

# Final Independent External Peer Review Report of the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana



Prepared by  
Battelle Memorial Institute

Prepared for  
Department of the Army  
U.S. Army Corps of Engineers  
Inland Navigation Planning Center of Expertise  
Baltimore District

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## Executive Summary

### Project Background and Purpose

The Chicago Area Waterways System (CAWS) is a network of interconnected waterways in the Chicago area supporting both deep-draft and inland navigation commercial vessel movements. The CAWS consists of the Calumet Harbor and River, Chicago Harbor, Chicago River, Calumet-Saganashkee (Calumet-Sag) Channel, and Chicago Sanitary and Ship Canal (CSSC). Maintenance dredging of Calumet Harbor and River produces an average yearly volume of approximately 50,000 cubic yards of material.

Elevated levels of contaminants (including metals, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons [PAHs]) in the sediment preclude open-lake placement. Currently, dredged sediment is placed in the Calumet Harbor Confined Disposal Facility (CDF). Within the next three years, the CDF will be full, creating the need for the development of a management plan for the material generated through ongoing maintenance dredging. The Calumet-Sag has not been dredged in more than 40 years, as a result sediment has accumulated in the channel, reducing the available draft and channel width. Projected dredging need for the Calumet-Sag is 30,000 cubic yards of material over the next 20 years.

In the development of a Dredged Material Management Plan (DMMP), measures were screened and evaluated including management of the existing CDF to extend its life, vertical expansion of the current CDF, potential new disposal locations, methods to reduce dredging requirements, and potential beneficial uses of the dredged material.

There are a variety of interests in the maintenance of the CAWS, including public and private entities and the citizens of the Chicago Metropolitan Area. The primary public entities are the Illinois International Port District, the Chicago Park District, the Metropolitan Water Reclamation District of Greater Chicago, and the City of Chicago. The City of Chicago Department of Transportation will be the local sponsor for the plan implementation.

### Independent External Peer Review Process

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The U.S. Army Corps of Engineers (USACE) is conducting an Independent External Peer Review (IEPR) of the CAWS DMMP and Integrated Environmental Impact Statement (EIS), Calumet Harbor and River, Illinois and Indiana (hereinafter: CAWS DMMP/EIS IEPR). As a 501(c)(3) non-profit

science and technology organization, Battelle is independent, is free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization 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 was 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: economist, environmental law compliance specialist, and civil design engineer/geotechnical engineer. 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 three-person Panel from this list.

The Panel received electronic versions of the decision documents (565 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. Overall, 11 Final Panel Comments were identified and documented. Of these, one was identified as having high significance, two had medium/high significance, two had medium significance, and six had low significance.

Battelle received public comments from USACE on the CAWS DMMP/EIS (approximately nine pages of comments) and provided them to the IEPR panel members. The panel members were charged with determining if any information or concerns presented in the public comments raised any additional discipline-specific technical concerns with regard to the CAWS DMMP/EIS review documents. After completing its review, the Panel confirmed that no new issues or concerns were identified other than those already covered in the Final Panel Comments.

## 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 CAWS

DMMP/EIS 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 report is well-written, and the document presented the material in a comprehensive and logical approach. However, the Panel identified several elements of the project where additional analysis is needed and where project findings and objectives need to be documented or clarified.

**Economics:** The cost estimates for the economic analysis and cost engineering study were done well. However, the Panel is concerned about the adequacy of the forecasting models used. Information on the actual forecasting models used and the statistical results associated with each model is not included in the DMMP/EIS. The only way to assess the adequacy of the forecasting methodology is to assess the performance of the forecasting models as reflected in the statistical results of the models.

The Panel is also concerned about the use of static demands for commodity groups used for the Calumet Harbor and River forecasts. Projecting static demand for all commodities from 2022-2045 for the Harbor and River forecasts is inconsistent with using the Great Lakes and Mississippi River Interbasin Study (GLMRIS) forecast data for these same commodity groups to generate yearly forecasts out to 2040 for the Calumet-Sag Channel. Historical data do not suggest that traffic demand has been or will be constant over time.

Finally, with regard to the economic analysis, the risk analysis associated with project benefits does not adequately convey the expected range of future project benefits. Holding the estimated project benefits for the majority of commodities constant over time and across risk scenarios effectively treats those estimates as certain, which is not an adequate way to convey uncertainty.

**Environmental:** The DMMP/EIS comprehensively and logically presents information on the years of evaluation of alternatives considered and the change to considering the existing CDF. However, major uncertainties remain regarding the beneficial use plan, because an explicit plan for about 370,000 cubic yards of material (one-third of the material over the next 20 years) has not been fully developed. The DMMP/EIS does not provide supporting data indicating assurance that the material will have a market or the associated costs.

The Panel is also concerned that the DMMP/EIS does not assess risks and impacts from climate change on the future project or from project activities on the climate. The climate change analysis that was included in Appendix H focuses on high-level regional impacts rather than specific vulnerabilities of the Tentatively Selected Plan (TSP). The Panel also found that the environmental justice analysis does not document the benefits of the TSP on environmental and social justice.

**Engineering:** Although most of the engineering analysis was logical and well documented, the Panel noted a few issues that need clarification in the DMMP/EIS. It is unclear how reduction/expansion and site settlement were included in determining the volume estimates for CDF berm construction and confined disposal. Also, the discussion of the properties of previously dredged material within the CDF relative to characteristics of the sediment that will be dredged is confusing since these soils may not appropriately represent the future dredged material density and moisture content. In addition, given the uncertainties in the slope stability parameters and model, consideration should be given to monitoring slope movements during construction.

**Table ES-1. Overview of 11 Final Panel Comments Identified by the CAWS DMMP/EIS IEPR Panel**

No.	Final Panel Comment
<b>Significance – High</b>	
1	
<b>Significance – Medium/High</b>	
2	
3	
<b>Significance – Medium</b>	
4	
5	
<b>Significance – Low</b>	
6	The DMMP/EIS does not document the benefits of the TSP on environmental and social justice.
7	
8	
9	
10	It is unclear whether there is enough space to rehandle/dry and store beneficial use material for Phase 1 berm construction.

