

# Final Independent External Peer Review Report Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement

Prepared by  
Battelle Memorial Institute

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

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Columbus, Ohio 43201

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## Executive Summary

### PROJECT BACKGROUND AND PURPOSE

The Matagorda Ship Channel Federal project is a single-purpose, deep-draft navigation (DDN) study (Section 216 review of completed projects) to identify and document significantly changed physical and economic conditions occurring since project construction and develop recommendations on the advisability of modifying the Matagorda Ship Channel or its operation. Recommendations must be technically feasible, economically practicable, and sound with respect to environmental considerations, and they must meet the requirements of the Principles and Guidelines (CEQ, 2013).

Measures/alternatives investigated to address transportation inefficiencies include:

- No Action
- Widening of the existing DDN channel up to 400 feet
- Deepening of the existing DDN channel up to a depth of -47 feet mean lower low water (MLLW)
- A combination of widening and deepening

It is anticipated that proposed changes will require Congressional authorization as the existing channel has been constructed to its authorized dimensions. The deep-draft channel was authorized by the River and Harbor Act of 1958 (Public Law 85-500), House Document 388, 84th Congress, 2nd Session. Authorized and constructed dimensions of the Federal project consist of the following.

Channel Section	Authorized Depth <sup>1</sup> (feet)	Width (feet)	Length
Outer Bar & Jetty Channel	40	300	3.2 miles
Channel to Point Comfort	38	200 – 300	20.9 miles
Approach Channel to Turning Basin	38	200 – 300	1.1 miles
Point Comfort Channel to Turning Basin	38	1,000	1,000 feet
Point Comfort Turning Basin Extensions (North & South)	38	300	1,279 feet

<sup>1</sup>Authorized depth referenced as MLLW

## Port of Port Lavaca-Point Comfort

The Port of Port Lavaca-Point Comfort is located on the Western Gulf of Mexico near the mid-point of the Texas Coast. The port and related industries are part of a massive Texas chemical, refining, and energy delivery complex.

The Matagorda Ship Channel opened to traffic in 1965 and serves hundreds of ships and barges each year. Calhoun Port Authority (CPA) operations include liquid cargo terminals, a dry bulk dock, general cargo facilities, liquid cargo barge terminals, a multi-purpose dock, and rail service. The CPA operates three liquid cargo ship docks and one dry bulk dock, which provide substantial flexibility for loading and unloading chemical, petroleum-related, and other liquid and dry bulk products.

## Matagorda Ship Channel

Matagorda Bay (at 28°38' N, 96°15' W) is a major bay on the Texas coast protected from the tides and storms of the Gulf of Mexico by the Matagorda Peninsula. The bay is divided almost equally between Calhoun and Matagorda counties. Matagorda Bay is crossed by the Gulf Intracoastal Waterway, as well as by ship channels serving Palacios, Port O'Connor, and Port Lavaca. The Matagorda Ship Channel is the only entry into Matagorda Bay from the Gulf; the channel enters the bay through Cavallo Pass at the southern end of Matagorda Peninsula. In 1965, USACE constructed the ship channel at a depth of -36 feet MLLW by cutting through the Matagorda Peninsula, which was then reinforced with rock jetties.

Existing channel dimensions create the following transportation inefficiencies:

- Delays due to one-way traffic restriction.
- Vessels >105-foot beam width cannot transit the channel.
- Vessels with an overall length of 639 feet or greater restricted to daylight-only transits.

Further, the existing turning basin, measuring 1,000 feet by 1,000 feet, limits the size of vessels able to use that project feature. Finally, excessive currents in the entrance channel and cross currents in the bay limit ship draft and options (timing/availability) for transit.

The Tentatively Selected Plan (TSP) for the Section 216 Matagorda Ship Channel Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) consists of deepening the Matagorda Ship Channel to a depth of -47 feet MLLW (+2 feet in the Entrance Channel); widening the channel to 350 feet (the Entrance Channel width would be 600 feet); and increasing the turning basin to 1,200 feet in diameter. Based on the 2018 FR/EIS, TSP implementation would result in the following environmental outlook: no direct impacts on listed species or critical habitat would occur; impacts on 1.5 acres of fresh marsh in confined upland placement areas would occur; mitigation for wetlands would occur in a previously impacted area; channel dredging would potentially impact 130 acres of oyster reef along the channel; mitigation for oysters would occur within the Matagorda Bay system; and natural resource agencies support alternative selection.

## Independent External Peer Review Process

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. USACE is conducting an Independent External Peer Review (IEPR) of the Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement



(FR/EIS) (hereinafter: Matagorda Ship Channel IEPR). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization per guidance described in USACE (2018). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate this IEPR. The IEPR was external to the agency and conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2018) 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 decision documents and the overall scope of the project, Battelle identified potential candidates for the Panel in the following key technical areas: Civil Works planning; economics; environmental; hydraulic/coastal engineering; and geotechnical engineering. Battelle screened the candidates to identify those most closely meeting the selection criteria and evaluated them for COIs and availability. USACE was given the list of all the final candidates to independently confirm that they had no COIs, and Battelle made the final selection of the four-person Panel from this list.

The Panel received electronic versions of the decision documents (873 pages in total), along with a charge that solicited comments on specific sections of the documents to be reviewed. Following guidance provided in USACE (2018) and OMB (2004), USACE prepared the charge questions, which were included in the draft and final Work Plans.

The USACE Project Delivery Team (PDT) briefed the Panel and Battelle during a kick-off meeting held via teleconference at 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.

IEPR panel members reviewed the decision documents individually and produced individual comments in response to the charge questions. The panel members then met via teleconference with Battelle to review key technical comments 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.

Battelle received public comments from USACE on the Matagorda Ship Channel (approximately 15 letters, emails, and individual comments, totaling 48 pages of comments) and provided them to the IEPR panel members. The panel members were charged with determining whether any information or concerns presented in the public comments raised any additional discipline-specific technical concerns with regard to the Matagorda Ship Channel review documents. After completing its review, the Panel determined that one issue required clarification in the document and subsequently generated one Final Panel Comment that summarized the concern.

Overall, 12 Final Panel Comments were identified and documented. Of these, two were identified as having high significance, two had medium/high significance, four had medium significance, three had medium/low significance, and one had low significance.

## Results of the Independent External Peer Review

The panel members agreed on their “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2018) in the Matagorda Ship Channel 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 panel members found that, as presented, the Matagorda Ship Channel 2018 FR/EIS documents do not provide a clear picture of USACE’s planned project moving forward backed by justifications for project changes and choices. The Panel understands that the project has been under evaluation since 2005, with many changes occurring over the past 13 years; however, because the 2018 document refers back to various aspects of the previously planned projects from 2005, 2009, and 2014, the Panel found it difficult to track exactly what would be done, what issues remained, and how impacts would be mitigated. It also found that the 2018 document does not adequately justify why previous aspects of the project that USACE had agreed to conduct are no longer viable. As panel members searched for project information, they found that the older documents presented many elements (for example, mitigation and beneficial use options) which were previously agreed to by USACE, but in the 2018 FR/EIS were dropped from the final plan with little to no explanation. Without a clear explanation of why specific changes were made, the Panel found it difficult to understand what USACE’s plans consist of and why the proposed 2018 project is more viable from an economic, engineering, and environmental aspect than the previously assessed project.

The following summary discusses some of the high-level concerns raised by the Panel. These are elements of the project where additional analysis is warranted and places where project findings and objectives need to be clarified, documented, or revised.

**Engineering:** The Panel found that the 2018 FR/EIS Appendix G, Draft Engineering Appendix, relied heavily on previous studies documented in previous reports, but the earlier studies were not adequately described or summarized in the current study. The references to previous studies made it difficult for the panel members to fully understand the current project without referring to the referenced documents, some of which were not originally provided for review. Of greatest concern from an engineering aspect is the proposed use of 3H-to-1V ship channel side slopes described in the TSP. The Panel believes these ship channel side slopes would be too steep for the loose submerged granular soils or soft cohesive soils found between approximate Stations STA 107+500 to STA 117+255. In the Panel’s experience, a 3H:1V slope in submerged granular soil will not stand up but will fail upon submergence; therefore, it will not be possible to maintain the slope as engineered because the soil will continually slough down to a shallower profile. The Panel also is concerned that 1) the proposed channel may be too narrow to allow safe passage for the design vessel, and 2) the methods used to calculate the shoaling rates may not include the effects of hydrodynamics and local wave climate.

**Environmental:** The majority of the Panel’s concerns were identified during the environmental review of the 2018 FR/EIS. Of greatest concern is that the base plan for the 2018 FR/EIS appears to disregard the findings of analyses conducted for the 2014 FR/EIS without clearly explaining why the 2009 and 2014 analyses were not carried forward. Only one beneficial use element of the 2014 base plan—the capping of Dredge Island mercury-contaminated sediments—was retained. Other issues identified include 1) the possibility that dredged material proposed for open-water disposal may have been deemed acceptable for such disposal based solely on a reliance on 2011 data; a large discrepancy between the 2014 and 2018



reports on the number of submerged cultural resources, with no explanation of the differences; and an environmental analysis in the 2018 FR/EIS that does not clearly describe the potential impacts to ecological resources or clearly present the compensatory mitigation. The overarching concern with regard to these issues is that, given the lack of updated information and the discrepancies between the various documents, potential impacts and issues may have been overlooked. The Panel also raised concerns regarding 1) a lack of information on the potential for groundwater contamination from placement of sediments at PA P1, and 2) the conclusion that environmental impacts are not of concern when such a conclusion is not supported by documentation or references.

**Plan Formulation/Economics:** The Panel review of the 2018 FR/EIS identified two medium/high-level concerns with the economics analysis. First, the 2018 FR/EIS does not document that a multiport analysis to identify competing port trade flows was conducted. The Panel believes that a multiport analysis to analyze additional ports as a network of competing ports on the Texas Gulf Coast is warranted. The ports of Corpus Christi (80 miles to the southwest) and Galveston, Houston, and Texas City (125 miles to the northeast) are in the same geographic area and also export crude oil and condensate. Second, an analysis of the risk and uncertainty associated with the benefits accruing from new crude oil and condensate activity was not performed. Without such an analysis, the magnitude of the National Economic Development (NED) benefits could be either over- or understated.

**Table ES-1. Overview of 12 Final Panel Comments Identified by the Matagorda Ship Channel IEPR Panel**

No.	Final Panel Comment
<b>Significance – High</b>	
1	Most of the project area soils will not maintain a 3H-to-1V ship channel side slope, which will result in increased construction costs due to additional dredging and spoil disposal.
2	With the exception of the capping of Dredge Island mercury-contaminated sediments, the 2018 FR/EIS does not utilize the findings from the 2009 Final EIS and 2014 FR/EIS analyses, nor does it provide technical, scientific, or cost information in determining the base plan.
<b>Significance – Medium/High</b>	
3	No documentation of a multiport analysis to identify competing port trade flows at neighboring ports is provided in the 2018 FR/EIS.
4	An analysis of the risk and uncertainty associated with the benefits accruing from new crude oil and condensate activity has not been performed; therefore, the NED benefits may be over- or understated.

**Table ES-1. Overview of 12 Final Panel Comments Identified by the Matagorda Ship Channel IEPR Panel (continued)**

No.	Final Panel Comment
<b>Significance – Medium</b>	
5	Reliance on 2011 data regarding the presence of contaminants may have underestimated the potential environmental issues; as a result, dredged material generated from proposed project activities may have been judged acceptable for open-water disposal without sufficient justification.
6	There are significant differences between the number of submerged cultural resources in the 2014 FR/EIS and the 2018 draft FR/EIS.
7	The 2018 FR/EIS does not clearly describe the potential impacts to ecological resources, nor does it clearly present the compensatory mitigation.
8	The proposed channel width may not be wide enough to allow safe passage for the design vessel.
<b>Significance – Medium/Low</b>	
9	The methods used to calculate shoaling rates do not include the effects of hydrodynamics and local wave climate, which may affect maintenance dredging volumes and costs.
10	The potential impacts to groundwater of disposal at PA P1 have not been assessed.
11	The conclusions that there are no concerns about environmental impacts and that dredged sediment is acceptable for open-water disposal are not supported.
<b>Significance – Low</b>	
12	During Public Comment Review, the Panel noted that the general public believes the 2018 FR/EIS does not address increased wave energies from larger vessels, the impact on the erosion of the shoreline, and the need for mitigation.

