



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER
CORPS OF ENGINEERS
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CINCINNATI, OH 45202-3222

CELRD-PD-G

February 12, 2016

MEMORANDUM FOR Commander, U.S. Army Engineer District, Chicago (CELRD-PM-PL/
[REDACTED]) 231 South LaSalle Street, Suite 1500, Chicago, IL 60604-1437

SUBJECT: Concurrence and approval of the Review Plan (RP) for DuPage River, Illinois Feasibility Study

1. Reference: CELRC-PM-PL memorandum, dated 31 December 2015, subject: DuPage River, Illinois Feasibility Study – Review Plan.
2. The enclosed RP was presented to the Great Lakes and Ohio River Division for approval in accordance with EC 1165-2-214 “Civil Works Review” dated 15 December 2012.
3. The DuPage River and its tributaries drain approximately 350 square miles in suburban Cook, DuPage and Will Counties in the Chicago Metropolitan area. Flooding is a significant problem in this watershed where major storm events in 1996, 2008, 2009, and 2013 led to the inundation of homes and businesses in communities across the watershed. The study is a single purpose Flood Risk Management study being conducted in partnership with DuPage County and Will County in Illinois.
4. The Implementation Phase RP defines the scope and level of peer review for the activities to be performed for the subject project phase. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes the scope of review for work phases and addresses all appropriate levels of review consistent with the requirements described in EC 1165-2-214.
5. I concur with the recommendations of the RMO and approve the enclosed RP for the DuPage River, Illinois project.
6. The District is requested to post the RP to its website. Prior to posting, the names of all individuals identified in the RP and the dollar values of all project costs should be removed.
7. If you have any questions please contact [REDACTED], CELRD-PD-P, at (513) 684-6050, or [REDACTED], CELRD-PD-G, at (513) 684-6249.

FOR: [REDACTED]

Date: 2016.02.12 16:21:38 -0500

Encl

[REDACTED]
Brigadier General, USA
Commanding

REVIEW PLAN

**DuPage River, Illinois
Feasibility Report and Integrated Environmental Assessment**

Chicago District

MSC Approval Date: 12 February 2016

Last Revision Date: Initial Submission 31 December 2015



**US Army Corps
of Engineers®**

REVIEW PLAN

**DuPage River, Illinois
Feasibility Report and Integrated Environmental Assessment**

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the DuPage River, Illinois Feasibility Report and Integrated NEPA documentation.

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, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) ISO Process; Document ID:14610 Great Lakes and Ohio River Division, Preparation and Approval of Civil Works Review Plans, 22 Sept 2011
- (6) DuPage River, Illinois Project Management Plan, Draft Oct 2015

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 the Flood Risk Management Planning Center of Expertise (FRM-PCX).

The RMO will coordinate with the Civil Works Cost Engineering Agency Technical Review and 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.

3. STUDY INFORMATION

a. **Decision Document.** The DuPage River, Illinois Feasibility Study will investigate flood risk in the DuPage River watershed. The study will result in a Feasibility Report that summarizes the investigations and the study recommendations.

The Feasibility Report will include integrated National Environmental Policy Act (NEPA) documentation of the assessment of environmental impacts of any recommended Federal actions. If no significant impacts are identified, an Environmental Assessment (EA) will be prepared. If significant impacts are identified, an Environmental Impact Statement (EIS) will be prepared.

This is a specifically authorized Feasibility Study that will require approval of the Great Lakes and Ohio River Division (LRD), USACE Headquarters (HQUSACE), the Chief of Engineers, and the Assistant Secretary of the Army for Civil Works (ASA(CW)). The Final Report will be the basis for Congressional authorization of the recommended project.

- b. Study/Project Description.** The DuPage River and its tributaries drain approximately 350 square miles in suburban Cook, DuPage and Will Counties in the Chicago Metropolitan area. See Figure 1 for a map of the watershed.

