



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-SP

11 JAN '16

MEMORANDUM FOR Commander, Rock Island District

SUBJECT: Review Plan Approval for the Great Lakes Mississippi River Interbasin Study: Brandon Road Feasibility Study

1. References:

a. Memorandum, CEMVR-PM-M, 21 September 2015, subject: Review Plan for the Great Lakes Mississippi River Interbasin Study (GLMRIS): Brandon Road Feasibility Study (encl 1).

b. Memorandum, CEMVD-PD-L, 30 July 2015, subject: Great Lakes and Mississippi River Interbasin Study (GLMRIS), Brandon Road, Interim Feasibility Study, Rock Island and Chicago Districts, Ecosystem Restoration Planning Center of Expertise Recommendation for Review Plan Approval (encl 2).

c. EC 1165-2-214, 15 December 2012, subject: Civil Works Review Policy.

2. The enclosed updated Review Plan (RP) (encl 3) for the Great Lakes Mississippi River Interbasin Study (GLMRIS): Brandon Road Feasibility Study has been prepared in accordance with EC 1165-2-214. The RP has been coordinated with the Upper District Support Team and the Ecosystem Restoration Planning Center of Expertise who concurred with the plan in reference 1.b.

3. MVD hereby approves this RP which is subject to change as circumstances require and is consistent with study development under the Project Management Business Process. Any subsequent revisions to this RP or its execution will require new written approval from this office. Non-substantive changes to this RP do not require further approval. The district should post the approved RP to its web site.

4. The MVD point of contact is Mr. Thatch Shepard, CEMVD-PD-SP, (601) 634-5830.

3 Encls

MICHAEL C. WEHR
Major General, USA
Commanding



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
PO BOX 2004 CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61204-2004

SEP 21 2015

CEMVR-PM-M

MEMORANDUM FOR Commander, US Army Corps of Engineers, Mississippi Valley Division (CEMVD-PD-SP/Miller), PO Box 80, 1400 Walnut Street, Vicksburg, Mississippi 39181-0080

SUBJECT: Review Plan for the Great Lakes Mississippi River Interbasin Study (GLMRIS): Brandon Road Feasibility Study.

1. The Subject Review Plan (Enclosure 1) for the Brandon Road Feasibility Study is attached for your review and approval. Enclosure 2 is a copy of the Endorsement by the Ecosystem Restoration Planning Center of Expertise. Electronic copies these enclosures have been sent to Mr. Greg Miller, CEMVD-PD-SP.

2. The points of contact are Mr. Marshall Plumley, Chief of Rock Island Planning Section, (309) 794-5447, e-mail: Marshall.B.Plumley@usace.army.mil; or Mr. Andrew Leichty, GLMRIS Brandon Road Project Manager, (309) 794-5399, e-mail: andrew.l.leichty@usace.army.mil.

CRAIG S. BAUMGARTNER
COL, EN
Commanding

Encls
as



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-L

30 July 2015

MEMORANDUM FOR Commander, Mississippi Valley Division
ATTN: (Greg Miller, CEMVN-PD-P)

SUBJECT: Great Lakes and Mississippi River Interbasin Study (GLMRIS), Brandon Road, Interim Feasibility Study, Rock Island and Chicago Districts, Ecosystem Restoration Planning Center of Expertise Recommendation for Review Plan Approval.

1. References:

- a. Engineering Circular (EC) 1165-2-214, Water Resources Policies and Authorities, CIVIL WORKS REVIEW, 15 December 2012
- b. EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
- c. Engineering Regulation (ER) 1110-2-12, Quality Management, 30 Sep 2006

2. The National Ecosystem Restoration Planning Center of Expertise (ECO-PCX) has reviewed the enclosed Review Plan (RP). The RP complies with all applicable policy and provides an adequate approach to District Quality Control (DQC) and Agency Technical Review (ATR) of the plan formulation, engineering, and environmental analyses, and other aspects of plan development.

3. The RP includes a Type I Independent External Peer Review (IEPR) that will be performed after the Tentatively Selected Plan Milestone. A Type II IEPR will be conducted during the PED Phase should the recommended plan be authorized.

4. The study will use multiple planning models. A Decision Tree Model based on Risk Assessment Methodology (to include Expert Elicitation) has not been certified. Coordination with the EcoPCX has been initiated to approve this model for one time use. The Regional Economic Impact Estimates – Regional Economics Models, Inc. (REMI PI+) has been identified for use. Coordination with the PCXIN is ongoing about the need to approve this commercially available model. Lastly, the Navigation System Simulation Model (NaSS) also will be used. NaSS will be corporately certified for use and this effort is being undertaken independently by IWR.

5. The ECO-PCX concurs with the RP. Upon approval by the MSC Commander, please provide the approved RP, the MSC Commander's approval memorandum, and the link to the District posting of the RP to the ECO-PCX. When substantive revisions are made to the RP, due to any changes associated with IEPR, changes in project scope, or Corps policy, a revised RP should be provided to the ECO-PCX for review. Non-substantive changes do not require further PCX review.

CEMVD-PD-L

30 July 2015

SUBJECT: Great Lakes and Mississippi River Interbasin Study (GLMRIS), Brandon Road, Interim Feasibility Study, Rock Island and Chicago Districts, Ecosystem Restoration Planning Center of Expertise Recommendation for Review Plan Approval.

6. Thank you for the opportunity to assist in the preparation of the RP. We look forward to working with you on the ATR and IEPR. Also let us know if we may be of any further assistance with planning efforts for this study.

STEFANIK.ELLIOTT
T.L.1239639913

Digitally signed by
STEFANIK.ELLIOTT.L.1239639913
DN: c=US, o=U.S. Government,
ou=DoD, ou=PKI, ou=USA,
cn=STEFANIK.ELLIOTT.L.1239639913
Date: 2015.07.30 14:35:35 -05'00'

Enclosures (1)

Elliott Stefanik
Acting Operational Director,
National Ecosystem Restoration Planning
Center of Expertise

CF:
CEMVD-PD-L (Wilbanks, Lachney, Young)
CEMVD-PD-SP (Harris)
CECW-MVD (Redican)
CEMVP-PD-F (Knollenberg)
CELRC-PM-PL (Davis)
CEMVR-PD-P (Richards)
CENAO-WR-P (Conner)

DRAFT REVIEW PLAN

**Great Lakes and Mississippi River Interbasin Study (GLMRIS)
Brandon Road**

Interim Feasibility Study

U.S. Army Corps of Engineers – Rock Island
Clock Tower Bldg. P.O. Box 2004
Rock Island, Illinois 61204

&

U.S. Army Corps of Engineers - Chicago District
231 S. LaSalle Street, Suite 1500
Chicago, Illinois 60604