## Table of Contents

	Page
Executive Summary .....	i
1. INTRODUCTION.....	1
2. PURPOSE OF THE IEPR.....	3
3. METHODS FOR CONDUCTING THE IEPR .....	3
4. RESULTS OF THE IEPR.....	4
4.1 Summary of Final Panel Comments.....	4
4.2 Final Panel Comments .....	5
5. REFERENCES.....	24
 Appendix A. IEPR Process for the Matagorda Ship Channel Project	
Appendix B. Identification and Selection of IEPR Panel Members for the Matagorda Ship Channel Project	
Appendix C. Final Charge for the Matagorda Ship Channel IEPR	
Appendix D. Conflict of Interest Form	

### List of Tables

	Page
Table ES-1. Overview of 12 Final Panel Comments Identified by the Matagorda Ship Channel IEPR Panel.....	v

## LIST OF ACRONYMS

<b>ADM</b>	Agency Decision Milestone
<b>ATR</b>	Agency Technical Review
<b>COI</b>	Conflict of Interest
<b>CPA</b>	Calhoun Port Authority
<b>DDN</b>	Deep Draft Navigation
<b>DMMP</b>	Dredged Material Management Plan
<b>DO</b>	Dissolved Oxygen
<b>DrChecks</b>	Design Review and Checking System
<b>EC</b>	Engineer Circular
<b>EIS</b>	Environmental Impact Statement
<b>EM</b>	Engineer Manual
<b>EPA</b>	United States Environmental Protection Agency
<b>ER</b>	Engineer Regulation
<b>ERDC</b>	Engineer Research and Development Center
<b>FEIS</b>	Final Environmental Impact Statement
<b>FR</b>	Feasibility Report
<b>GIWW</b>	Gulf Intracoastal Waterway
<b>IEPR</b>	Independent External Peer Review
<b>IWR</b>	Institute for Water Resources
<b>mcy</b>	Million Cubic Yards
<b>MLLW</b>	Mean Lower Low Water
<b>MLT</b>	Mean Low Tide
<b>NED</b>	National Economic Development
<b>NEPA</b>	National Environmental Policy Act
<b>NMFS</b>	National Marine Fisheries Service
<b>O&amp;M</b>	Operation and Maintenance
<b>OCPD</b>	Oceans & Coastal Protection Division
<b>ODMDS</b>	Ocean Dredged Material Disposal Site
<b>OMB</b>	Office of Management and Budget
<b>PA</b>	Placement Alternative

<b>PAH</b>	Polycyclic Aromatic Hydrocarbon
<b>PCB</b>	Polychlorinated Biphenyl
<b>PCX</b>	Planning Center of Expertise
<b>PDT</b>	Project Delivery Team
<b>RAO</b>	Remedial Action Objective
<b>TCEQ</b>	Texas Commission on Environmental Quality
<b>TSP</b>	Tentatively Selected Plan
<b>USACE</b>	United States Army Corps of Engineers
<b>USFWS</b>	United States Fish and Wildlife Service
<b>WEDA</b>	Western Dredging Association

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## 1. INTRODUCTION

The Matagorda Ship Channel Federal project is a single-purpose, deep draft navigation (DDN) study (Section 216 review of completed projects) to identify and document significantly changed physical and economic conditions occurring since project construction and develop recommendations on the advisability of modifying the Matagorda Ship Channel or its operation. Recommendations must be technically feasible, economically practicable, and sound with respect to environmental considerations, and must meet the requirements of the Principles and Guidelines (CEQ, 2013). Measures/alternatives investigated to address transportation inefficiencies include:

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Calhoun and Matagorda counties. Matagorda Bay is crossed by the Gulf Intracoastal Waterway, as well as by ship channels serving Palacios, Port O'Connor, and Port Lavaca. The Matagorda Ship Channel is the only entry into Matagorda Bay from the Gulf; the channel enters the bay through Cavallo Pass at the southern end of Matagorda Peninsula. In 1965, USACE constructed the ship channel at a depth of -36 feet MLLW by cutting through the Matagorda Peninsula, which was then reinforced with rock jetties.

Existing channel dimensions create the following transportation inefficiencies:

- Delays due to one-way traffic restriction
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Further, the existing turning basin, measuring 1,000 feet by 1,000 feet, limits the size of vessels able to use that project feature. Finally, excessive currents in the entrance channel and cross currents in the bay limit ship draft and options (timing/availability) for transit.

The Tentatively Selected Plan (TSP) for the Section 216 Matagorda Ship Channel Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) consists of deepening the Matagorda Ship Channel to a depth of -47 feet MLLW (+2 feet in the Entrance Channel); widening the channel to 350 feet (the Entrance Channel width would be 600 feet); and increasing the turning basin to 1,200 feet in diameter. Based on the 2018 FR/EIS, TSP implementation would result in the following environmental outlook: no direct impacts on listed species or critical habitat would occur; impacts on 1.5 acres of fresh marsh in confined upland placement areas would occur; mitigation for wetlands would occur in a previously impacted area; channel dredging would potentially impact 130 acres of oyster reef along the channel; mitigation for oysters would occur within the Matagorda Bay system; and natural resource agencies support alternative selection.

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 Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) (hereinafter: Matagorda Ship Channel IEPR) in accordance with procedures described in the Department of the Army, USACE, Engineer Circular (EC) *Review Policy for Civil Works* (EC 1165-2-217) (USACE, 2018) and the Office of Management and Budget (OMB) *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 Matagorda Ship Channel IEPR documents (Section 4). Appendix A describes in detail how the IEPR was planned and conducted, including the schedule followed in executing the IEPR. 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 in the final Work Plan according to the schedule listed in Table A-1. Appendix D presents the organizational COI form that Battelle completed and submitted to the Institute for Water Resources (IWR) prior to the award of the Matagorda Ship Channel IEPR.

## 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, as described in USACE (2018).

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 Matagorda Ship Channel was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (as defined by EC 1165-2-217). 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. The IEPR was completed in accordance with established due dates for milestones and deliverables as part of the final Work Plan; the due dates are based on the award/effective date and the receipt of review documents.

Battelle identified, screened, and selected four panel members to participate in the IEPR based on their expertise in the following disciplines: Civil Works planning, economics, environmental, hydraulic/coastal engineering, and geotechnical engineering. One panel member served in a dual role capacity filling both the Civil Works planning and economics disciplines. The Panel reviewed the Matagorda Ship Channel 2018 FR/EIS documents and produced 12 Final Panel Comments in response to 16 charge questions provided by USACE for the review. This charge included two overview questions and one public comment question added by Battelle. 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 1165-2-217), 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 is provided in Section 4.1, followed by the full text of the Final Panel Comments (Section 4.2).

### 4.1 Summary of Final Panel Comments

The panel members agreed on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2018) in the Matagorda Ship Channel review documents. 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 panel members found that, as presented, the Matagorda Ship Channel 2018 FR/EIS documents do not provide a clear picture of USACE's planned project moving forward backed by justifications for project changes and choices. The Panel understands that the project has been under evaluation since 2005, with many changes occurring over the past 13 years; however, because the 2018 document refers back to various aspects of the previously planned projects from 2005, 2009, and 2014, the Panel found it difficult to track exactly what would be done, what issues remained, and how impacts would be mitigated. It also found that the 2018 document does not adequately justify why previous aspects of the project that USACE had agreed to conduct are no longer viable. As panel members searched for project information, they found that the older documents presented many elements (for example, mitigation and beneficial use options) which were previously agreed to by USACE, but in the 2018 FR/EIS were dropped from the final plan with little to no explanation. Without a clear explanation of why specific changes were made, the Panel found it difficult to understand what USACE's plans consist of and why the proposed 2018 project is more viable from an economic, engineering, and environmental aspect than the previously assessed project.

This summary discusses some of the high-level concerns raised by the Panel. These are elements of the project where additional analysis is warranted and places where project findings and objectives need to be clarified, documented, or revised.

**Engineering:** The Panel found that the 2018 FR/EIS Appendix G, Draft Engineering Appendix, relied heavily on previous studies documented in previous reports, but the earlier studies were not adequately described or summarized in the current study. The references to previous studies made it difficult for the panel members to fully understand the current project without referring to the referenced documents, some of which were not originally provided for review. Of greatest concern from an engineering aspect is the proposed use of 3H-to-1V ship channel side slopes described in the TSP. The Panel believes these ship channel side slopes would be too steep for the loose submerged granular soils or soft cohesive soils found between approximate Stations STA 107+500 to STA 117+255. In the Panel's experience, a 3H:1V slope in submerged granular soil will not stand up but will fail upon submergence; therefore, it will not be possible to maintain the slope as engineered because the soil will continually slough down to a shallower profile. The Panel also is concerned that 1) the proposed channel may be too narrow to allow safe passage for the design vessel, and 2) the methods used to calculate the shoaling rates may not include the effects of hydrodynamics and local wave climate.

**Environmental:** The majority of the Panel's concerns were identified during the environmental review of the 2018 FR/EIS. Of greatest concern is that the base plan for the 2018 FR/EIS appears to disregard the findings of analyses conducted for the 2014 FR/EIS without clearly explaining why the 2009 and 2014

analyses were not carried forward. Only one beneficial use element of the 2014 base plan—the capping of Dredge Island mercury-contaminated sediments—was retained. Other issues identified include 1) the possibility that dredged material proposed for open-water disposal may have been deemed acceptable for such disposal based solely on a reliance on 2011 data; a large discrepancy between the 2014 and 2018 reports on the number of submerged cultural resources, with no explanation of the differences; and an environmental analysis in the 2018 FR/EIS that does not clearly describe the potential impacts to ecological resources or clearly present the compensatory mitigation. The overarching concern with regard to these issues is that, given the lack of updated information and the discrepancies between the various documents, potential impacts and issues may have been overlooked. The Panel also raised concerns regarding 1) a lack of information on the potential for groundwater contamination from placement of sediments at PA P1, and 2) the conclusion that environmental impacts are not of concern when such a conclusion is not supported by documentation or references.

**Plan Formulation/Economics:** The Panel review of the 2018 FR/EIS identified two medium/high-level concerns with the economics analysis. First, the 2018 FR/EIS does not document that a multiport analysis to identify competing port trade flows was conducted. The Panel believes that a multiport analysis to analyze additional ports as a network of competing ports on the Texas Gulf Coast is warranted. The ports of Corpus Christi (80 miles to the southwest) and Galveston, Houston, and Texas City (125 miles to the northeast) are in the same geographic area and also export crude oil and condensate. Second, an analysis of the risk and uncertainty associated with the benefits accruing from new crude oil and condensate activity was not performed. Without such an analysis, the magnitude of the National Economic Development (NED) benefits could be either over- or understated.

## [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

**Most of the project area soils will not maintain a 3H-to-1V ship channel side slope, which will result in increased construction costs due to additional dredging and spoil disposal.**

### Basis for Comment

The Panel believes the proposed ship channel side slopes of 3H-to-1V described in the TSP are too steep for the loose submerged granular soils or soft cohesive soils found approximately between Stations STA 107+500 to STA 117+255. In the Panel's experience a 3H:1V slope in submerged granular soil will not stand up but will fail upon submergence; therefore, it will not be possible to maintain the slope as engineered because the soil will continually slough down to a shallower profile. The existing ship channel cross sections in the 2018 FR/EIS show that the current channel side slope is shallower than the proposed 3H-to-1V side slopes. If the current conditions cannot maintain the 3H-to-1V slope, an increase in the volume of dredged material could result. Also, the geotechnical data available for review is from the original 1962 exploration, which needs to be supplemented with more closely-spaced borings and more laboratory testing.

The cost of the dredging and spoil disposal is the largest portion of the construction costs. An increase in the volume of dredged material will increase costs. As currently presented, project construction costs may not be reflective of the actual amount of dredging and spoil disposal to be performed. Ideally, project development would be based on a robust geotechnical evaluation, which is not the case with the current approach to ship channel side slope design.

### Significance – High

The impact of a cost increase on the project associated with flatter ship channel side slopes is likely to affect the TSP selection.

### Recommendations for Resolution

1. Perform additional geotechnical investigation (borings and cone penetration test probes in the field and laboratory testing) to obtain current geotechnical information on the affected soils at closer spacing than the original 1,500-foot spacing for the 1962 exploration.
2. Perform drained and undrained shear strength testing on a representative cross section of the soils along the proposed alignment.
3. Perform slope stability analyses on the typical soil profiles by drained and undrained shear strength methods to evaluate the stability of the proposed 3H-to-1V ship channel side slopes.
4. Select an appropriate factor of safety for the ship channel side slopes and determine what ship channel side slope angle is appropriate for the selected slope stability factor of safety.
5. Reevaluate the TSP based upon the increase in the volume of dredged and spoiled material from the flattening of the ship channel side slopes.



## Final Panel Comment 2

**With the exception of the capping of Dredge Island mercury-contaminated sediments, the 2018 FR/EIS does not utilize the findings from the 2009 FEIS and 2014 FR/EIS analyses, nor does it provide technical, scientific, or cost information in determining the base plan.**

### Basis for Comment

The base plan for the 2018 FR/EIS essentially disregards the findings of analyses conducted for the 2014 FR/EIS without clearly explaining why the 2009 and 2014 analyses were not carried forward. Only one beneficial use element of the 2014 base plan—the capping of Dredge Island mercury-contaminated sediments—was retained. In addition, the 2014 FR/EIS included a process of collaboration with federal and state agencies that was not replicated for the 2018 FR/EIS. The following paragraphs discuss some of the earlier findings.

The 2014 FR/EIS (Section 204(f) Feasibility Report by URS, July 2014, p. 90) stated that: “Preliminary results indicate that the Upland Confined and Gulf Unconfined Placement Alternatives would cost considerably more than the Multi-use Placement Alternative, even if there was no cost for the land acquisition. Therefore, several Multi-use Placement Alternatives were evaluated to determine the least-cost optimized plan that provides net positive ecological impacts. Multi-use Placement Alternatives include a mixture of upland, offshore, and in-bay placement areas. In these alternatives, placement areas are located close to the channel to minimize pump distance and thereby minimize costs for placement of both new work and maintenance-dredged material.” The same report concluded with this statement (p. 97): “Alternative 3 [of the Multi-Use Placement Alternative] was selected during the screening process as the most favorable alternative based on having the lowest cost and by providing net positive impact to the Bay system.”

Costs prepared as part of the 2009 Final EIS (FEIS) for Placement Alternatives (PAs) (2009 FEIS) (Table 5-4 of the DMMP [Appendix F, PDF p.8 of 19]) are stated as:

- Costs for upland confined placement: \$1,057,418,000.
- Costs for Gulf Unconfined Placement: \$1,386,576,000
- Costs for Multi-Use Placement: \$772,571,000 to \$863,710,000; includes a variety of placement types containing various mitigation PAs reducing ecological impact as well as non-mitigation PAs.