Major storm events occurred in the basin in 1996, 2008, 2009, and most recently in April 2013 resulting in overbank flooding to at least 20 communities and significant damage to residential and non-residential structures, critical infrastructure, and the closure of two major interstate highways (I-80 and I-55) for several days. Flooding in the watershed poses life-safety risks, as discussed in Section 3.c.

The DuPage River, Illinois Feasibility Study is a flood risk management study authorized by Section 206 of the Flood Control Act of 1958 (P.L. 85-500):

“The Secretary of the Army is hereby authorized and directed to cause surveys for flood control and allied purposes included channel and major drainage improvements...in drainage areas...which include the following-named localities...

Watersheds of the Illinois River, at and in the vicinity of Chicago, Illinois, the Chicago River, Illinois, the Calumet River, Illinois and Indiana, and their tributaries and any area in the northeast Illinois and northwest Indiana which drains directly into Lake Michigan with respect to flood control and major drainage problems.”

The watershed includes East and West Branches which exist primarily in DuPage County, a main stem in Will County, and several tributaries to each of the three main waterways. The largest tributary, Lily Cache Creek, flows into the main stem in Will County. The study will investigate a range of alternatives to address flood risk in the watershed including floodwater storage, levees and floodwalls, and nonstructural measures such as buyouts and floodproofing. Flood damages occur across the watershed with some concentrated high-damage areas as well as additional dispersed damage areas. It is expected that alternative plans will include multiple projects formulated to manage concentrated risk areas as well as the isolated pockets. There is no estimated cost for the project at this stage of the study.