MSC Approval Date: Pending
Last Revision Date: October 2015



**US Army Corps
of Engineers®**

REVIEW PLAN

**Great Lakes and Mississippi River Interbasin Study (GLMRIS)
Brandon Road – Interim Feasibility Study**

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS..... 1

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION 1

3. STUDY INFORMATION..... 1

4. DISTRICT QUALITY CONTROL (DQC)..... 7

5. AGENCY TECHNICAL REVIEW (ATR) 8

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)..... 11

7. POLICY AND LEGAL COMPLIANCE REVIEW 13

8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND
CERTIFICATION 13

9. MODEL CERTIFICATION AND APPROVAL..... 13

10. REVIEW SCHEDULES AND COSTS 15

11. PUBLIC PARTICIPATION 16

12. REVIEW PLAN APPROVAL AND UPDATES..... 16

13. REVIEW PLAN POINTS OF CONTACT 16

ATTACHMENT 1: TEAM ROSTERS..... 18

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS..... 21

ATTACHMENT 3: REVIEW PLAN REVISIONS..... 22

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS 23

1. PURPOSE AND REQUIREMENTS

- a. **Purpose.** This Review Plan defines the scope and level of peer review for the GLMRIS – Brandon Road Interim Report.
- b. **References**
- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012
 - (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
 - (3) Engineering Regulation (ER) 1110-1-12, Quality Management, Change 2, 11 Mar 2011
 - (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
 - (5) GLMRIS – Brandon Road Feasibility Study Project Management Plan Updated June 2015
 - (6) Mississippi Valley Division and Rock Island District Quality Management Plan(s)
- c. **Requirements.** This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is National Ecosystem Restoration Planning Center of Expertise (EcoPCX).

The RMO will coordinate with the Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. The feasibility study will require navigation impact analysis using modeling tools currently undergoing review by the Inland Navigation Planning Center of Expertise (IN-PCX). Therefore, the RMO will coordinate with the IN-PCX to ensure the appropriate expertise is included on the review teams related to navigation economics, impacts assessment and modeling.

3. STUDY INFORMATION

- a. **Decision Document.** The GLMRIS – Brandon Road Interim Report is a USACE feasibility study that serves as an interim response to the GLMRIS Study authority. The report would require a Chief of Engineers Report to Congress for authorization of any recommended plan. An Environmental Impact Statement is expected to accompany this report.

- b. Study/Project Description.** The GLMRIS – Brandon Road Interim Report is an interim feasibility study that is building on the foundation of GLMRIS Report released in Jan 2014. This feasibility study will assess the viability of establishing a single point to control the upstream transfer of aquatic nuisance species (ANS) from the Mississippi River (MR) Basin into the Great Lakes (GL) Basin near the Brandon Road Lock and Dam in Joliet, Illinois.

The Great Lakes and Mississippi River Interbasin Study was authorized in Section 3061(d) of WRDA 2007, Public Law 110-114 as follows:

FEASIBILITY STUDY – The Secretary, in consultation with appropriate Federal, State, local and nongovernmental entities, shall conduct, at Federal expense, a feasibility study of the range of options and technologies available to prevent the spread of aquatic nuisance species between the Great Lakes and Mississippi River Basins through the Chicago Sanitary and Ship Canal and other aquatic pathways.

This authority differs from traditional USACE feasibility study authorizations in that it directs the identification and assessment of a range of available options and technologies, and it does not require the recommendation of any one option. It also authorizes completion of study activities at full federal expense. As of this time, there is not a non-Federal sponsor for this study.

In July 2012, the GLMRIS authority was modified by Section 1538 of Public Law 112-141 of the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 directs the Secretary of the Army (Secretary) to expedite the completion of the report for the study authorized by Section 3061(d) of WRDA 2007 and, if the Secretary determines a project is justified in the completed report, to proceed directly to PED. The full text of Section 1538 of MAP-21 is as follows:

(a) DEFINITIONS.—In this section:

(1) HYDROLOGICAL SEPARATION.—The term “hydrological separation” means a physical separation on the Chicago Area Waterway System that—

(A) would disconnect the Mississippi River watershed from the Lake Michigan watershed; and

(B) shall be designed to be adequate in scope to prevent the transfer of all aquatic species between each of those bodies of water.

(2) SECRETARY.—The term “Secretary” means the Secretary of the Army, acting through the Chief of Engineers.

(b) EXPEDITED STUDY AND REPORT.—

(1) IN GENERAL.—The Secretary shall—

(A) expedite completion of the report for the study authorized by section 3061(d) of the Water Resources Development Act of 2007 (Public Law 110–114; 121 Stat. 1121); and

(B) if the Secretary determines a project is justified in the completed report, proceed directly to project preconstruction engineering and design.

(2) FOCUS.—In expediting the completion of the study and report under paragraph (1), the Secretary shall focus on—

(A) the prevention of the spread of aquatic nuisance species between the Great Lakes and Mississippi River Basins, such as through the permanent hydrological separation of the Great Lakes and Mississippi River Basins; and

(B) the watersheds of the following rivers and tributaries associated with the Chicago Area Waterway System:

- (i) The Illinois River, at and in the vicinity of Chicago, Illinois.
- (ii) The Chicago River, Calumet River, North Shore Channel, Chicago Sanitary and Ship Canal, and Cal-Sag Channel in the State of Illinois.
- (iii) The Grand Calumet River and Little Calumet River in the States of Illinois and Indiana.
- (3) EFFICIENT USE OF FUNDS.—The Secretary shall ensure the efficient use of funds to maximize the timely completion of the study and report under paragraph (1).
- (4) DEADLINE.—The Secretary shall complete the report under paragraph (1) by not later than 18 months after the date of enactment of this Act.
- (5) INTERIM REPORT.—Not later than 90 days after the date of enactment of this Act, the Secretary shall submit to the Committees on Appropriations of the House of representatives and Senate, the Committee on Environment and Public Works of the Senate, and the Committee on Transportation and Infrastructure of the House of Representatives a report describing—
 - (A) interim milestones that will be met prior to final completion of the study and report under paragraph (1); and
 - (B) funding necessary for completion of the study and report under paragraph (1), including funding necessary for completion of each interim milestone identified under subparagraph (A).

As an interim feasibility study to the GLMRIS study authority, this study will not be addressing certain aspects of the study authority. Particularly, this study will not examine: 1) Downstream transfer of ANS from the Great Lakes Basin to the Mississippi River Basin; 2) transfer of ANS along the entire basin divide.