**Table ES-1. Overview of 11 Final Panel Comments Identified by the CAWS DMMP/EIS IEPR Panel (continued)**

No.	Final Panel Comment
<b>Significance – Low</b>	
11	The relatively low safety factor for the waterfront CDF slope stability at the end of construction may indicate a risk of excessive deformation given the uncertainties regarding geotechnical parameters and the stability model.

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## LIST OF ACRONYMS

<b>ADM</b>	Agency Decision Milestone
<b>CAWS</b>	Chicago Area Waterways System
<b>CDF</b>	Confined Disposal Facility
<b>CE/ICA</b>	Cost Effectiveness/Incremental Cost Analysis
<b>COI</b>	Conflict of Interest
<b>CSSC</b>	Chicago Sanitary and Ship Canal
<b>D MDF</b>	Dredged Material Disposal Facility
<b>DMMP</b>	Dredged Material Management Plan
<b>DrChecks</b>	Design Review and Checking System
<b>EC</b>	Engineer Circular
<b>EIS</b>	Environmental Impact Statement
<b>EPA</b>	U.S. Environmental Protection Agency
<b>ERDC</b>	Engineer Research and Development Center
<b>ESA</b>	Endangered Species Act
<b>GLMRIS</b>	Great Lakes and Mississippi River Interbasin Study
<b>HEP</b>	Habitat Evaluation Procedure
<b>IEPR</b>	Independent External Peer Review
<b>IWR</b>	Institute for Water Resources
<b>MSE</b>	Mean Squared Error
<b>NEP</b>	National Estuary Program
<b>NEPA</b>	National Environmental Policy Act
<b>O&amp;M</b>	Operations and Management
<b>OCPD</b>	Oceans & Coastal Protection Division
<b>OMB</b>	Office of Management and Budget
<b>PAHs</b>	Polycyclic Aromatic Hydrocarbons
<b>PCBs</b>	Polychlorinated Biphenyls
<b>PDT</b>	Project Delivery Team
<b>USACE</b>	United States Army Corps of Engineers
<b>USFWS</b>	United States Fish and Wildlife Service
<b>TSP</b>	Tentatively Selected Plan
<b>WEDA</b>	Western Dredging Association

## 1. INTRODUCTION

The Chicago Area Waterways System (CAWS) is a network of interconnected waterways in the Chicago area supporting both deep-draft and inland navigation commercial vessel movements. The CAWS consists of the Calumet Harbor and River, Chicago Harbor, Chicago River, Calumet-Saganashkee (Calumet-Sag) Channel, and Chicago Sanitary and Ship Canal (CSSC). Maintenance dredging of Calumet Harbor and River produces an average yearly volume of approximately 50,000 cubic yards of material.

Elevated levels of contaminants (including metals, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons [PAHs]) in the sediment preclude open-lake placement. Currently, dredged sediment is placed in the Calumet Harbor Confined Disposal Facility (CDF). Within the next three years, the CDF will be full, creating the need for the development of a management plan for the material generated through ongoing maintenance dredging. The Calumet-Sag has not been dredged in more than 40 years, as a result sediment has accumulated in the channel, reducing the available draft and channel width. Projected dredging need for the Calumet-Sag is 30,000 cubic yards of material over the next 20 years.

In the development of a Dredged Material Management Plan (DMMP), measures were screened and evaluated including management of the existing CDF to extend its life, vertical expansion of the current CDF, potential new disposal locations, methods to reduce dredging requirements, and potential beneficial uses of the dredged material.

There are a variety of interests in the maintenance of the CAWS, including public and private entities and the citizens of the Chicago Metropolitan Area. The primary public entities are the Illinois International Port District, the Chicago Park District, the Metropolitan Water Reclamation District of Greater Chicago, and the City of Chicago. The City of Chicago Department of Transportation will be the local sponsor for the plan implementation.

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 CAWS DMMP and Integrated Environmental Impact Statement (EIS), Calumet Harbor and River, Illinois and Indiana (hereinafter: CAWS DMMP/EIS IEPR) in accordance with procedures described in the Department of the Army, U.S. Army Corps of Engineers (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, and environmental analyses contained in the CAWS DMMP/EIS 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 CAWS DMMP/EIS 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, and environmental 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 CAWS DMMP/EIS 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 three panel members to participate in the IEPR based on their expertise in the following disciplines: economist, environmental law compliance specialist, and civil design engineer/geotechnical engineer. The Panel reviewed the CAWS DMMP/EIS documents and produced 11 Final Panel Comments in response to 16 charge questions provided by USACE for the review. This charge also included two overview questions and one public comment question added by Battelle, for a total of 19 questions. 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 this Final IEPR Report. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Panel's findings are summarized in Section 4.1; the Final Panel Comments are presented in full in Section 4.2.

## 4. RESULTS OF THE IEPR

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

### 4.1 Summary of Final Panel Comments

The panel members agreed on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2018) in the CAWS DMMP/EIS IEPR review documents. The following summarizes the Panel's findings.

Based on the Panel's review, the report is well-written, and the document presented the material in a comprehensive and logical approach. However, the Panel identified several elements of the project where additional analysis is needed and where project findings and objectives need to be documented or clarified.

**Economics:** The cost estimates for the economic analysis and cost engineering study were done well. However, the Panel is concerned about the adequacy of the forecasting models used. Information on the actual forecasting models used and the statistical results associated with each model is not included in the DMMP/EIS. The only way to assess the adequacy of the forecasting methodology is to assess the performance of the forecasting models as reflected in the statistical results of the models.

The Panel is also concerned about the use of static demands for commodity groups used for the Calumet Harbor and River forecasts. Projecting static demand for all commodities from 2022-2045 for the Harbor and River forecasts is inconsistent with using the Great Lakes and Mississippi River Interbasin Study (GLMRIS) forecast data for these same commodity groups to generate yearly forecasts out to 2040 for the Calumet-Sag Channel. Historical data do not suggest that traffic demand has been or will be constant over time.

Finally, with regard to the economic analysis, the risk analysis associated with project benefits does not adequately convey the expected range of future project benefits. Holding the estimated project benefits for the majority of commodities constant over time and across risk scenarios effectively treats those estimates as certain, which is not an adequate way to convey uncertainty.

