACE (2003). Engineering and Design - Slope Stability. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Manual (EM) 1110-2-1902. October 31.

Final Panel Comment 7

The accuracy of the cost estimate for the tentatively selected plan (TSP) is unclear without a comparison of annual operation and maintenance (O&M) costs for the with- and without-project conditions.

Basis for Comment

Future maintenance dredging requirements are estimated to average 132,000 cubic yards (cy) per year more than present quantities, based on a desktop analysis described in Section 6.5 of the General Reevaluation Report II (GRR2) and in Appendix P (p. 3). The desktop analysis uses only the project footprint expansion as a cause of sedimentation rate increases, implicitly assuming that the enlarged channel net deposition rates will be unchanged. Furthermore, Section 5.6.1.2 and Appendix P (p. 4) state that a negligible difference in deposition rates was assumed between the National Economic Development (NED) plan (45-foot depth) and the TSP (47-foot depth). The use of an unchanged deposition rate between the with-project (NED plan or TSP) and without-project conditions is not consistent with an increase in project dimensions.

Appendix P (pp. 2 and 3) presents the basis for the assumed 132,000-cy-per-year maintenance dredging increase. Table 1 (Appendix P) gives the dredging requirements from the approved 2012-2013 Dredged Material Management Plan (DMMP) Update, which include a 20% overdepth/bulking factor. In the text following Table 1 the bulked volume is converted to neatline volumes simply by multiplying the bulked volume by 80%. However, this calculation is not correct for this purpose. Instead, the bulked volume should be divided by 120% to calculate the neatline volume, which will result in an estimated annual O&M volume greater than the estimated 132,000 cy per year.

Tables 36 and 37 (GRR2) show increases in O&M costs of approximately $1.1 million for both the NED plan and the TSP. Based on the 132,000 cy of increased maintenance dredging volume noted above, the unit cost for additional maintenance dredging and disposal is approximately $8.33 per cubic yard. The Panel noted that in Table 4 (Appendix P) the unit costs are between $8.12 and $9.12. However, the level of detail and backup provided in Appendix N is not sufficient to fully assess the reliability and accuracy of annual O&M costs of approximately $1.1 million. For instance, Section N.1.4 (Appendix N) states that the “unit prices for dredging related work were developed in the Corps of Engineers Dredge Estimating Program (CEDEP),” but the details of the CEDEP are not provided for review.

Significance – Medium

A revised maintenance dredging requirement or a revised unit cost for maintenance dredging may have a significant effect on project costs.

Recommendations for Resolution

1. Compute the deposition rate for the with-project condition based on results from

the adaptive hydraulics (ADH) numerical model after it has been validated to observed sedimentation processes.
2. Compare O&M costs for the with- and without-project conditions.
3. Recalculate the annual O&M volumes with appropriate accounting for the 20% bulking factor.
4. Provide additional details for the basis of the unit costs of dredging and disposal (including maintenance dredging).

Final Panel Comment 8

The National Economic Development (NED) benefits identified in the economic analysis cannot be verified because the economic risk and uncertainty analysis is not documented.

Basis for Comment

The identification, quantification, and description of risk and uncertainty allow for informed decision-making when estimated benefits and costs are demonstrated to be reliable and alternative plans are shown to be effective. The documents provided for review do not explicitly describe the methods used to quantify risk and uncertainty related to key economic variables associated with the calculation of transportation cost savings. This could significantly affect the findings of the economic analysis.

Section 6.7 of the General Reevaluation Report II (GRR2) provides a limited discussion of risk and uncertainty, with references to Appendix B for discussions of economic parameters. However, Appendix B presents no discussion of risk and uncertainty inherent in the development of critical economic parameters such as the commodity forecast, fleet forecast, total voyage costs by trade route, or parameters incorporated into the HarborSym model.

Commodity and fleet forecasts, based on Global Insight and Maritime Strategies International forecasts, respectively, are presented in the GRR2 as single-point estimates (Tables 23 and 24, respectively); the risks and uncertainties inherent in those forecasts are not addressed in the GRR2.