In the 2018 FR/EIS, Table 5-5 of the Dredged Material Management Plan (DMMP) (Appendix F, April 2018) presents features of the Applicant’s Preferred Alternative. All are from the 2009 FEIS. For new work material, 26.6 million cubic yards (mcy) were to be beneficially used in Sites A2, BN1, BN2, BN3, ER1/OR, ER3, ER3/North, G, and H4 Habitat Area. The 2014 FR/EIS, in stating that the Texas Commission on Environmental Quality (TCEQ), General Land Office, Texas Parks & Wildlife Department, U.S. Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service (USFWS) helped develop the plan, concluded that the DMMP presented in Tables 6.1 and 6.2 of the 2014 FR/EIS (the same as Tables 5-4 and 5-5 in the 2018

## Final Panel Comment 2

FR/EIS) “represents the least cost, environmentally acceptable, engineering feasible placement plan” (2014 FR/EIS, p. 89).

In a discussion of disposal and placement, the 2014 FR/EIS (p. 41) stated that “The remaining placement areas will be constructed for mitigation purposes such as beach nourishment along the Magnolia/Indianola shoreline and habitat creation and protection for oysters, marsh, and sea grass.”

The USACE Galveston District Permit Approach Approval Memorandum dated April 30, 2014, to the CPA stated that “New work and maintenance dredge material will be used to create in bay upland PAs, create marsh, nourish public beaches, create oyster reefs, cap in situ bottom sediments impacted by mercury, protect eroding shoreline, create upland PAs and create multi-use habitat site (Approval Request and Report for Matagorda Ship Channel Improvement Project, URS, July 2014, Appendix A, USACE Galveston District Permit Approach Approval Memo) .”

The 2018 FR/EIS essentially discards the work cited above and reported in the 2014 FR/EIS. Instead, it determined a new base plan, saying simply that there were logistical issues and that USACE thought it would cost more. Beneficial use was eliminated. The sole exception was the capping of mercury-contaminated sediments at Dredge Island. There was no explanation of logistical issues that caused the base plan to switch wholly to disposal, with the exception of covering mercury-contaminated sediments at Dredge Island. There was also no explanation why there were not “logistical issues” in the capping operation at Dredge Island, similar to other beneficial use sites.

The Panel recognizes that creating marshes, nourishing beaches, and protecting habitat with dredged material usually costs more than open-water disposal alone. The panel members were impressed that the 2014 report considered all the factors in the Federal Standard to create a base plan, including a process of collaboration with state and Federal agencies. The efforts included costing of alternatives, and it was determined that the base plan would include a multitude of beneficial uses. The 2018 FR/EIS does not include technical, scientific, or other rationales for determining the new base plan. No revised costs are presented, and logistical issues are not discussed.

### Significance – High

Selection of the base plan per the Federal Standard is critical to the viability of the project, and the approach taken in the 2018 FR/EIS to select a new base plan, based solely upon logistical issues, is not supportable.

### Recommendations for Resolution

1. Provide rationale for disregarding technical, scientific, and costing information from the 2009 and 2014 analyses.
2. Explain what is meant by logistical issues in view of the requirements of the Federal Standard.
3. Prepare cost analyses to support the new base plan.

### Final Panel Comment 3

**No documentation of a multiport analysis to identify competing port trade flows at neighboring ports is provided in the 2018 FR/EIS.**

#### Basis for Comment

The Panel believes that a multiport analysis to analyze additional ports as a network of competing ports on the Texas Gulf Coast is warranted. The ports of Corpus Christi (80 miles to the southwest) and Galveston, Houston, and Texas City (125 miles to the northeast) are in the same geographic area and also export crude oil and condensate. Their locations lead the Panel to believe they are competing ports to the Port of Port Lavaca/Point Comfort for these commodities. Without a multiport analysis based on trade routes, commodities, and port facilities, the project may be duplicating existing capacity at competing ports.

#### Significance – Medium/High

The inclusion of a multiport analysis that discusses the potential of competition from other ports in the region will enhance the understanding of the project's purpose and need.

#### Recommendations for Resolution

1. Provide a multiport analysis of other ports in the region as part of the export network of the Gulf coast, or explain why such an analysis is not necessary.

#### Final Panel Comment 4

**An analysis of the risk and uncertainty associated with the benefits accruing from new crude oil and condensate activity has not been performed; therefore, the NED benefits may be over- or understated.**

#### Basis for Comment

Crude oil exports are a new activity to the Port of Point Comfort, and they represent 68 percent of the Transportation Cost Savings Benefit. The baseline and forecasts for crude oil exports were made based on limited information about the channel users' capacity, and therefore may be incorrect.

#### Significance – Medium/High

The crude oil exports baseline and forecast data have a strong probability of influencing the technical or scientific basis for selection and justification of the TSP.

#### Recommendations for Resolution

1. Include an analysis that illustrates how sensitive the NED benefits are to variations in the baseline and forecast volume of crude oil exports.

## Final Panel Comment 5

**Reliance on 2011 data regarding the presence of contaminants may have underestimated the potential environmental issues; as a result, dredged material generated from proposed project activities may have been judged acceptable for open-water disposal without sufficient justification.**

### Basis for Comment

Conclusions regarding environmental quality, and the acceptability of open-water disposal in Lavaca or Matagorda Bay waters or in offshore waters, are drawn from data that are more than 5 years old. In Appendix B (Environmental Resources), Enclosure 2 – Ocean Dredged Material Disposal Site Analyses, Section 4.1 states the following “However, EPA does not consider data more than 5 years old to be relevant for determining whether there is cause for concern” (p. 13). Therefore, sediments proposed to be dredged will need to be tested to assess potential environmental impacts and the acceptability for open-water disposal. Chemical and biological testing is required in both the Ocean Testing Manual and the Inland Testing Manual to determine acceptability for open-water disposal. While some flexibility is included in the Inland Testing Manual for conduct of bioassays of sediments proposed for open-water disposal, there is no flexibility in EPA’s Ocean Disposal Regulations, which stipulate that chemical and toxicity testing must be conducted on any material disposed at an ocean dredged material disposal site (ODMDS), including new work materials.

Sediments in Lavaca Bay and Matagorda Bay (and possibly the project area) have the potential to be contaminated and therefore may be unacceptable for unconfined open-water disposal. Contaminant sources could be from legacy actions, such as the Alcoa Superfund Site, or from point sources and nonpoint discharges from operating port and industrial facilities. The CPA handles a variety of products, including petroleum, aluminum ore, chemicals, and allied products. Local industrial plants include Alcoa World Alumina, INEOS Nitriles, Formosa Plastics, Invista, J.R. Simplot, and crude oil/condensate users North Star Midstream, NGL Energy Partners, and Arrowhead Offshore Pipeline (USFWS, September 25, 2017, letter to USACE). According to a review of database records and research of the environmental history of the region, the industrial activity adjacent to Lavaca Bay has caused “measurable impacts to the terrestrial and marine environments adjacent to this and adjacent waterways” (Appendix B, Environmental Resources, p. 35).

Examples of known chemicals in water and sediments from the reports reviewed include the following:

- TCEQ has identified that waters in the study area have concerns with depressed dissolved oxygen (DO), dioxin, and polychlorinated biphenyls (PCBs) in edible tissue, and bacteria. (Section 408 Report, p. 24.)
- Dioxin was found in tissues in Chocolate Bay, but no sampling for dioxin has been done for the Matagorda Bay Channel (Section 408 Report, p. 18)
- In addition to mercury, volatile organic constituents, semivolatile organic constituents, PCBs, polycyclic aromatic hydrocarbons (PAHs), pesticides, and other contaminants have been identified in water and sediment samples within the study area. (Section 408 Report, p. 24).

### Final Panel Comment 5

- Within the Turning Basin, pre-dredging sediment sampling will be performed to confirm that mercury, ethylene dichloride, or PAH levels will not adversely affect the placement areas (Section 408 Report, p. 38).
- In reference to the Turning Basin, the 2014 408 Report, Appendix C (p. 9) stated that: “several metals, notably chromium, copper, selenium, and zinc that bioaccumulated to a statistically significantly greater degree than the same metals present in the sediment in the reference area.”

### Significance – Medium

Without new data, the potential environmental impacts of the Matagorda Ship Channel project and the acceptability of dredged sediments for open-water disposal cannot be determined.

### Recommendations for Resolution

1. Revise the FR/EIS to recognize that a comprehensive chemical and bioassay testing program will be implemented to confirm that dredged sediments are acceptable for open-water disposal (e.g., testing for heavy metals, PAHs, PCBs, total petroleum hydrocarbons, and tributyltin and bioassay, including toxicity and bioaccumulation testing).
2. Conduct sampling and analysis for dioxin in Matagorda Bay near the outlet from Chocolate Bay.



## Final Panel Comment 6

**There are significant differences between the number of submerged cultural resources in the 2014 FR/EIS and the 2018 Draft FR/EIS.**

### Basis for Comment

Regarding historic or cultural impacts, the 2014 Section 408 Report (p. 38) stated the following:

“In 2005 and 2006, remote-sensing surveys were conducted by NCS Subsea and PBS&J on approximately 12,700 acres for areas within Lavaca Bay, Matagorda Bay, and the Gulf for the majority of the areas that would be impacted by the MSCIP. *The survey identified 39 potentially significant remote sensing targets within the project survey areas, four of which have structural characteristics visible in the sonar images*” (M4, M12, M35, and M41) [emphasis added] (Section 408 Report, p. 38, and Section 204(f) Feasibility Report July 2014).

The 2018 FR/EIS states that the potential for encountering submerged cultural resources, such as shipwrecks, is moderate, and referred to one anomaly, just north of Sundown Island, outside of the project area:

“Previous marine cultural resources investigations in the project area have included archeological surveys of the Matagorda Ship Channel for the El Paso LNG Terminal Company (McCormick et al. 1978), the USACE (Pearson and Hudson 1990), and the Calhoun County Navigation District (Borgens et al. 2012). An archeological survey was also conducted along alternative routes of the Gulf Intracoastal Waterway for the USACE (Enright et al. 2002). A magnetic anomaly (anomaly M39 in Enright et al. 2002: E-7) was identified as a result of this survey just north of Sundown Island, outside of the project area, which was recommended for additional investigation. (2018 FR/EIS, p. 41).

The 2014 FR/EIS identified 39 potentially impacted cultural resources; the 2018 FR/EIS identified one, outside the project area. There is no explanation for the difference. Furthermore, it is not clear whether any of the “39 potentially significant remote sensing targets” mentioned in the Section 408 Report are on the west side of the channel where unconfined disposal islands will be created.

In addition, Section 5.6 of the 2018 FR/EIS states that “The USACE recommends intensive cultural resources investigations to identify and evaluate any historic properties within proposed construction areas.” (p. 113). However, the FR/EIS does not make a commitment to conduct such investigations.

### Significance – Medium

If any of the submerged cultural resources identified in 2014 are on the west side of the channel where unconfined disposal islands will be created or in other areas of the project, the ability to implement the recommended plan could be affected.

### Recommendations for Resolution

1. Explain the discrepancy in the numbers of potentially impacted submerged cultural resources between the 2014 Section 408 Report and the 2018 FR/EIS, including why the “39 potentially

## Final Panel Comment 6

significant remote sensing targets” mentioned in the Section 408 report are not considered to be potentially impacted in 2018.

2. Prepare Appendix C, Cultural Resources, and include it as part of the 2018 FR/EIS.
3. Change Section 5.6 of the 2018 FR/EIS 2018 to say: “The USACE *will conduct* intensive cultural resource investigations to identify and evaluate any historic properties within the proposed construction areas.”

## Final Panel Comment 7

**The 2018 FR/EIS does not clearly describe the potential impacts to ecological resources, nor does it clearly present the compensatory mitigation.**

### Basis for Comment

The 2018 FR/EIS states that adverse impacts will occur to ecological resources (e.g., oyster reefs) and then presents compensatory mitigation. Mitigation would consist of 133 acres of oyster reefs and 26 acres of marsh; in addition, the FR/EIS states that 1,540 acres of bay bottom and mercury-impacted bottom would be enhanced by habitat creation and that precise mitigation plans will be developed later with the resource agencies.

The FR/EIS states that the proposed project would mitigate one-for-one for lost oyster beds, stating that this would be done even though the beds should recover or move. It also acknowledges that the project may indirectly negatively affect oyster reefs by increasing salinity and turbidity interfering with filter feeding and respiration, but it does not estimate the magnitude of such impacts or propose mitigation. The FR/EIS concludes that adult oysters “are more capable of withstanding such conditions than seed or spat, and during periods of high turbidity can close up tightly for a week or more until normal conditions return (Coke, 1983)”. The FR/EIS also states that “turbidity from the TSP should be temporary and local” (Appendix B – Environmental Resources, Enclosure 1 (Ecosystem Mitigation), p. 5). Therefore, no mitigation was proposed for the indirect impacts.

Furthermore, the FR/EIS does not assess the short and longer-term impacts of unconfined disposal in the placement areas along the western side of the Matagorda Ship Channel in Matagorda Bay. Erosion and dispersion from wind-generated waves and currents would be expected. No modeling has been done or impacts assessed with regard to the transport and fate of resuspended and eroded sediments. The FR/EIS also does not address longer-term effects of turbidity, sedimentation, and increased salinity on the ecological resources in the project area, such as oysters, wetlands, and seagrasses.

The Panel disagrees with the limited analysis and the FR/EIS conclusion that no mitigation is needed for indirect impacts. The analysis is incomplete; an estimate of the magnitude of indirect and chronic impacts to ecological resources from increased turbidity, suspended solids, salinity, and sedimentation should be conducted to determine needed mitigation actions. These issues were also raised in public comments by the Texas Parks and Wildlife (July 21, 2018), the TCEQ (July 20, 2018), and concerned citizen Ken Teague in his comments dated May 30, 2018.

