

Final Independent External Peer Review Report Brazos Island Harbor, Texas Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment

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

Contract No. W912HQ-10-D-0002
Task Order: 0051

January 15, 2014

This page is intentionally left blank.

CONTRACT NO. W912HQ-10-D-0002
TASK ORDER: 0051

Final Independent External Peer Review Report Brazos Island Harbor, Texas Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment

Prepared by

Battelle
505 King Avenue
Columbus, Ohio 43201

for

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

January 15, 2014

This page is intentionally left blank.

Final Independent External Peer Review Report Brazos Island Harbor, Texas Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment

Executive Summary

PROJECT BACKGROUND AND PURPOSE

The Brazos Island Harbor Project, also known as the Brownsville Ship Channel (BSC), is an existing deep-draft navigation project located on the lower Texas coast. The channel uses the natural Brazos-Santiago Pass to connect the Gulf of Mexico with the inland portion of the BSC. The BSC is the southernmost navigation channel in the state of Texas and the western terminus of the Gulf Intracoastal Waterway system.

The project area includes the BSC channel and property directly adjacent to the channel, including the Port of Brownsville and upland placement areas, as well as offshore placement areas and a nearshore feeder berm. The Port infrastructure consists of railroad, highway, and pipeline systems allowing access to the Port facilities. The existing Brazos Island Harbor navigation channel is 19.4 miles long. The entrance and jetty channel extend east to west for approximately 2.5 miles, from the open Gulf of Mexico, through the jetties to the Laguna Madre. The flared north and south jetties flank Brazos Santiago Pass, which connects the Gulf with the Lower Laguna Madre. The interior deep-draft navigation channel is an artificial waterway extending 17 miles westward from the Laguna Madre to the turning basin, which is located on the eastern outskirts of the city of Brownsville.

Ten (10) placement areas are available for the placement of dredged material from the Brazos Island Harbor Project. Two existing Ocean Dredged Material Disposal Sites (ODMDSs) can be used for the entrance channel and seven upland placement areas for containment of material from the main channel. One nearshore feeder berm can be used for beach-quality sediments from the entrance or main channel. All ODMDSs and the feeder berm are dispersive.

The non-federal sponsor is the Brownsville Navigation District acting as the financial representative for the Port of Brownsville. The purpose of the Brazos Island Harbor study is to determine if there is a federal interest in making channel improvements to the existing BSC. An evaluation of benefits, costs, and environmental impacts determines federal interest.

The feasibility study was authorized by a resolution of the Committee on Public Works, U.S. House of Representatives, dated May 5, 1966. Additionally, Section 6009, "Offshore Oil and Gas Fabrication Ports," of the *Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005* (Public Law [PL] 109-13) provides that in determining the economic justification for navigation projects involving offshore oil and gas fabrication ports, the Secretary is directed to measure and include in the National Economic Development (NED) calculation the value of future energy

exploration and production fabrication contracts and transportation cost savings that would result from larger navigation channels.

Independent External Peer Review Process

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The U.S. Army Corps of Engineers (USACE) is conducting an Independent External Peer Review (IEPR) of the Brazos Island Harbor, Texas, Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment (FR/EA) (hereinafter Brazos Island Harbor IEPR). 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 Brazos Island Harbor Draft Integrated FR/EA. 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 presents the Final Panel Comments of the IEPR Panel (the Panel). Details regarding the IEPR (including the process for selecting panel members, the panel members' biographical information and expertise, and the charge submitted to the Panel to guide its review) are presented in appendices.

Based on the technical content of the Brazos Island Harbor review documents and the overall scope of the project, Battelle identified candidates for the Panel in the following key technical areas: engineering, economics, environmental, and plan formulation. Four 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 716-page Brazos Island Harbor review documents, along with a charge that solicited comments on specific sections of the documents to be reviewed. USACE prepared the charge questions following guidance provided in USACE (2012) and OMB (2004), which were included in the draft and final Work Plans.

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. Other than Battelle-facilitated teleconferences, there was no direct communication between the Panel and USACE during the peer review process. The Panel produced individual comments in response to the charge questions.

IEPR panel members reviewed the Brazos Island 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/high, medium, medium/low, or low); and (4) recommendations on how to resolve the comment. Overall, 13 Final Panel Comments were identified and documented. Of these, three were identified as having medium/high significance, five had medium significance, two had medium/low significance, and three had low significance.

Results of the Independent External Peer Review

The panel members agreed among one another on their “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2012; p. D-4) in the Brazos Island Harbor review documents. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Section 4.2 of this report. The following summarizes the Panel’s findings.

Based on the Panel’s review, the Brazos Island Harbor Draft Integrated FR/EA and its appendices make up a well-organized, logically assembled, and easily understood document. While the Draft Integrated FR/EA clearly demonstrates that the USACE six-step planning process was followed and documented, the Panel identified several elements of the report that should be clarified or revised.

Plan Formulation and Economics: The Panel’s most significant finding was that the NED benefits may be overestimated, as they appear to include benefits that accrue to Mexico and not the United States. Present and future Brazos Island Harbor deep-draft commodity traffic consists mostly of imports that pass through Brazos Island Harbor bound for Mexico. In evaluating benefits related to enlarging the Brazos Island Harbor channel, NED benefits should reflect those benefits that accrue only to U.S. commodity users or producers; they should not include benefits that accrue to Mexico’s commodity users or producers. To clarify this issue, information on the benefits associated with U.S. origin/destination should be reported separately from Mexican origin/destination, and the NED plan should include only those benefits with U.S. origin/destination.

Another important economic issue is that the report lacked information supporting channel deepening beyond the Keppel AmFELS facility. As currently presented, the full channel deepening appears to be necessary only for Keppel AmFELS. The concern is supported by the fact that the few deep-draft vessels that currently call at docks past Keppel AmFELS do not use the full channel depth. This means that the project could turn into a single-owner situation. In addition, the benefit-cost ratio (BCR) is sufficiently low that any loss of stated benefits could severely impact the economic justification. Additional information is needed regarding the configuration and frequency of future traffic visiting docks beyond the Keppel AmFELS facility to remove uncertainty surrounding a single-owner situation.

Although the HarborSym model used in the economic analysis was briefly described, the accuracy of the model results could not be determined because it was not clear how future fleet ship drafts, vessel distribution, and loaded or unloaded drafts were used in the model. The Panel identified this as an important issue because the HarborSym results are key to determining channel width and channel depth, and ultimately to assisting in choosing the Tentatively Selected Plan (TSP) for Brazos Island Harbor. In addition, documentation on the risks and uncertainties associated with the HarborSym model and other portions of the project does not appear in the materials provided to the Panel; therefore, the Panel was not able to determine if appropriate risks and uncertainties have been taken into account.

In addition, there is no assessment of fixed-width alternatives throughout the entire channel and no documentation supporting the dredging of channel widths wider than 250 feet. Currently, the downstream constricting width of 250 feet seems to indicate that all vessels entering Brazos Island Harbor should be able to operate in a channel that is 250 feet wide. The documentation provided does not explain why some areas are being dredged to a width of 300 and 400 feet.

Engineering: The most important engineering issue is that the TSP maintains an under-designed interior channel width. USACE (2006) calls for channel widths 2.5 times as wide as the design ship's beam. Page 30 of the Economic Appendix (Appendix A) states that pilots currently restrict beams to 130 feet, although special permission has previously been granted to three very light loaded tankers with beams of 140 feet. These represent channel width:ship beam ratios of 1.9 and 1.8, respectively, significantly less than the recommended ratio of 2.5. The report should explain why the TSP does not meet established USACE design criteria.

Environmental: The Panel concurs with USACE's conclusion that no significant environmental impacts are anticipated and that minor impacts would be transient and manageable through established best management practices and adherence to conservation recommendations. The Panel noted that the cumulative impacts analysis regarding air quality does not take into account potential project-induced emissions from repair and construction operations at the Keppel AmFELS facility.

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

No.	Final Panel Comment
Medium/High Priority	
1	The NED benefits may be overestimated because they include benefits from pass-through commodities whose benefits would accrue to Mexico rather than the United States.
2	The accuracy and acceptability of the benefits of deepening beyond Keppel AmFELS could not be evaluated because information on the Brazos Island Harbor's upstream terminals and the depths needed at those terminals is not provided.
3	The validity of the HarborSym model application cannot be determined because it is not clear what dock-specific future fleet ship drafts, vessel distribution, and loaded and unloaded drafts were used.
Medium Priority	
4	The rationale for recommending a 52-foot-deep channel for the TSP wider than 250 feet above station 64+000 has not been documented, and the difference in project costs for deepening the channel areas beyond 250 feet have not been provided.
5	The factors and methods used for the risk and uncertainty analysis have not been documented sufficiently to support the design and economic justification of the project.
6	The TSP channel width does not conform to channel width design criteria.
7	The array of alternatives considered is incomplete because it does not take into consideration uniform channel widths throughout the length of the interior channel.
8	Benefits claimed by application of Section 6009 of PL 109-13 do not include a statement of their certification, raising a concern over the validity of the analysis.