**Environmental:** The DMMP/EIS comprehensively and logically presents information on the years of evaluation of alternatives considered and the change to considering the existing CDF. However, major uncertainties remain regarding the beneficial use plan, because an explicit plan for about 370,000 cubic yards of material (one-third of the material over the next 20 years) has not been fully developed. The DMMP/EIS does not provide supporting data indicating assurance that the material will have a market or the associated costs.

The Panel is also concerned that the DMMP/EIS does not assess risks and impacts from climate change on the future project or from project activities on the climate. The climate change analysis that was included in Appendix H focuses on high-level regional impacts rather than specific vulnerabilities of the Tentatively Selected Plan (TSP). The Panel also found that the environmental justice analysis does not document the benefits of the TSP on environmental and social justice.

**Engineering:** Although most of the engineering analysis was logical and well documented, the Panel noted a few issues that need clarification in the DMMP/EIS. It is unclear how reduction/expansion and site

settlement were included in determining the volume estimates for CDF berm construction and confined disposal. Also, the discussion of the properties of previously dredged material within the CDF relative to characteristics of the sediment that will be dredged is confusing since these soils may not appropriately represent the future dredged material density and moisture content. In addition, given the uncertainties in the slope stability parameters and model, consideration should be given to monitoring slope movements during construction.

## 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

### Basis for Comment

### Significance – High

### Recommendations for Resolution

1. Explain the level of disaggregation for all forecast models (i.e., explain whether each commodity group has a single forecast model for the entire group or whether each commodity within a commodity group has its own forecast model).
2. Include an equation representing the forecasting models estimated using the Microsoft Excel Forecast function.

### Final Panel Comment 1

3. Provide t-stats, F-stats, Mean Squared Error (MSE), and R-squared associated with each commodity forecast model.
4. Describe the data used for the growth projections of aggregates, grains, chemicals, and iron/steel commodities.
5. Explain why the data used for those projections are considered accurate.

## Final Panel Comment 2

### Basis for Comment

### Significance – Medium/High

### Recommendations for Resolution

1. Generate yearly forecasts for the Calumet Harbor and River for each commodity group out to 2040.
2. Utilize the forecasted growth rates for each commodity group from the GLMRIS for the Calumet Harbor and River forecasts if new forecasting models cannot be developed.

### Final Panel Comment 3

#### Basis for Comment

#### Significance – Medium/High

Because the risk analysis does not convey the level of uncertainty related to benefit and cost estimates, the analysis is incomplete, and the selection of the recommended plan is not adequately

#### Recommendation for Resolution

1. Generate 90% confidence intervals for all commodity groups and use those confidence intervals to establish upper and lower bounds for the risk analysis. Do this for the Calumet Harbor and River benefits as well as the Calumet-Sag Channel benefits.

## Final Panel Comment 4

### Basis for Comment

Beneficial use of Calumet Harbor dredged material is a key part of the TSP. However, this aspect of the TSP was not supported by data indicating assurance that the material will have a market and what it will cost. This uncertainty seems to be a big risk for about one-third of the dredged material over the next 20 years. This risk is confirmed in the DMMP/EIS (page 69):

“Where beneficial use is part of the Base Plan, it shall be treated as a general navigation O&M component. Beneficial uses which are not part of the Base Plan shall be considered separable elements of the management plan and will be pursued in accordance with guidance implementing other available authorities. However, even though funded from different sources, the beneficial use planning effort must be pursued in conjunction with the overall management plan effort to assure the timely availability of dredged material for the beneficial use project. The beneficial use project sites must be available to meet maintenance dredging disposal needs.”

The DMMP/EIS considers the risk of not finding buyers for the Calumet Harbor dredged material to be low because local demand for these types of materials is high and because an agreement is in development between USACE and the co-sponsors. However, the Panel believes that more effort is needed to secure locations for beneficial use before final decisions are made. Appendix C, page 20, states: “It is recommended that coordination begin with the State of Illinois to define the testing requirements necessary to make a final determination of the material suitability.” This statement clearly reflects the fact that some of the dredged material from Calumet Harbor does not yet have a home.

Costs of handling beneficial use of dredged material are not included in the cost estimates for any of the facilities included in the final array of alternatives. The dredged material is being treated as a commodity and should result in values that offset dredging and handling costs. Therefore, the DMMP/EIS should include a market analysis for the dredged materials, including 1) costs to the buyer of Calumet Harbor dredged materials, and 2) the current and future anticipated market for the dredged material. The analysis should also show that the cost of moving the Calumet Harbor dredged material from the dredged material disposal facility (DMDF) to the end use is competitive.

The DMMP/EIS and Appendix C, Environmental Engineering Report, conclude that Calumet Harbor sediment can be used without confinement—that is, that the sediment should be suitable for beneficial use. The analysis in Appendix C is not questioned, but several statements throughout the DMMP/EIS give pause to use of the material in unconfined situations.

- More testing may be needed to confirm that mercury is not in a form that poses risks to human health. In Appendix C, the 2010 report (page 19) states:

“It is unlikely that the mercury at the site is elemental mercury.”

## Final Panel Comment 4

### Significance – Medium

370,000 cubic yards of sediment from Calumet Harbor do not have an explicit plan for use, and the EIS assumes that the commodity of dredged material will be competitive with other sources of sediment for the end uses specified.

### Recommendations for Resolution

1. Prepare a market analysis for supply and demand for dredged material from Calumet Harbor, ensuring that it is competitive with other sources of sediment for similar purposes.
2. Conduct further analyses of the environmental quality of the Calumet Harbor sediments to ensure that the end uses specified (e.g., brownfields and roadbeds) are available.
3. Determine whether Calumet Harbor sediments meet regulatory criteria for use on recreational parkland such as athletic fields.

## Final Panel Comment 5

### Basis for Comment

Appendix H, Climate Change Assessment, assesses the impacts of climate change at a high level, but it does not address specific vulnerabilities of the TSP. Nine pages are devoted to the knowns and mostly unknowns about climate change in the Great Lakes (e.g., precipitation and air temperatures). One paragraph (bottom of page 3) is the extent of the analysis of possible effects on the TSP, and except for the last sentence, it is written without reference to the Calumet River and Harbor dredging and DMMP/EIS:

“Climate changes can have a direct impact on dredging. Increased precipitation and flooding cause higher erosion rates, sediment transport rates, and combined sewer overflows. Dredging will continue to be an important activity in the future to maintain commercial waterways and it is possible that dredging requirements may increase as a result of increased flooding and erosion resulting in increased sedimentation. Changes in water levels also could impact dredging requirements. Higher levels could potentially reduce dredging needs while lower levels could increase the need for dredging. Lake levels would have a direct impact on the Calumet Harbor and River but levels on the Chicago River, CSSC and Cal-Sag channel are all maintained at a specific elevation through the use of lakefront controlling works and downstream sluice gate operations.”