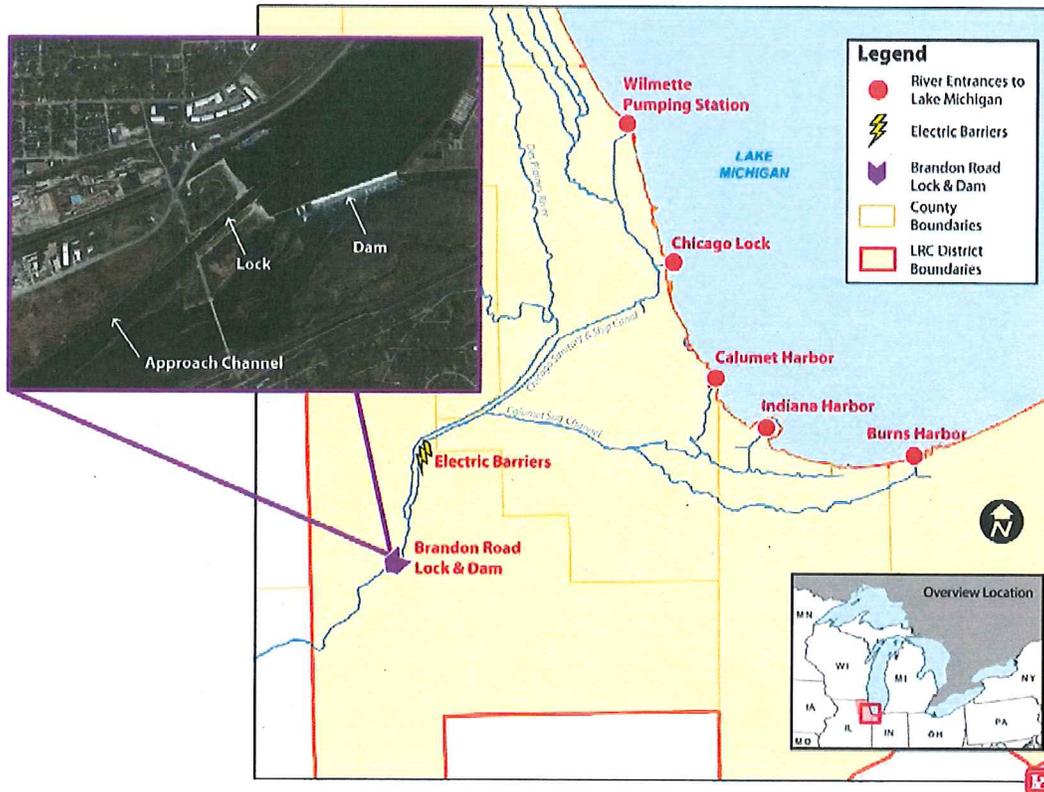
The Brandon Road site is located south (downstream) of the confluence of the Des Plaines River and the Chicago Sanitary and Ship Canal (CSSC). Previous investigations under the USACE Efficacy Study have indicated that a potential hydrologic bypass can occur, during periods of high precipitation, from the Des Plaines River to the CSSC. A one-way control point at the Brandon Road site would minimize the likelihood of bypass of MR Basin ANS into the GL Basin during flood events.

The physical configuration of the Brandon Road Dam prevents the upstream transfer of MR ANS. There is a minimum 25-foot difference in water elevation from the downstream side of the dam to the upstream side of the dam, which effectively limits upstream transfer. Operation of the lock currently provides the only known aquatic pathway that allows transfer of MR ANS to the GL.

The approach channel and lock provide a unique opportunity to control ANS transfer in a relatively small section of the river that is not free flowing. These conditions provide the opportunity to optimize the operational characteristics of the ANS controls, maximize the efficiency of applied technologies, and minimize the associated costs for implementation and operation. The physical lock structure also provides an additional control in the event of a temporary failure or malfunction of any potential control technologies employed downstream.

Establishing a control point at Brandon Road for MR species does not adversely impact flood risk or water quality of the CAWS and provides for additional defense in depth for a particular species of concern, Asian carp, when combined with the current electric barrier dispersal system located in Romeoville, IL.

Three of six structural alternatives presented in the GLMRIS Report (Alts. #4, #7, #8) utilized the Brandon Road site as a control point for ANS transfer in the upstream direction.



Study Objectives & Constraints Objectives

1. Prevent the upstream transfer of ANS from the MR Basin to the GL Basin, to the maximum extent possible, in the vicinity of Brandon Road Lock and Dam in advance of a bidirectional solution.
2. Minimize project impacts at Brandon Road Lock and Dam on significant natural resources.
3. Minimize project impacts at Brandon Road Lock and Dam to existing waterway uses and users.

Primary Constraint

Detailed analysis limited upstream transfer and Brandon Road area only

NEPA Scoping Summary

- Received 70 comments
 - Nearly 60 percent of the commenter’s were from Illinois and Michigan
 - 13 percent were from Louisiana
- Comment themes
 - ANS control is a shared-responsibility
 - Steps must be taking to control the spread of Asian carp
 - Brandon Road is a good short-term measure but controlling ANS movement in

- both directions should be the ultimate goal
- The Brandon Road control point should effectively prevent ANS movement while minimizing impacts to navigation, native species, the environment and other users
- USACE's evaluation should consider life safety impacts of alternatives
- Opportunities for ongoing stakeholder involvement in the study should be encouraged and supported
- The GLMRIS executive steering committee and the Asian Carp Regional Coordinating Committee should continue

Future Without Project Conditions

- Asian carp
 - Continued operation of the Chicago Sanitary and Ship Canal Aquatic Nuisance Species Dispersal Barriers
 - Continued efforts by others to prevent the transfer of Asian carp through the Chicago Area Waterway System (CAWS)
- Scud
 - No effort to control or manage the scud's passage through the CAWS

A variety of management measures are being considered for this study, ranging from nonstructural measures such as overharvesting, to structural measures such as an engineered channel to support ANS controls like an electric dispersal barrier, CO2 barrier, a flushing lock, or even lock closure. Further details on ANS Controls considered in GLMRIS can be found on the GLMRIS website at <http://glrmis.anl.gov>.

Costs for measures at the Brandon Road in the GLMRIS Report were in excess of \$1 billion.

- c. Factors Affecting the Scope and Level of Review.** Several aspects of the GLMRIS - Brandon Road Study are expected to be novel or nontraditional.

Specific Considerations

- Is total project cost estimated to exceed \$200M?

Yes. The range of potential solutions could exceed \$1 billion.

- Does the project pose significant technical, institutional, social, or other challenges?

Yes. The project is technically complex from an evaluation, construction and operations perspective.

- Where are significant project risks likely to occur and at what magnitude (e.g., what are the uncertainties and how might they affect the success of the project)?

1. The evaluation of the Future Without Project Condition (FWOP) will have a high uncertainty associated with it. There is a large uncertainty in the scientific community about what the potential ecological and economic impacts of ANS establishment in the GL. Several studies have shown a variety of different impacts to specific lakes and tributaries, very little detailed

efforts have been made to show impacts to the entire GL and all of their tributaries. To address this uncertainty to team is going to conduct ecological models to create scenario forecasts of FWOP conditions due to ANS establishment in the GL (bracket high, low for habitat; multiple scenarios for dollars; best case worst case).