The risks and uncertainties associated with the transition of the Jacksonville with-project fleet to post-Panamax vessels (Table 3-8, Appendix B) over the period of analysis are not assessed.

The statistics for total transportation costs for each alternative (Table 4.1, Appendix B), indicate that risks may have been analyzed (presumably within the HarborSym model), but the parameters evaluated and methods used are not discussed. The range of values that were assigned to critical parameters and entered into the HarborSym model, and the resulting risks assessed within the model, are not described.

Significance – Medium

The failure to adequately quantify and communicate project risk and uncertainty could result in inefficient allocation of resources.

Recommendations for Resolution

1. Describe the risks and uncertainties inherent in the commodity and fleet forecasts and provide a distribution of possible forecast outcomes.

2. Describe the risks and uncertainties associated with the transition of the Jacksonville with-project fleet to post-Panamax vessels over the period of analysis.
3. Describe the risks assessed in the HarborSym model and provide the range of values assigned to critical parameters and entered into the model.

Final Panel Comment 9

The analysis and presentation of salinity results in the General Reevaluation Report II (GRR2) provide an incomplete understanding of the impacts of channel enlargement.

Basis for Comment

The Environmental Fluid Dynamics Code (EFDC) model is an appropriate choice for examining salinity and circulation changes and has been correctly applied. However, the results presented in the documents convey only a partial understanding of salinity intrusion changes that will result from implementing the Jacksonville Harbor Project.

Appendix A, Attachment K, Phase 1 (pp. 25-73) provides an adequate salinity validation, with vertical under-mixing of the water column at Dames Point (i.e., the water column is more stratified in the model than in the observed data). Over-stratification should produce more conservative results – greater salinity intrusion – than would occur otherwise; however, the upstream values at Acosta Bridge and above match observations adequately. The report attributes the difference to a possible error in freshwater inflow, but the salinity values suggest that horizontal and longitudinal mixing may be too high in the model, which compensates for under-mixing in the vertical.

Model validation statistics appropriately include Correlation and Root Mean Square Error. However, standard modeling practice calls for showing other statistics, such as absolute and percentage average error, in order to fully quantify the validation error bounds and biases (Sucsy et al., 2011a). Appropriate use of these statistics includes presentation as error bounds on the salinity values reported (GRR2, pp. 178-181) for the base and plan channels.

Tables 46-48 (GRR2) show median salinities and changes in median salinities for the existing condition and channel enlargement plans. Attachment K to Appendix A shows probability exceedance salinities. Although these results are instructive, they provide an incomplete picture of plan effects. For example, Table 47 shows that median salinity increases by 1 practical salinity unit (psu) at Acosta Bridge for the 50-foot channel; however, the calibration period shows salinities there fluctuating from 1 psu to about 6 psu daily and from 2 psu to 14 psu weekly. Daily and weekly salinity fluctuations are of greater importance to estuarine ecosystems than median values, so standard presentations of salinity intrusion include contours (plan and elevation views) at high and low water slack under a range of conditions, along with an analysis of how the results can be interpreted in light of model validation statistics (Sucsy et al., 2011b).

The 46- and 50-foot-deep EFDC channel simulations will be a good predictor for the 49-foot-deep channel for the near term. However, for the long term, the response will be more complicated, as noted in Attachment J to Appendix A. A full interpretation of

salinity changes will include the possibility of nonlinear responses to sea level rise, storm tides, and altered freshwater inflows.

Significance – Medium

The modeling is adequate for the purpose of defining salinity changes resulting from channel enlargement, but the results and interpretation given in the review documents provide only a partial evaluation of estimated salinity changes.

Recommendations for Resolution

1. Perform a complete error analysis on the EFDC salinity model validation, including absolute and percentage average error by location.
2. Interpret the model validation results for the implications of possible under- and over-mixing of salinity.
3. Present salinity intrusion findings through contours (plan and elevation views) at high and low water slack under a range of conditions, and analyze how the results can be interpreted in light of model validation statistics.

Literature Cited:

Sucsy, P., K. Park, G. Belaineh, E. Carter, D. Christian, M. Cullum., J. Stewart, and Y. Zhang (2011a). River Hydrodynamics Calibration. *Water Supply Impact Study*, Chapter 5. St. Johns River Water Management District, Palatka, Florida.