Table ES-1. Overview of 13 Final Panel Comments Identified by the Brazos Island Harbor IEPR Panel. (continued)

No.	Final Panel Comment
Medium/Low Priority	
9	The impacts of disposing of dredged material from non-federal berthing areas may not have been adequately accounted for in the project construction costs and schedules.
10	The construction schedule for the TSP may not have accounted for the required lag time between completing placement area dike raising and use of the placement area for disposal of new work material.
Low Priority	
11	The cost appendix does not include sufficient information regarding unit prices for various dredging and construction activities to determine if the final cost estimate is accurate.
12	Details describing how the TSP meets the four criteria in the Principles and Guidelines have not been provided.
13	The cumulative impacts section does not discuss potential project-induced changes in air quality associated with repair and construction operations at Keppel AmFELS.

This page is intentionally left blank.

Table of Contents

	Page
Executive Summary	iii
1. INTRODUCTION.....	1
2. PURPOSE OF THE IEPR.....	2
3. METHODS FOR CONDUCTING THE IEPR	2
4. RESULTS OF THE IEPR.....	4
4.1 Summary of Final Panel Comments	4
4.2 Final Panel Comments.....	5
5. REFERENCES.....	21
Appendix A. IEPR Process for the Brazos Island Harbor Project	
Appendix B. Identification and Selection of IEPR Panel Members for the Brazos Island Harbor Project	
Appendix C. Final Charge to the IEPR Panel as Submitted to USACE on November 22, 2013, for the Brazos Island Harbor Project	

List of Tables

	Page
Table ES-1. Overview of 13 Final Panel Comments Identified by the Brazos Island Harbor IEPR Panel.....	vi
Table 1. Major Milestones and Deliverables of the Brazos Island Harbor IEPR.....	3

LIST OF ACRONYMS

ASCE	American Society of Civil Engineers
ATR	Agency Technical Review
BCR	Benefit-cost Ratio
BSC	Brownsville Ship Channel
CAR	Coordination Act Report
COI	Conflict of Interest
CWRB	Civil Works Review Board
DrChecks	Design Review and Checking System
EA	Environmental Assessment
EC	Engineer Circular
ER	Engineer Regulation
ERDC	Engineer Research and Development Center
FONSI	Finding of No Significant Impact
FR	Feasibility Report
IEPR	Independent External Peer Review
IWR	Institute for Water Resources
NED	National Economic Development
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
ODMDS	Ocean Dredged Material Disposal Site
OEO	Outside Eligible Organization
OMB	Office of Management and Budget
PDT	Project Delivery Team
PIANC	Permanent International Association of Navigation Congresses
PL	Public Law
TCMP	Texas Coastal Management Program
TSP	Tentatively Selected Plan
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1. INTRODUCTION

The Brazos Island Harbor Project, also known as the Brownsville Ship Channel (BSC), is an existing deep-draft navigation project located on the lower Texas coast. The channel uses the natural Brazos-Santiago Pass to connect the Gulf of Mexico with the inland portion of the BSC. The BSC is the southernmost navigation channel in the state of Texas and the western terminus of the Gulf Intracoastal Waterway system.

The project area includes the BSC channel and property directly adjacent to the channel, including the Port of Brownsville and upland placement areas, as well as offshore placement areas and a nearshore feeder berm. The Port infrastructure consists of railroad, highway and pipeline systems allowing access to the Port facilities. The existing Brazos Island Harbor navigation channel is 19.4 miles long. The entrance and jetty channel extend east to west for approximately 2.5 miles, from the open Gulf of Mexico, through the jetties to the Laguna Madre. The flared north and south jetties flank Brazos Santiago Pass, which connects the Gulf with the Lower Laguna Madre. The interior deep-draft navigation channel is an artificial waterway extending 17 miles westward from the Laguna Madre to the turning basin, which is located on the eastern outskirts of the city of Brownsville.

Ten (10) placement areas are available for the placement of dredged material from the Brazos Island Harbor Project. Two existing Ocean Dredged Material Disposal Sites (ODMDSs) can be used for the entrance channel and seven upland placement areas for containment of material from the main channel. One nearshore feeder berm can be used for beach-quality sediments from the entrance or main channel. All ODMDSs and the feeder berm are dispersive.

The non-federal sponsor is the Brownsville Navigation District acting as the financial representative for the Port of Brownsville. The purpose of the Brazos Island Harbor study is to determine if there is a federal interest in making channel improvements to the existing BSC. An evaluation of benefits, costs, and environmental impacts determines federal interest.

The feasibility study was authorized by a resolution of the Committee on Public Works, U.S. House of Representatives, dated May 5, 1966. Additionally, Section 6009, "Offshore Oil and Gas Fabrication Ports," of the *Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005* (Public Law [PL] 109-13) provides that in determining the economic justification for navigation projects involving offshore oil and gas fabrication ports, the Secretary is directed to measure and include in the National Economic Development (NED) calculation the value of future energy exploration and production fabrication contracts and transportation cost savings that would result from larger navigation channels.

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Brazos Island Harbor, Texas, Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment (FR/EA) (hereinafter Brazos Island Harbor IEPR) 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). 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).

This final report presents the Final Panel Comments of the IEPR Panel (the Panel) on the existing engineering, economic, environmental, and plan formulation analyses contained in the Brazos Island Harbor IEPR documents (Section 4). Appendix A describes in detail how the IEPR was planned and conducted. Appendix B provides biographical information on the IEPR panel members and describes the method Battelle followed to select them. Appendix C presents the final charge to the IEPR panel members for their use during the review; the final charge was submitted to USACE on November 22, 2013.

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 engineering, economic, environmental, and plan formulation analyses 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 Brazos Island Harbor was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC 1165-2-214). Battelle, a 501(c)(3) organization under the U.S. Internal Revenue Code, has experience conducting IEPRs for USACE.

3. METHODS FOR CONDUCTING THE IEPR

The methods used to conduct the IEPR are briefly described in this section; a detailed description can be found in Appendix A. Table 1 presents the major milestones and deliverables of the Brazos Island Harbor IEPR. Due dates for milestones and deliverables are based on the award/effective date of November 1, 2013. Note that the work items listed under Task 6 occur after the submission of this report. Battelle anticipates submitting the pdf printout of the USACE's Design Review and Checking System (DrChecks) project file (the final deliverable) on February 18, 2014. The actual date for contract end will depend on the date that all activities for this IEPR, including Civil Works Review Board (CWRB) preparation and participation, are conducted.

Table 1. Major Milestones and Deliverables of the Brazos Island Harbor IEPR

Task	Action	Due Date
1	Award/Effective Date	11/1/2013
	Review documents available	11/20/2013
2	Battelle submits list of selected panel members	11/15/2013
	USACE confirms the panel members have no COI	11/18/2013
3	Battelle convenes kick-off meeting with USACE	11/12/2013
	Battelle convenes kick-off meeting with USACE and panel members	11/26/2013
4	Panel members complete their individual reviews	12/10/2013
	Panel members provide draft Final Panel Comments to Battelle	12/30/2013
5	Battelle submits Final IEPR Report to USACE	1/15/2014
6 ^a	Battelle convenes Comment-Response Teleconference with panel members and USACE	1/29/2014
	Battelle submits pdf printout of DrChecks project file to USACE	2/18/2014
	CWRB Meeting (Estimated Date) ^b	6/25/2014
	Contract End/Delivery Date	9/30/2014

^a Task 6 occurs after the submission of this report.

^b The CWRB meeting was listed in the Performance Work Statement under Task 3 but was relocated in this schedule to reflect the chronological order of activities.

Battelle identified and selected four panel members to participate in the IEPR. The panel members had expertise in the following disciplines: engineering, economics, environment, and plan formulation. The Panel reviewed the Brazos Island Harbor Draft Integrated FR/EA document and produced 13 Final Panel Comments in response to 30 charge questions provided by USACE for the review. Battelle instructed the Panel to develop the Final Panel Comments using a standardized four-part structure:

1. Comment Statement (succinct summary statement of concern)
2. Basis for Comment (details regarding the concern)
3. Significance (high, medium/high, medium, medium/low, or low; in accordance with specific criteria for determining level of significance)
4. Recommendation(s) for Resolution (at least one implementable action that could be taken to address the Final Panel Comment).

Battelle reviewed all Final Panel Comments for accuracy, adherence to USACE guidance (EC 1165-2-214, Appendix D), and completeness prior to determining that they were final and suitable for inclusion in the Final IEPR Report. There was no direct communication between the Panel and USACE during the

preparation of the Final Panel Comments. The Panel's findings are summarized in Section 4.1; the Final Panel Comments are presented in full in Section 4.2.

4. RESULTS OF THE IEPR

This section presents the results of the IEPR. A summary of the Panel's findings and the full text of the Final Panel Comments are provided.

4.1 Summary of Final Panel Comments

The panel members agreed among one another on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the Brazos Island Harbor IEPR review document. The following summarizes the Panel's findings.

Based on the Panel's review, the Brazos Island Harbor Draft Integrated FR/EA and its appendices make up a well-organized, logically assembled, and easily understood document. While the Draft Integrated FR/EA clearly demonstrates that the USACE six-step planning process was followed and documented, the Panel identified several elements of the report that should be clarified or revised.