2. Several of the ANS controls being considered as measures have never been used in a field application or at the scale imagined in the GLMRIS Report. There is a level of engineering design that must be conducted to reduce the uncertainty surrounding potential ANS Control measures, including the flushing lock concept (also known as the GLMRIS Lock), continued evaluation of electric dispersal barriers, CO2 barriers, seismic water guns, and targeted pesticides, in addition to others.
3. Evaluating the effectiveness of any proposed ANS Controls is also going to be difficult and include much uncertainty considering many of them have not been applied in field applications. To incorporate this uncertainty in measuring an overall alternative's effectiveness, the GLMRIS team is going to conduct a decision tree analysis based on the GLMRIS Risk Assessment model. The five probability elements in the risk assessment that combine to make the probability of an ANS establishing in a new basin will be the elements in the decision tree. Using information gathered in the risk assessment along with expert elicitation, the GLMRIS Team will determine probability distributions for each of the five probability elements. Then the team will conduct a monte carlo simulation to determine the probability a specific ANS will establish in the GL basin. This analysis will also be done for the FWOP condition so a change in the probability can be measure. This change in value will demonstrate the effectiveness or risk reduction of an alternative.

- Is the project likely to have significant economic, environmental, and/or social effects to the Nation?

Yes. Potential alternatives are likely to prevent movement of ANS between the Basins, which will have a significant positive benefit to the ecosystem in terms of degradation prevented. However, the negative impacts the National Economic Development (NED) investments on the inland waterway system could be significant.

- Does the project likely involve significant threat to human life/safety assurance?

Some potential project features, such as electrical barriers, pose significant risk to human life related to the day to day operation of the navigation system. Operation of the current electrical barriers upstream for over 10 years has resulted in numerous safety mechanisms being developed. Coordination with industry and the Coast Guard, safety protocols and other measures have been developed to manage these risks. However, operation of electrical barriers within an operational navigation lock setting has not been done before.

- Is the project/study likely to have significant interagency interest?

Yes. Interest from numerous agencies, States and the nation of Canada is present.

- Is the project/study highly controversial (with some discussion as to why or why not and, if so, in what ways)?

Yes. Given the vast interest from various stakeholders, the previous GLMRIS study was highly visible and controversial. Legal action, as well as varying attempts by congressional interests to influence the study occurred. It is reasonable to assume this will continue.

- Is the project/study likely to contain influential scientific information or be a highly influential scientific assessment (with some discussion as to why or why not and, if so, in what ways)?

Yes. The study will likely include a robust monitoring and adaptive management component. It is clear in the direction from the ASA(CW) and vertical team engagement that the future adaptability of the project to new and emerging technologies need to be considered as part of any recommended plan. This presents significant opportunity for learning and best practices transfer to the nation.

- Is there information in the decision document or proposed project design that will likely be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices (with some discussion as to why or why not and, if so, in what ways)?

Yes. The array of management actions available are at the leading edge of the state of the science. Design and construction in an active navigation environment may require novel methods and innovative techniques to implement.

- Does the proposed project have unique construction sequencing or a reduced or overlapping design construction schedule (with some discussion as to why or why not and, if so, in what ways)?

Yes. Construction sequencing is a key driver for potential NED impacts to navigation and is one of the focus areas for modeling described below.

- d. **In-Kind Contributions.** This study is authorized at full federal expense and currently does not have a local sponsor. As such, in-kind contributions are not anticipated.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

- a. **Documentation of DQC.** DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The PDT and technical supervisors shall obtain technical adequacy and quality through periodic internal reviews and documented through certification of Quality Control (QC) checklists. Dr. Checks will be used to document the DQC. The results of the DQC review will be provided to the ATR team prior to the completion of their review.

- b. Products to Undergo DQC.** All Corps feasibility-level decision documents requiring authorization by the U.S. Congress will be subject to Quality Control. This includes both District Quality Control (DQC), and Agency Technical Review (ATR), as set forth in Engineering Circular (EC) 1165 2 214.
- c. Required DQC Expertise.** The following disciplines are included in the checklists provided in the Quality Control Plan:
- Lead Engineer
 - Specification Technician
 - CADD Technician
 - Civil Engineer
 - Cost Engineer
 - Geotechnical Engineer
 - Environmental Engineer
 - Hydraulic Engineer
 - Structural Engineer
 - Mechanical Engineer
 - Electrical Engineer
 - Economic Plan Formulation and Analysis
 - Inland Navigation & Environmental Plan Formulation and Analysis
 - Plan Formulation
 - Operations (Locks & Dams) and/or Safety Office

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

- a. Products to Undergo ATR.** ATR will be performed, at a minimum, on all products subjected to formal review outside of the Rock Island and Chicago Districts, in this case, including the Draft Feasibility Report and Final Feasibility Report. Leading up to review of the Draft Feasibility Report, where practicable, technical products that support subsequent analyses will be reviewed prior to being used in the study and may include: Study Area Description, Purpose and Scope, Study Authority, Federal Interest and USACE Interest, Future Without Project condition, Problems and Opportunities, Plan Formulation including Modeling Strategy and Formulation Strategy, geotechnical investigations, economic, environmental, cultural, and social inventories, cost estimates, etc.

The GLMRIS – Brandon Road study will undergo a formal ATR after the Tentatively Selected Plan (TSP) Milestone (May 2016). An additional targeted ATR may be required after the Agency Decision Milestone (December 2016) on the feasibility level of design components and any significant changes resulting from Public, Policy and IEPR Review.

- b. Required ATR Team Expertise.** The ATR team will be finalized by the ECO-PCX and is comprised of individuals from all the technical disciplines that were significant in the preparation of the report. Proposed ATR team members are listed in Attachment 1. Technical disciplines determined to be appropriate for this review include: Plan Formulation, Economics, Environmental Resources, NEPA Compliance (e.g., NEPA documentation preparation), Hydrology and Hydraulics (H&H), H&H Modeling, Geotechnical Engineering, Civil Engineering Design, Cost Estimating, Operations, and Real Estate. The following table provides a description of suggested expertise.