Sucsy, P., E. Carter, D. Christian, M. Cullum, K. Park, J. Stewart, and Y. Zhang, (2011b). River Hydrodynamics Results. *Water Supply Impact Study*, Chapter 6. St. Johns River Water Management District, Palatka, Florida.

Final Panel Comment 10

Rock strength data collected within the Jacksonville Harbor Project site suggest that proposed pretreatment methods may be unnecessary for the type of rock typically found there, which is contrary to previous experience at the site.

Basis for Comment

Section 6.3.5 of the General Reevaluation Report II (GRR2) implies that rock with an unconfined compressive strength of more than 5,000 pounds per square inch (psi) will be common, requiring the use of blasting or other pretreatment methods. While the Panel agrees that pre-treatment methods would be necessary for such rock strengths, it is not clear that rock of this strength is typical within the project area.

Appendix A, Engineering (p. A-14) states that during previous deepening activities, rock encountered in Cuts 12 to 14 had an unconfined compressive strength averaging over 5,700 psi (based on samples from the rock disposal area). However, the measured rock strengths within the current project area (presented in an unnumbered table on page A-14) are significantly less, ranging from 135 to 5,728 psi, with all but one measurement being below the 5,000-psi threshold requiring pretreatment. The table "Compressive Strength of Rock Core Samples" (p. 94/102) in the file titled "JAXDGRR2_A_5_ATTACHMENT_B_PART2.PDF" includes more unconfined compressive strength data than presented in the summary table noted above; it is unclear if these data are representative of the project limits.

The Panel recognizes that pre-treatment should be strongly considered, but the available strength data should be qualified based on the previous experience to support the need for pre-treatment.

Significance – Low

A clarification of the type of rock and corresponding rock strength is needed to support the need for pre-treatment.

Recommendations for Resolution

1. Clarify whether the strengths measured in the rock disposal area (averaging over 5,700 psi) are representative of the rock strengths expected within the project area in light of the lower rock strengths measured as part of this study.
2. Clearly document what rock strength data were used in in the assessment of pretreatment (comparing tables in Appendix A and in the file "JAXDGRR2_A_5_ATTACHMENT_B_PART2.PDF".).

Final Panel Comment 11

The General Reevaluation Report II (GRR2) and appendices do not clearly characterize the actual Ocean Dredged Material Disposal Site (ODMDS) site as new or existing, which could affect costs and environmental impacts.

Basis for Comment

Based on a June 20, 2013, mid-review teleconference (facilitated by Battelle) with the U.S. Army Corps of Engineers (USACE) and IEPR panel, the Panel understands that the U.S. Environmental Protection Agency (EPA) has not yet identified a location for the new or expanded ODMDS.

The GRR2 (Sections 2.2.8 and 7.2.8 and Figure 7) and Appendix C (Real Estate, p. 5) seem to use the terms “new” and “expanded” interchangeably. The documents do not address the potential differences in environmental impacts or costs between an expanded version of the existing ODMDS and a new (separate) ODMDS. The status of this evaluation needs to be discussed consistently.

Significance – Low

The confusion regarding “new” and “expanded” ODMDS affects the technical quality of the report.

Recommendations for Resolution

1. Clarify the discussion on the creation of a new ODMDS and include a reference to the ongoing EPA evaluation.
2. Include a summary of the modeling and scenarios related to the ODMDS being evaluated by EPA.

Final Panel Comment 12

The Regional Economic Development (RED) benefits are incorrectly attributed to the harbor deepening and therefore overemphasize regional benefits of the Jacksonville Harbor Project.

Basis for Comment

Section 4.3.1 of the General Reevaluation Report II (GRR2) states that the RED account is one of four accounts established in the Principles and Guidelines (P&G) to facilitate the evaluation and display of effects of alternative plans. In accordance with U.S. Army Corps of Engineers (USACE) guidance (2005), greater emphasis is being placed on a broad range of considerations in planning besides the National Economic Development (NED) effects.