Plan Formulation and Economics: The Panel's most significant finding was that the NED benefits may be overestimated, as they appear to include benefits that accrue to Mexico and not the United States. Present and future Brazos Island Harbor deep-draft commodity traffic consists mostly of imports that pass through Brazos Island Harbor bound for Mexico. In evaluating benefits related to enlarging the Brazos Island Harbor channel, NED benefits should reflect those benefits that accrue only to U.S. commodity users or producers; they should not include benefits that accrue to Mexico's commodity users or producers. To clarify this issue, information on the benefits associated with U.S. origin/destination should be reported separately from Mexican origin/destination and the NED plan should include only those benefits with U.S. origin/destination.

Another important economic issue is that the report lacked information supporting channel deepening beyond the Keppel AmFELS facility. As currently presented, the full channel deepening appears to be necessary only for Keppel AmFELS. The concern is supported by the fact that the few deep-draft vessels that currently call at docks past Keppel AmFELS do not use the full channel depth. This means that the project could turn into a single-owner situation. In addition, the benefit-cost ratio (BCR) is sufficiently low that any loss of stated benefits could severely impact the economic justification. Additional information is needed regarding the configuration and frequency of future traffic visiting docks beyond the Keppel AmFELS facility to remove uncertainty surrounding a single-owner situation.

Although the HarborSym model used in the economic analysis was briefly described, the accuracy of the model results could not be determined because it was not clear how future fleet ship drafts, vessel distribution, and loaded or unloaded drafts were used in the model. The Panel identified this as an important issue because the HarborSym results are key to determining channel width and channel depth, and ultimately to assisting in choosing the Tentatively Selected Plan (TSP) for Brazos Island Harbor. In addition, documentation on the risks and uncertainties associated with the HarborSym model and other portions of the project does not appear in the materials provided to the Panel; therefore, the Panel was not able to determine if appropriate risks and uncertainties have been taken into account.

In addition, there is no assessment of fixed-width alternatives throughout the entire channel and no documentation supporting the dredging of channel widths wider than 250 feet. Currently, the downstream constricting width of 250 feet seems to indicate that all vessels entering Brazos Island Harbor should be able to operate in a channel that is 250 feet wide. The documentation provided does not explain why some areas are being dredged to a width of 300 and 400 feet.

Engineering: The most important engineering issue is that the TSP maintains an under-designed interior channel width. USACE (2006) calls for channel widths 2.5 times as wide as the design ship's beam. Page 30 of the Economic Appendix (Appendix A) states that pilots currently restrict beams to 130 feet, although special permission has previously been granted to three very light loaded tankers with beams of 140 feet. These represent channel width:ship beam ratios of 1.9 and 1.8, respectively, significantly less than the recommended ratio of 2.5. The report should explain why the TSP does not meet established USACE design criteria.

Environmental: The Panel concurs with USACE's conclusion that no significant environmental impacts are anticipated and that minor impacts would be transient and manageable through established best management practices and adherence to conservation recommendations. The Panel noted that the cumulative impacts analysis regarding air quality does not take into account potential project-induced emissions from repair and construction operations at the Keppel AmFELS facility.

4.2 [Final Panel Comments](#)

This section presents the full text of the Final Panel Comments prepared by the IEPR panel members.

Final Panel Comment 1

The NED benefits may be overestimated because they include benefits from pass-through commodities whose benefits would accrue to Mexico rather than the United States.

Basis for Comment

Benefits from deep-draft navigation projects are derived mainly from transportation cost savings or from higher net income to commodity users or producers during the economic period of analysis (USACE, 2010; p. 20). In evaluating benefits related to enlarging the Brazos Island Harbor channel, NED benefits should reflect those benefits that accrue only to U.S. commodity users or producers; they should not include benefits that accrue to Mexico's commodity users or producers. Increases in Mexican trade from port deepening should be reflected as Regional Economic Development benefits, not the NED benefits.

The Draft Integrated FR/EA notes that the present and future Brazos Island Harbor deep-draft commodity traffic consists mostly of imports that pass through Brazos Island Harbor bound for Mexico. Because NED benefits should accrue to the United States, transportation savings associated with traffic to or from Mexico should not be included. The report does not quantify the Mexican traffic or the transportation savings associated with the benefits reported. The BCR for the project (excluding Section 6009 benefits) is close to unity. If benefits associated with Mexican trade are excluded, and project benefits are reduced as a result, the TSP may not be justified. If the Mexican-related benefits are significant, their elimination could result in a shallower or even no depth increase upstream from Keppel AmFELS, which could result in a single-owner situation for the channel to Keppel AmFELS.

Significance – Medium/High

Without Mexican trade-related benefits, the TSP may not be justified.

Recommendation for Resolution

1. Provide the benefits by channel depth associated with U.S. origin/destination and those associated with Mexican origin/destination.

Final Panel Comment 2

The accuracy and acceptability of the benefits of deepening beyond Keppel AmFELS could not be evaluated because information on the Brazos Island Harbor’s upstream terminals and the depths needed at those terminals is not provided.

Basis for Comment

Section 6009 allows proprietary shielded data to be included in calculating project benefits. This allowance provides ample economic justification for deepening the channel to 52 feet from the mouth of the channel up to the Keppel AmFELS terminal. However, there is insufficient data to evaluate the benefits associated with the Port’s terminals that are upstream of Keppel AmFELS, including what depths are needed to achieve optimum NED benefits.

Without individual terminal arrival and departure statistics for depth-restricted vessels over the past few years and for the future fleet, it is difficult to determine if there is economic justification for deepening to 52 feet for ships that use the portions of the project above Keppel AmFELS. Additional information, such as the terminal depths at either the port of origin and/or previous port of call for vessels importing materials to Brazos Island Harbor or the terminal depth at ports of destination for exports, is needed to show that Brazos Island Harbor currently limits the depth at which these vessels can operate.

The extent of 52-foot-deep channel deepening needed beyond Keppel AmFELS is unclear because of the following statement in Appendix L, Plan Formulation (p. 38):

“The largest vessel expected in the future is a tanker with dimensions of 793 feet by 138 feet by 46 feet, but this would only come in a maximum of three times a year, and represents less than 3 percent of the deep-draft vessel fleet forecasted.”

A ship this size, even if fully loaded, presumably would have spent some of its fuel and thus would arrive at less than design draft. However, even if it were to arrive at its design draft, it would have a 6-foot underkeel clearance, which appears to be greater than the normal rule of thumb (10% of the draft) used as a minimum draft at other ports.

It is also unclear why a 10-foot deepening is needed when only one of the existing terminals has a berth equal to the authorized channel depth. Table 4-1 of Appendix A (Economic Appendix) shows that only Dock 15 has a 42-foot-deep berthing area. This could indicate that the full potential of the harbor is not being achieved under the without-project condition, which could skew the assessment of benefits claimed with a channel deepening. Additional information provided by the USACE after its mid-review teleconference with the Panel (which was facilitated by Battelle) was not dock-specific and leaves questions regarding where the few ships drawing the most water (39 feet) dock.

Finally, a 52-foot-deep Brazos Island Harbor channel would be the deepest throughout the Gulf of Mexico, and yet it would remain one of the smallest ports in terms of commodity throughput. If larger ports do not need a 52-foot channel, a channel of this depth for Brazos Island Harbor may be difficult to explain.

Significance – Medium/High

If the channel depth above Keppel AmFELS does not optimize at 52 feet, a 52-foot channel to Keppel AmFELS becomes a single-owner situation that shifts the cost sharing for the increased depth to Keppel AmFELS and results in a lesser-depth federal channel.

Recommendations for Resolution

1. Provide “port-pair” data for existing traffic.
2. Provide present design and load drafts by terminal for the most recent 2-year period.
3. Provide transportation savings by terminal for future with-project conditions.
4. Provide the underkeel drafts used in the analysis for the design ship.
5. Provide a letter of commitment from the port stating what berths it intends to deepen and to what depths.
6. Provide assumed load factors for the future with-project fleet.

Final Panel Comment 3

The validity of the HarborSym model application cannot be determined because it is not clear what dock-specific future fleet ship drafts, vessel distribution, and loaded and unloaded drafts were used.

Basis for Comment

HarborSym is the model used to determine the transportation cost savings and thus is the key to determining the TSP. A clear understanding of the model input is critical because of the TSP's relatively low BCR.

Although supplemental information regarding the HarborSym model was provided, certain fundamental questions that could affect the validity of the results remain unanswered. For example, the Draft Integrated FR/EA does not clearly describe whether vessel drafts were determined by the model or provided as input to the model. Tables 6-5 and 6-10 of the Draft Integrated FR/EA show a range of drafts for various size categories, but neither the Draft Integrated FR/EA nor the supplemental information explains the specific drafts assigned to various vessel classes under loaded and unloaded conditions.

It appears that only one vessel speed (5.5 knots) (Appendix A, Economics, p. 64) was used on the interior channel (beginning with reach 5). It seems reasonable that larger ships, which occupy a greater cross-sectional area of the channel, might travel more slowly due to resistance and/or to minimize waves and suction that would affect moored vessels. Further, the varying width of the interior channel is not discussed in terms of impact on vessel speeds. It is not clear whether one speed was assigned to all reaches, whether prototype data were assigned, or whether there was a speed distribution. If the latter was used, there is no discussion in the Draft Integrated FR/EA of how the distribution was derived.