The Climate Change Assessment (Appendix H) does not explicitly assess and estimate possible effects on the TSP. In fact, the estimates of vulnerability in the assessment are for 2050 and 2085, but the project’s performance only goes until 2046. There is no assessment of what DMDF design parameters are needed to combat issues related to climate change, such as the vulnerability to erosion and damage to the existing CDF walls or to the new berm walls from the higher lake levels, potentially increased number and intensity of storms, increased rainfall, or higher energy waves reaching the DMDF.

There are no discussions of contingency plans if the assumptions regarding climate change are incorrect. For example, many have predicted that climate change will result in lower water levels for the Great Lakes. The DMMP/EIS does not explicitly consider the impacts of increased dredging due to lower lake and river levels, such as those experienced during the period of 2000 to 2015 when water levels were well below annual averages. Appendix H does not address the possibility that the capacity of the DMDF will be exhausted earlier than designed because of increased dredging from lower river levels.

With regard to impacts of project activities on the climate, there is no analysis of greenhouse gas emissions associated with dredging or placement in the DMDF. It is not expected that dredging and placement activities would be a serious source of emissions, but they should be addressed to clarify that greenhouse gas emissions under this project would not reach undesirable levels. In addition, greenhouse gas emissions under the no action alternative and the TSP are not compared (e.g., the no action alternative says road traffic would increase for trucks and barge waterway traffic). The

## Final Panel Comment 5

### Significance – Medium

The effects of climate change on the integrity of the DMDF could result in major costs in maintenance and repair of the DMDF. The capacity of the DMDF could also be prematurely exhausted if lake and river water levels were low for long periods of time.

### Recommendations for Resolution

1. Explicitly assess and estimate possible effects on the TSP from climate change, including the effects of lake levels, waves, and increases in rainfall events and their intensity upon the CDF or new berm walls, as well as the effects of lower water levels on dredging quantities.
2. Provide a detailed analysis regarding the possible impacts resulting from the generation of greenhouse gases under the TSP and the alternatives, including the no action alternative.

## Final Panel Comment 6

### Basis for Comment

The analysis in Appendix K, Environmental Justice Materials, includes comprehensive information identifying low-income and minority populations in the area. The analysis essentially concludes that local residents would benefit from less traffic and removal of contaminants from the river under the TSP. However, the conclusion was presented only in general terms; the DMMP/EIS notes that the TSP is farthest from the low-income and minority populations. The analysis seems to assume that these populations would experience no impacts simply because of their distance from project activities.

There is no detailed analysis of environmental or social issues that could impact low-income and minority populations of the upland sites or the TSP. There is no presentation of the potential pathways of exposure from the upland sites or from the TSP to nearby neighborhoods and residents. There is no assessment of the potential for airborne release of volatile contaminants during the drying operations of contaminated sediments at the DMDF, or from dredging operations in the river. There is no assessment of the potential for resuspension of contaminants into the water column potentially impacting aquatic life and human health through fish consumption. In addition, there is no analysis of related issues such as the potential for creation of dust (which could be suspected of containing contaminants), or other factors such as noise. The conclusion (page 109 of the DMMP/EIS) that “No significant adverse impacts to the human and natural environment are anticipated as a result of constructing a DMDF at any of the alternative sites” is not questioned by the Panel, but a detailed analysis to support that conclusion is not presented.

The bottom paragraph on pages 109-110 of the DMMP/EIS misses the point of an environmental justice assessment. The first sentence is particularly in error as the basis of an environmental justice evaluation.

“Construction of the facility may have minimal short-term impacts to residents, but *these impacts would be the same regardless of race or income* (emphasis added). No significant adverse impacts to the human and natural environment are anticipated as a result of constructing a DMDF at any of the alternative sites. Therefore, no minority or low-income populations would be exposed to disproportionately high adverse human health impacts or environmental effects.”

The DMMP/EIS (page 109) states: “For the no action alternative, no construction will occur and there will be no impacts to socioeconomic/environmental justice.” This is an opportunity to explain that without the project (i.e., under the no action alternative), environmental and social impacts will occur to the low-income and minority populations in those nearby communities. By quantifying the estimates of increased truck and barge traffic, along with their associated emissions and safety issues, which would result if the Calumet River and Harbor are not dredged, the analysis can show that the project will have positive attributes.

On the last page of the Executive Summary, under Unresolved Issues and Areas of Controversy, the summary of environmental justice is written in such a manner that causes one to wonder if an analysis

## Final Panel Comment 6

### Significance – Low

While clarification and further analysis of social and environmental justice concerns are needed, the additional analyses will not impact the selection of the TSP; in fact, further evaluation will enhance the conclusions in the selection of the TSP.

### Recommendation for Resolution

1. Expand the environmental justice evaluation to provide a detailed analysis of potential pathways of exposure and possible impacts of the four upland sites and the TSP.

## Final Panel Comment 6

2. Provide details of potential impacts to the local communities under the no action alternative, including such impacts as increased barge traffic and emissions, added truck traffic, and safety issues.
3. Edit the misleading statement on page 109 to clarify that these impacts would be the same regardless of race or income.
4. Discuss the environmental risks avoided by selection of the TSP instead of selecting one of the four upland sites, showing the relative positive contributions of the selection of the TSP.
5. Explain the methodology in Tables 5 and 6 of Appendix K such that the reader understands how household income is related to the percent of individuals below the poverty line.

## Final Panel Comment 7

### Basis for Comment

### Significance – Low

### Recommendations for Resolution

1. Provide additional details regarding how reduction/expansion and settlement were accounted for in the volume estimates in Appendix E and Appendix F.
2. Discuss the possible impacts on project cost effectiveness associated with the uncertainty of the volume of beneficial use material for berm construction and available volume for confined disposal.