Section 3.3.4 of Appendix B (p. 73) states that the commodity forecast is the same for the future without-project and future with-project conditions. Accordingly, in reference to the RED account, Section 6.6 of the GRR2 states that "regional shifts in economics are not expected as a part of the Tentatively Selected Plan." However, Section 6.6.1 of the GRR states that the "increased traffic with deepening at JAXPORT is expected to provide RED benefits," including the creation of 22,748 new private-sector port jobs in Jacksonville for the 45-foot National Economic Development (NED) plan and 34,508 jobs for the 47-foot locally preferred plan (LPP). According to Section 3.3.4, any RED benefits resulting from increased traffic will occur under the without- and with-project conditions and are not associated with deepening of the harbor.

Significance – Low

An accurate assessment of the regional economic benefits generated by the proposed project is needed to support the overall understanding of project benefits and of the project's impact on the regional economy.

Recommendations for Resolution

1. Revise the RED benefits analysis to accurately reflect the impact of harbor deepening.

Literature Cited:

USACE (2005). Planning in a Collaborative Environment. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Circular (EC) No. 1105-2-409. May 31.

Final Panel Comment 13

The Adaptive Management Plan does not include key elements such as trigger thresholds and specific actions to correct deficiencies.

Basis for Comment

The U.S. Army Corps of Engineers (USACE) Planning Guidance Notebook (USACE, 2000) addresses the requirement for compliance with the National Environmental Policy Act (NEPA). Compliance requires a detailed inventory of existing environmental conditions; the prediction and evaluation of the consequences of project completion; and development of measures to mitigate unavoidable impacts. In coordination with other Federal and state agencies, USACE has developed a number of mitigation options, from physical nutrient reduction in the Lower St. Johns River watershed to purchase of additional conservation property (General Reevaluation Report II [GRR2], Appendix E).

The unavoidable impacts will not be manifest immediately, and a monitoring program has been proposed to (1) track impact trends in relation to predictions from the modeling effort (the Environmental Fluid Dynamics Code [EFDC] salinity model and the ecological models) and (2) ascertain whether the physical mitigation efforts are successful (GRR2, Appendix F). Should the trends deviate from the predictions, the Adaptive Management Plan (GRR2, Appendix G) states:

> "If the success criteria for the mitigation, as described in the mitigation plan (Appendix E), are not met then modifications would be warranted and re-coordination with the regulatory agencies and the public would occur:"

However, there are no success criteria, per se, presented in the mitigation plan. Later in that same section, the Adaptive Management Plan states:

> "…should SAV (sic. SAV- submerged aquatic vegetation) stress levels exceed those anticipated in the SAV model and the DSEIS, then the model would be re-run using the new field data and re-coordination with the regulatory agencies and the public would occur," (Appendix G, third unnumbered page).

Figure 1 of Appendix G depicts *Vallisneria americana* stress levels without indicating how the need for adaptive management is determined. The salinities on the figure range from 3 to 25 ppt. In the area of the river where *V. americana* has been recorded, this species appears to be under stress when the salinity is greater than 1 ppt, and the species does not appear to normally occur where salinities exceed 10-15 ppt (GRR2, Section 7.3.10). Elevated salinities upstream of River Mile 25 appear to be confined to the river bottom/thalweg, which lacks SAV. Considering that, salinity intrusion mitigation could include structural methods, such as the sand sill constructed in the Lower Mississippi River by USACE during extreme drought, but no specific possibilities are

mentioned in the mitigation or adaptive management appendices.

The Monitoring Plan also includes data gathering efforts from eelgrass beds, tributary wetlands, and fish and macroinvertebrate assemblages in tributary wetlands. The frequency of these monitoring efforts range from monthly to biannually.

Considering the volume of information presented in the GRR2 and its appendices regarding the environmental consequences of the deepening project, the Panel finds the lack of a clear picture of remedial actions to be taken to correct project deficiencies contrary to the intent of NEPA. The role of adaptive management and its integration with both monitoring and mitigation need to be clearly and thoroughly defined.