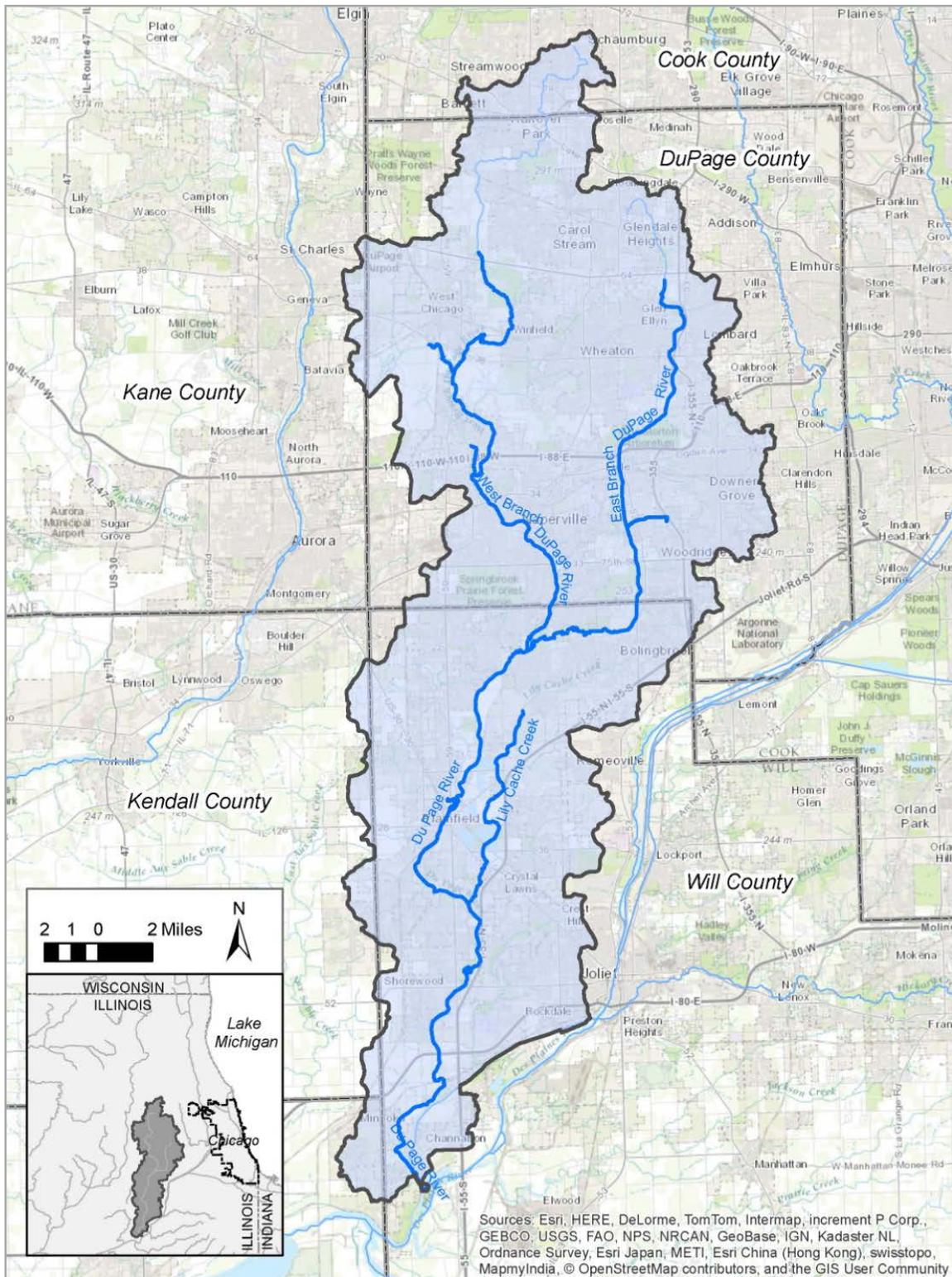


Figure 1: Study Area

c. Factors Affecting the Scope and Level of Review.

- *Technical complexity.* The study will investigate measures to address the impacts of overbank flooding to residential and commercial structures as well as infrastructure such as roadways, bridges and key public facilities in the watershed. It is expected that alternative plans will use established and proven measures for addressing flood risks. Therefore, it is not expected that there will be any significant technical, institutional, or social challenges the design of the recommended plan

Developing hydraulic models for the watershed may present technical challenges. The Full Equations (FEQ) hydraulic model will be used to model hydraulics in the DuPage County portion of the watershed, and the Hydraulic Engineering Center - River Analysis System (HEC-RAS) hydraulic model will be used to model hydraulics in the Will County portion. While HEC-RAS is the Hydrology, Hydraulics, and Coastal (HH&C) Community of Practice (CoP) preferred model, FEQ is not currently approved by the USACE HH&C COP and the study team is currently seeking approval for use of FEQ in this study. It is expected that there will be some technical challenges associated with ensuring continuity between the hydraulic models.

HSPF will be used to model the hydrology for the entire watershed. HSPF, while not the preferred model, is on the USACE H&H Community of Practice (COP) list of allowed models.

- *Controversy.* The Feasibility Study is not expected to be controversial. Flooding is a long-term concern of watershed residents and this study is supported by local agencies. Plans will include consideration of mitigation for any impacts of proposed projects.
- *Requested External Review.* The Governor of Illinois has not requested a peer review by independent experts.
- *Life-Safety.* Projects recommended by this study are likely to address not only the economic impacts of flooding, but also life-safety risk. In accordance with EC 1165-2-214, for any project where potential hazards pose a significant threat to human life (public safety); the Federal action is justified by life safety; or the failure of the project would pose a significant threat to human life, i.e. when life safety issues exist, a Type I IEPR is required. In addition, since design initiates in the decision document phase, a Safety Assurance Review (SAR) should be incorporated into the Type I IEPR when life-safety issues exist.

The District Chief of Technical Services has determined that there are life-safety concerns associated with the impacts of flooding in the watershed. Floods in 1996, 2008, 2009, and 2013 inundated communities with several feet of water. No documentation of any loss of life was reported, however, the flooding did require emergency evacuations. In addition, flood-induced closures of major area roadways have impeded access to critical facilities including a regional hospital and local fire and police stations. During severe flood events, homes and businesses are inundated with several feet water. And residents have been evacuated from their homes for extended periods.