The 2018 FR/EIS Section 5.3.1.5 (p. 99) also states that “Unavoidable impacts to [essential fish habitat] would be compensated for through the protection and creation of marshes, increasing the amount of nursery areas, protective habitat, and food sources within the Matagorda Bay estuary. While bay bottom habitat would be lost, the creation of marshes would help offset the effects of this bottom bay habitat loss since marshes provide essential habitat for federally managed species.” These mitigation measures do not appear to be part of the 2018 base plan, which eliminated most beneficial uses identified in the 2014 FR/EIS.

The Panel finds the following paragraph, included in the 2018 FR/EIS, Appendix B, Enclosure 1- Ecosystem Mitigation to be a good general statement. However, without specific information on the

## Final Panel Comment 7

types of mitigation, the number of acres, and the location, the credibility of the mitigation efforts is questioned.

Selection of potential mitigation sites and modeling of benefits will be conducted in coordination with resource agencies. The location of the marsh mitigation sites will be, to the extent practicable, within the areas surrounding Matagorda Bay. In addition, the location of oyster reef mitigation will be within the Matagorda Bay system. Periodic meetings with the resource agencies have been ongoing to try to narrow down locations for the mitigation. During final feasibility planning, fully-realized mitigation plans will be developed in further consultation with the resource agencies and presented in the FIFR-EIS.

According to Appendix B Environmental Resources, Enclosure 1 Ecosystem Mitigation (p.5), a total of 3,927 acres would be impacted by unconfined placement. Of that total, 2,053 acres would be impacted at the two ODMDs, which means that 1,874 acres of bay bottom would be impacted outside of the ODMDs. As stated above, mitigation for these impacts would be implemented for 1,540 acres. It is not clear why mitigation for bay bottom would be implemented only for 1,540 acres instead of 3,927 acres. If it is assumed that the offshore bottom at the two ODMDs would be excluded from mitigation, it is then not clear why mitigation for bay bottom would be implemented for 1,540 acres instead of 1,874 acres (Appendix B – Environmental Resources, Enclosure 1 Ecosystem Mitigation, p. 5).

The FR/EIS also does not clearly state how much of the 1,540 acres will cover mercury-contaminated sediments at ER3/D and how much will be in other locations. The number of acres of mitigation in other locations is particularly problematic, as it is unstated. Appendix B – Environmental Resources, Enclosure 1 (Ecosystem Mitigation) (p. 5) states: “Some of the dredged material from the proposed MSC Project would be used to convert open bay bottom to mitigation marsh, oyster reef, or sand platform conducive to seagrass colonization. Material would also be used to cap mercury-impacted sediments and provide a bay bottom suitable for benthic production.” The Panel questions whether the 1,540 acres (plus the 26 acres of marsh mitigation) can actually achieve the stated objectives of covering the mercury-contaminated sediments as well as the other stated mitigation actions.

### Significance – Medium

Without further analyses to determine the potential impacts upon aquatic resources and the need for mitigation, disposal plans and costs could be impacted.

### Recommendations for Resolution

1. Model the effects of increased turbidity, dispersion of sediments from unconfined placement areas, and salinity on oysters and other aquatic resources.
2. Based upon the results of additional modeling/analyses, determine the appropriate mitigation and describe it in greater detail in terms of types, amounts, and locations.

## Final Panel Comment 8

**The proposed channel width may not be wide enough to allow safe passage for the design vessel.**

### Basis for Comment

Appendix G, Engineering Appendix, of the 2018 FR/EIS presents the channel design analysis, which relied on guidance from USACE Engineer Manual (EM) 1110-2-1613, Hydraulic Design of Deep-Draft Navigation Projects, dated May 31, 2006. Using Table 8-2 from this guidance (reproduced as Table 2.11 in the 2018 FR/EIS, Appendix G), the minimum recommended entrance channel width for the design vessel was determined to be 554 feet for the case with best navigation aids and currents ranging from 1.5 to 3 knots. However, this method of determining entrance channel design may not be appropriate for the given design parameters given the following information:

- 1) Currents often exceed 3 knots, while the guidance is applicable to a maximum of 3 knots.
- 2) Current velocities are expected to increase with severity and duration within the entrance channel as Pass Cavallo continues to reduce in size.
- 3) A ship simulation study from 2014 (Waterway Simulation Technology, Inc., 2014) indicated that the proposed channel widths were safe except when currents exceeded 3.5 knots. Pilots suggested restrictions on vessel transit to times of lower current magnitudes.

Use of EM 1110-2-1613 may result in an undersized entrance channel width given the high current velocities in the entrance channel. In addition, the width of the in-bay portion of the channel was determined to be 449 feet for currents ranging from 0.5 to 1.5 knots and 380 feet for currents ranging from 0.0 to 0.5 knots. Both widths exceed the proposed in-bay channel width of 350 feet.

PIANC's Report Number 121, "Harbour Approach Channels Design Guidelines," which provides alternative formulas for determining channel geometry, may provide a higher level of confidence in the proposed channel design.

### Significance – Medium

The channel width may be too narrow to allow safe passage of the design vessel. Transit of the design vessel will be limited to times when current velocities are below the critical threshold set by the pilots.

### Recommendations for Resolution

1. Compare the channel design with guidance from PIANC.

### Literature Cited

PIANC Maritime Navigation Commission (2014). Harbour Approach Channels Design Guidelines. PIANC Report No. 121-2014, 320 pp.

Waterway Simulation Technology, Inc. (2014). Proposed Deepening and Widening of the Matagorda Ship Channel, Texas – A Ship Maneuvering Simulation Study, 87 pp. April 2014.

## Final Panel Comment 9

**The methods used to calculate shoaling rates do not include the effects of hydrodynamics and local wave climate, which may affect maintenance dredging volumes and costs.**

### Basis for Comment

Appendix G, Engineering Appendix, for the 2018 FR/EIS states that shoaling rates for the TSP were based on empirical and analytical methods. Use of these “first-order” estimating tools may not provide reasonable shoaling rates for computing maintenance dredging volumes and costs. A major limitation is that the methods used do not include the effects of the hydrodynamics and local wave climate. A numerical sediment transport model that incorporates hydrodynamics and wave climate would provide a higher level of confidence in shoaling rates for the TSP.

### Significance – Medium/Low

Shoaling rates, which have a direct correlation to maintenance dredging volumes and operational and maintenance costs, may be underestimated.

### Recommendations for Resolution

1. Perform a preliminary, bay-wide sediment transport study to determine more accurate shoaling rates. The study should include the unconfined placement areas to assess the fate of dredged material considering wind waves, vessel waves, and tidal currents.



## Final Panel Comment 10

**The potential impacts to groundwater of disposal at PA P1 have not been assessed.**

### Basis for Comment

Under the TSP, proposed terrestrial upland area PA P1 is currently mostly agricultural land with 1.5 acres of wetlands. Regardless of whether new work material or maintenance material were placed at PA P1, it is reasonable to assume that a portion of the dredged material deposited in PA P1 will be contaminated with mercury. No assessments or modeling of the potential for leaching of mercury or other contaminants into groundwater appear to have been conducted.

### Significance – Medium/Low

While the level of contamination of groundwater may be found to be insignificant, an assessment of the pathways and fate of chemical contaminants, especially mercury, from disposal at PA P1 would help clarify the potential extent of groundwater contamination that would occur from disposal.

### Recommendations for Resolution

1. Model the fate and transport of mercury and other contaminants contained in the new work and maintenance material to be placed at PA P1.

## Final Panel Comment 11

**The conclusions that there are no concerns about environmental impacts and that dredged sediment is acceptable for open-water disposal are not supported.**

### Basis for Comment

Concluding statements throughout the 2018 FR/EIS and Appendix B, Environmental Resources, regarding water and sediment quality are not supported by references or documentation.

The 2018 FR/EIS notes that: “The TSP could result in the disturbance of bay sediments and subsequently impact the sediment quality in the project area. The primary concern with regard to sediment quality in the project area is mercury” (Appendix B, Environmental Resources, p. 37). This language is then followed in various places in the text by concluding statements without discussing how these conclusions were reached or providing references to back up the statements. For example:

- 2018 FR/EIS, p. 109. “The high mercury levels in sediments, resulting from the Alcoa discharges that led to the Superfund site investigations, caused water quality concerns. However, the water quality in the area is good, and should not be negatively impacted by the proposed dredging and dredged material placement.”
- Appendix B, Environmental Resources, p. 36. “...Tier III (bioassays and bioaccumulation testing) testing of elutriates with chemical analyses and water column bioassays indicated no cause for concern.”
- Appendix B, Environmental Resources, p. 37. “A similar situation exists for mercury in sediment. While the project will not involve dredging in the areas that have highest mercury concentrations, there will be some amount of resuspension of sediment associated with the construction dredging process, and there is some concentration of mercury in sediments. However, no significant change in ambient or sediment mercury concentrations are expected.”

Resuspension of mercury-contaminated sediments is raised as an issue in the bullet above. In Cox Bay, there is a stated concern over mercury-impacted sediments (URS, 2014a, p. 39), and the July 2014 Approval Request and Report for the Matagorda Ship Channel Improvement Project (408 Report) (URS, 2014b) states that constructing barge access channels through these areas will be unavoidable (URS, 2014c, Appendix C of the 408 Report, p.18). Without any details, the 2014 408 Report concludes that the mercury-impacted sediment will be managed in a manner consistent with the Superfund Site framework (URS, 2014c, pp. 18-19). Nothing is provided in the 2018 FR/EIS regarding disposal of the dredged material from the Cox barge channels, nothing is suggested as control for resuspension, and nothing explains what the meaning of “managed consistent with the Superfund Site Framework.”

The public also raised questions regarding the plans for controlling resuspension of mercury-contaminated sediments in removal of the 22 pipelines. This issue is not addressed.

The 2018 FR/EIS presents a narrative and conclusions that are likely supportable. For example, the 2014 408 Report (URS, 2014b) included detailed assessments of contaminants in the ship channel, prepared by SOL Engineering Services and Atkins (URS, 2014d, Appendix B to Appendix C of the 408 Report). These studies are well done and support many of the conclusions in the 2018 FR/EIS. However, these efforts and the supporting documentation are not mentioned in the 2018 FR/EIS. The work performed

## Final Panel Comment 11

consisted of chemical analyses of water, sediment, and elutriate samples; suspended particulate phase and solid phase bioassays; and bioaccumulation studies. In addition to the above examples, documentation, data, and references would provide useful information to strengthen the narrative with regard to the following issues:

- Arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium, zinc, total organic carbon, total polycyclic aromatic hydrocarbon, phenanthrene, TPH, and ammonia. Past testing of maintenance material with chemical analyses, whole mud bioassays, and bioaccumulation studies has indicated no cause for concern (URS, 2014d, p. 16).
- Volatile organic compounds such as acetone and toluene, semivolatile organic compounds such as 2,4-dimethylphenol and phenol, and PAHs such as anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, naphthalene, phenanthrene, and pyrene were detected in sediment samples collected in the vicinity of the Alcoa facility (Alcoa, 1999) but not in the footprint of the proposed Matagorda Ship Channel Improvement Project (Alcoa, 1999, p. 16).

### Significance – Medium/Low

Because of the known mercury and other chemical contaminants in the project area, data and documentation, including reference materials, that support the conclusions in the 2018 FR/EIS will improve the understanding of potential environmental impacts.

### Recommendations for Resolution

1. Add documentation and references to support the 2018 FR/EIS concluding statements that there are no concerns about environmental impacts and that sediments proposed to be dredged are acceptable for open-water disposal.

### Literature Cited

Alcoa (1999). Remedial Investigation Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. November 1999.

URS (2014a). Dredged Material Management Plan, Matagorda Ship Channel Improvement Project. URS Corporation, July 2014.

URS (2014b). Approval Request and Report for Matagorda Ship Channel Improvement Project (408 Report). URS Corporation, July 2014.

URS (2014c). URS Contaminant Assessment. Appendix C of the Approval Request and Report for Matagorda Ship Channel Improvement Project (408 Report). URS Corporation, July 2014.

URS (2014d). MSC-Entrance Channel Contaminant Assessment Report. Appendix B, prepared by SOL Engineering Services and Atkins, dated April 2012, to Appendix C, URS Contaminant Assessment, of the Approval Request and Report for Matagorda Ship Channel Improvement Project (408 Report). URS Corporation, July 2014.

## Final Panel Comment 12

**During Public Comment Review, the Panel noted that the general public believes the 2018 FR/EIS does not address increased wave energies from larger vessels, the impact on the erosion of the shoreline, and the need for mitigation.**

### Basis for Comment

Shorelines are eroding in Matagorda and Lavaca Bays, raising concerns that bigger ships will cause even more erosion. Many have expressed their belief that mitigation actions should be taken to compensate for increased shoreline erosion.

Shoreline erosion was noted multiple times in the 2018 FR/EIS as a problem; however, the impact upon shoreline erosion of increased wave size and wave energies from larger vessels in the deepened channel is not adequately addressed. The only statement is in Section 1.7.2, Public Concerns (2018 FR/EIS, p. 17):

“Shoreline Erosion – Enlarging the depth and width of the MSC to accommodate larger and heavier cargo ships, and increased cargo ship traffic could create additional shoreline erosion from Alamo Beach southward to Port O’Connor. Increased cargo ship traffic, compounded by larger and heavier cargo ships, could create larger and more powerful waves, accelerating beach and shoreline erosion.”