Section 9, Future Modeling, of the Draft Monitoring Plan (GRR2, Appendix F, p. 13) commits to annual hydrodynamic modeling throughout the 15-year monitoring period and to additional ecological modeling should salinity levels exceed predictions. The predicted salinity levels are referenced in “Appendix TBD,” which the Panel assumes is an abbreviation for “To Be Determined.” The same unknown appendix is referenced several times in the preceding pages of the Monitoring Plan.

Significance – Low

The Adaptive Management Plan and the Monitoring Plan will govern how the project sponsor satisfies relevant permit conditions for the life of the project so the information should be clearly identified, comprehensible, and easily found.

Recommendations for Resolution

1. Extract the success criteria, predicted salinity levels, SAV stress levels, and any other pertinent environmental parameters established in the appendices and create a table of threshold or trigger levels and their durations to be inserted in the Adaptive Management Plan (Appendix G). With so much emphasis on the accuracy of the hydrologic and ecological modeling, describe the range of variation in model results that will be considered aberrant.
2. Provide a list of potential salinity mitigation measures.
3. Explain how the results of the range of monitoring efforts will be integrated and interpreted.
4. Explain the consequences of agency re-coordination should monitoring/modeling indicate its need. Describe the mechanism for adaptive management to modify the mitigation plan, should that action prove necessary.

Literature Cited:

USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) No. 1105-2-100. April 22.

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APPENDIX B

Final Charge to the Independent External Peer Review Panel as Submitted to USACE on June 18, 2013

on the

Jacksonville Harbor

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Charge Questions and Guidance to the Peer Reviewers for the Independent External Peer Review of the Jacksonville Harbor, Florida, Navigation Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS)

BACKGROUND

Jacksonville Harbor is a part of the St. Johns River, and Deep Draft navigation vessels transit the harbor from the Atlantic Ocean to the Main Street Bridge in downtown Jacksonville. The harbor has an authorized project depth of 40 feet from mile 0 to mile 20 and an authorized project depth of 34 feet to mile 22. The purpose of this study is to determine the economic and environmental feasibility of widening and deepening Jacksonville Harbor from the existing project depth of 40 feet up to a possible 50-foot project depth from the entrance channel to river mile 20. The EIS is integrated within the document.

The Water Resources Development Act (WRDA) of 1999 authorized the harbor to be deepened to 40 feet from the Entrance Channel to river mile 14.7. The House of Representatives Energy and Water Appropriations Act, 109 Congress, 1st Session, Report 109-275, Conference Report, printed November 7, 2005, authorized deepening to 40 feet from river mile 14.7 to 20. House Document 214 (in 1992) and House Report 107-681 (in 2003) authorize a General Reevaluation Report to study the harbor. Specific planning objectives for the reevaluation of Jacksonville Harbor include:

- Decrease transportation costs associated with existing commercial ship delays from light loading, use of high tides
- Provide for the navigational safety
- Develop the most cost effective means for disposal of new construction and maintenance dredged material over the 50-year project evaluation period
- Integrate beneficial uses of dredged material such as manufactured soils, recycling of dredge material for construction fill, development of artificial reefs, or use of beach quality material for placement along adjacent beaches as part of a least cost dredged material management plan over the economic life of the project
- Identify the NED plan for Jacksonville Harbor which most efficiently and safely accommodates existing and larger commercial ship and barge traffic while avoiding or minimizing impacts to environmental resources.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Jacksonville Harbor, Florida Navigation Project Integrated General Reevaluation Report (GRR2) And Environmental Impact Statement (EIS) (hereinafter: Jacksonville Harbor) in accordance with the Department of the Army, USACE, Water Resources Policies and Authorities' *Civil*

Works Review (EC 1165-2-214, December 15, 2012), and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004).

Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

The purpose of the IEPR is to assess the "adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (EC 1165-2-214; p. D-4) for the Jacksonville Harbor documents. The IEPR will be limited to technical review and will not involve policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) with extensive experience in hydraulic and geotechnical engineering, Civil Works planning, environment, and economic issues relevant to the project. They will also have experience applying their subject matter expertise to deep draft navigation projects.