Skilled and experienced personnel who have not been associated with the development of the study products perform the ATR. ATR team members may be employees of U.S. Army Corps of Engineer Districts, other Federal agencies, state or local government agencies, universities, private contractors or other institutions. The key factor is extensive, expert knowledge in their field of expertise.

c.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process.
Planning	The Planning reviewer should be a senior water resources planner with demonstrated formulation and review experience in both ecosystem restoration and inland navigation studies. Experience with formulation of a range of ecosystem restoration alternatives that balance or trade off navigation impacts is required.
Economics	The economics reviewer should be a senior economist with demonstrated experience evaluating ecosystem restoration project benefits and costs. Experience with evaluating the appropriateness of cost effectiveness and incremental cost analysis (CE/ICA), as applied to dollar costs & ecosystem restoration benefits; familiarity with the USACE tool IWR-PLAN is required. Additionally, demonstrated experience with evaluating alternatives with ecosystem benefits (NER) and the associated tradeoff of navigation (NED) impacts is required.
Inland Navigation Economics	A reviewer with experience in inland navigation economic analysis, navigation capacity, system reliability and performance as well as transportation rate analysis is required.
Environmental Resources/NEPA Compliance	Environmental Resources reviewer should be a senior biologist/ecologist/environmental engineer, with demonstrated experience in ecosystem restoration and familiarity with large riverine systems and invasive species. Should be able to review for NEPA compliance and quality and applicability of ecosystem benefits evaluations.

Hydrology, Hydraulic Engineering and Modeling	This reviewer should be a senior hydraulic engineer with demonstrated experience in the field of hydrology, hydraulics and H&H modeling, including a general knowledge of Illinois River Basin and water management. The reviewer(s) should have a thorough understanding of water storage and conveyance and sediment control and be knowledgeable of associated hydrologic and hydraulic model applications, with the ability to understand the application of LECsR (MODFLOW-based with custom packages), S2DMM, HEC RAS, SMS, RMA2, RMA4, WAM to south Florida conditions.
Cultural Resources	The Illinois Water Way and Brandon Road Lock and Dam is listed on the National Register of Historic Places as a Multi-Property District. The cultural resources reviewer should be knowledgeable of USACE policy, applicable laws and regulations regarding such resources.
Geotechnical Engineering	Experience in geotechnical aspects of navigation structures with an understanding of local geology. A minimum of 10 years demonstrated experience is preferred.
Civil Engineering	Experience in engineering/construction management for ecosystem restoration and navigation structural and non-structural systems
Cost Engineering	Approved by the Cost DX
Real Estate	Senior real estate specialist experienced in contributing to large civil works projects to include environmental restoration and navigation projects.
Operations	Senior staff with field experience of the operation of USACE navigation Lock.

d. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, , draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR; Type I is generally for decision documents and Type II is generally for implementation products.

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and

environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. **Decision on IEPR.** A Type I Independent External Peer Review (IEPR) will be performed as part of the feasibility study process. A Type II IEPR will be conducted during PED phase should a recommended plan be authorized. The GLMRIS – Brandon Road study will undergo a formal IEPR after the Tentatively Selected Plan (TSP) Milestone, currently scheduled for May 2016.

b. **Products to Undergo Type I IEPR.** The Draft Feasibility Report and technical appendices will be reviewed.

c. **Required Type I IEPR Panel Expertise**

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member should have extensive experience with evaluation and analysis of multipurpose ecosystem restoration and navigation projects. This includes the use of trade-off analysis to formulate, evaluate and recommend alternatives for investment decisions.
Environmental	The Environmental Panel Member should have extensive experience with Aquatic Nuisance Species management and NEPA compliance.
Civil Engineering	The Civil Engineering reviewer should have an extensive experience in design and construction of ecosystem restoration and navigation features.
Risk Methods and Expert Elicitation	The reviewer should have extensive experience with the design and implementation of expert elicitation processes and their use to manage uncertainties related to environmental investment decisions.

d. **Documentation of Type I IEPR.** IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering and ATR MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering certification. The RMO is responsible for coordination with the Cost Engineering MCX.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Decision Tree Model based on Risk Assessment Methodology, to include Expert Elicitation	To incorporate this uncertainty in measuring an overall alternative's effectiveness, the GLMRIS team is going to conduct a decision tree analysis based on the GLMRIS Risk Assessment model. The five probability elements in the risk assessment that combine to make the probability of an ANS establishing in a new basin will be the elements in the decision tree. Using information gathered in the risk assessment along with expert elicitation, the GLMRIS Team will determine probability distributions for each of the five probability elements. Then the team will conduct a monte carlo simulation to determine the probability a specific ANS will establish in the GL basin. This analysis will also be done for the FWOP condition so a change in the probability can be measure. This change in value will demonstrate the effectiveness or risk reduction of an alternative.	Not certified – seeking approval for one time use. Coordination with the ECO-PCX has been started.
Regional Economic Impact Estimates – Regional Economics Models, Inc. (REMI PI+	REMI PI+) – will be used to estimate the changes in the regional economic measures such as sales and employment given changes in spending on GL fishing activities due to Asian carp establishment in the basin. Articles about the model equations and research findings have been published in professional journals such as the American Economic Review, The Review of Economic Statistics, the Journal of Regional Science, and the International Regional Science Review.	Coordination with the PCXIN is ongoing about the need to approve this commercially available model.
Navigation System Simulation Model (NaSS)	(NaSS) – is a model that will be used by the Inland Navigation Center to generate Tonnage-Transit information for the system based on the characteristics of the various alternatives.	NaSS will be corporately certified for use and this effort is being undertaken independently by IWR.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Civil Works Regional Economic System (RECONS) Program	The Civil Works Regional Economic System (RECONS) Program is a regional economic impact modeling tool that was developed to provide accurate and defensible estimates of regional economic impacts associated with USACE spending. It can be utilized to track progress and justify continued operation, maintenance and construction work performed by the Corps. RECONS will be used to estimate the jobs and revenue impacts associated with project construction.	Certified for agency wide use.
Inland Navigation Equilibrium Spreadsheet (INES) Model	The INES Model will use the outputs from NaSS and then will equilibrate traffic based on rate-savings to determine overall impacts.	INES is a model that is being adapted specifically for Brandon Road and will need to be certified as Single Use. Coordination with the ECO-PCX has been started.

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

Estimated Schedule and Cost.

Alternatives Milestone	June 2015
TSP Milestone	May 2016
Initiate ATR of Draft Report	June 2016
ATR Certification of Draft Report	August 2016
Agency Decision Milestone	December 2016
ATR of ADM Final Report	December 2017
Civil Works Review Board	July 2018
Chiefs Report	January 2019

The estimated cost for ATR is \$150,000 with approximately \$25,000 reserved for targeted product reviews as needed; \$75,000 budgeted for the Draft Report and \$50,000 for the Final Report.

b. Type I IEPR Schedule and Cost.

Type I IEPR will be conducted during review of the Draft Report. This is tentatively scheduled for June of 2016. Approximately three months prior to the TSP milestone. The Eco-PCX will begin the contracting process to identify the IEPR team. The estimated cost for IEPR is \$250,000.

c. Model Certification/Approval Schedule and Cost.

Coordination is already underway with the ECO-PCX and the IN-PCX on model approval and is anticipated to be completed prior to the TSP milestone. The estimated cost is \$180,000.