However, findings from past analyses provide evidence that such concerns by the public may be misplaced. In addressing concerns about shoreline erosion from ship wakes, the 2014 FR/EIS stated that 1% to 3% of the total wave energy eroding the shoreline was caused by existing ship traffic, while most erosion forces were from wind-driven waves.

Furthermore, as part of the development of the 2009 FR/EIS, the engineering firm Moffatt & Nichol, Inc. conducted a highly credible 2006 analysis concluding that larger ships in the proposed deepened channel would result in smaller waves than the current ship-generated waves in the existing channel, a finding that is counterintuitive to most people’s thinking:

“Increasing the depth of the channel is projected to result in a reduction of wave energy from passing vessel wakes. A proposed LNG vessel passing through the modified channel will result in a smaller wake than an existing vessel passing through the existing channel.” -- Moffatt & Nichol, Matagorda Navigation Channel—Shoreline Impact Analysis, Technical Memorandum, October 4, 2006. p. 17.

As an example of well-meaning public comments that could be addressed by discussion of the Moffatt & Nichol Report in the revised 2018 FR/EIS, during the public comment period for the 2018 FR/EIS, concerned citizen Kenneth Teague, in his comments dated May 31, 2018, stated his concern that “USACE did not evaluate the potential impact of larger ships using the larger channel, creating larger wakes, and thus larger waves impacting the shoreline, causing shoreline erosion. USACE should simulate such effects, and estimate the increase in shoreline erosion, and propose appropriate mitigation.”

## Final Panel Comment 12

### Significance – Low

By providing credible engineering evidence in the 2018 FR/EIS that larger ships in a deeper channel lessen the wave size and wave energy reaching the shoreline, stakeholder concerns regarding shoreline erosion may be allayed.

### Recommendations for Resolution

1. Add a section in the 2018 FR/EIS to address the issue of ships' wakes.
2. Summarize the issue in language understandable to the public, referencing the 2006 Moffatt & Nichol, Inc. technical memorandum.

### Literature Cited

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- Waterway Simulation Technology, Inc. (2014). Proposed Deepening and Widening of the Matagorda Ship Channel, Texas – A Ship Maneuvering Simulation Study, 87 pp. April 2014.

# APPENDIX A

IEPR Process for the Matagorda Ship Channel Project

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

Table A-1 presents the major milestones and deliverables of the Matagorda Ship Channel Independent External Peer Review (IEPR). Due dates for milestones and deliverables were based on the award/effective date listed in Table A-1. The review documents were provided by the U.S. Army Corps of Engineers (USACE) on June 21, 2018. Note that the actions 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 October 4, 2018. The actual date for contract end will depend on the date that all activities for this IEPR are conducted and subsequently completed.

**Table A-1. Major Milestones and Deliverables of the Matagorda Ship Channel IEPR**

Task	Action	Due Date
1	Award/Effective Date	5/31/2018
	Review documents available	6/1/2018
	Public comments available	7/5/2018
	Battelle submits draft Work Plan <sup>a</sup>	6/7/2018
	USACE provides comments on draft Work Plan	6/20/2018
	Battelle submits final Work Plan <sup>a</sup>	6/26/2018
2	Battelle submits list of selected panel members <sup>a</sup>	6/8/2018
	USACE confirms the panel members have no COI	6/12/2018
3	Battelle convenes kick-off meeting with USACE	6/7/2018
	Battelle convenes kick-off meeting with panel members	6/21/2018
	Battelle convenes kick-off meeting with USACE and panel members	6/26/2018
4	Panel members complete their individual reviews	7/13/2018
	Panel members provide draft Final Panel Comments to Battelle	7/23/2018
	Battelle sends public comments to panel members for review	7/16/2018
	Panel drafts a Final Panel Comment with regard to a public concern	7/23/2018
	Panel finalizes Final Panel Comments	7/30/2018
5	Battelle submits Final IEPR Report to USACE <sup>a</sup>	8/6/2018
6 <sup>b</sup>	Battelle convenes Comment Response Teleconference with panel members and USACE	9/17/2018
	Battelle submits pdf printout of DrChecks project file <sup>a</sup>	10/4/2018
	Agency Decision Milestone (ADM) meeting <sup>c</sup>	TBD
	Contract End/Delivery Date	4/30/2019

<sup>a</sup> Deliverable.

<sup>b</sup> Task 6 occurs after the submission of this report.

<sup>c</sup> The ADM meetings were listed in the Performance Work Statement under Task 3 but were relocated in this schedule to reflect the chronological order of activities.

At the beginning of the Period of Performance for the Matagorda Ship Channel 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 (terminology to use, access to DrChecks, etc.). Any revisions to the schedule were submitted as part of the final Work Plan. The final charge consisted of 16 charge questions provided by USACE; two overview questions and one public comment question added by Battelle (all questions were included in the draft and final Work Plans); and 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 after their subcontracts were finalized, all the 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 review documents and reference/supplemental materials listed in Table A-2.

**Table A-2. Documents to Be Reviewed and Provided as Reference/Supplemental Information**

Review Documents	No. of Review Pages
Draft Integrated Feasibility Report & Environmental Impact Statement	170
Appendix A: Economics	75
Appendix B: Environmental and Cultural Resources	348
Appendix D: Real Estate	52
Appendix F: Dredge Material Management Plan	19
Appendix G - Engineering	194
Appendix G - Engineering Plans	15
<b>Total Number of Reference Pages</b>	<b>873</b>
Supplemental Documents <sup>a</sup>	
Public Comments <sup>b</sup>	48
Risk Register	5
<b>Total Number of Reference Pages</b>	<b>55</b>

<sup>a</sup> Supporting documentation only. These documents are not for Panel review and should be used as information sources only. They are not included in the total page count.

<sup>b</sup> USACE will submit public comments to Battelle upon their availability according to the schedule in Table A-1. Battelle will in turn submit the comments to the IEPR Panel for review.

In addition to the materials provided in Table A-2, the panel members were provided the following USACE guidance documents.

- USACE guidance, *Review Policy for Civil Works* (EC 1165-2-217), February 20, 2018
- Office of Management and Budget, *Final Information Quality Bulletin for Peer Review*, December 16, 2004.
- Foundations of SMART Planning
- SMART Planning Bulletin (PB 2013-03, July 15, 2013)
- SMART – Planning Overview
- Planning Modernization Fact Sheet.
- USACE Climate Change Adaptation Plan (June 2014)
- Procedures to Evaluate Sea Level Change: Impacts, Responses, Adaptation (ETL 1100-2-1, June 30, 2014)
- Incorporating SLR Change in CW Programs (ER 1100-2-8162, December 31, 2013)

About halfway through the review, a teleconference was held with USACE, Battelle, and the Panel so that USACE could answer any questions the Panel had concerning either the review documents or the project. Prior to this teleconference, Battelle submitted 14 panel member questions to USACE. USACE was able to provide responses to all the questions during the teleconference, and was able to provide written responses to all the questions prior to the end of the review.

In addition, throughout the review period, USACE provided documents at the request of panel members. These documents were provided to Battelle and then sent to the Panel as additional information only and were not part of the official review. A list of these additional documents requested by the Panel is provided below.

- Cost Appendix Rev Jul 2014.pdf
- MSCIP DMMP 7-22-14.pdf
- 2009 MSCIP FEIS Volume I All DMMP Measures Considered.pdf
- 2009 MSCIP FEIS ODMDS Site Analysis.pdf
- Economics Appendix 7-22-14.pdf
- MSCIP Eng Appendix Draft 7 22 2014.pdf
- MSCIP Feasibility Report Rev C
- Section 408 Report 7-22-14.pdf.

## A.2 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response form 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. At the end of the review, Battelle summarized the individual comments into a preliminary list of overall comments and discussion points. Each panel member's individual comments were shared with the full Panel.

### A.3 IEPR Panel Teleconference

Battelle facilitated a 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 (this report) and decide which panel member should 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 teleconference, Battelle reviewed each Final Panel Comment with the Panel, including the associated level of significance, and confirmed the lead author for each comment.

### A.4 Preparation of Final Panel Comments

Following the teleconference, Battelle distributed 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 Matagorda Ship Channel 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 a summary email 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 members 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 criteria were used to assign a significance level to each Final Panel Comment:
  1. **High:** There is a fundamental issue within study documents or data that will influence the technical or scientific basis for selection of, justification of, or ability to implement the recommended plan.

2. **Medium/High:** There is a fundamental issue within study documents or data that has a strong probability of influencing the technical or scientific basis for selection of, justification of, or ability to implement the recommended plan.
  3. **Medium:** There is a fundamental issue within study documents or data that has a low probability of influencing the technical or scientific basis for selection of, justification of, or ability to implement the recommended plan.
  4. **Medium/Low:** There is missing, incomplete, or inconsistent technical or scientific information that affects the clarity, understanding, or completeness of the study documents, and there is uncertainty whether the missing information will affect the selection of, justification of, or ability to implement the recommended plan.
  5. **Low:** There is a minor technical or scientific discrepancy or inconsistency that affects the clarity, understanding, or completeness of the study documents but does not influence the selection of, justification of, or ability to implement the recommended plan.
- 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).

Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel's overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. At the end of this process, 12 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 full text of the Final Panel Comments is presented in Section 4.2 of the main report.

## A.5 Conduct of the Public Comment Review

Following the schedule in Table A-1, Battelle received two PDF files containing approximately 15 letters, emails, and individual comments, totaling 48 pages of public comments on the Matagorda Ship Channel project from USACE. Battelle then sent the public comments to the panel members in addition to the following charge question:

1. **Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?**

The Panel produced individual comments in response to the charge question. Each panel member's individual comments for the public comment review were shared with the full Panel. Battelle reviewed the comments to identify any new technical concerns that had not been previously identified during the initial IEPR. After completing its review, the panel members determined that they wanted to bring forward one issue for clarification in the document and subsequently generated one Final Panel Comment that summarized the concern.

## **A.6 Final IEPR Report**

After concluding the review and preparation of the Final Panel Comments, Battelle prepared this final IEPR report on the overall IEPR process and the IEPR panel members' findings. Each panel member and Battelle technical and editorial reviewers reviewed the IEPR report prior to submission to USACE for acceptance.

## **A.7 Comment Response Process**

As part of Task 6, Battelle will enter the 12 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.

# APPENDIX B

Identification and Selection of IEPR Panel Members for the Matagorda Ship Channel Project

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## B.1 Panel Identification

The candidates for the Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) (hereinafter: Matagorda Ship Channel IEPR) Panel were evaluated based on their technical expertise in the following key areas: Civil Works planning, economics, environmental, hydraulic/coastal engineering, and geotechnical engineering. These areas correspond to the technical content of the review documents and overall scope of the Matagorda Ship Channel 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 remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

Candidates were screened for the following potential exclusion criteria or COIs. These COI questions were intended to serve as a means of disclosure in order to better characterize a candidate's employment history and background. Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. Guidance in OMB (2004, p. 18) states,

"...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."

### Panel Conflict of Interest (COI) Screening Questionnaire for the IEPR of the Matagorda Ship Channel Project

1. Previous and/or current involvement by you or your firm in the Section 216 Matagorda Ship Channel, Texas, Draft Environmental Impact Statement (DEIS) and any related studies / projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico particularly along the mid-coast of Texas
2. Previous and/or current involvement by you or your firm in deep-draft navigation studies in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.
3. Previous and/or current involvement by you or your firm in the conceptual or actual design, construction, or operation and maintenance (O&M) of any projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.

## Panel Conflict of Interest (COI) Screening Questionnaire for the IEPR of the Matagorda Ship Channel Project

4. Current employment by the U.S. Army Corps of Engineers (USACE).
5. Previous and/or current involvement with paid or unpaid expert testimony related to Section 216 Matagorda Ship Channel, Texas, DEIS and any related studies / projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.
6. Previous and/or current employment or affiliation with the non-Federal sponsors or any of the following cooperating Federal, state, county, local, and regional agencies, environmental organizations, and interested groups (*for pay or pro bono*):
  - Environmental Protection Agency
  - National Marine Fisheries Service
  - Texas Council on Environmental Quality (TCEQ)
  - Texas Parks & Wildlife Department
  - Texas Water Development Board
  - US Fish & Wildlife Service
  - Friends of Aransas & Matagorda Island
  - Matagorda Bay Foundation
  - Calhoun Port Authority (CPA)
  - Calhoun County Navigation District
  - CPA Port Board
  - Local Chambers of Commerce
7. Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to Matagorda Bay or the Western Gulf of Mexico along the mid-coast of Texas.
8. 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.
9. Previous or current involvement with the development or testing of models that will be used for, or in support of the Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) project.
10. Current firm 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.

## Panel Conflict of Interest (COI) Screening Questionnaire for the IEPR of the Matagorda Ship Channel Project

11. Any previous employment by 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.
12. Any previous employment by USACE as a contractor (either as an individual or through your firm) 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.
13. Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning deep-draft navigation and include the client/agency and duration of review (approximate dates).
14. Pending, current, or future financial interests in Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) related contracts/awards from USACE.
15. Significant portion of your personal or office's revenues within the last three years came from USACE contracts.
16. Significant portion of your personal or office's revenues within the last three years came from CPA contracts.
17. Any publicly documented statement (including, for example, advocating for or discouraging against) related to the Section 216 Matagorda Ship Channel, Texas, DEIS and any related studies / projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.
18. Participation in relevant prior and/or current Federal studies relevant to the Section 216 Matagorda Ship Channel, Texas, DEIS and any related studies / projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.
19. Previous and/or current participation in prior non-Federal studies relevant to the Section 216 Matagorda Ship Channel, Texas, DEIS and any related studies / projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.
20. Has your research or analysis been evaluated as part of the Section 216 Matagorda Ship Channel, Texas, DEIS and any related studies / projects in Matagorda Bay, Port Lavaca, Point Comfort, or the Western Gulf of Mexico, particularly along the mid-coast of Texas.
21. 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? If so, please describe.