The Panel will be "charged" with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-214, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The panel members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Documents for Review. The following documents are to be reviewed by designated discipline:

Title	Approx. No. of Pages	Required Disciplines
Integrated General Reevaluation Report II and Supplemental EIS	337	All
Appendix A: Engineering	2432	Hydraulic and Geotechnical Engineer
Appendix B: Economic	80	Economist
Appendix C: Real Estate	19	Planner
Appendix E: Mitigation Plan	88	Hydraulic, Geotech, Environmental and Planner
Appendix F: Draft Monitoring Plan	17	Environmental
Appendix G: Adaptive Management Plan	7	Environmental and Planner
Appendix H: Coastal Zone Management	6	Environmental and Planner
Appendix I: 404(b)(1)	25	All
Appendix J: Air Emissions Report	108	Environmental
Appendix L: Essential Fish Habitat	45	Environmental
Appendix M: Draft Coordination Action Report (CAR)	75	Environmental and Planner
Total Page Count	3,159	

Supporting Information

- Appendix D: Ecological Models
- Appendix N: Cost Appendix
- Appendix O: Pertinent Correspondence and Mailing List
- Appendix P: Dredged Material Management Plan

Documents for Reference

- USACE guidance *Civil Works Review*, (EC 1165-2-214, December 15, 2012)
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004).

SCHEDULE

This draft schedule is based on the May 31, 2013 receipt of the final review documents. The schedule was revised upon receipt of final review documents.

Task	Action	Due Date
Conduct Peer Review	Battelle sends review documents to panel members	6/11/2013
	Battelle convenes kick-off meeting with panel members	6/11/2013
	Battelle convenes kick-off meeting with USACE and panel members	6/11/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	6/20/2013
	Panel members complete their individual reviews	6/24/2013
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members with talking points for Panel Review Teleconference	6/26/2013
	Battelle convenes Panel Review Teleconference	6/26/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	6/27/2013
	Panel members provide draft Final Panel Comments to Battelle	7/2/2013
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	7/2 to 7/8
	Battelle finalizes Final Panel Comments	7/8/2013
	Battelle provides Final IEPR Report to panel members for review	7/9/2013
	Panel members provide comments on Final IEPR Report	7/10/2013
	*Battelle submits Final IEPR Report to USACE	7/12/2013
Comment/ Response Process	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	7/12/2013
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	7/15/2013
	USACE provides draft PDT Evaluator Responses to Battelle	7/19/2013
	Battelle provides the panel members the draft PDT Evaluator Responses	7/22/2013
	Panel members provide Battelle with draft BackCheck Responses	7/24/2013
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	7/25/2013
	Battelle convenes Comment-Response Teleconference with panel members and USACE	7/26/2013
	USACE inputs final PDT Evaluator Responses to DrChecks	7/31/2013
	Battelle provides PDT Evaluator Responses to panel members	8/1/2013

Task	Action	Due Date
	Panel members provide Battelle with final BackCheck Responses	8/5/2013
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	8/6/2013
	*Battelle submits pdf printout of DrChecks project file	8/7/2013
Civil Works Review Board (CWRB)	Panel prepares and/or reviews slides for CWRB	TBD
	Civil Works Review Board	12/17/2013

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the Jacksonville Harbor documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, properly documented, satisfies established quality requirements, and yields scientifically credible conclusions. The Panel is being asked to provide feedback on the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (by report section or appendix) are included in the general charge guidance, which is provided below.

General Charge Guidance

Please answer the scientific and technical questions listed below and conduct a broad overview of the Jacksonville Harbor documents. Please focus your review on the review materials assigned to your discipline/area of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note the following guidance. Note that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-214; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.
2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.
3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluating economic or environmental impacts of the proposed project.
4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.

5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.
6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.
7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also, please **do not** comment on or make recommendations on policy issues and decision-making. Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Agency Technical Review (ATR).
2. Please contact the Battelle Project Manager (Patricia Strayer, strayerp@battelle.org) or Program Manager (Karen Johnson-Young, johnson-youngk@battelle.org) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager, Karen Johnson-Young (johnson-youngk@battelle.org) immediately.
4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

Please submit your comments in electronic form to Patricia Strayer, strayerp@battelle.org, no later than June 24, 2013, 10 pm ET.