Because the Draft Integrated FR/EA has proposed a finite channel extension of the proposed deepening, HarborSym should account for traffic to docks along the deepened route. Dock-specific data are not provided, and the calling ships' design drafts, load distributions, or tug assistance are not discussed. Without this information, the economic justification of the specified channel extension cannot be confirmed.

Under the alternatives presented, there would be a transportation cost increase under the future with-project condition to handle larger ships in an undeeened turning basin. Ships would require a design draft of at least 48 feet to fully utilize a 52-foot-deep channel. To turn around in the turning basin, they would have to unload to 33 feet. The Draft Integrated FR/EA does not discuss (1) whether these ships would unload that much, (2) how they would be assisted in the turning process, or (3) because of such a large "sail" exposure, what wind conditions at what frequency would curtail their movement.

Normally, the largest transportation savings are obtained by more fully loading a given ship or by realizing economies of scale associated with the open-ocean leg of a voyage. However, the Draft Integrated FR/EA appears to discuss only the harbor portion of the benefit analysis. The relationship of the at-sea benefits versus the harbor benefits is not discussed.

Finally, the Draft Integrated FR/EA (p. 68) states that the HarborSym model accounts for uncertainties, but the report does not adequately discuss how uncertainties are factored into the model.

Significance – Medium/High

Without this information, the economic justification of the specified channel extension cannot be confirmed.

Recommendations for Resolution

1. Describe the input data for HarborSym in more detail.
2. Present in the Draft Integrated FR/EA total transportation savings by dock, including vessel wait time and associated waiting costs.
3. Elaborate on how the model accounts for risk and uncertainty.
4. Discuss the nature of the ship speed distribution used in the model, and describe how it accounted for varying channel width under each alternative.
5. Describe the restrictions the model placed on individual docks in terms of berthing depths and vessel assistance, and explain how those restrictions changed under the future with-project conditions.
6. Provide an approximate percentage of benefits that the model generated for the harbor portion of the origin-destination transportation cost savings.
7. Explain how HarborSym accounts for the bank and bottom suction for various size ships and for alternative channel depths and widths.
8. Explain how the model accounts for vessel assistance as a function of ship size and load, by alternative.
9. Discuss how the model treated ship movements in the turning basin with regard to light loaded drafts, tug assistance, and wind restrictions.

Final Panel Comment 4

The rationale for recommending a 52-foot-deep channel for the TSP wider than 250 feet above station 64+000 has not been documented, and the difference in project costs for deepening the channel areas beyond 250 feet have not been provided.

Basis for Comment

The constricting width of the existing project is the downstream reach of the interior channel (from station 0+000 to station 64+000), which has an authorized width of 250 feet. This width was used for all alternatives considered in the Draft Integrated FR/EA for the downstream section. Beyond station 64+000, however, all alternatives used the existing project widths that vary from 300 to 400 feet. Given that all vessels visiting Brazos Island Harbor must traverse the constricting width in the downstream section, it is unclear why widths of 300 to 400 feet are necessary above station 64+000. There is no discussion in the Draft Integrated FR/EA of the federal interest, rationale, or justification for continuing the existing project width for any increased depth alternative beyond station 64+000. Although the 300- and 400-foot wide reaches are authorized to a depth of 42 feet, their economic justification at greater depths cannot be assumed.

Significance – Medium

Without providing a rationale for the design (and for the associated costs) of the deepened channel in excess of the 250-foot constricting width, questions remain as to whether there is sufficient justification to incur the additional costs.

Recommendation for Resolution

1. Revise the report to justify channel widths in excess of 250 feet as being a federal responsibility.
2. Document project costs associated with providing a 52-foot-deep channel for widths in excess of 250 feet in the areas above station 64+000.

Final Panel Comment 5

The factors and methods used for the risk and uncertainty analysis have not been documented sufficiently to support the design and economic justification of the project.

Basis for Comment

Section 6.8 of the Draft Integrated FR/EA contains a qualitative discussion of risk and uncertainty inherent in certain aspects of the study, including an assessment of the likely impact on the TSP. Other areas of risk and uncertainty appear to have been considered, but they are not documented in the Draft Integrated FR/EA. For example, the Draft Integrated FR/EA states (Section 6.8.3, p. 68) that “the cost and schedule risk analysis report regarding the risk findings and recommended contingencies for TSP are included in Appendix B”; however, the risk analysis is not documented in Appendix B. As a further example, the Draft Integrated FR/EA (Section 6.8.2, p. 68) states that the HarborSym model has risk and uncertainty built into the program as a result of the Monte Carlo simulation process, but does not provide any further explanation or analysis beyond the statement. Additionally, the Draft Integrated FR/EA discusses risk and uncertainty in some of the engineering analyses conducted for the study, including relative sea level rise, shoaling, hydrodynamics, and storm surge; however, risk and uncertainty exist with regard to other aspects of the design of the TSP, such as geotechnical conditions and the design of the recommended channel width.

Some elements of the Economic Analysis (Appendix A) have risk and uncertainty associated with them, including the commodity and fleet forecasts. Appendix A briefly discusses two sensitivity analyses conducted to examine areas of risk and uncertainty; however, the analyses are not discussed in sufficient detail to understand their methodology. A migration to larger ships or more fully loaded ships under the future with-project condition is the basis of the project benefits. The uncertainty and risk associated with this basis are critical because of the project’s low BCR.

Significance – Medium

The limited description of the risks and uncertainties associated with key variables of the project affects the understanding of certain engineering and economic aspects of the study.

Recommendations for Resolution

1. Add the cost and schedule risk analysis to Appendix B.
2. Discuss in detail how HarborSym accounts for risk and uncertainty.
3. Elaborate on the sensitivity analyses performed regarding commodity and fleet forecasts.
4. Add quantitative details regarding the risks and uncertainties associated with the engineering data and models.

Final Panel Comment 6

The TSP channel width does not conform to channel width design criteria.

Basis for Comment

The width of the Brazos Island Harbor interior channel appears to be under-designed. USACE guidance (USACE, 2006; p. 8.4) indicates that channel widths 2.5 times as wide as the design ship's beam should be adequately conservative. This guidance is based in part on ship simulation modeling. Table 8-1 in USACE (2006) recommends a channel width of 250 feet for a ship with a beam of 106 feet operating in the Brazos Island Harbor channel (channel width:ship beam ratio = 2.4).

The Draft Integrated FR/EA does not provide the beams of ships calling. Page 30 of the Economic Appendix (Appendix A) states that pilots currently restrict beams to 130 feet, although special permission has previously been granted to three very light loaded tankers with beams of 140 feet. These represent channel width:ship beam ratios of 1.9 and 1.8 respectively, significantly less than the recommended ratio of 2.5.

Despite current pilot practice, it is not clear if a federal project whose width is significantly less than recommended design standards established by modeling could be recommended.

Significance – Medium

If a federal project with a channel width significantly less than USACE design standards is not allowed under USACE regulations, the identification of the TSP and the cost of the project could be impacted.

Recommendations for Resolution

1. Provide a summary (or a recent history) of ships expected to traverse the Brazos Island Harbor along with their geometric dimensions.
2. Explain why width:beam ratios significantly less than those recommended by USACE (2006) are acceptable; include modeling or ship simulation results as appropriate.
3. Provide the basis for approving a proposed channel width for authorization that does not meet USACE design criteria.

Final Panel Comment 7

The array of alternatives considered is incomplete because it does not take into consideration uniform channel widths throughout the length of the interior channel.

Basis for Comment

The existing project as described in the Draft Integrated FR/EA has an interior channel with “telescoping” widths that progressively increase beyond station 64+000 from the constricting 250-foot width to 300 and then 400 feet. The alternatives described in the Draft Integrated FR/EA as “deepening only” include these existing widths of the wider channel reaches beyond station 64+000. The Draft Integrated FR/EA does not discuss the rationale for including the additional width for these upstream reaches for any of the deepening alternatives. Accordingly, since the Draft Integrated FR/EA does not consider alternatives that have a single, fixed-width, interior channel throughout the length of the proposed project, it does not include a full range of widening alternatives.

Significance – Medium

The failure to evaluate alternatives with uniform channel width could lead to a TSP that is more costly and has greater environmental impacts than is warranted.

Recommendations for Resolution

1. Provide the rationale for maintaining telescoped, wider upstream reaches for all depth alternatives.
2. Revise the Draft Integrated FR/EA to evaluate alternatives with uniform channel widths of 250 feet and greater.

Final Panel Comment 8

Benefits claimed by application of Section 6009 of PL 109-13 do not include a statement of their certification, raising a concern over the validity of the analysis.

Basis for Comment

Without a certification of the validity of Section 6009 benefits, the Panel cannot comment on their appropriateness. These benefits are needed to support channel deepening to the Keppel AmFELS terminal. The amount of net benefits and the resulting BCR influence prioritizing of project appropriations. USACE guidance for application of Section 6009 to project benefits requires a statement from the Chief Executive Officer (or equivalent) certifying the validity of the information.