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. The term “firm” in a screening question referred to any joint venture in which a firm was involved. It applied to whether that firm served as a prime or as a subcontractor to a prime. Candidates were asked to clarify the relationship in the screening questions.

## 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. Table B-1 provides information on each panel member’s affiliation, location, education, and overall years of experience. 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.

**Table B-1. Matagorda Ship Channel IEPR Panel: Summary of Panel Members**

Name	Affiliation	Location	Education	P.E.	Exp. (yrs)
<b>Civil Works Planning / Economics (Dual Role)</b>					
Donald Ator	Independent Consultant	Baton Rouge, LA	M.S., Economics and Agriculture Economics, M.B.A., Concentration in Finance and Accounting	N/A	40
<b>Environmental</b>					
Craig Vogt	Independent Consultant	Hacks Neck, VA	M.S., Environmental Engineering	N/A	42
<b>Hydraulic/Coastal Engineering</b>					
Michael Giovannozzi	AquaTerra Consulting International	West Palm Beach, FL	M.S., Civil Engineering (Coastal Engineering)	Yes	18
<b>Geotechnical Engineering</b>					
David Bird	Independent Consultant	Carmel, IN	M.S., Geotechnical Engineering	Yes	43

Table B-2 presents an overview of the credentials of the final four members of the Panel and their qualifications in relation to the technical evaluation criteria. More detailed biographical information on the panel members and their areas of technical expertise is given in Section B.3.

**Table B-2. Matagorda Ship Channel IEPR Panel: Technical Criteria and Areas of Expertise**

Technical Criterion	Ator	Vogt	Giovannozzi	Bird
<b>Civil Works Planning/Economics (Dual Role))</b>				
Minimum 10 years of demonstrated experience as a water resources planner for Deep Draft Navigation (DDN) projects	X			
Demonstrated experience with USACE plan formulation process, procedures, and standards, DDN channel improvement projects, and dredged material management plans	X			
Minimum of 15 years demonstrated experience or combined equivalent of education and experience in DDN economics, specifically with bulk and tanker trade	X			
Demonstrated experience in applying USACE procedures and standards for DDN economic analyses and in formulating and evaluating alternative plans for those projects	X			
Knowledge of tools employed for economic analysis, risk analysis, and trade/fleet forecasts	X			
Experience directly working for or with the USACE in applying Principles and Guidelines to Civil Works project evaluations	X			
M.S. degree in a related field	X			
Active participation in related professional societies	X			
<b>Environmental</b>				
15 years of demonstrated experience directly related to water resource environmental evaluation and National Environmental Policy Act (NEPA) compliance for DDN channel improvement and dredged material management projects (i.e., to include open water, ocean disposal, and beneficial use)		X		
Minimum M.S. degree or higher in a related field		X		
Extensive experience in evaluating environmental compliance documents and cultural resources assessments in support of navigation projects		X		
Expert in compliance requirements of environmental laws, policies, and regulations, including the Fish and Wildlife Coordination Act and the Endangered Species Act		X		
<b>Hydraulic/Coastal Engineering</b>				
15 years of demonstrated experience or combined equivalent of education and experience in DDN channel design			X	
M.S. degree in coastal or hydraulic engineering			X	
Familiar with the application of USACE risk and uncertainty analyses			X	

**Table B-2. Matagorda Ship Channel IEPR Panel: Technical Criteria and Areas of Expertise (continued).**

Technical Criterion	Ator	Vogt	Giovannozzi	Bird
Familiar with coastal engineering requirements for feasibility studies (including channel design and effects of navigation channels on currents, sea level rise, sedimentation, and water quality)			X	
Experience in the design and use of dredged material placement areas (open water, ocean disposal, and beneficial use)			X	
Familiar with standard USACE hydrologic and hydraulic computer models and has 5-10 years' experience working with numerical modeling applications for navigation projects			X	
Registered Professional Engineer			X	
<b>Geotechnical Engineer</b>				
Minimum of 15 years' demonstrated engineering experience or combined equivalent of education and experience in geo-civil design and geotechnical evaluation of DDN projects				X
Demonstrated experience related to USACE geotechnical practices for design and construction of DDN channels and dredged material management (i.e., open water, ocean disposal, and beneficial use).				X
Experience in geotechnical risk analysis				X
Active participation in related professional engineering and scientific societies is encouraged				X
M.S. degree or higher in geotechnical engineering				X
Registered Professional Engineer				X

### B.3 Panel Member Qualifications

Detailed biographical information on each panel members' credentials and qualifications and areas of technical expertise is summarized in the following paragraphs.

<b>Name</b>	Donald Ator
<b>Role</b>	Civil Works Planner/Economist
<b>Affiliation</b>	Independent Consultant

Mr. Ator is an independent consultant and serves as Research Associate, Professor, and Undergraduate Advisor in the Department of Agriculture Economics and Agribusiness at Louisiana State University. He earned his M.S. in economics and agriculture economics in 1978 and his M.B.A. with a concentration in finance and accounting in 1984, both from Louisiana State University. Mr. Ator's current research is in

financial resiliency planning for local governments in Louisiana, Texas, Alabama, Mississippi, Florida, Georgia, Kentucky, and Nebraska.

Mr. Ator has 40 years of experience working for 26 USACE districts, first as a full-time employee with USACE Vicksburg District for one year, then in the private sector with a not-for-profit research institute, and later at three architect-engineer firms. He has demonstrated experience related to deep-draft navigation (DDN) for USACE as evidenced by participation in the following relevant studies: Savannah Harbor Expansion Project Economic Analysis, Phase III Benefits Calculation Methodology and Model, Multiport Analysis and Regional Port Analysis, Georgia, USACE, Savannah District; Deep Draft Channel Improvement Economic Analysis, La Quinta Ship Channel, Corpus Christ, Texas, USACE, Galveston District; and Houma Navigation Canal Deepening, Integrated Feasibility Study and Environmental Impact Statement, Houma, Louisiana, USACE, New Orleans District.

Mr. Ator has worked extensively with USACE conducting Civil Works planning/economics studies in accordance with Engineer Regulation (ER) 1105-2-100 and other pertinent guidance, laws, and regulations applicable to the USACE Six-Step Planning Process and Engineer Circular (EC) 1165-2-209 review requirements. Representative studies include the Sensitivity Analysis of Benefit and Cost Evaluation Criteria to Risk and Uncertainty Associated with Study Parameters, Passaic River Basin, New Jersey (USACE New York District) and the Licking River Watershed and Dillon Lake Ecosystem Restoration Project Feasibility Study, Ohio (USACE Huntington District). He has participated in two IEPRs of Federal water resources planning documents justifying construction of Civil Works projects: Grays Harbor, Washington, Navigation Improvement Project (USACE Seattle District) and Sutter Basin Pilot Feasibility Study (USACE Sacramento District).

Mr. Ator's demonstrated proficiency in USACE procedures and standards for DDN economic analyses and in the formulation and evaluation of alternative plans is evidenced by his extensive experience as a Civil Works planner/economist on the following projects: Port of Panama City, Limited Reevaluation Report, Navigation Feasibility Report, Economic Appendix, Florida, USACE, Mobile District; and Projection of Study Area Involvement in Present and Future Petroleum Industry Activities on the Outer Continental Shelf, Channel Deepening Study, Port of Iberia, Louisiana, USACE, New Orleans District.

Mr. Ator has experience working directly for or with the USACE in applying Principles and Guidelines to Civil Works project evaluations through such projects as: Preparation of Project Management Plan for Louisiana Coastal Ecosystem Restoration Study, Mississippi River Gulf Outlet, Louisiana, USACE, New Orleans District; Economic Analysis of Alternate Regulation Plans for the Arkansas River, Oklahoma and Arkansas, USACE, Tulsa District; and Shore Protection Alternative Analysis, Section 222 National Shoreline Erosion Control Demonstration Project, Jefferson County, Texas, USACE, Galveston District.

Mr. Ator is actively involved in related professional engineering and scientific societies, including the Society of American Military Engineers and the American Society of Civil Engineers.

<b>Name</b>	Craig Vogt
<b>Role</b>	Environmental
<b>Affiliation</b>	Independent Consultant

Mr. Vogt is an independent ocean and coastal environmental consultant, focusing on such areas as ecosystem restoration techniques, NEPA and environmental compliance, dredging and dredged material



management, and sediment management for wetlands, shorelines, and coastal restoration. He earned his M.S. in environmental engineering from Oregon State University in 1971.

From 1971 to 2008, Mr. Vogt worked for the U.S. Environmental Protection Agency (EPA), the last 20 years of which was in the Oceans & Coastal Protection Division (OCPD) at EPA Headquarters. His time at EPA provided him extensive experience in environmental, estuarine, and coastal processes, including being responsible for field monitoring in his early years in EPA's Region X Office to measure the environmental impacts of wastewater discharges to the coastal and fresh waters of the Pacific Northwest.

As Deputy Director of OCPD, Mr. Vogt was responsible for implementation of the National Estuary Program, whose goal was, and still is, healthy and productive estuary habitats and ecosystems for the 28 separate NEP programs around the country. Much of the focus was on the restoration of aquatic resources, including beneficially using dredged material for restoration and beach nourishment; restoration activities involved such resources as fish/eelgrass beds and wetlands/marshes, recognizing the influence of point and nonpoint sources of contamination, invasive species, development (including dredging of channels), toxic chemicals, and climate change.

Mr. Vogt has extensive experience in evaluating environmental compliance documents and cultural resources assessments in support of navigation projects. As Deputy Director of OCPD, Mr. Vogt was also responsible for the national implementation of the Ocean Dumping Act for dredged material, including environmental criteria, testing requirements, site designation, and coordination with USACE permitting. The NEPA requirements for developing descriptions of the environmental impacts of a proposed project and its alternatives form the basis for nearly all the work he has been involved in since the late 1980s, as a regulator and as a consultant.

While Deputy Director, Mr. Vogt also served as co-chair of the National Dredging Team, an interagency team established to bring together the Federal agencies involved in dredging and dredged material management. He was involved in facilitating and supporting the operations of the Regional Dredging Teams, which were established to bring state and local government agencies together to move dredging and restoration projects forward. Working with NMFS and USFWS on endangered species and critical habitat was key to proceeding with approval of dredging projects. Also, in that role, great progress was made in understanding—and EPA allowing—placement of clean dredged material in the littoral drift along shorelines, with the objective of rebuilding beaches, mudflats, and coastal wetlands.

Mr. Vogt's experience in water resource environmental evaluation and NEPA compliance for DDN channel improvement and dredged material management projects (i.e., to include open water, ocean disposal, and beneficial use) includes a number of pertinent activities. Mr. Vogt prepared a guidance manual for USACE-HQ Headquarters on tracking beneficial use of dredged material by USACE Districts. The manual categorized beneficial uses, including beach/dune restoration and wetlands/marsh restoration, with the objective of increasing shoreline and ecosystem restoration.

Since his retirement from EPA in 2008, Mr. Vogt has applied his knowledge of ecosystem restoration techniques for the creation of wetlands, beaches, dunes, and oyster reefs in a variety of projects. He provided (and continues to provide) consulting services to USACE under the National Shoreline Management Study, whose objective is to assess the impacts of accretion and erosion on shorelines and coastal environmental resources such as the freshwater wetlands in the Great Lakes. In addition, he was an independent reviewer of the required NEPA documents for a coal transport project on the Columbia River and for the Redwood City proposed dredging project in San Francisco Bay. Mr. Vogt also was an



independent reviewer of the Hudson-Raritan USACE Coastal Restoration Project. For that project, environmental assessments under NEPA were an essential element in understanding the proposed project; these assessments included potential impacts upon historical and cultural resources. Mr. Vogt prepared and was co-author of a USACE Technical Note titled “The Application of Adaptive Management to Ecosystem Restoration Projects” (ERDC TN-EMRRP-EBA-10 April 2012). The Technical Note provided overall guidance on management of ecosystem restoration projects, including conceptual ecological models, uncertainties in ecosystem restoration projects, ecosystem restoration goals, and the use of metrics in monitoring approaches to measure success.

Mr. Vogt is an active member of the Western Dredging Association (WEDA) and its Board of Directors (and several committees), and is Chair of the WEDA Environmental Commission.

<b>Name</b>	Michael Giovannozzi, P.E.
<b>Role</b>	Hydraulic/Coastal Engineer
<b>Affiliation</b>	AquaTerra Consulting International

Mr. Giovannozzi is a coastal engineer and independent consultant with more than 18 years of engineering experience in both the government and private sectors in the fields of coastal and hydraulic engineering, including DDN projects, throughout the United States. He earned a B.S. and an M.S. in civil engineering from the University of Delaware, with a coastal engineering concentration for his graduate degree. He is a registered professional engineer in Washington, Florida, Alabama, Connecticut, Georgia, South Carolina, Texas, North Carolina, New Jersey, and Delaware. He has worked for three years with USACE Philadelphia District (2001-2004), two years with USACE Seattle District (2009-2011), and 13 years in private consulting.

Mr. Giovannozzi has extensive experience designing navigation improvement projects in tidally influenced systems, including channel-deepening projects. In the area of coastal current studies, Mr. Giovannozzi has performed extensive hydrodynamic and sediment transport modeling, morphologic analysis, and engineering assessments for multiple projects to determine expected water levels, tidal exchange, wave conditions, and circulation patterns. While at USACE Philadelphia District, he was the hydraulic engineer for a coastal inlet hydrodynamics study that involved numerical modeling to predict sediment transport potential for several alternative sand borrow-area strategies for a Federal beach fill project near a coastal inlet in Ocean City, New Jersey. Mr. Giovannozzi was the coastal engineer for a dredging/environmental restoration project for an island community located on the Intracoastal Waterway in Palm Beach County, Florida. The work included tidal hydraulic modeling, channel optimization, and dredging cost estimates for hydraulic and mechanic dredging to restore tidal connectivity.