Any plan recommended by the study will manage flood risks in the watershed, but it is expected that there will also be residual risks associated with the potential for catastrophic project failure and remaining ongoing flooding in some areas of the watershed.

- d. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsors, Will County and DuPage County, include: river surveys, structure surveys, GIS mapping and data analysis, and H&H modeling.

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 will be conducted in accordance with the Chicago District Process for Feasibility Phase District Quality Control/Quality Assurance. DQC will be documented in a summary report completed prior to each submittal. This documentation will be provided to the ATR Lead as part of the review submittal.
- b. **Products to Undergo DQC.** All documents prepared by the District will be checked for completeness and accuracy. Formally documented DQC will, at a minimum, be completed for documents submitted as read-aheads for milestone meetings, the draft Feasibility Report, and the Final Feasibility Report and all supporting documents will be reviewed.

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.** An ATR of the Draft Feasibility Report and Integrated NEPA document will be completed concurrent with public review. An early review of the Hydrologic and Hydraulic modeling approach may be performed, if warranted by the complexity of the modeling. If it is determined that this review is needed, the Review Plan will be promptly updated to reflect the revised scope, schedule, and budget for the ATR. A scaled review of the Final Report will include certification of the final cost estimate and review of any technical products that are substantially revised after completion of the draft report. The study team may also coordinate key decisions with ATR team members to solicit feedback early in the process.
- b. **Required ATR Team Expertise.** The following areas of expertise should be represented on the ATR team. If additional disciplines are added to the PDT or additional technical challenges are identified, the requirements for the ATR team may be revised.

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. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The planning reviewer should be a senior water resources planner with experience in flood risk management plan formulation and the SMART study process.
Economics	The economics reviewer should have experience with economic analyses to support flood risk management studies, with modeling structural and transportation damages in HEC-FDA, recreation analysis, and evaluation of non-structural measures.
NEPA/Environmental Resources/Cultural Resources	The NEPA reviewer should be experienced in analysis of impacts as required by the National Environmental Policy Act (NEPA) and other applicable laws, regulations, and executive orders.
Hydrology & Hydraulics	The hydrology and hydraulics reviewer will be CERCAP certified and should be a senior engineer with experience using HEC-RAS and FEQ and a general understanding of open channel one-dimensional unsteady flow hydraulic models. They should have experience with HSPF and other hydrologic models used to produce input hydrographs. It is possible that separate reviewers might be needed for the hydrologic and hydraulic analysis portions of the study.
Risk Analysis	The risk reviewer should be experienced with performing and presenting risk analyses in accordance with ER 105-2-101 and other related guidance. This review may be combined with the economics or hydrology and hydraulics review.
Geotechnical Engineering	The geotechnical reviewer should be experienced with embankment stability and seepage analyses and will be CERCAP certified.
Civil Engineering	The civil engineering reviewer should be experienced in the design of flood risk management projects including levees, reservoirs, and diversion channels, and non-structural measures such as floodproofing and elevations and will be CERCAP certified.
Cost Engineering	The cost engineering reviewer will be certified as a reviewer by the Cost MCX, have experience with preparing cost estimates for flood risk management projects, and be CERCAP certified.
Real Estate	The real estate reviewer will be approved by the Real Estate COP as a Flood Risk Management reviewer and have experience with preparing real estate plans for structural and non-structural flood risk management projects.

c. **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 been 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, for each review completed by the ATR Team. 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 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.** The factors affecting the scope and level of review are discussed in Section 3. Because life-safety is a mandatory trigger for conducting and IEPR and there are life-safety concerns associated with this study, a Type I IEPR will be conducted. The IEPR will also include Safety Assurance Review considerations.