11. PUBLIC PARTICIPATION

The Districts will solicit input from the members of the Executive Steering Committee, and other stakeholder groups. In order to satisfy requirements of the National Environmental Policy Act (NEPA), an environmental compliance document will be developed as part of the feasibility study process and released for public review. Comments related to the review process received through these activities will be reviewed, and incorporated into the RP where appropriate. GLMRIS public review comments, project background information, interim products, newsletters and press releases will continue to be made available on the GLMRIS website as they are released: www.glmris.anl.gov.

Due to the highly visible nature of GLMRIS, it is anticipated that there will be multiple opportunities for significant and relevant public comment on the content of the study as well as from interested stakeholder and scientific groups. The Districts will include documentation on public meetings as part of the NEPA process.

The first currently scheduled public review of the report will be held after the TSP milestone. Significant and relevant comments on the study process that are available will be provided to the ATR and IEPR teams as part of the review package.

12. REVIEW PLAN APPROVAL AND UPDATES

The MVD Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

- Andy Leichty, Project Manager Rock Island, 309-794-5399
- Susanne Davis, Chicago District Chief Planning Branch, 312-846-5580
- Marshall Plumley Rock Island District Chief Planning Section, 309-794-5447
- Kenn Barr, Mississippi River Division, (Acting) ECO-PCX – 309-794-5349
- Susan Conner, MVD Account Manager, ECO PCX – 757-201-7390

ATTACHMENT 1: TEAM ROSTERS

PDT Roster

* Discipline Lead

Program Management

Jeffrey Heath*	LRC	H6H4000
Felicia Kirksey	LRC	H6H4M00

Project Management

Andrew Leichty*	MVR	B5H0810
Jeffrey Heath	LRC	H6H4M00
Dawn Ewan	MVR	B5H0820

Plan Formulation

Johnna Potthoff*	LRC	H6H4P01
David Bucaro	LRC	H6H4P01
Matt Shanks	LRC	H6H4P02
Nick Barkowski	LRC	H6H4P02
Shawna Herleth-King	LRC	H6H4P02
Marshall Plumley	MVR	B6K2F00
John Wethington	LRC	H6L1DG0

Engineering Team

Kirk Sunderman*	INDC/MVR	B5L1410
Allen Hammack	ERDC	U430430
Craig Hess	MVR	B5R0200
Dan Ferris	INDC/LRC	H6L1DG0
David Force	INDC/LRC	H6L1DT0
Eric Sampson	INDC/LRC	H6L1DT0
Fred Joers	INDC/MVR	B5L1430
Jane Vaughan	ERDC	U430430
Jennifer Miller	INDC/LRC	H6L1DH0
Joe Schmidt	INDC/LRC	H6L1D00
Joe Schulenberg	INDC/LRC	H6L1DG0
Josh Cackley	INDC/MVR	B5L1430
Kiril Zumbulev	INDC/LRC	H6L1DT0
Laura Vanden Berg	INDC/LRC	H6L1DC0
Majdi Arman	INDC/LRC	H6L1DT0
Matthew Zager	INDC/MVR	B5L1200
Rana Mishra	INDC/LRC	H6L1DC0
Randy Kinney	INDC/MVR	B5L1300
Richard Stockstill	ERDC	U430430
Richard Styles	ERDC	U430420
Rick Ackerson	INDC/LRC	H6L1DH0

Robert Castro	INDC/MVR	B5L1800
Steve Gustafson	INDC/MVR	B5L1450
T.Y. Su	INDC/LRC	H6L1DH0
Toby Hunemuller	INDC/MVR	B5L1200
Tom Gambucci	INDC/MVR	B5L1200
Zach Langel	INDC/LRC	H6L1DC0

Technologies & Species Risk Team

Johnna Potthoff*	LRC	H6H4P01
Mark Cornish	MVR	B6K2P00
Erin Maloney	LRC	H6L1DH0
Jennifer Miller	LRC	H6L1DH0
Lauren Fleer	NAP	E5K0420
Linda Nelson	ERDC	U433A00
Mark Grippo	Argonne	
Laura Fox	Argonne	
Charlie Yoe	Contractor	
Brian Harper	IWR	
Safra Altman	ERDC	U433F30
Kyle McKay	ERDC	U433F60
Todd Swannack	ERDC	U433F30

Natural Resources & NEPA Team

Susanne Davis*	LRC	H6H4P00
Ken Barr	MVR	B6K2P00
Mark Cornish	MVR	B6K2P00
Ron Deiss	MVR	B6K2P00
Peter Bullock	LRC	H6H4P02
John Hayse	Argonne	
Ihor Hlohowskyj	Argonne	

Economics Team

Dena Abou-El-Seoud*	LRC	H6H4P01
Chris Bouquot	LRH	H121100
Justin Carlson	LRH	H121200
Buddy Langdon	LRH	H121100
Eric Singley	LRH	H121100
James Nowlin	LRH	H121100
Lin Prescott	LRH	H121100
Beth Cade	LRH	H121100
Lorraine Cordova	POA	J4HOTPL
Frank Lupi (Tentative)	Contractor	
Support Staff (Tentative)	Contractor	

Communications Team

Lynne Whelan*	LRC	
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Ron Founier	MVR	B5C0000
Allen Marshall	MVR	B5C0000
Nikki Chaffin	LRC	H6L1CR3

Real Estate Team

Jason Appel*	MVR	B5N0510
Mike Rohde	LRC/LRE	H7N0220
Vic Kotwicki	LRE	
James Lovelace	MVS/MVR	B5N0510

ATR Roster

TBD

Vertical Team Roster

CECW-MVD	Deputy	Joe Redican
CECW-MVD	Planner	Charlie Hanneken
MVD-PD-L	Planning Chief	Rayford Wilbanks
MVD-PD-L	Planning Lead	Fay Lachney
MVD-PD-L	Environmental Lead	Gary Young
MVD-PD-L	Economics Lead	Lee Robinson
MVD-PD-L	Program Management	Renee Turner
ECO-PCX	Account Manager	Greg Steele
ECO-PCX	Director	Kenn Barr
LRC-PM	Program Manager	Jeffrey Heath
MVR-PM	Project Manager	Andrew Leichty
RPEDN-PD-F	Planning Chief	Tom Crump

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name
ATR Team Leader
Office Symbol/Company

Date

SIGNATURE

Name
Project Manager
Office Symbol

Date

SIGNATURE

Name
Architect Engineer Project Manager¹
Company, location

Date

SIGNATURE

Name
Review Management Office Representative
Office Symbol

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Name
Chief, Engineering Division
Office Symbol