Mr. Giovannozzi is familiar with the application of USACE risk and uncertainty analyses and coastal engineering requirements for feasibility studies (including channel design and effects of navigation channels on currents, sea level rise, sedimentation, and water quality). He has demonstrated experience in DDN channel design. Notably, he was involved in the hydrodynamic modeling and navigation studies of the canals for the World Islands Mega Project in Dubai, United Arab Emirates. The project required a balanced design that allowed for safe navigation of pleasure craft, provided sufficient flow to minimize siltation and improve tidal flow, while also minimizing shoreline erosion. The study included hydrodynamic and sediment transport modeling and determination of safe navigational clearances for vessels. In addition, Mr. Giovannozzi was the lead project engineer for a Section 905(b) Reconnaissance Study that examined the potential need for navigation improvements for the Neah Bay Entrance Channel in

Washington State to enable deeper-draft vessels to use the port for commerce and as a safe harbor of refuge.

Mr. Giovannozzi has specialized experience in subsurface investigations for channel design, dredged material management, and the design of dredged material placement areas (open water, ocean disposal, and beneficial use). He is familiar with both mechanical and hydraulic dredging technologies and has completed the USACE Dredging Fundamentals Course. While at USACE Seattle District, he was the project manager for the outer reach of the Grays Harbor Navigation Channel Maintenance Dredging project and worked with Miami Dade County on several channel- and berth-deepening projects at the Port of Miami. Mr. Giovannozzi recently developed a dredged material management plan (DMMP) for the Panama Canal Authority. The dredge disposal plan addressed best management strategies (including beneficial reuse) for six confined upland and nearshore disposal areas for marina and riverine dredging along the Pacific region of the Panama Canal. The work included a review of subsurface sediments for beneficial reuse, construction of internal dikes, and expansion of the perimeter dikes to optimize storage within the disposal areas.

In addition, Mr. Giovannozzi is familiar with standard USACE hydrologic and hydraulic computer models and has worked with numerical modeling applications for navigation projects for more than 15 years. For example, the USACE numerical wave model (CMS Wave) and circulation model (CMS Flow) were used to assess channel realignment scenarios for the Quillayute Navigation Channel Improvement Study in Washington State. The computer models were used to optimize the channel modification scheme to improve hydraulic efficiency with an aim to reduce future maintenance dredging activities. Recommendations were provided to alter the channel cross section and to rehabilitate a nearby sea dike to optimize the channel flow. Mr. Giovannozzi has also performed wave and circulation modeling for a navigation study to assess the feasibility of deepening the Intracoastal Waterway to accommodate deep-draft megayachts at a yacht repair facility located near the Port of Palm Beach in Palm Beach County, Florida.

Mr. Giovannozzi is an active member of the American Society of Civil Engineers; Coasts, Oceans, Ports, and Rivers Institute; and the Association of Coastal Engineers.

<b>Name</b>	David Bird, P.E.
<b>Role</b>	Geotechnical Engineering
<b>Affiliation</b>	Independent Consultant

Mr. Bird is an engineer and independent consultant specializing in civil/structural/geotechnical/geo-structural engineering, experienced in investigations, geotechnical explorations, analysis, expert witness testimony, forensic engineering, bid preparation, and cost estimating. He earned his M.S. in civil engineering from the University of Illinois (accredited by the Accreditation Board for Engineering and Technology, Inc.), specializing in soil mechanics. He is a registered professional engineer in Illinois, Indiana, Kentucky, Michigan, Virginia, and Wisconsin. He earned his M.S. in civil engineering (soil mechanics and foundation engineering) from the University of Illinois in 1979.

Mr. Bird's areas of expertise include geotechnical explorations, analysis and design, and geo-structural engineering and design. Most recently, he has specialized in slope stability of river banks and slopes and in the review of geotechnical-related design and construction projects, and geotechnical consulting on high-capacity foundations and earth-retention system design and construction. He is experienced in

USACE geotechnical practices for design and construction of DDN channels and dredged material management (open water, ocean disposal, and beneficial use).

Mr. Bird has provided geotechnical risk analyses on such projects as the Yellowwood State Forest dam leakage investigation and the Knox County Dam feasibility study, among others. He is familiar with dam safety and the physical/mechanical and chemical properties that are relevant to large-scale construction in northern climates. He has worked on the design and construction of bridges and large control structures in cold climates on such projects as the geotechnical and structural design of a railroad bridge anchorage system in Hamilton County, Ohio; the design and preparation of construction plans for all excavations associated with a pump station installation in Detroit, Michigan; and the evaluation of water seepage under a concrete spillway and the related design of an inverted filter seepage water collection system at a dam in Nashville, Indiana. He has consulted on numerous geotechnical investigations for bridges over waterways in those climates, and all his dam experience has been in that same geographic and climatological region. He is an active member of the American Society of Civil Engineers.

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# APPENDIX C

Final Charge for the Matagorda Ship Channel IEPR

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## Charge Questions and Guidance to the Panel Members for the Independent External Peer Review (IEPR) of the Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS)

***This is the final Charge to the Panel for the Matagorda Ship Channel IEPR. This final Charge was submitted to USACE as part of the final Work Plan, originally submitted on June 26, 2018.***

### BACKGROUND

This single-purpose, deep-draft navigation (DDN) study (Section 216 review of completed projects) is to assess use of the Matagorda Ship Channel Federal project. The Project Delivery Team (PDT) will identify and document significantly changed physical and economic conditions occurring since project construction and develop recommendations on the advisability of modifying the Matagorda Ship Channel or its operation. Any recommendations will require approval by the U.S. Army Corps of Engineers (USACE) Chief of Engineers. Recommendations will be technically feasible, economically practicable, sound with respect to environmental considerations, and meet the requirements of the Principles and Guidelines. Measures/alternatives investigated to address transportation inefficiencies include:

- No Action
- Widening of the existing DDN channel up to 400 feet
- Deepening of the existing DDN channel up to a depth of -47 feet mean lower low water (MLLW)
- A combination of widening and deepening

It is anticipated that the proposed changes will require Congressional authorization, as the existing channel has been constructed to its authorized dimensions. The deep-draft channel was authorized by the River and Harbor Act of 1958 (Public Law 85-500), House Document 388, 84th Congress, 2nd Session. Authorized and constructed dimensions of the Federal project consist of the following.

Channel Section	Authorized Depth <sup>1</sup> (feet)	Width (feet)	Length
Outer Bar & Jetty Channel	40	300	3.2 miles
Channel to Point Comfort	38	200 – 300	20.9 miles
Approach Channel to Turning Basin	38	200 – 300	1.1 miles
Point Comfort Channel to Turning Basin	38	1,000	1,000 feet
Point Comfort Turning Basin Extensions (North & South)	38	300	1,279 feet

<sup>1</sup>Authorized depth referenced as MLLW

### Port of Port Lavaca-Point Comfort

The Port of Port Lavaca-Point Comfort is located on the Western Gulf of Mexico near the mid-point of the Texas Coast. The port and related industries are part of a massive Texas chemical, refining, and energy delivery complex.

The Matagorda Ship Channel opened to traffic in 1965 and serves hundreds of ships and barges each year. Calhoun Port Authority (CPA) operations include liquid cargo terminals, a dry bulk dock, general

cargo facilities, liquid cargo barge terminals, a multi-purpose dock, and rail service. The CPA operates three liquid cargo ship docks and one dry bulk dock that provide substantial flexibility for loading and unloading chemical, petroleum-related, and other liquid and dry bulk products.

The 1,100-foot liquid product dock has two ship berths and multiple loading arms to accommodate the specific needs of individual commodity shippers, and a dry bulk dock capable of handling handymax-size vessels. A third liquid cargo berth is located at the east end of the multi-use general cargo dock.

The liquid product dock is equipped with generous pipe rack capabilities, remote control firefighting systems, continuous video monitoring, hazardous materials containment systems, and stormwater collection systems. The pier was built such that berths can be deepened when future ship channel improvements are made.

The port's dry bulk dock, identified as the conveyor dock, went into full operation in 2011. This modern, public deep-draft dock was designed primarily for bulk materials unloading. It is capable of handling bulk carriers up to 740 feet in length. The cargo handling system includes a spiral conveyor unloading tower that travels on dock rails to access each cargo hold and feed a continuous conveyor system that extends to nearby industrial sites. Plans are under way to include the handling of liquid products from pipeline to ship/barge, as well as ship-to-barge and barge-to-ship transfers of liquid products.

The CPA provides facilities for handling break bulk, containerized, and heavy-lift cargoes. The general cargo dock can accommodate vessels of up to 750 feet in length. Dock height is 16.7 feet mean low tide (MLT). The terminal includes a 25,000-square-foot dockside warehouse and transit shed. Rail service is available to the rear of the warehouse. Also available are open-storage areas and truck scales. Cargo handling equipment is available. The port also operates a nearby barge dock with outloading conveyor. Direct highway access to the general cargo facilities is via U.S. Highway 59, U.S. Highway 87, Texas 35, and Texas 172.

The port's barge terminal includes six slips that are available to multiple users on a cooperative basis. It is equipped with multiple loading and unloading arms; additional equipment can be added as required to accommodate the specific needs of shippers. There is pipe rack capacity both on the dock and in the landside support area. All barge berths have a 14-foot operating depth and a dock height of 12 feet MLT. West of the barge docks, the port operates a public barge staging area. The area is used for barge mooring before and after cargo transfer operations.

The multi-purpose dock provides port users the capability to handle project cargoes, heavy equipment, roll-on/roll-off, and certain dry bulk shipments moving by ship or by barge. The ship berth can accommodate a variety of general-purpose and specialized ocean-going vessels. The full length of the 711-foot bulkhead is fendered. A 60-foot by 380-foot concrete apron is surrounded by approximately three acres of open-storage area for project staging or cargo consolidation. The Port of Port Lavaca-Point Comfort and adjacent industrial facilities are served by the Point Comfort and Northern Railway, a short-line railroad that connects to the Union Pacific main line at a point 20 miles north of the port's main harbor.

## **Matagorda Ship Channel**

Matagorda Bay (at 28°38' N, 96°15' W) is a major bay on the Texas coast protected from the tides and storms of the Gulf of Mexico by the Matagorda Peninsula. The bay is divided almost equally between Calhoun and Matagorda counties. Matagorda Bay is crossed by the Gulf Intracoastal Waterway (GIWW), as well as by ship channels serving Palacios, Port O'Connor, and Port Lavaca. The Matagorda Ship Channel is the only entry into Matagorda Bay from the Gulf; the channel enters the bay through Cavallo



Pass at the southern end of Matagorda Peninsula. In 1965, USACE constructed the ship channel at a depth of -36 feet MLLW by cutting through the Matagorda Peninsula, which was then reinforced with rock jetties.

Existing channel dimensions create the following transportation inefficiencies:

- Delays due to one-way traffic restriction
- Vessels >105-foot beam width cannot transit the channel
- Vessels with an overall length of 639 feet or greater restricted to daylight-only transits.

Further, the existing turning basin, measuring 1,000 feet by 1,000 feet, limits the size of vessels able to use that project feature. Finally, excessive currents in the entrance channel and cross currents in the bay limit ship draft and options (timing/availability) for transit.

The Tentatively Selected Plan (TSP) for the Section 216 Matagorda Ship Channel Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) consists of deepening the Matagorda Ship Channel to a depth of -47 feet MLLW (+2 feet in the Entrance Channel); widening the channel to 350 feet (the Entrance Channel width would be 600 feet); and increasing the turning basin to 1,200 feet in diameter. Based on the 2018 FR/EIS, TSP implementation would result in the following environmental outlook: no direct impacts on listed species or critical habitat would occur; impacts on 1.5 acres of fresh marsh in confined upland placement areas would occur; mitigation for wetlands would occur in a previously impacted area; channel dredging would potentially impact 130 acres of oyster reef along the channel; mitigation for oysters would occur within the Matagorda Bay system; and natural resource agencies support alternative selection.

According to USACE policy, placement of dredged material associated with construction or maintenance dredging of navigation projects should be accomplished in the least costly manner consistent with sound engineering practices and meeting all Federal environmental requirements. Implementation of the TSP would generate approximately 46.5 million cubic yards (mcy) of new work material and 257.5 mcy of maintenance material over the 50-year span of the project. The subsurface soils in the turning basin and channel consist of soft clay, very stiff to hard clay, and sand. The dredge prism soil classification is based on available boring logs.