The study does not meet any additional mandatory triggers for IEPR:

- The study is not expected to contain influential scientific information or contain any highly influential scientific assessments;
 - Neither the Governor of Illinois or any state or Federal agencies have requested IEPR of this study to date;
 - There has been no significant public dispute over the size, nature, or effects of the project.
 - Project costs have not been developed at this time, but it is expected that the total project cost will not exceed \$200,000,000.
- b. Products to Undergo Type I IEPR.** A Type I IEPR of the Draft Feasibility Report and Integrated NEPA document will be completed concurrent with public review.

c. Required Type I IEPR Panel Expertise.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member should have extensive experience in flood risk management and risk based economic analyses including familiarity with HEC-FDA.
Environmental	The Environmental Panel member will be a senior biologist with experience with projects in Illinois and have experience with the NEPA process and the assessment of environmental impacts.
Hydrology and Hydraulics	The Hydrology and Hydraulics Panel member will be an expert in the field of hydrology and hydraulics and have experience with modeling flood impacts and designing hydraulic structures.
Civil Engineering	The Civil Engineering panel member should be an expert in their field, which may include civil design, cost estimating, or geotech. The panel member will have expertise in design and implementation of flood risk management projects including levees, reservoirs, and diversion channels.

d. Documentation of Type I IEPR. The 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. CIVIL WORKS COST ENGINEERING AGENCY TECHNICAL REVIEW AND MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering 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 MCX 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).

- a. **Planning Models.** The following planning models are anticipated to be used in the development of the decision document. At this time, it is not expected that any environmental mitigation will be required. If a need for mitigation is identified, additional planning models may be needed for the analysis.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.4 (Flood Damage Analysis)	The Hydrologic Engineering Center’s Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the DuPage River and its tributaries to aid in the selection of a recommended plan to manage flood risk.	Certified

- b. Engineering Models.** The following engineering 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	Approval Status
HEC-RAS 4.1 (River Analysis System)	The Hydrologic Engineering Center’s River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for unsteady flow analysis to evaluate the existing and future without- and with-project conditions along the DuPage River mainstem and its tributaries.	HH&C CoP Preferred Model
FEQ 10.61 (Full Equations Model)	The Full Equations Model (FEQ) program simulates one-dimensional unsteady flow in open channels and through control structures. The program will be used for unsteady flow analysis to evaluate the existing and future without- and with-project conditions along the East Branch and West Branch of the DuPage River and their tributaries.	Model review and approval by the HH&C CoP required
HSPF 11.0 (Hydrologic Simulation Program - Fortran)	Hydrologic Simulation Program - Fortran (HSPF) simulates the hydrologic processes on pervious and impervious land surfaces and in streams and well-mixed impoundments. HSPF uses continuous rainfall and other meteorologic records to compute streamflow hydrographs. The program will be used to generate hydrographs for the watershed to be used as inputs to the HEC-RAS and FEQ hydraulic models.	HH&C CoP Allowed Model
MII	MII is the second generation of the Micro-Computer Aided Cost Estimating System (MCACES). It is a detailed cost estimating software application that was developed in conjunction with Project Time & Cost LLC. MII provides an integrated cost estimating system (software and databases) that meets the U.S. Army Corps of Engineers (USACE) requirements for preparing cost estimates. The program will be used to develop cost estimates for alternatives.	Enterprise Model

10. REVIEW SCHEDULES AND COSTS

- a. ATR Schedule and Cost.** ATR of the Draft Feasibility Report will be conducted after the Tentatively Selected Plan milestone and a scaled ATR will be conducted before submittal of the Final Feasibility Report. The reviews of the Draft Report and Final Feasibility Report are currently expected to begin in January 2017 and November 2017, respectively. In addition to these reviews, the ATR Lead will participate in key study milestones to assist with identification of review concerns as early as possible. All review activities are expected to cost approximately \$75,000.
- b. Type I IEPR Schedule and Cost.** IEPR will be conducted after the Tentatively Selected Plan milestone. The review is currently expected to begin in January 2017. This review is expected to cost approximately \$175,000.