Significance – Medium

Without certification, the benefits claimed under Section 6009 of PL 109-13 may be overstated.

Recommendations for Resolution

1. Provide a statement from the Chief Executive Officer (or equivalent) certifying the validity of the information.

Final Panel Comment 9

The impacts of disposing of dredged material from non-federal berthing areas may not have been adequately accounted for in the project construction costs and schedules.

Basis for Comment

The Draft Integrated FR/EA discusses placement of new work material associated with the TSP beginning on p. 50 and shows the costs associated with berth deepening in Table 6.4, p. 59. However, the Draft Integrated FR/EA does not specify a disposal site for the material to be dredged from non-federal berthing areas. If non-federal material will be disposed of in one of the placement areas being used for disposal of new work material from the TSP, there will be costs associated with using the placement area for non-federal disposal; otherwise, the non-federal project costs may be underestimated. Further, the project schedule on p. 60 does not show when during project implementation the dredging of the berthing areas will occur.

Significance – Medium/Low

Project costs and schedules could be adversely affected if (1) a placement area is used for disposal of non-federal dredged material, and (2) the sequencing of non-federal use of the placement area is not properly accounted for in the implementation schedule.

Recommendations for Resolution

1. Clearly describe where the non-federal dredged material will be disposed of. If it will be disposed of in a project placement area, revise the cost apportionment to account for the use of the placement area capacity by non-federal interests.
2. Clearly describe when dredging of the non-federal berthing areas will be accomplished.

Final Panel Comment 10

The construction schedule for the TSP may not have accounted for the required lag time between completing placement area dike raising and use of the placement area for disposal of new work material.

Basis for Comment

The Engineering Appendix (p. 24) states the following:

“It is recommended that construction of the raised perimeter dikes be completed a minimum of three months prior to start of channel improvement dredging.”

It is not apparent from reviewing the construction schedules in the Draft Integrated FR/EA (p. 60) or the Engineering Appendix (p. 69) whether this lag time has been accounted for in the construction schedule and, if not, whether interest costs during construction will increase.

Significance – Medium/Low

Project costs and schedules could be adversely affected if the lag time following dike raising is not properly accounted for.

Recommendation for Resolution

1. Review the project schedules in the Draft Integrated FR/EA and in the Engineering Appendix to ensure that appropriate lag time following dike raising is reflected in the project schedule.

Final Panel Comment 11

The cost appendix does not include sufficient information regarding unit prices for various dredging and construction activities to determine if the final cost estimate is accurate.

Basis for Comment

Appendix B summarizes estimated project construction costs. These costs are presented as a series of seven contracts representing phases of the required dredging and dike-raising activities. The cost estimate for each contract is developed using a table that includes construction costs (planning, engineering, and design) and construction management costs. Construction costs combine mobilization, demobilization, and operating costs. However, the cost details do not include unit prices or quantities used as the basis for the cost estimates. Unit prices are needed to evaluate the accuracy of the cost estimates provided.

The Draft Integrated FR/EA (p. 39) shows project costs and dredging quantities. These result in dredging costs of about \$24 per cubic yard (cy) for the deepening increment from 42 to 45 feet; \$14.7/cy for deepening from 42 to 48 feet; \$14.2 for deepening from 42 to 50 feet; and \$13.8 for deepening from 42 to 52 feet. While a slight decrease in unit cost would be expected with greater volume to account for mobilization and demobilization, in the case when the placement locations are the same for all alternatives, the huge unit cost decrease from dredging to 48 feet versus to 45 feet is not explained.

Significance – Low

Unit costs are essential to facilitate comparison of estimated project costs to historical data from other projects and locations.

Recommendations for Resolution

1. Revise Appendix B to include more detail on the basis of the cost estimates.
2. Specify unit costs used to develop cost estimates for dredging and construction activities. If unit costs were not used, compute the resulting unit costs resulting from the cost estimates for each contract.

Final Panel Comment 12

Details describing how the TSP meets the four criteria in the Principles and Guidelines have not been provided.

Basis for Comment

The Draft Integrated FR/EA (p. 40) and Appendix L, Plan Formulation, state: “Each plan was formulated in consideration of the four criteria in the Principles and Guidelines: completeness, effectiveness, efficiency, and acceptability.” However, neither the FR/EA nor the appendix explains how the TSP satisfies the criteria.

Significance – Low

The completeness of the Draft Integrated FR/EA would be improved if additional information were included to document how the four criteria in the Principles and Guidelines (Water Resources Council, 1983) were met under the TSP.

Recommendation for Resolution

1. Revise Table 5-3 of the Draft Integrated FR/EA to state how the TSP meets each of the four criteria in the Principles and Guidelines.

Final Panel Comment 13

The cumulative impacts section does not discuss potential project-induced changes in air quality associated with repair and construction operations at Keppel AmFELS.

Basis for Comment

Sections 7.11.1, Environmental Justice, and 7.12, Cumulative Impacts, of the Draft Integrated FR/EA indicate that air quality in the project area is in attainment and that project construction will not have adverse impacts on air quality. However, the Draft Integrated FR/EA does not discuss the possibility that an increase in construction and repair activities will contribute to air pollution.

The Draft Integrated FR/EA assumes that deepening the Brazos Island Harbor channel will lead to increased repair and new construction activities at the Keppel AmFELS facility, since existing channel depth is cited as an impediment to navigation by both drilling vessels and drilling platforms. Repair and fabrication utilize a wide range of diesel-fueled air pollution-generating devices, including cranes, trucks, lift trucks, and air compressors, as well as welders, grinders, cutters, sandblasters, etc.

The assumed increase in air pollutants may be offset by vessel fleet changes to fewer, larger, and more fuel-efficient ships, but the FR/EA does not recognize the potential for either improved or diminished air quality. Emission inventory data are extant for a broad range of construction equipment from agency reports and equipment manufacturers.

Significance – Low

A discussion of an increase in construction and repair activities as contributors to air pollution would improve the understanding of the project.

Recommendation for Resolution

1. Compare the possible reduction in air pollution (from a more efficient vessel fleet) with the assumed increase in air pollution (from repair and construction activities in the various port facilities, including Keppel AmFELS).

5. REFERENCES

OMB (2004). Final Information Quality Bulletin for Peer Review. Executive Office of the President, Office of Management and Budget, Washington, D.C. Memorandum M-05-03. December 16.

The National Academies (2003). Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports. The National Academies (National Academy of Science, National Academy of Engineering, Institute of Medicine, National Research Council). May 12.

USACE (2006). Hydraulic Design of Deep-Draft Navigation Projects. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Manual (EM) No. 1110-2-1613, May 31.

USACE (2010). National Economic Development Manual for Deep Draft Navigation. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. IWR Report 10-R-4. April 2010.

USACE (2012). Water Resources Policies and Authorities: Civil Works Review. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Circular (EC) 1165-2-214. December 15.

Water Resources Council (1983). Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. U.S. Water Resources Council, Washington, D.C., James G. Watt, Chairman. March 10.

This page is intentionally left blank.

APPENDIX A

IEPR Process for the Brazos Island Harbor Project

This page is intentionally left blank.

A.1 Planning and Conduct of the Independent External Peer Review (IEPR)

Table A-1 presents the schedule followed in executing the Brazos Island Harbor Independent External Peer Review (IEPR). Due dates for milestones and deliverables are based on the award/effective date of November 1, 2013. The review documents were provided by U.S. Army Corps of Engineers (USACE) on November 20, 2013. Note that the work items listed under 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 closeout, as a final deliverable and record of the IEPR results.

Table A-1. Brazos Island Harbor Complete IEPR Schedule

Task	Action	Due Date
1	Award/Effective Date	11/1/2013
	Review documents available	11/20/2013
	Battelle submits draft Work Plan ^a	11/8/2013
	USACE provides comments on draft Work Plan	11/18/2013
	Battelle submits final Work Plan ^a	11/22/2013
2	Battelle requests input from USACE on the conflict of interest (COI) questionnaire	11/5/2013
	USACE provides comments on COI questionnaire	11/6/2013
	Battelle submits list of selected panel members ^a	11/15/2013
	USACE confirms the panel members have no COI	11/18/2013
	Battelle completes subcontracts for panel members	11/22/2013
3	Battelle convenes kick-off meeting with USACE	11/12/2013
	Battelle sends review documents to panel members	11/25/2013
	Battelle convenes kick-off meeting with panel members	11/26/2013
	Battelle convenes kick-off meeting with USACE and panel members	11/26/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	12/5/2013
4	Panel members complete their individual reviews	12/10/2013
	Battelle provides panel members with talking points for Panel Review Teleconference	12/12/2013
	Battelle convenes Panel Review Teleconference	12/13/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	12/16/13

Table A-1. Brazos Island Harbor Complete IEPR Schedule (continued)

Task	Action	Due Date
4	Panel members provide draft Final Panel Comments to Battelle	12/27/2013
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	12/30/13-1/7/14
	Battelle finalizes Final Panel Comments	1/7/2014
5	Battelle provides Final IEPR Report to panel members for review	1/9/2014
	Panel members provide comments on Final IEPR Report	1/13/2014
	Battelle submits Final IEPR Report to USACE ^a	1/15/2014
6 ^b	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	1/16/2014
	Battelle convenes teleconference with USACE to review the Post-Final Panel Comment Response Process	1/16/2014
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process	1/16/2014
	USACE provides draft Project Delivery Team (PDT) Evaluator Responses to Battelle	1/22/2014
	Battelle provides the panel members the draft PDT Evaluator Responses	1/23/2014
	Panel members provide Battelle with draft BackCheck Responses	1/28/2014
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	1/29/2014
	Battelle convenes Comment-Response Teleconference with panel members and USACE	1/31/2014
	USACE inputs final PDT Evaluator Responses to DrChecks	2/4/2014
	Battelle provides final PDT Evaluator Responses to panel members	2/6/2014
	Panel members provide Battelle with final BackCheck Responses	2/11/2014
	Battelle inputs the Panel's final BackCheck Responses in DrChecks	2/14/2014
	Battelle submits pdf printout of DrChecks project file ^a	2/18/2014
	CWRB Meeting (Estimated Date) ^c	6/25/2014
	Contract End/Delivery Date	9/30/2014

^a Deliverable.