## Final Panel Comment 8

### Basis for Comment

### Significance – Low

### Recommendation for Resolution

1. Modify the description of the dredged material physical properties to address grain size, plasticity, and organic content, separate from in-situ channel and existing CDF moisture content/density.

## Final Panel Comment 9

### Basis for Comment

### Significance – Low

### Recommendations for Resolution

1. Provide additional data regarding the physical properties of the in-situ materials within the channel to be dredged, if available.
2. Summarize any additional investigations of the physical properties of the dredged material that will be conducted prior to disposal.

**Final Panel Comment 10**

**Basis for Comment**

**Significance – Low**

**Recommendation for Resolution**

1. Provide a more detailed discussion of rehandling/drying and stockpiling operations for Phase 1 berm construction.

## Final Panel Comment 11

### Basis for Comment

### Significance – Low

### Recommendation for Resolution

1. Include the scope and cost of a slope monitoring program to be implemented during construction in the final design and cost estimate.

## 5. REFERENCES

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

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

USACE (2018). Water Resources Policies and Authorities: Review Policy for Civil Works. Engineer Circular (EC) 1165-2-217. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. February 20.

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# APPENDIX A

IEPR Process for the CAWS DMMP/EIS 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 CAWS DMMP/EIS IEPR. Due dates for milestones and deliverables are 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 April 18, 2019. 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 28, 2019. 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 CAWS DMMP/EIS IEPR**

Task	Action	Due Date
1	Award/Effective Date	6/3/2019
	Review documents available	4/18/2019
	Public comments available	8/8/2019
	Battelle submits draft Work Plan <sup>a</sup>	6/7/2019
	USACE provides comments on draft Work Plan	6/14/2019
	Battelle submits final Work Plan <sup>a</sup>	6/21/2019
2	Battelle submits list of selected panel members <sup>a</sup>	6/10/2019
	USACE confirms the panel members have no COI	6/20/2019
3	Battelle convenes kick-off meeting with USACE	6/6/2019
	Battelle convenes kick-off meeting with panel members	7/1/2019
	Battelle convenes kick-off meeting with USACE and panel members	7/2/2019
4	Panel members complete their individual reviews	7/23/2019
	Panel members provide draft Final Panel Comments to Battelle	8/2/2019
	Battelle sends public comments to panel members for review	8/12/2019
	Panel confirms no additional Final Panel Comment is necessary with regard to the public comments	8/13/2019
	Panel finalizes Final Panel Comments	8/20/2019
5	Battelle submits Final IEPR Report to USACE <sup>a</sup>	8/22/2019
6 <sup>b</sup>	Battelle convenes Comment Response Teleconference with panel members and USACE	10/10/2019
	Battelle submits pdf printout of DrChecks project file <sup>a</sup>	10/28/2019
	Agency Decision Milestone (ADM) meeting <sup>c</sup>	TBD
	Contract End/Delivery Date	5/20/2019

<sup>a</sup> Deliverable.

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

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

At the beginning of the Period of Performance for the CAWS DMMP/EIS IEPR, Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., 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
Main Report and Integrated EIS	177
Appendix B – Economic Analysis	35
Appendix E - Civil Appendix	21
Appendix H – Climate Change Draft	13
Appendix J – 404b1 Evaluation	14
<b>Total number of pages reviewed</b>	<b>565</b>

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

Supplemental Information <sup>a</sup>	No. of Review Pages
Appendix B2 – Attachment 2 Calumet Sag Traffic Demand Forecast	22
Appendix D - Geotechnical Appendix (pages 26-468)	443
Site Selection Appendix	75
<b>Total number of pages of supplemental information provided</b>	<b>2,333</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.

- 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
- Feasibility Study Milestones (PB 2017-01, January 20, 2017)
- SMART – Planning Overview
- USACE Planning Modernization Summary
- USACE Climate Change Adaptation Plan (June 2014)

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 eight panel member questions to USACE. USACE was able to provide responses to most of the questions during the teleconference and provided written responses to all the questions prior to the end of the review.

## 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 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 CAWS DMMP/EIS 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 were used as criteria for assigning 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, 11 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 a pdf file containing nine pages of public comments on the CAWS DMMP/EIS 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. Upon review, Battelle determined and the Panel confirmed that no new issues or concerns were identified other than those already covered in the Final Panel Comments.

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

After concluding the review and preparation of the Final Panel Comments, Battelle prepared a Final IEPR Report (this document) 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 11 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 CAWS  
DMMP/EIS Project

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## B.1 Panel Identification

The candidates for the Chicago Area Waterways System (CAWS) Dredged Material Management Plan (DMMP) and Integrated Environmental Impact Statement (EIS), Calumet Harbor and River, Illinois and Indiana (hereinafter: CAWS DMMP/EIS IEPR) Panel were evaluated based on their technical expertise in the following key areas: economist, environmental law compliance specialist, and civil design engineer/geotechnical engineer. These areas correspond to the technical content of the review documents and overall scope of the CAWS DMMP/EIS 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 three 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 conflicts of interest (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 U.S. Army Corps of Engineers (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.”

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

### Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana

1. Previous and/or current involvement by you or your firm in the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana (hereinafter: CAWS DMMP/EIS) and related projects.
2. Previous and/or current involvement by you or your firm in deep draft navigation or dredging in the area around Calumet Harbor and River.

## Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana

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 Calumet Harbor, Calumet River, or related projects.
4. Current employment by the USACE.
5. Previous and/or current involvement with paid or unpaid expert testimony related to Calumet Harbor or Calumet River.
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*):
  - City of Chicago
  - Chicago Parks District
  - Chicago Department of Transportation
  - Illinois International Port District.
7. Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to the area around Calumet Harbor and Calumet River.
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 Chicago District.
9. Previous or current involvement with the development or testing of models that will be used for, or in support of the CAWS DMMP/EIS project.
 

Note that models developed for this project include: USACE Regional Economic System (RECONS); Great Lakes Systems Analysis of Navigation Depths (GL-SAND) model; Cal-Sag Shoaling Impact Tool (C-SSIT); LTFATE SEDZLJ
10. Current firm involvement with other USACE projects, specifically those projects/contracts that are with the Chicago 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 Chicago District. Please explain.
11. Any previous employment by USACE as a direct employee, notably if employment was with the Chicago District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.

## Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana

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 Chicago 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 contracts/awards from USACE related to the CAWS DMMP/EIS project.
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 City of Chicago and Chicago Park District contracts.
17. Any publicly documented statement (including, for example, advocating for or discouraging against) related to the CAWS DMMP/EIS project.
18. Participation in relevant prior and/or current Federal studies related to the CAWS DMMP/EIS project.
19. Previous and/or current participation in prior non-Federal studies related to the CAWS DMMP/EIS project.
20. Has your research or analysis been evaluated as part of the CAWS DMMP/EIS project?
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.

### 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. One panel member held a dual role serving as both the civil design engineer and geotechnical engineer. 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. CAWS DMMP/EIS IEPR Panel: Summary of Panel Members**

Name	Affiliation	Location	Education	P.E.	Exp (yrs)
<b>Economics</b>					
Jeff Mullen	Independent consultant	Athens, GA	Ph.D., Applied Economics	N/A	24
<b>Environmental Law Compliance</b>					
Craig Vogt	Independent consultant	Hacks Neck, VA	M.S., Environmental Engineering	N/A	47
<b>Civil Design Engineering / Geotechnical Engineering (Dual Role)</b>					
R. William Rudolph	Independent consultant	Tahoe City, CA	M.S., Civil/Geotechnical Engineering	Yes	41

Table B-2 presents an overview of the credentials of the final three 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. CAWS DMMP/EIS IEPR Panel: Technical Criteria and Areas of Expertise**

Technical Criterion	Mullen	Vogt	Rudolph
<b>Economist</b>			
Minimum 15 years of demonstrated experience in economics and planning			
M.S. degree or higher in economics	X		
Experience related to economic models and studies related to inland navigation	X		
<b>Environmental Law Compliance</b>			
Have a biological or environmental background that is familiar with the project area and environmental impact analysis and mitigation		X	
		X	
		X	
		X	
Expertise in the social and environmental justice requirements of the NEPA process and analysis		X	
<b>Civil Design Engineering / Geotechnical Engineering (Dual Role)</b>			
Registered professional engineer or geologist			X
Minimum of 10 years of experience in cost engineering, civil design, and geotechnical engineering			X
M.S. or higher in engineering			X
Extensive experience in cost estimating practices for construction projects and civil design procedures			X
Familiarity and experience in working with subsurface soil classifications and stability analysis as well as settlement and seepage properties			X

### B.3 Panel Member Qualifications

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

<b>Name</b>	<b>Jeff Mullen, Ph.D.</b>
<b>Role</b>	<b>Economist</b>
<b>Affiliation</b>	<b>Independent Consultant</b>

Dr. Mullen is an associate professor in the Department of Agricultural and Applied Economics at the University of Georgia, specializing in water resource, natural resource, and environmental economics. He earned his Ph.D. in Agricultural and Applied Economics/Natural Resource Economics from Virginia Polytechnic Institute and State University in 1999. He has over 24 years of experience conducting numerous studies in the field of environmental and natural resources economics and has taught graduate courses in environmental and natural resource economics and econometrics. He is familiar with large, complex Civil Works projects with high public and interagency interests and has served on USACE IEPR panels as an economist for both the Lock and Dam 22 Fish Passage Project, Hannibal, Missouri, and Kissimmee River Restoration Project, Kissimmee, Florida. Dr. Mullen is exceptionally qualified to evaluate the appropriateness of cost effectiveness/incremental cost analysis (CE/ICA) applied to dollar costs and ecosystem restoration. In addition to the experience described above, he has taught theory and application of the techniques used by USACE to estimate National Economic Development, Environmental Quality, Regional Economic Development, and Other Social Effects benefits. He has detailed knowledge of USACE benefit and cost calculations for ecosystem restoration, agricultural production, urban flood damage, transportation, and recreation. In addition, both IEPRs that Dr. Mullen participated in required the extensive application of CE/ICA. He has detailed knowledge of the Institute for Water Resources (IWR) Planning Suite, the USACE tool for CE/ICA, utilizing the program in his Water Resource Economics course to illustrate the complexity of water management decisions and incremental cost analysis. He has coauthored numerous peer-reviewed articles concerning economic analyses and impacts related to municipal, wastewater, irrigation, and water impoundment projects and has been a contributing author to numerous publications concerning environmental economics and evaluation, economic modeling, and price analysis. His textbook "Water Resource Economics" (Routledge Press) is forthcoming. Dr. Mullen is a member of the American Agricultural Economics Association and served as President of the Southern Natural Resource Economics Committee.

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

Mr. Vogt is an independent ocean and coastal environmental consultant, focusing on such areas as ecosystem restoration techniques, National Environmental Policy Act (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 (NEP), the goal of which 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 included improving the condition of habitat such as fish and eelgrass beds and wetlands/marshes, as well as 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 of the work Mr. Vogt 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, under the Clean Water Act and the Ocean Dumping Act. 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 the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on endangered species and critical habitat was a 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 deep-draft navigation 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-Headquarters on tracking the beneficial use of dredged material by USACE Districts. The manual categorized beneficial uses, which included such categories as beach / dune restoration and wetlands / marsh restoration, with the objective of increasing shoreline and ecosystem restoration.

Since his retirement from the EPA in 2008, Mr. Vogt has used his knowledge of ecosystem restoration techniques for 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, the objective of which 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, the Matagorda Navigation Dredging Project in Texas, and 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 which environmental assessments under NEPA were a very important element in understanding the proposed project; these assessments included potential impacts to historical and cultural resources, as well as social and environmental justice concerns. Mr. Vogt assisted Environment Canada in the preparation of its contaminated sediments management manual, to be used for remediation of Canadian Areas of Concern in the Great Lakes. Mr. Vogt prepared and was co-author of the 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), serving on its Board of Directors and on several committees; is Chair of the WEDA Environmental Commission; and in 2019 was awarded WEDA’s Lifetime Achievement Award.

<b>Name</b>	<b>R. William Rudolph, P.E., G.E.</b>
<b>Role</b>	<b>Civil Design Engineering / Geotechnical Engineering (Dual Role)</b>
<b>Affiliation</b>	<b>Independent Consultant</b>

Mr. Rudolph is an independent, licensed P.E., G.E., and Principal Engineer with over 41 years of experience on a wide variety of geotechnical engineering projects throughout the western United States. He earned his M.S. degree in geotechnical engineering from the University of California at Berkeley in 1978 and is an active member of the American Society of Civil Engineers and the Coasts, Oceans, Ports, and Rivers Institute.