Date

SIGNATURE

Name
Chief, Planning Division
Office Symbol

Date

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
ADM	Agency Decision Milestone	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
EA	Environmental Assessment	OEO	Outside Eligible Organization
EC	Engineer Circular	OSE	Other Social Effects
EIS	Environmental Impact Statement	PCX	Planning Center of Expertise
EO	Executive Order	PDT	Project Delivery Team
ER	Ecosystem Restoration	PAC	Post Authorization Change
FDR	Flood Damage Reduction	PMP	Project Management Plan
FEMA	Federal Emergency Management Agency	PL	Public Law
FRM	Flood Risk Management	QMP	Quality Management Plan
		QA	Quality Assurance
GRR	General Reevaluation Report	QC	Quality Control
Home District/MS	The District or MSC responsible for the preparation of the decision document	RED	Regional Economic Development
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
ATR	Agency Technical Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MCX	Mandatory Center of Expertise	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act

Review Plan Checklist For Decision Documents

Date: 10/2/15

Originating District: MVR

Project/Study Title: Great Lakes and Mississippi River Interbasin Study: Brandon Road Feasibility Study

PWI #: 451617

District POC: Marshall Plumley

PCX Reviewer: Susan Conner NAO

Please fill out this checklist and submit with the draft Review Plan when coordinating with the appropriate PCX. Any evaluation boxes checked 'No' indicate the RP may not comply with ER 1105-2-410 (22 Aug 2008) and should be explained. Additional coordination and issue resolution may be required prior to MSC approval of the Review Plan.

REQUIREMENT	REFERENCE	EVALUATION
1. Is the Review Plan (RP) a stand alone document?	EC 1105-2-410, Para 8a	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<p>a. Does it include a cover page identifying it as a RP and listing the project/study title, originating district or office, and date of the plan?</p> <p>b. Does it include a table of contents?</p> <p>c. Is the purpose of the RP clearly stated and EC 1105-2-410 referenced?</p> <p>d. Does it reference the Project Management Plan (PMP) of which the RP is a component?</p> <p>e. Does it succinctly describe the three levels of peer review: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR)?</p> <p>f. Does it include a paragraph stating the title, subject, and purpose of the decision document to be reviewed?</p> <p>g. Does it list the names and disciplines of the Project Delivery Team (PDT)?*</p>	EC 1105-2-410, Appendix B, Para 4a	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>e. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>f. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>g. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Comments:</p>
<p><i>*Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.</i></p>		

<p>2. Is the RP detailed enough to assess the necessary level and focus of peer review?</p>	<p>EC 1105-2-410, Appendix B, Para 3a</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it indicate which parts of the study will likely be challenging?</p> <p>b. Does it provide a preliminary assessment of where the project risks are likely to occur and what the magnitude of those risks might be?</p> <p>c. Does it indicate if the project/study will require preparation of an environmental impact statement (EIS)?</p> <p><i>Will an EIS be prepared? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p> <p>d. Does it address if the project report is likely to contain influential scientific information or be a highly influential scientific assessment?</p> <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p> <p>e. Does it address if the project is likely to have significant economic, environmental, and social affects to the nation, such as (but not limited to):</p> <ul style="list-style-type: none"> • more than negligible adverse impacts on scarce or unique cultural, historic, or tribal resources? • substantial adverse impacts on fish and wildlife species or their habitat, prior to implementation of mitigation? • more than negligible adverse impact on species listed as endangered or threatened, or to the designated critical habitat of such species, under the Endangered Species Act, prior to implementation of mitigation? <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p>	<p>EC 1105-2-410, Appendix B, Para 3a</p> <p>EC 1105-2-410, Appendix B, Para 3a</p> <p>EC 1105-2-410 Para 7c & 8f</p> <p>EC 1105-2-410, Appendix B, Para 4b</p> <p>EC 1105-2-410, Para 6c</p> <p>EC 1105-2-410 Para 8f</p> <p>EC 1105-2-410 Para 8f</p> <p>EC 1105-2-410 Para 8f</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>e. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Comments:</p>

<p>f. Does it address if the project/study is likely to have significant interagency interest?</p> <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p> <p>g. Does it address if the project/study likely involves significant threat to human life (safety assurance)?</p> <p><i>Is it likely? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></i> <i>If yes, IEPR is required.</i></p> <p>h. Does it provide an estimated total project cost?</p> <p><i>What is the estimated cost: <u>\$20-\$75 million</u></i> <i>(best current estimate; may be a range)</i></p> <p><i>Is it > \$45 million? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p> <p>i. Does it address if the project/study will likely be highly controversial, such as if there will be a significant public dispute as to the size, nature, or effects of the project or to the economic or environmental costs or benefits of the project?</p> <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p> <p>j. Does it address if the information in the decision document will likely be based on novel methods, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices?</p> <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i> <i>If yes, IEPR is required.</i></p>	<p>EC 1105-2-410, Para 6c</p> <p>EC 1105-2-410, Appendix D, Para 1b</p> <p>EC 1105-2-410, Appendix D, Para 1b</p> <p>EC 1105-2-410, Appendix D, Para 1b</p> <p>EC 1105-2-410, Appendix D, Para 1b</p>	<p>f. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>g. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>h. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>j. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Comments:</p>
<p>3. Does the RP define the appropriate level of peer review for the project/study?</p>	<p>EC 1105-2-410, Para 8a</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it state that DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans?</p>	<p>EC 1105-2-410, Para 7a</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

<p>b. Does it state that ATR will be conducted or managed by the lead PCX?</p> <p>c. Does it state whether IEPR will be performed?</p> <p><i>Will IEPR be performed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i></p> <p>d. Does it provide a defensible rationale for the decision on IEPR?</p> <p>e. Does it state that IEPR will be managed by an Outside Eligible Organization, external to the Corps of Engineers?</p>	<p>EC 1105-2-410, Appendix D, Para 3a</p> <p>EC 1105-2-410, Appendix B, Para 4b</p> <p>EC 1105-2-410, Para 7c</p>	<p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>e. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/></p> <p>Comments:</p>
<p>4. Does the RP explain how ATR will be accomplished?</p>	<p>EC 1105-2-410, Appendix B, Para 4l</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it identify the anticipated number of reviewers?</p> <p>b. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)?</p> <p>c. Does it indicate that ATR team members will be from outside the home district?</p> <p>d. Does it indicate that the ATR team leader will be from outside the home MSC?</p> <p>e. Does the RP state that the lead PCX is responsible for identifying the ATR team members and indicate if candidates will be nominated by the home district/MSc?</p> <p>f. If the reviewers are listed by name, does the RP describe the qualifications and years of relevant experience of the ATR team members?*</p> <p><i>*Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.</i></p>	<p>EC 1105-2-410, Appendix B, Para 4f</p> <p>EC 1105-2-410, Appendix B, Para 4g</p> <p>EC 1105-2-410, Para 7b</p> <p>EC 1105-2-410, Para 7b</p> <p>EC 1105-2-410, Appendix B, Para 4k(1)</p> <p>EC 1105-2-410, Appendix B, Para 4k(1)</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>e. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>f. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/></p> <p>Comments:</p>