The least-cost plan would require the creation of numerous in-bay placement areas, and potentially an onshore placement area. Placement Area (PA) ER3/D is a 539-acre site located along the western shoreline of Dredge Island. This area would be used to contain approximately 3.8 mcy of new work material and 39.5 mcy of future maintenance material. PA P1 would be created south of Alamo Beach on existing agricultural land. The 248-acre P1 placement area would impact 1.5 acres of farmed wetland. This area would contain approximately 1.5 mcy of new work material and 21.1 mcy of future maintenance material. The Matagorda Ship Channel is currently maintained by placing dredged material in unconfined placement areas along the length of the channel, both in the bay and offshore. New PAs are located northwest of the ship channel in Matagorda Bay. PA Sundown Island, a pentagonal site of approximately 442 acres located southeast of GIWW, would be widened to accept both new work and maintenance materials with the 50-year DMMP. PA O5 is a 1,600-acre rectangular open-water placement area located approximately 3 miles offshore and 1,000 feet south of the channel centerline. The Ocean Dredged Material Disposal Sites (ODMDS) would be used for the placement of approximately 12.0 mcy of new work dredged material from Matagorda Bay and Offshore. PA A1 is an 850-acre, rectangular site located south of the Port of Port Lavaca-Point Comfort facilities on existing USACE PAs 18 and 19 composed of upland and open bay bottom. The area is planned to be an upland confined PA located partially on land, but with the majority of the site in open water. PA A1 would be used to contain approximately 70.0 mcy of

future maintenance material only. PA 1 is a 453-acre, rectangular open-water PA located approximately 2 miles offshore and 1,000 feet south of the channel centerline. PA 1 would be used for the placement of approximately 13.6 mcy of maintenance material only from the Entrance Channel over a 50-year period.

## OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) (hereinafter: Matagorda Ship Channel IEPR) in accordance with the Department of the Army, U.S. Army Corps of Engineers (USACE), Water Resources Policies and Authorities' *Review Policy for Civil Works* (Engineer Circular [EC] 1165-2-217, dated February 20, 2018), and the Office of Management and Budget's (OMB) *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 and environmental assumptions and projections, project evaluation data, economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in evaluation of economic or environmental impacts, and any biological opinions” (EC 1165-2-217; p. 39) for the decision 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) who meet the technical criteria and areas of expertise required for and relevant to the project.

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 1165-2-217 (p.41), 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. The review assignments per panel member may vary slightly according to discipline.

Review Documents	No. of Review Pages	Subject Matter Experts			
		Civil Works Planner/Economics	Environmental	Hydraulic/Coastal Engineer	Geotechnical Engineer
Draft Integrated Feasibility Report & Environmental Impact Statement	170	170	170	170	170
Appendix A: Economics	75	75			
Appendix B: Environmental and Cultural Resources	348		348		
Appendix D: Real Estate	52	52	52		
Appendix F: Dredge Material Management Plan	19			19	19
Appendix G - Engineering	194	194		194	194
Appendix G - Engineering Plans	15			15	15
<b>Total Number of Reference Pages</b>	<b>873</b>	<b>491</b>	<b>570</b>	<b>398</b>	<b>398</b>
Supplemental Documents					
Public Comments	50	50	50	50	50
Risk Register	5	5	5	5	5
<b>Total Number of Reference Pages</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>

**Documents for Reference**

- Review Policy for Civil Works (EC 1165-2-217, February 20, 2018)
- Office of Management and Budget’s *Final Information Quality Bulletin for Peer Review* (December 16, 2004)
- Foundations of SMART Planning
- SMART Planning Bulletin (PB 2013-03, July 15, 2013)
- SMART – Planning Overview
- Planning Modernization Fact Sheet.
- USACE Climate Change Adaptation Plan (June 2014)
- Procedures to Evaluate Sea Level Change: Impacts, Responses, Adaptation (ETL 1100-2-1, June 30, 2014)
- Incorporating SLR Change in CW Programs (ER 1100-2-8162, December 31, 2013)

**SCHEDULE AND DELIVERABLES**

This schedule is based on the receipt date of the final review documents and may be revised if review document availability changes. This schedule may also change due to circumstances out of Battelle’s control such as changes to USACE’s project schedule and unforeseen changes to panel member and

USACE availability. As part of each task, the panel member will prepare deliverables by the dates indicated in the table (or as directed by Battelle). All deliverables will be submitted in an electronic format compatible with MS Word (Office 2003).

Task	Action	Due Date
<b>Attend Meetings and Begin Peer Review</b>	Battelle convenes kick-off meeting with USACE	6/7/2018
	Battelle sends review documents to panel members	6/21/2018
	Battelle convenes kick-off meeting with panel members	6/21/2018
	Battelle convenes kick-off meeting with USACE and panel members	6/26/2018
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	6/29/2018
	Battelle participates in the ADM Meeting	TBD
<b>Prepare Final Panel Comments</b>	Panel members complete their review of the documents	7/13/2018
	Battelle provides talking points to panel members for Panel Review Teleconference	7/16/2018
	Battelle convenes Panel Review Teleconference	7/16/2018
	Battelle provides Final Panel Comment templates and instructions to panel members	7/17/2018
	Panel members provide draft Final Panel Comments to Battelle	7/23/2018
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	7/24/2018 - 7/29/2018
	Panel finalizes Final Panel Comments	7/30/2018
<b>Review Public Comments</b>	Battelle receives public comments from USACE	7/5/2018
	Battelle sends public comments to Panel	7/16/2018
	Panel members complete their review of the public comments	7/20/2018
	Battelle and Panel review the Panel's responses to the charge question regarding the public comments	7/23/2018
	Panel drafts Final Panel Comment on public comments, if necessary	7/26/2018
	Panel finalizes Final Panel Comment regarding public comments, if necessary	7/30/2018
<b>Review Final IEPR Report</b>	Battelle provides Final IEPR Report to panel members for review	8/1/2018
	Panel members provide comments on Final IEPR Report	8/3/2018
	Battelle submits Final IEPR Report to USACE*	8/6/2018
	USACE Planning Center of Expertise (PCX) provides decision on Final IEPR Report acceptance	8/13/2018
<b>Comment Response</b>	Battelle inputs Final Panel Comments to Design Review and Checking System (DrChecks) and provides Final Panel Comment response template to USACE	8/15/2018
	Battelle convenes teleconference with USACE to review Comment Response process	8/15/2018
	Battelle convenes teleconference with Panel to review Comment Response process	8/15/2018
	USACE Project Delivery Team (PDT) provides draft Evaluator Responses to USACE PCX for review	8/29/2018

Task	Action	Due Date
	USACE PCX reviews draft Evaluator Responses and works with USACE PDT regarding clarifications to responses, if needed	9/5/2018
	USACE PCX provides draft PDT Evaluator Responses to Battelle	9/6/2018
	Battelle provides draft PDT Evaluator Responses to panel members	9/10/2018
	Panel members provide draft BackCheck Responses to Battelle	9/13/2018
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	9/14/2018
	Battelle convenes Comment Response Teleconference with panel members and USACE	9/17/2018
	USACE inputs final PDT Evaluator Responses to DrChecks	9/24/2018
	Battelle provides final PDT Evaluator Responses to panel members	9/25/2018
	Panel members provide final BackCheck Responses to Battelle	9/28/2018
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	10/3/2018
	Battelle submits pdf printout of DrChecks project file*	10/4/2018
	Contract End/Delivery Date	11/30/2018

\* Deliverables

\*\* Battelle will provide public comments to the Panel after they have completed their individual reviews of the project documents to ensure that the public comment review does not bias the Panel’s review of the project documents.

## CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the decision documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, and 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 decision 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 that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-217).

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 (Project Manager; Jessica Tenzar; [tenzarj@battelle.org](mailto:tenzarj@battelle.org)) or Program Manager (Lynn McLeod; [mcleod@battelle.org](mailto:mcleod@battelle.org)) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager, Lynn McLeod ([mcleod@battelle.org](mailto:mcleod@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 the Project Manager, [tenzarj@battelle.org](mailto:tenzarj@battelle.org) no later than 10 pm ET by the date listed in the schedule above.

## Independent External Peer Review of the Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report (DIFR) and Environmental Impact Statement (EIS)

### Charge Questions and Relevant Sections as Supplied by USACE

1. Are the need for and intent of the decision document clear?
2. Does the decision document adequately address the stated need and intent relative to scientific and technical issues?

**Given the need for and intent of the decision document, assess the adequacy and acceptability of the following:**

3. Project evaluation data used in the study analyses
4. Economic, environmental, and engineering assumptions that underlie the study analyses
5. Economic, environmental, and engineering methodologies, analyses, and projections
6. Models used in the evaluation of existing and future without-project conditions and of economic or environmental impacts of alternatives
7. Methods for integrating risk and uncertainty
8. Formulation of alternative plans and the range of alternative plans considered
9. Quality and quantity of the surveys, investigations, and engineering sufficient for conceptual design of alternative plans
10. Overall assessment of significant environmental impacts and any biological analyses.

#### Further

11. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable
12. Assess the considered and tentatively selected alternatives from the perspective of systems, including systemic aspects being considered from a temporal perspective, including the potential effects of climate change
13. Does information or do concerns provided in the public comments raise any additional discipline-specific technical concerns with regard to the overall report?

#### Specific Technical and Scientific Review Charge Questions

14. Given strong currents (up to 6 knots in the channel and a 4-knot cross current in the Bay), were assessments of vessel operations and navigation adequate?

15. Did the measures/alternatives considered adequately address the offshore bar that forms in the channel (i.e., as a result of the large shoal)?
16. Were the geotechnical and dredged material management plan (DMMP) analyses and conclusions reasonable considering the following:
  - a. All work was performed based on existing data; therefore, additional field studies, such as soil borings, may be required in Preconstruction, Engineering, and Design phase if sufficient data are not available for the final design. Existing data are old, are less technically precise and could contain errors, and are scattered across the projected area.
  - b. Between boring locations in the existing information, it was assumed that depths of material layers changed linearly. In some locations, the boring logs did not show vertically for the depths extending fully to the bottom of the proposed channel. In these instances, it was assumed that the last shown material layer continued to the proposed depth. In areas where there was laterally limited information, it was assumed that the soil conditions were similar to those of the closest available boring log.
  - c. DMMPs had been established previously in the Final Environmental Impact Statement for USACE, dated 2009, and Section 204(f) Feasibility Report for Calhoun Port Authority (CPA), dated 2014. However, all mitigation sites in these DMMPs contained a logistical issue associated with the areas to be dredged compared with non-mitigation sites and resulted in increased project costs. The new low-cost plan was developed with the idea of eliminating the mitigation sites and rearranging the dredge materials from the mitigation sites to the new placement areas (PAs).
  - d. The potential (or candidate) unconfined PAs were proposed to accept additional new work or maintenance material should the PAs (ER3/D, P1, and Sundown Island) have insufficient capacities to receive the dredged material estimated. These potential unconfined PAs consist of PA 14 to PA 16, NP 4 to NP 6, and NP 7 for new work materials and PA 14 to PA 16, OP 8 to OP 10, and OP 7 for maintenance materials, respectively.
  - e. The northern part of PA ER3/D was excavated during initial remedial activities at Lavaca Bay Superfund Site prior to the establishment of the remedial action objectives (RAOs). Sediments on this PA are impacted by mercury with concentrations above the Lavaca Bay Superfund Record of Decision sediment RAO. Dredged sediments will be placed over the area to cover the impacted sediment. Several measures will be employed to remove or reduce the potential disturbance of mercury-impacted sediment.



## **Battelle Summary Charge Questions to the Panel Members<sup>1</sup>**

### **Summary Questions**

17. Please identify the most critical concerns (up to five) you have with the project and/or review documents. These concerns can be (but do not need to be) new ideas or issues that have not been raised previously.
18. Please provide positive feedback on the project and/or review documents.

### **Public Comment Questions**

19. Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?

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<sup>1</sup> Questions 17 through 19 are Battelle-supplied questions and should not be construed or considered part of the list of USACE-supplied questions. These questions were delineated in a separate appendix in the final Work Plan submitted to USACE.

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# APPENDIX D

## Conflict of Interest Form

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David Kaplan  
USACE, Institute for Water Resources  
May 15, 2018  
C-2

**Conflicts of Interest Questionnaire**  
**Independent External Peer Review**  
**Section 216 Matagorda Ship Channel, Texas, Draft Integrated Feasibility Report and  
Environmental Impact Statement**

The purpose of this document is to help the U.S. Army Corps of Engineers identify potential organizational conflicts of interest on a task order basis as early in the acquisition process as possible. Complete the questionnaire with background information and fully disclose relevant potential conflicts of interest. Substantial details are not necessary; USACE will examine additional information if appropriate. Affirmative answers will not disqualify your firm from this or future procurements.

NAME OF FIRM: **Battelle Memorial Institute Corporate Operations**  
REPRESENTATIVE'S NAME: **Jason Jenkins**  
TELEPHONE: **614-424-4873**  
ADDRESS: **505 King Avenue, Columbus, Ohio 43201**  
EMAIL ADDRESS: **jenkins@battelle.org**

I. INDEPENDENCE FROM WORK PRODUCT. Has your firm been involved in any aspect of the preparation of the subject study report and associated analyses (field studies, report writing, supporting research etc.) **No** Yes (if yes, briefly describe):

II. INTEREST IN STUDY AREA OR OUTCOME. Does your firm have any interests or holdings in the study area, or any stake in the outcome or recommendations of the study, or any affiliation with the local sponsor? **No** Yes (if yes, briefly describe):

III. REVIEWERS. Do you anticipate that all expert reviewers on this task order will be selected from outside your firm? **No** **Yes** (if no, briefly describe the difficulty in identifying outside reviewers):

IV. AFFILIATION WITH PARTIES THAT MAY BE INVOLVED WITH PROJECT IMPLEMENTATION. Do you anticipate that your firm will have any association with parties that may be involved with or benefit from future activities associated with this study, such as project construction? **No** Yes (if yes, briefly describe):

V. ADDITIONAL INFORMATION. Report relevant aspects of your firm's background or present circumstances not addressed above that might reasonably be construed by others as affecting your firm's judgment. Please include any information that may reasonably: impair your firm's objectivity; skew the competition in favor of your firm; or allow your firm unequal access to nonpublic information.

**No additional information to report.**

  
\_\_\_\_\_  
Jason Jenkins

5/15/2018  
\_\_\_\_\_  
Date

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Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal

***BATTELLE***

**It can be done**