Independent External Peer Review
of the
Jacksonville Harbor, Florida Navigation Project Integrated General Reevaluation Report (GRR2) and Environmental Impact Statement (EIS)

Note that information in appendices and supporting information should be taken into consideration when judging the overall adequacy and acceptability of the report for any of the questions below.

General Charge Questions

1. Comment on the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used.

2. In general terms, are the planning methods used in the analyses used in the appropriate manner?

3. Are the assumptions that underlie the economic, engineering, environmental, hydrologic, real estate, and plan formulation analyses sound?

4. Are the models used sufficiently discriminatory (i.e., do they identify meaningful differences between alternatives) to support the conclusions drawn from them?

5. In your opinion, are there sufficient analyses upon which to base the recommendation?

Specific Charge Questions

Chapter 1 Introduction

No questions.

Chapter 2 Existing Conditions

6. For your particular area of expertise, provide an in-depth review of whether the analyses of the economic, navigation, built, and natural environments within the project area are sufficient to support the estimate of impacts for the alternatives.

7. Have the character and scope of the study area been adequately described, and is the identified study area appropriate in terms of undertaking a navigation-based investigation?

8. Was the discussion of the economic, navigation, hydraulic, and natural environment sufficient to characterize current baseline conditions and to allow for evaluation of forecasted conditions (with and without the recommended plan)?

9. Do the existing and historical conditions accurately describe the current commodity movements through the study area?

10. In general, are the aquatic habitat impacts anticipated under the various harbor deepening alternatives reasonable and adequately described? If not, explain.

11. Are the components of the final channel-deepening plans sufficient for a comprehensive analysis?

12. Based on your area of expertise, are there any additional problems that should be considered when deepening this harbor that have not been identified for this project? If so, what and why?

Chapter 3 Future Without Project Conditions

13. Are the assumptions regarding future commodity and ship movements through the study area reasonable and supported?

14. Please evaluate the growth forecasts for benefiting commodities/cargo flows, including assumptions, methodology, and risks.

15. Please evaluate the forecasts of future vessel fleet, drafts, and operations for benefiting commodities/cargo flow, including assumptions, methodology, and risks.

16. Please evaluate the forecasts of future vessel costs and cost savings for benefiting commodities/cargo flows, including assumptions, methodology, and risks.

17. Are the future conditions that are expected to exist in the absence of a Federal project logical, and are they adequately described and documented?

18. Were the assumptions that were used as the basis for developing the most probable future without-project conditions reasonable? Were adequate scenarios effectively considered (applied during analyses where relevant and/or reasonably investigated)?

Chapter 4 Problems and Opportunities

19. Are there any additional problems, opportunities, constraints, or objectives that should be considered to ensure that the project's goals are reached?

20. Did the study address those resources identified during the scoping process as important in making decisions relating to the study?

Chapter 5 Formulation and Evaluation of Alternative Plans

21. Comment on the planning process. Has the U.S. Army Corps of Engineers (USACE) Six-Step Planning Process been followed?

22. Was a reasonably complete array of possible management measures considered in the development of alternatives?

23. Comment on whether you agree or disagree with how the selected alternative was formulated and selected. Specifically comment on the rationale for the level of Fed-

eral interest in the locally preferred plan. Does it meet the study objectives and avoid violating the study constraints?

24. Did the formulation process follow the requirement to avoid, minimize, and then mitigate adverse impacts on resources?

25. Does each alternative meet the formulation criteria of being effective, efficient, complete, and acceptable?

26. Does the calculation of National Economic Development (NED) benefits correctly reflect economics principles and USACE policy? If not, what corrections are required?

27. Discuss whether the conclusions drawn on the viability of each alternative are supported by the analysis.

Chapter 6 Tentatively Selected Plan (Recommended Plan)

28. Was the process for screening and selecting the recommended plan clearly described?

29. Have the operations and maintenance considerations of the Tentatively Selected Plan been adequately addressed?

30. Are the differences between the without- and with-project conditions adequately described for the Tentatively Selected Plan? If not, what additional documentation or clarification is needed?

31. Are the uncertainties inherent in the evaluation of impacts on the engineering, economic, navigation, built, and natural environment, and any risks associated with those uncertainties, adequately addressed and described for the Tentatively Selected Plan?