Mr. Rudolph has project experience with large river, dredging, and other Civil Works projects with high levels of public and interagency interest. These projects include the harbor dredging projects at the Ports of Oakland, Richmond, and San Francisco. He has supervised explorations for geotechnical and environmental characterization, evaluated the effects of harbor deepening on shoreline/marine structure stability, and consulted on alternatives for the transportation, handling, and disposal/reuse of dredge materials. These projects including the Hamilton Wetland Restoration and the Oakland Inner Harbor Shallow Water Habitat projects in the USACE San Francisco District. The geotechnical design of the projects involved in-water and upland dredge material placement; stability analysis of containment levees, sheet pile walls, and submerged rock sills and weirs; and levee and marsh plain settlement/stability analysis.

Mr. Rudolph is experienced in urban levees, floodwalls, and channel structures along large river systems. He has worked on riverine projects on the American, Sacramento, and San Joaquin Rivers near Sacramento, California, and projects on the Mississippi River in Illinois, Missouri, and New Orleans, Louisiana. He has consulted on projects performing geotechnical evaluation and geo-civil design for all phases of flood risk management, channel widening, and dredging projects. He is currently principal consultant to the Marin County Flood Control and Water Conservation District on the evaluation of Corte Madera Creek and levee system in the San Francisco Bay Area, California. The Corte Madera Creek project is in a dense urban area and will involve a wide variety of improvements, including tidal gates,

levee raises, flood walls, and channel dredging to reduce flood risks. The project includes developing project alternatives and cost estimates for future planning purposes.

Mr. Rudolph is familiar with and has demonstrated experience related to USACE geotechnical and civil design practices associated with dredging, flood management channels, construction, and cost estimating. He has managed numerous geotechnical investigations and participated in design teams for USACE projects as well as local projects that have applied USACE practices.

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# APPENDIX C

Final Charge for the CAWS DMMP/EIS IEPR

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## Charge Questions and Guidance to the Panel Members for the Independent External Peer Review (IEPR) of the Chicago Area Waterways System (CAWS) Dredged Material Management Plan (DMMP) and Integrated Environmental Impact Statement (EIS), Calumet Harbor and River, Illinois and Indiana

***This is the final Charge to the Panel for the CAWS DMMP/EIS IEPR. This final Charge was submitted to USACE as part of the final Work Plan, originally submitted on June 21, 2019. The dates and page counts in this document have not been updated to match actual changes made throughout the project.***

### BACKGROUND

The Chicago Area Waterways System (CAWS) is a network of interconnected waterways in the Chicago area supporting both deep-draft and inland navigation commercial vessel movements. The CAWS is comprised of Calumet Harbor and River, Chicago Harbor, Chicago River, the Calumet-Sag, and the Chicago Sanitary and Ship Canal. Maintenance dredging of Calumet Harbor and River produces an average yearly volume of approximately 50,000 cubic yards of material.

Elevated levels of contaminants including metals, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in the sediment preclude open-lake placement of some of the material. Currently, dredged sediment is placed in the Calumet Harbor Confined Disposal Facility (CDF). Within the next three years the CDF will be full, creating the need for the development of a management plan for the material generated through ongoing maintenance dredging. The Calumet-Sag has not been dredged in more than 40 years, but sediment has accumulated in the channel, reducing the available draft and channel width. Projected dredging need for the Calumet-Sag is 30,000 cubic yards of material over the next 20 years.

In the development of a Dredged Material Management Plan (DMMP), measures were screened and evaluated that include management of the existing CDF to extend its life, vertical expansion of the current CDF, potential new disposal locations, measures to reduce dredging requirements, and an assessment of potential beneficial uses of the dredged material. As a preliminary estimate, the recommended plan is expected to cost approximately \$32,000,000.

There are a variety of interests in the maintenance of the CAWS, including public and private entities and the citizens of the Chicago Metropolitan Area. The primary public entities are the Illinois International Port District, the Chicago Park District, the Metropolitan Water Reclamation District of Greater Chicago, and the City of Chicago. The City of Chicago Department of Transportation will be the local sponsor for the plan implementation.

### OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana (hereinafter: CAWS DMMP/EIS) 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's) *Final Information Quality Bulletin for Peer Review* (December 16, 2004). Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

The purpose of the IEPR is to “assess the adequacy and acceptability of the economic 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 for the panel members may vary slightly according to discipline.

Review Documents	No. of Review Pages	Subject Matter Experts		
		Economist	Environmental Law Compliance Specialist	Civil Design Engineer/ Geotechnical Engineer
Main Report and Integrated EIS	177	177	177	177
Appendix B – Economic Analysis	35	35		
Appendix E - Civil Appendix	21			21

Review Documents	No. of Review Pages	Subject Matter Experts		
		Economist	Environmental Law Compliance Specialist	Civil Design Engineer/ Geotechnical Engineer
Appendix H – Climate Change Draft	13		13	
Appendix J – 404b1 Evaluation	14		14	
<b>Total Number of Review Pages</b>	<b>565</b>	<b>347</b>	<b>349</b>	<b>358</b>
Supplemental Information*				
Appendix B2 – Attachment 2 Calumet Sag Traffic Demand Forecast	22	22		
Appendix D - Geotechnical Appendix (pages 26-468)	443			443
Site Selection Appendix	75	75	75	75
<b>Total Number of Reference Pages</b>	<b>2,333</b>	<b>225</b>	<b>1,840</b>	<b>618</b>

\* 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.

\*\* Page count for public comments is approximate. USACE will submit public comments to Battelle, who will in turn submit the comments to the IEPR Panel.

### 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
- Feasibility Study Milestones (PB 2017-01, January 20, 2017)

- SMART – Planning Overview
- Planning Modernization Fact Sheet
- USACE Climate Change Adaptation Plan (June 2015).