<p>5. Does the RP explain how IEPR will be accomplished?</p>	<p>EC 1105-2-410, Appendix B, Para 4k & Appendix D</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/></p>
<p>a. Does it identify the anticipated number of reviewers?</p> <p>b. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)?</p> <p>c. Does it indicate that the IEPR reviewers will be selected by an Outside Eligible Organization and if candidates will be nominated by the Corps of Engineers?</p> <p>d. Does it indicate the IEPR will address all the underlying planning, safety assurance, engineering, economic, and environmental analyses, not just one aspect of the project?</p>	<p>EC 1105-2-410, Appendix B, Para 4f</p> <p>EC 1105-2-410, Appendix B, Para 4g</p> <p>EC 1105-2-410, Appendix B, Para 4k(1) & Appendix D, Para 2a</p> <p>EC 1105-2-410, Para 7c</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Comments:</p>
<p>6. Does the RP address peer review of sponsor in-kind contributions?</p>		<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does the RP list the expected in-kind contributions to be provided by the sponsor?</p> <p>b. Does it explain how peer review will be accomplished for those in-kind contributions?</p>	<p>EC 1105-2-410, Appendix B, Para 4j</p>	<p>a. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>b. Yes <input type="checkbox"/> No <input type="checkbox"/> n/a <input checked="" type="checkbox"/></p> <p>Comments: No Sponsor, no In kind contributions.</p>
<p>7. Does the RP address how the peer review will be documented?</p>		<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does the RP address the requirement to document ATR and IEPR comments using DrChecks?</p> <p>b. Does the RP explain how the IEPR will be documented in a Review Report?</p> <p>c. Does the RP document how written responses to the IEPR Review Report will be prepared?</p>	<p>EC 1105-2-410, Para 8g(1)</p> <p>EC1105-2-410, Appendix B, Para 4k(13)(b)</p> <p>EC 1105-2-410, Appendix B, Para 4l</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/></p>

<p>d. Does the RP detail how the district/PCX will disseminate the final IEPR Review Report, USACE response, and all other materials related to the IEPR on the internet and include them in the applicable decision document?</p>	<p>EC 1105-2-410, Para 8g(2) & Appendix B, Para 4l</p>	<p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/> Comments:</p>
<p>8. Does the RP address Policy Compliance and Legal Review?</p>	<p>EC 1105-2-410, Para 7d</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Comments:</p>
<p>9. Does the RP present the tasks, timing and sequence (including deferrals), and costs of reviews?</p>	<p>EC 1105-2-410, Appendix B, Para 4c & Appendix C, Para 3d</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Comments:</p>
<p>a. Does it provide a schedule for ATR including review of the Feasibility Scoping Meeting (FSM) materials, Alternative Formulation Briefing (AFB) materials, draft report, and final report?</p> <p>b. Does it include interim ATR reviews for key technical products?</p> <p>c. Does it present the timing and sequencing for IEPR?</p> <p>d. Does it include cost estimates for the peer reviews?</p>	<p>EC 1105-2-410, Appendix C, Para 3g</p> <p>EC 1105-2-410, Appendix C, Para 3g</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/> d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Comments: a. SMART Planning Milestones are used.</p>
<p>10. Does the RP indicate the study will address Safety Assurance factors?</p> <p>Factors to be considered include:</p> <ul style="list-style-type: none"> • Where failure leads to significant threat to human life • Novel methods\complexity\ precedent-setting models\policy changing conclusions • Innovative materials or techniques • Design lacks redundancy, resiliency of robustness • Unique construction sequence or acquisition plans • Reduced\overlapping design construction schedule 	<p>EC 1105-2-410, Para 2 & Appendix D, Para 1c</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/> Comments:</p>

11. Does the RP address model certification requirements?	EC 1105-2-407	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it list the models and data anticipated to be used in developing recommendations (including mitigation models)? b. Does it indicate the certification/approval status of those models and if certification or approval of any model(s) will be needed? c. If needed, does the RP propose the appropriate level of certification/approval for the model(s) and how it will be accomplished?	EC 1105-2-410, Appendix B, Para 4i	a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/> Comments:
12. Does the RP address opportunities for public participation?		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it indicate how and when there will be opportunities for public comment on the decision document? b. Does it indicate when significant and relevant public comments will be provided to reviewers before they conduct their review? c. Does it address whether the public, including scientific or professional societies, will be asked to nominate potential external peer reviewers? d. Does the RP list points of contact at the home district and the lead PCX for inquiries about the RP?	EC 1105-2-410, Appendix B, Para 4d EC 1105-2-410, Appendix B, Para 4e EC 1105-2-410, Appendix B, Para 4h EC 1105-2-410, Appendix B, Para 4a	a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Comments:
13. Does the RP address coordination with the appropriate Planning Centers of Expertise?	EC 1105-2-410, Para 8a	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it state if the project is single or multi-purpose? Single <input checked="" type="checkbox"/> Multi <input type="checkbox"/> List purposes: Ecosystem Restoration b. Does it identify the lead PCX for peer review? Lead PCX: ECO c. If multi-purpose, has the lead PCX coordinated the review of the RP with the other PCXs as appropriate?	EC 1105-2-410, Appendix D, Para 3c	a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/> Comments: PCX IN is in support.

<p>14. Does the RP address coordination with the Cost Engineering Directory of Expertise (DX) in Walla Walla District for ATR of cost estimates, construction schedules and contingencies for all documents requiring Congressional authorization?</p>	<p>EC 1105-2-410, Appendix D, Para 3</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it state if the decision document will require Congressional authorization?</p> <p>b. If Congressional authorization is required, does the state that coordination will occur with the Cost Engineering DX?</p>		<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> n/a <input type="checkbox"/></p> <p>Comments:</p>
<p>15. Other Considerations: This checklist highlights the minimum requirements for an RP based on EC 1105-2-410. Additional factors to consider in preparation of the RP include, but may not be limited to:</p> <p>a. Is a request from a State Governor or the head of a Federal or state agency to conduct IEPR likely?</p> <p>b. Is the home district expecting to submit a waiver to exclude the project study from IEPR?</p> <p>c. Are there additional Peer Review requirements specific to the home MSC or district (as described in the Quality Management Plan for the MSC or district)?</p> <p>d. Are there additional Peer Review needs unique to the project study?</p>	<p>EC 1105-2-410, Appendix D, Para 1b</p> <p>EC 1105-2-410, Appendix D, Para 1d</p>	<p>Comments: IEPR will be conducted so a and b are not applicable. c. No. D. No.</p>
<p>Detailed Comments and Backcheck:</p>		