^b Task 6 occurs after the submission of this report.

^c The CWRB meeting was listed in the Performance Work Statement under Task 3 but was relocated in this schedule to reflect the chronological order of activities.

At the beginning of the Period of Performance for the Brazos Island Harbor IEPR, 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, 30 charge questions were provided by USACE 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 C of this final report).

Prior to beginning their review and within 3 days 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 Brazos Island 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.

- **Brazos Island Harbor Draft Feasibility Report (163 pages)**
- **Brazos Island Harbor Engineering Appendix Report with Shoaling Table (75 pages)**
- **Appendix A - Brazos Island Harbor Economic Appendix (74 pages)**
- **Appendix B - Cost Report and Plans (32 pages)**
- **Appendix C - Real Estate Plan (6 pages)**
- **Appendix D - Public Coordination (89 pages)**
- **Appendix E - Agency Coordination (8 pages)**
- **Appendix F - Brazos Island Harbor-ODMDS July 30 2013 (37 pages)**
- **Appendix G - Section 404b 2013 (21 pages)**
- **Appendix H - TCMP Compliance Statement (16 pages)**
- **Appendix I - Endangered Species Coordination (87 pages)**
- **Appendix J - USFWS CAR QC 10-29-13 (37 pages)**
- **Appendix K - NHPA Coordination (11 pages)**
- **Appendix L - Plan Formulation (55 pages)**
- **Draft Statement of Findings and FONSI (5 pages)**
- Model Documentation for HarborSym Deepening Model
- Risk Register
- 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.

About halfway through the review of the Brazos Island Harbor IEPR 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 26 panel member questions to USACE. USACE was able to provide responses to all of the questions during the teleconference or later that day via email.

A.2 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 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 individual comments into a preliminary list of 17 overall comments and discussion points. Each panel member's individual comments were shared with the full Panel in a merged individual comments table.

A.3 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 significant importance to the findings, and merged any related individual comments. At the conclusion of the call, Battelle reviewed each Final Panel Comment with the Panel, including the associated level of significance and the lead author to confirm the information during the teleconference.

At the end of these discussions, the Panel identified 11 comments and discussion points that should be brought forward as Final Panel Comments.

A.4 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 Brazos Island Harbor IEPR:

- **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/high, medium, medium/low, and 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 issue with the project that affects the current recommendation or justification of the project, and which will affect its future success, if the project moves forward without the issue being addressed. Comments rated as high indicate that the Panel determined that the current methods, models, and/or analyses contain a “showstopper” issue.
 2. **Medium/High:** Describes a potential fundamental issue with the project, which has not been evaluated at a level appropriate to this stage in the planning process. Comments rated as medium/high indicate that the Panel analyzed or assessed the methods, models, and/or analyses available at this stage in the planning process and has determined that if the issue is not addressed, it could lead to a “showstopper” issue.
 3. **Medium:** Describes an issue with the project, which does not align with the currently assessed level of risk assigned at this stage in the planning process. Comments rated as medium indicate that, based on the information provided, the Panel identified an issue that would raise the risk level if the issue is not appropriately addressed.
 4. **Medium/Low:** Affects the completeness of the report at this time in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium/low indicate that the Panel does not currently have sufficient information to analyze or assess the methods, models, or analyses.
 5. **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 that was mislabeled or incorrect or that certain data or report section(s) were not clearly described or presented.
 - Guidelines 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).

During the Final Panel Comment development process, the Panel determined that one of the Final Panel Comments no longer met the criteria for at least a low level of significance; however, the Panel submitted three additional Final Panel Comments for consideration, each of which met the criteria for one of the levels of significance. In the end, 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 the main report.

This page is intentionally left blank.

APPENDIX B

Identification and Selection of IEPR Panel Members
for the Brazos Island Harbor Project

This page is intentionally left blank.

B.1 Panel Identification

The candidates for the Brazos Island Harbor Independent External Peer Review (IEPR) Panel were evaluated based on their technical expertise in the following key areas: engineering, economics, environment, and plan formulation. These areas correspond to the technical content of the Brazos Island Harbor IEPR review documents and overall scope of the Brazos Island Harbor project.

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 conflicts of interest (COIs). Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected four experts for the final Panel.

The four 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 firm² in the Brazos Island Harbor Channel Improvement Project Feasibility Report and Environmental Assessment.
- Previous and/or current involvement by you or your firm² in deep-draft navigation studies in the western Gulf of Mexico.
- Previous and/or current involvement by you or your firm² in Brazos Island Harbor Channel Improvement Project-related projects.
- Previous and/or current involvement by you or your firm² in the conceptual or actual design, construction, or operation and maintenance (O&M) of any projects in the Brazos Island Harbor Channel Improvement Project-related projects.
- Current employment by the U.S. Army Corps of Engineers (USACE).

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.

- Previous and/or current involvement with paid or unpaid expert testimony related to the Brazos Island Harbor Channel Improvement Project.
- Previous and/or current employment or affiliation with the Brownsville Navigation District or any of the following cooperating Federal, State, County, local and regional agencies, environmental organizations, and interested groups:] Port of Brownsville, City of Brownsville (for pay or pro bono).
- Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to southern coastal Texas.
- Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, Engineer Research and Development Center [ERDC], etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Galveston District.
- Previous or current involvement with the development or testing of models (HarborSym, HEP/HSI, TABS-MD, Gulf Shoreline Erosion, Ship Simulator) that will be used for or in support of the Brazos Island Harbor Channel Improvement Project.
- Current firm² involvement with other USACE projects, specifically those projects/contracts that are with the Galveston 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 Galveston District. Please explain.
- Any previous employment by the USACE as a direct employee, notably if employment was with the Galveston District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Any previous employment by the USACE as a contractor (either as an individual or through your firm²) within the last 10 years, notably if those projects/contracts are with the Galveston 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, and include the client/agency and duration of review (approximate dates).
- Pending, current or future financial interests in Brazos Island Harbor Channel Improvement Project-related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm² revenues within the last 3 years came from USACE contracts.
- A significant portion (i.e., greater than 50%) of personal or firm² revenues within the last 3 years from contracts with the non-federal sponsor (Brownsville Navigation District).
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to the Brazos Island Harbor Channel Improvement Project
- Participation in relevant prior and/or current Federal studies relevant to the Brazos Island Harbor Channel Improvement Project
- Previous and/or current participation in prior non-Federal studies relevant to the Brazos Island Harbor Channel Improvement Project

- 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?

Other considerations:

- Participation in previous USACE technical review panels
- Other technical review panel experience.

B.2 Panel Selection

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. One of the four final reviewers is affiliated with an academic institution, and the remaining reviewers are affiliated with consulting companies or were independent consultants. 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 selected the final Panel.

An overview of the credentials of the final four members of the Panel and their qualifications in relation to the technical evaluation criteria is presented in Table B-1. More detailed biographical information regarding each panel member and his area of technical expertise is presented in Section B.3.

Table B-1. Brazos Island Harbor IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	Hayes	Bastian	Staiger	Burke
Engineer				
Minimum 10 years of experience in hydraulic or civil engineering	X			
Experience in deep-draft navigation channels	X			
Experience in dredged material disposal	X			
Experience in erosion	X			
Experience in coastal currents	X			
Experience in channel modifications	X			
Active participation in related professional societies	X			
M.S. degree or higher in civil, hydraulic, or related engineering field	X			
Registered Professional Engineer	X			
Economics				
Minimum 10 years of experience in deep-draft navigation economic analysis		X		
Experience evaluating and comparing alternative plans for USACE		X		
Experience evaluating and conducting National Economic Development (NED) analyses of deep-draft navigation or inland navigation transportation-related projects		X		
Experience directly working for or with USACE in applying Principles and Guidelines to Civil Works project evaluations		X		
Active participation in related professional societies		X		
M.A., M.S., M.B.A. degree or higher		X		

Table B-1. Brazos Island Harbor IEPR Panel: Technical Criteria and Areas of Expertise (continued)

Technical Criterion	Hayes	Bastian	Staiger	Burke
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 and preparation of National Environmental Policy Act (NEPA) compliance documents			X	
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 evaluating and comparing alternative plans for USACE				X
Experience evaluating and conducting NED analyses of deep-draft navigation or inland navigation transportation-related projects				X
Experience directly working for or with USACE in applying Principles and Guidelines to Civil Works project evaluations				X
Active participation in related professional societies				
M.A./M.S. degree or higher				X

B.3 Panel Member Qualifications

Donald F. Hayes, P.E., Ph.D.