- c. **Model Certification/Approval Schedule and Cost.** The planning model and two of the engineering models that will be used in this study are certified and/or allowed for use by the associated CoPs. One of the engineering models that will be used in this study, FEQ, is not currently approved for use by the HH&C CoP. The PDT has initiated the review process for this model and expects that the review process will be completed by March 2016. This review is expected to cost approximately \$10,000.

11. PUBLIC PARTICIPATION

In accordance with the National Environmental Policy Act (NEPA), opportunities for public comment will be provided during an initial scoping period at the start of the study and once a tentatively selected plan has been identified.

Study scoping will be initiated with the announcement of a 30-day public comment period through letters to resource agencies, state and local organizations, and other potentially interested parties. The draft Feasibility Report and Integrated NEPA analysis identifying the tentatively selected plan and any significant environmental impacts will be released for public review and a 30-day comment period. The public review of necessary state or federal permits will also take place during this period. Comments will be documented in the Feasibility Report and Integrated NEPA analysis as part of the Final Report.

The IEPR comments and USACE responses will be documented in a public report to Congress by the IEPR panel and a corresponding response memorandum by USACE. It is not expected that the public will be asked to nominate peer reviewers for this panel.

12. REVIEW PLAN APPROVAL AND UPDATES

The Great Lakes and Ohio River Division 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:

Chicago District

- Project Manager, 312-846-5560, [REDACTED]
- Chief of Planning, 312-845-5580, [REDACTED]

Great Lakes and Ohio River Division

- District Liaison, 513-684-6249, [REDACTED]

Flood Risk Management Planning Center of Expertise

- FRM-PCX Deputy Director, 415-503-6852, [REDACTED]

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team

Role	Name	Telephone
Project Manager	[REDACTED]	[REDACTED]
Lead Planner	[REDACTED]	[REDACTED]
Economist	[REDACTED]	[REDACTED]
NEPA Specialist	[REDACTED]	[REDACTED]
Biologist	[REDACTED]	[REDACTED]
Hydraulic Engineer	[REDACTED]	[REDACTED]
Environmental Engineer	[REDACTED]	[REDACTED]
Civil Engineer	[REDACTED]	[REDACTED]
Cost Engineer	[REDACTED]	[REDACTED]
Geotechnical Engineer	[REDACTED]	[REDACTED]
Real Estate	[REDACTED]	[REDACTED]

Agency Technical Review Team

Role	Name	Telephone
ATR Lead/Plan Formulation	[REDACTED]	[REDACTED]
Economics/Risk Analysis	[REDACTED]	[REDACTED]
NEPA/Environmental Resources/ Cultural Resources	[REDACTED]	[REDACTED]
Hydrology and Hydraulics	TBD	TBD
Geotechnical Engineering	TBD	TBD
Civil Engineering	[REDACTED]	[REDACTED]
Cost Engineering	[REDACTED]	[REDACTED]
Real Estate	TBD	TBD

Vertical Team

Role	Name	Telephone
LRD District Liaison	[REDACTED]	[REDACTED]
Regional Integration Team Planner	[REDACTED]	[REDACTED]

Flood Risk Management Planning Center of Expertise

Role	Name	Telephone
Deputy Director	[REDACTED]	[REDACTED]

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

Date

SIGNATURE

Name

Project Manager

Office Symbol

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, Design Branch

Office Symbol

Date

SIGNATURE

Name

Chief, Planning Branch

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>
ASA(CW)	Assistant Secretary of the Army for Civil Works	NED	National Economic Development
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
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMP	Quality Management Plan
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
FSM	Feasibility Scoping Meeting	RED	Regional Economic Development
GRR	General Reevaluation Report	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
LRC	Chicago District	SAR	Safety Assurance Review
LRD	Great Lakes and Ohio River Division	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act