## SCHEDULE & DELIVERABLES

This schedule is based on the receipt date of the final review documents and may be revised if public comment 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>Meetings</b>	Subcontractors complete mandatory Operations Security (OPSEC) training	7/28/2019
	Battelle sends review documents to panel members	6/28/2019
	Battelle convenes kick-off meeting with panel members	7/1/2019
	Battelle convenes kick-off meeting with USACE and panel members	7/2/2019
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	7/11/2019
<b>Review and Comment Development</b>	Panel members complete their individual reviews	7/23/2019
	Battelle provides talking points for Panel Review Teleconference to panel members	7/25/2019
	Battelle convenes Panel Review Teleconference	7/26/2019
	Battelle provides Final Panel Comment templates and instructions to panel members	7/29/2019
	Panel members provide draft Final Panel Comments to Battelle	8/2/2019
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	8/3/2019 - 8/11/2019
	Panel finalizes Final Panel Comments	8/12/2019
<b>Public Comment Review**</b>	Battelle receives public comments from USACE	8/8/2019
	Battelle sends public comments to Panel	8/12/2019
	Panel completes its review of public comments	8/15/2019
	Battelle and Panel review the Panel's responses to the charge question regarding the public comments	8/16/2019
	Panel drafts Final Panel Comment for public comments, if necessary	8/20/2019
	Panel finalizes Final Panel Comment regarding public comments, if necessary	8/22/2019

Task	Action	Due Date
<b>Final Report</b>	Battelle provides Final IEPR Report to panel members for review	8/26/2019
	Panel members provide comments on Final IEPR Report	8/28/2019
	*Battelle submits Final IEPR Report to USACE	8/30/2019
	USACE Planning Center of Expertise (PCX) provides decision on	9/9/2019
<b>Comment Response Process</b>	Battelle inputs Final Panel Comments to Design Review and Checking System (DrChecks) and provides Final Panel Comment response	9/11/2019
	Battelle convenes teleconference with Panel to review the Comment Response process	9/11/2019
	USACE Project Delivery Team (PDT) provides draft Evaluator Responses to USACE PCX for review	10/2/2019
	USACE PCX reviews draft Evaluator Responses and works with USACE PDT regarding clarifications to responses, if needed	10/8/2019
	USACE PCX provides draft PDT Evaluator Responses to Battelle	10/9/2019
	Battelle provides draft PDT Evaluator Responses to panel members	10/11/2019
	Panel members provide draft BackCheck Responses to Battelle	10/17/2019
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	10/18/2019
	Battelle convenes Comment Response Teleconference with panel members and USACE	10/21/2019
	USACE inputs final PDT Evaluator Responses to DrChecks	10/28/2019
	Battelle provides final PDT Evaluator Responses to panel members	10/29/2019
	Panel members provide final BackCheck Responses to Battelle	11/1/2019
	Battelle inputs panel members' final BackCheck Responses to DrChecks	11/4/2019
	*Battelle submits pdf printout of DrChecks project file	11/5/2019
<b>ADM</b>	Agency Decision Milestone (ADM) Meeting	TBD
	Contract End/Delivery Date	5/20/2020

\* Deliverables

\*\* Battelle will provide public comments to panel members 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. Some sections have no questions associated with them; however, you may still 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, 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, no later than 10 pm ET by the date listed in the schedule above.

## **Independent External Peer Review of the Chicago Area Waterways System Dredged Material Management Plan and Integrated Environmental Impact Statement, Calumet Harbor and River, Illinois and Indiana**

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

The following Review Charge to Reviewers outlines the objectives of the Independent External Peer Review (IEPR) for the subject study and identifies specific items for consideration for the IEPR Review Panel.

The objective of the IEPR is to obtain an independent evaluation of whether the interpretations of analysis and conclusions based on analysis are reasonable for the subject study. The IEPR Review Panel is requested to offer a broad evaluation of the overall study decision document in addition to addressing the specific technical and scientific questions included in the Review Charge. The Review Panel has the flexibility to bring important issues to the attention of decision makers, including positive feedback or issues outside those specific areas outlined in the Review Charge. The Review Panel can use all available information to determine what scientific and technical issues related to the decision document may be important to raise to decision makers. This includes comments received from agencies and the public as part of the public review process.

The Panel review is to focus on scientific and technical matters, leaving policy determinations for USACE and the Army. The Panel should not make recommendations on whether a particular alternative should be implemented or present findings that become “directives” in that they call for modifications or additional studies or suggest new conclusions and recommendations. In such circumstances the Review Panel would have assumed the role of advisors as well as reviewers, thus introducing bias and potential conflict in their ability to provide objective review.

Panel review comments are to be structured to fully communicate the Panel’s intent by including the comment, why it is important, any potential consequences of failure to address, and suggestions on how to address the comment.

The Review Panel is asked to consider the following items as part of its review of the decision document and supporting materials.

### **Broad Evaluation Charge Questions**

1. Is the need for and intent of the decision document clearly stated?
2. Does the decision document adequately address the stated need and intent relative to scientific and technical information?

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, social, and engineering assumptions that underlie the study analyses

5. Economic, environmental, social, 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, social justice, 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.

For the tentatively selected plan, assess whether:

13. The models used to assess life safety hazards are appropriate
14. The assumptions made for the life safety hazards are appropriate
15. The quality and quantity of the surveys, investigations, and engineering are sufficient for a concept design considering the life safety hazards and to support the models and assumptions made for determining the hazards
16. The analysis adequately addresses the uncertainty and residual risk given the consequences associated with the potential for loss of life for this type of project.

## **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.

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<sup>1</sup> Questions 1 through 3 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.

### **Public Comment Questions**

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

# APPENDIX D

## Conflict of Interest Form

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David Kaplan  
USACE, Institute for Water Resources  
May 28, 2019  
C-2

**Conflicts of Interest Questionnaire**  
**Independent External Peer Review**

**Chicago Area Waterways System (CAWS) Dredged Material Management Plan (DMMP) and  
Integrated Environmental Impact Statement (EIS), Calumet Harbor and River, Illinois and Indiana**

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: **Courtney Brooks**  
TELEPHONE: **614-424-5623**  
ADDRESS: **505 King Avenue, Columbus, Ohio 43201**  
EMAIL ADDRESS: **brooksc1@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.**

*Courtney M. Brooks*

\_\_\_\_\_  
Courtney Brooks

May 28, 2019

\_\_\_\_\_  
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**