Role: Civil engineering expertise.

Affiliation: Independent Consultant/University of Nevada, Las Vegas

Dr. Hayes is the Department Chair and a professor in the Department of Civil & Environmental Engineering and Construction at the University of Nevada, Las Vegas. He is also Director of the Nevada Universities Transportation Center, and one of 10 directors of the Mineta National Transit Research Center. He earned his M.S. in civil engineering from Mississippi State University and his Ph.D. in civil engineering from Colorado State University.

Dr. Hayes is a Board Certified Environmental Engineer, and a registered Professional Engineer in Louisiana, Mississippi, and Nevada. He has more than 30 years of experience in both academia and consulting, including 10 years of experience working with USACE at the Waterways Experiment Station. He has experience with developing and evaluating models related to dredging and has deep-draft navigation channel design experience as demonstrated by his work for many large U.S. ports, including Houston, South Carolina, Port of New York and New Jersey, Norfolk, Oakland, San Francisco, and Charleston. The focus of these projects has been primarily related to dredging and sediment management in these navigation channels.

Additionally, Dr. Hayes has extensive experience with dredged material management and beneficial uses of dredge sediments and has authored guidance documents and technical papers on these subjects. Dr. Hayes is familiar with environmental dredging and with open-water and confined placement techniques for dredge material management, including contaminated sediments. He was the original developer of the ADDAMS system distributed by USACE ERDC and is intimately familiar with the current available software for managing dredged sediments. Dr. Hayes has extensively used SedFlume and model results to estimate erosion due to propeller wash and vessel movement and has authored papers and reports on the subject.

Dr. Hayes has taught courses on coastal hydraulics using his knowledge of coastal hydraulics and wave processes and familiarity with coastal currents, tides, extreme events, and channel modifications for traffic safety and increased vessel size through work on various ports and harbors. He is a member of several engineering committees and societies, including the American Society of Civil Engineers (ASCE) and the Western Dredging Association (Board of Directors). He also was a member of the Permanent International Association of Navigation Congresses (PIANC)/ASCE Dredging 2012 planning committee.

David Bastian, P.E.

Role: Economics expertise.

Affiliation: Independent Consultant

Mr. Bastian is an independent consultant and professional engineer for David Bastian Consulting in Annapolis, Maryland, specializing in USACE compliance and policy review, plan formulation and incremental cost analysis, deep-draft navigation, dredged material disposal, and hydraulic and river engineering. He earned his B.S. in civil engineering from the Georgia Institute of Technology and a M.S. in River Engineering from Delft University, Holland. He is a registered professional engineer in Mississippi.

Mr. Bastian is proficient in the USACE plan formulation process, procedures, standards, guidance, and economic evaluation techniques and in the application of the USACE six-step process defined in the Principles and Guidelines. He has over 35 years of experience with USACE and 10 years as contractor/consultant on USACE projects, with 30 years of demonstrated experience in public works planning, working with project teams to identify and evaluate measures and alternatives using appropriate planning methodologies to reduce life safety risk. He is also an expert on USACE policy, including Engineer Regulation (ER) 1105-2-100. His project history has resulted in his creation or creation of over 100 USACE reports evaluating and comparing alternative plans.

Mr. Bastian has developed economic input databases for deep-draft navigation studies at USACE Institute for Water Resources (IWR) from 1980-1987 and evaluated deep-draft economic feasibility for enlarging the Panama Canal (1987-1993). He authored the deep-draft and inland navigation sections of the IWR Planning Workshop manual, participated in the IEPR of the Delaware River Deepening Feasibility Study (2003-2004), and contributed as an external peer reviewer to the Port Everglades channel relocation and enlargement (2012) economic evaluation.

Mr. Bastian has evaluated and conducted National Economic Development (NED) analysis procedures, particularly as they relate to deep-draft and inland navigation transportation-related projects. In addition, he has extensive experience reviewing the analyses used to evaluate measures and alternatives and is able to determine whether they are sufficiently comprehensive and complete to result in approval of recommended alternatives. He provided technical and policy compliance to all aspects of the Corpus Christi channel deepening project report such that the feasibility report met Headquarters requirements for project authorization. He has been involved with programs with high public and interagency interests such as the post-Katrina Hurricane and Storm Damage Risk Reduction System. He also is experienced with the USACE calculation and application of environmental impacts and benefits, determining the scope and appropriate methodologies for impact assessment and analyses for a variety of projects, and potential project impacts to nearby sensitive habitats.

Mr. Bastian's previous employment at USACE included positions as Deputy Chief of Staff for Support, Office Chief of Engineers; Assistant Director of Civil Works, Office Chief of Engineers; technical and policy compliance review expert, Washington Level Review Center; and navigation research, USACE IWR. He has served as a USACE Washington-level technical and policy compliance review expert and managed interdisciplinary reviews of over 70 feasibility reports.

Mr. Bastian's participation in professional societies includes the ASCE, the American Association of Port Authorities, the PIANC, and the Western Dredging Association.

Jon Staiger, Ph.D.

Role: Environmental expertise.

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.

Dr. Staiger has experience in environmental, estuarine, and coastal processes as well as an understanding of ecological responses to navigation channel improvements. 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 his understanding of ecological responses to navigation channel improvements, coordinating marine turtle and marine mammal protection with regulatory agencies and participating 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 the National Environmental Policy Act (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 (ODMDSs). He is also familiar with beneficial use for beach and upland restoration, which can involve impacts to 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 7 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.

Roger Burke

Role: Plan formulation expertise.

Affiliation: Tetra Tech, Inc.

Mr. Burke is a Senior Project Manager with Tetra Tech, Inc. with 46 years of experience in deep-draft navigation and inland navigation projects, water resources planning, and project management, performing and overseeing the performance of feasibility studies and associated economic analyses. He earned an MBA from the University of South Alabama in 1984.

Mr. Burke is familiar with USACE Civil Works planning policies, methodologies and procedures and was with USACE for 39 years, serving as Branch Chief, plan formulator, economist, and operations research analyst. As Plan Formulation Branch Chief at the Mobile District, he was responsible for providing guidance to planners and economists within the Branch regarding USACE planning policy and procedures, which required an in-depth familiarity with ER 1105-2-100 (Principles and Guidelines) and

other ERs, engineer circulars, and engineer pamphlets pertaining to Civil Works planning. He was personally involved in the review of various reports on deep-draft harbors, including limited reevaluation reports for Mobile Harbor and Pascagoula Harbor, and a general reevaluation report on Panama City Harbor. Additionally, between April 2006 and July 2007, Mr. Burke participated in the Executive Management Team for the Savannah Harbor Deepening General Reevaluation Report. These reports were all prepared in accordance with applicable planning guidance, which required identification of the NED plan.

Since his retirement from USACE in 2007, his responsibilities at Tetra Tech have included serving as senior planner on various USACE studies and projects, advising on USACE planning policies and procedures. Relevant projects and studies include the Neuse River Basin Study and the Indian, Sugar, Intrenchment, and Snapfinger Creeks Study. Mr. Burke's experience with USACE large-river engineering projects is reflected in his involvement with the interstate water issues in two major river basins (Alabama-Coosa-Tallapoosa and Apalachicola-Chattahoochee-Flint River Basins). He served as a subject matter expert with Alabama, Georgia, and Florida and the Federal Commissioner regarding federal and interstate water issues, which involved water management and water supply policies, related to federal reservoirs.

This page is intentionally left blank.

APPENDIX C

Final Charge to the IEPR Panel
as Submitted to USACE on November 22, 2013,
for the Brazos Island Harbor Project

This page is intentionally left blank.

CHARGE QUESTIONS AND GUIDANCE TO THE PANEL MEMBERS FOR THE IEPR OF THE BRAZOS ISLAND HARBOR, TEXAS, CHANNEL IMPROVEMENT PROJECT DRAFT INTEGRATED FR/EA

BACKGROUND

The Brazos Island Harbor project, also known as the Brownsville Ship Channel (BSC), is an existing deep-draft navigation project located on the lower Texas coast. The channel uses the natural Brazos-Santiago Pass to connect the Gulf with the inland portion of the BSC. The BSC is the southernmost navigation channel in the state of Texas and the western terminus of the Gulf Intracoastal Waterway system (GIWW). The GIWW is a shallow draft navigation channel 125 feet wide and 12 feet deep, that traverses the entire length of the Laguna Madre.