32. Comment on whether you agree or disagree with how the selected alternative was formulated and selected. Specifically comment on the rationale for the level of Federal interest in the locally preferred plan. Does it meet the study objectives and avoid violating the study constraints?

33. Is the final cost estimate reliable, accurate, and justified? If not, please comment.

Chapter 7 Environmental Consequences

34. Are the uncertainties inherent in the evaluation of impacts on the economic, navigation, built, and natural environment, and any risks associated with those uncertainties, adequately addressed and described for the Tentatively Selected Plan?

35. Comment on whether the cumulative effects of the project and other previous and future projects in the area have been accurately described. What, if any, additional information should be included?

36. Given your area of expertise, does this section appropriately address the potential impacts of the Tentatively Selected Plan on the environmental resources?

37. Does the discussion regarding cumulative impacts include reasonably foreseeable impacts from other actions occurring in the area for each of the resources in the study area?

38. Comment on the adequacy and accuracy of the assumptions, models, and scenarios used to calculate impacts.

Chapter 8 Recommendations

39. Comment on the extent to which the recommendations are consistent with and justified by the General Reevaluation Report/Supplemental Environmental Impact Statement.

Chapter 9 References

No questions.

Appendix A: Engineering

40. Comment on the adequacy and accuracy of the assumptions, models, and data used in the hydrodynamic modeling.

41. Comment on the adequacy and accuracy of the assumptions, models, and data used in the geotechnical investigations.

42. Is the methodology used to conduct the model sensitivity analysis complete and valid?

43. Are the descriptions of the risk and uncertainties associated with the development, selection, and construction of the Tentatively Selected Plan sufficiently comprehensive?

44. Are the channel widths, including passing lanes and turns, adequate for the design vessel? If not, explain.

45. Comment on the relevance and detail of information regarding the potential impacts of the various types of dredging operations on marine resources.

46. In your professional opinion, was sufficient credence given to current and future riverine shoreline erosion issues?

Appendix B: Economics

47. Are the current cargo flows described completely and correctly? If not, where are the shortfalls?

48. Are the current vessel fleet, drafts, and movements described completely and correctly? If not, where are the shortfalls?

49. Please evaluate the forecasts of future vessel fleet, drafts, and operations for benefiting commodities/cargo flows, including assumptions, methodology, and risks.

50. Please evaluate the forecasts of future vessel costs and cost savings for benefiting commodities/cargo flows, including assumptions, methodology, and risks.

51. Does the calculation of NED benefits correctly reflect economics principles and USACE policy? If not, what corrections are required?

Appendix C: Real Estate

52. Discuss the extent to which (1) the need for land, easements, rights-of-way, relocations, borrow material, disposal requirements, and mitigation is clearly and adequately explained and (2) costs are justified.

Appendix E: Mitigation Plan

53. Comment on the ability of the proposed mitigation plan to address adverse impacts from the project.

Appendix F: Monitoring

54. Are the proposed monitoring procedures appropriate?

55. Are the performance measures, desired outcomes, and monitoring designs for each of the project objectives adequate?

Appendix G: Adaptive Management

56. Does the adaptive management plan identify additional actions that will be taken as next steps if the planned actions do not meet the performance measures?

Appendix H: Coastal Zone Management

No questions.

Appendix I: Section 404 (b)(1) Analysis

57. Are the general characteristics of the dredged and fill material accurately and adequately described?

58. Is the quantity of dredged and fill material adequate and factually supported?

59. Is the description of the disposal method sufficiently detailed and comprehensive?

60. Are the suspended particulate/turbidity determinations appropriate?

Appendix J: Air Emissions Inventory

No questions.

Appendix L: Essential Fish Habitat

61. Comment on the adequacy of the species and habitat descriptions and evaluations.

Appendix M: Draft Coordination Act Report (CAR)

No questions.

Overview Questions

62. Please identify the most critical concerns, if any (up to five), you have with the project and/or review documents.

63. Please provide positive feedback on the project and/or review documents.

64. Is the documentation adequate as written? If not, what areas of documentation need improvement?