The project area includes the BSC channel and property directly adjacent to the channel, including the Port of Brownsville and upland placement areas (placement areas), as well as offshore placement areas and a nearshore Feeder Berm. The Port infrastructure consists of railroad and highway systems allowing access to the Port facilities. The existing Brazos Island Harbor navigation channel is 19.4 miles in length. The Entrance and Jetty Channel extends east to west for approximately 2.5 miles, from the open Gulf of Mexico, through the jetties to the Laguna Madre. The flared North and South Jetties flank Brazos Santiago Pass, which connects the Gulf with the Lower Laguna Madre. The Main Channel extends 17 miles westward from the Laguna Madre to the Turning Basin, which is located on the eastern outskirts of the city of Brownsville.

There are 10 placement areas available for the placement of dredged material from the Brazos Island Harbor Project – two existing Ocean Dredged Material Disposal Sites (ODMDSs) which can be used for the Entrance Channel, seven upland placement areas for containment of material from the Main Channel, and one nearshore Feeder Berm which can be used for beach-quality sediments from the Entrance or Main Channel. The ODMDSs and Feeder Berm are all dispersive and by their nature have unlimited capacity.

The non-federal sponsor is the Brownsville Navigation District acting as the financial representative for the Port of Brownsville. The purpose of the Brazos Island Harbor study is to determine if there is a Federal interest in making channel improvements to the existing Brazos Island Harbor. An evaluation of benefits, costs, and environmental impacts determines Federal interest.

The feasibility study was authorized by a resolution of the Committee on Public Works, U.S. House of Representatives dated May 5, 1966. Additionally, Section 6009 of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005 (Public Law 109-13) – Offshore Oil and Gas Fabrication Ports provides that in determining the economic justification for navigation projects involving offshore oil and gas fabrication ports, the Secretary is directed to measure and include in the National Economic Development (NED) calculation the value of future energy exploration and production fabrication contracts and transportation cost savings that would result from larger navigation channels.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Brazos Island Harbor, Texas, Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment (hereinafter: Brazos Island Harbor IEPR) in accordance with the Department of the Army, USACE, Water Resources Policies and Authorities' *Civil Works Review* (EC 1165-2-214, dated 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 Brazos Island 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 engineering, economic, environmental, plan formulation, and real estate issues relevant to the project. They will also have experience applying their subject matter expertise to deep draft navigation.

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:

Review Documents		
Title	Number of Pages	Required Disciplines
Brazos Island Harbor Draft Feasibility Report	163	All Disciplines
Brazos Island Harbor Engineering Appendix Report with Shoaling Table	75	Engineer
Appendix A - Brazos Island Harbor Economic Appendix	74	Economics
Appendix B - Cost Report and Plans	32	Plan Formulation & Economics
Appendix C - Real Estate Plan	6	Plan Formulation & Economics
Appendix D - Public Coordination	89	All Disciplines
Appendix E - Agency Coordination	8	All Disciplines
Appendix F - Brazos Island Harbor-ODMDS July 30 2013	37	Environmental & Engineer
Appendix G - Section 404b 2013	21	Environmental
Appendix H - TCMP Compliance Statement	16	Environmental & Plan Formulation
Appendix I - Endangered Species Coordination	87	Environmental
Appendix J - USFWS CAR QC 10-29-13	37	Environmental
Appendix K - NHPA Coordination	11	All Disciplines
Appendix L - Plan Formulation	55	Plan Formulation
DRAFT STATEMENT OF FINDINGS and FONSI	5	Environmental
Total Pages	716	
Supplemental Documents		
Risk Register	TBD	All Disciplines

Documents for Reference

- 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.

SCHEDULE

This final schedule is based on the November 20, 2013, receipt of the final review documents.

Task	Action	Due Date
Conduct Peer Review	Battelle sends review documents to panel members	11/25/13
	Battelle convenes kick-off meeting with panel members	11/26/13
	Battelle convenes kick-off meeting with USACE and panel members	11/26/13
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	12/05/13
	Panel members complete their individual reviews	12/10/13
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members with talking points for Panel Review Teleconference	12/12/13
	Battelle convenes Panel Review Teleconference	12/17/13
	Battelle provides Final Panel Comment templates and instructions to panel members	12/18/13
	Panel members provide draft Final Panel Comments to Battelle	12/27/13
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	12/27/13-01/08/14
	Battelle finalizes Final Panel Comments	01/08/14
	Battelle provides Final IEPR Report to panel members for review	01/10/14
	Panel members provide comments on Final IEPR Report	01/14/14
	Battelle submits Final IEPR Report to USACE	01/16/14
Comment/Response Process	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	01/21/14
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	01/21/14
	USACE provides draft PDT Evaluator Responses to Battelle	01/22/14
	Battelle provides the panel members the draft PDT Evaluator Responses	01/23/14
	Panel members provide Battelle with draft BackCheck Responses	01/28/14
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	01/30/14
	Battelle convenes Comment-Response Teleconference with panel members and USACE	01/31/14
	USACE inputs final PDT Evaluator Responses to DrChecks	02/04/14
	Battelle provides PDT Evaluator Responses to panel members	02/06/14
	Panel members provide Battelle with final BackCheck Responses	02/11/14

	Battelle inputs the panel members' final BackCheck Responses to DrChecks	02/14/14
	Battelle submits pdf printout of DrChecks project file	02/18/14
Civil Works Review Board (CWRB)	Panel prepares and/or reviews slides for CWRB	TBD
	Civil Works Review Board	June 2014

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the Brazos Island 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 Brazos Island 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 (Lynn McLeod, mcleod@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 Lynn McLeod, mcleod@battelle.org, no later than December 10, 2013, 10 pm ET.

IEPR of the Brazos Island Harbor, Texas Channel Improvement Project Draft Integrated Feasibility Report and Environmental Assessment

CHARGE QUESTIONS AND RELEVANT SECTIONS AS SUPPLIED BY USACE

General Questions

1. Are the assumptions that underlie the economic, engineering, environmental, plan formulation, and real estate analyses sound?
2. Comment on the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used.
3. In general terms, are the planning methods in the analyses used in the appropriate manner?
4. Were risk and uncertainty sufficiently considered and documented in the risk register?
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. Do you agree with the general analyses of the environmental and historic resources and economic conditions of the port operations?
7. For your particular area of expertise, provide an in-depth review of whether the analyses of the environmental and historic resources and economic conditions within the project area are sufficient to support the estimate of impacts for the alternatives.
8. Given your area of expertise, does this section appropriately address the existing conditions of all resources pertinent to the study?
9. Do the existing and historical conditions accurately describe the current commodity movements through the study area?
10. Are the assumptions regarding future commodity and ship movements through the study area reasonable and supported?

Chapter 3 Future Without-Project Conditions

11. Taking into account the information in Chapters 2 and 3, was the discussion of the environmental and historic resources and economic conditions sufficient to characterize current baseline conditions and to allow for evaluation of forecasted conditions (with and without the recommended plan)?

Chapter 4.0 Problems and Opportunities

12. Comment on the Planning Process. Has the USACE 6-Step Planning Process been followed?
13. Are there any additional problems, opportunities, constraints, or objectives that should be considered to ensure that the project's goals are reached?

Chapter 5 Formulation and Evaluation of Alternative Plans

14. Was a reasonably complete array of possible management measures considered in the development of alternatives?
15. Did the formulation process follow the requirement to avoid, minimize, and then mitigate adverse impacts on resources?
16. Does each alternative meet the formulation criteria of being effective, efficient, complete, and acceptable?

Chapter 6 The Recommended Plan

17. Are the changes between the without and with project conditions adequately described for the Recommended Plan?
18. Are the uncertainties inherent in the evaluation of the impacts to the environmental and historic resources and economic conditions and any risks associated with those uncertainties, adequately addressed and described for the Recommended Plan?
19. Did the study address those resources identified during the scoping process as important in making decisions relating to the study?
20. Given your area of expertise, does this section appropriately address the potential impacts of the Recommended Plan on all resources pertinent to the study?

Chapter 7 Environmental Consequences

21. 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?

Chapter 8 Implementation Requirements

No questions.

Chapter 9 Public Involvement

No questions.

Chapter 10 Recommendations

No questions.

Chapter 11 References

No questions.

Appendix A: Economics

22. Was the methodology used to develop the Total Project Cost estimate adequate and valid?

Appendix B: Engineering Design, Cost Estimates and Cost Risk Analysis

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

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

25. Is the final cost estimate reliable, accurate, and justified?

26. Were the methods used in the risk and uncertainty analysis adequate and valid?

27. Are the results of the risk and uncertainty analysis reliable and accurate?

28. To what extent have significant project construction costs been adequately identified and described?

Appendix C: Real Estate

No questions.

Appendix D: Public Coordination

No questions.

Appendix E: Agency and Tribal Coordination

No questions.

Appendix F: Ocean Dredged Material Disposal Sites Evaluation Report

No questions.

Appendix G: Clean Water Act Section 404(b)(1) Evaluation

No questions.

Appendix H: Coastal Zone Management Act Coordination

No questions.

Appendix I: Endangered Species Act – Biological Opinion

No questions.

Appendix J: Fish and Wildlife Coordination Act

No questions.

Appendix K: National Historical Preservation Act Coordination

No questions.

Overview Questions

29. Please identify the most critical concerns (up to five) you have with the project and/or review documents.
30. Please provide positive feedback on the project and/or review documents.

This page is intentionally left blank.

