DECISION DOCUMENT REVIEW PLAN

McCook Levee, Illinois
Continuing Authorities Program Section 205
Small Flood Risk Management Project

Chicago District

LRD Commander Approval Date: 25 July 2017

Last Revision Date: None

US Army Corps
of Engineers ®

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I. PURPOSE AND REQUIREMENTS

A. Purpose

This Review Plan defines the scope and level of peer review for the McCook Levee, Illinois Section 205 Small Flood Risk Management Project decision document.

Section 205 of the Flood Control Act of 1948, as amended, authorizes USACE to study, design and construct flood risk management projects. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost and complexity. Traditional USACE civil works projects are of wider scope and complexity and are specifically authorized by Congress. The CAP is a delegated authority to plan, design, and construct certain types of water resource and environmental restoration projects without specific Congressional authorization.

B. Applicability

This review plan is based on the Lakes and Ohio River Division (LRD) CAP Programmatic Review Plan Model, which includes the GLFER Section 506 and Lake Michigan Waterfront Section 125 programs. It also accounts for CAP Section 103 and Section 205 projects, which require case-by-case determination on the appropriateness of Type I Independent External Peer Review (IEPR). The LRD CAP Programmatic Review Plan Model **is not approved** for use on any CAP, GLFER or Lake Michigan Waterfront projects where:

- A significant threat to human life/safety assurance exists;
- Total Project Cost is likely to exceed the limits established for the applicable Section in law.
- The Governor of an affected state has requested a peer review by independent experts;
- An Environmental Impact Statement (EIS) is required;
- Significant public dispute is likely due to the size, nature, or effects of the project;
- Significant public dispute is likely due to the economic or environmental cost or benefit of the project;
- Complex challenges will likely require use of novel methods, innovative materials, new techniques, precedent-setting methods or models, or result in conclusions that are likely to change prevailing practices;
- Redundancy, resiliency, and/or robustness are required or unique construction sequencing, or a reduced or overlapping design construction schedule will likely be required; or
- The Chief of Engineers or Director of Civil Works is likely to determine Type I IEPR is warranted.

If any of the circumstances above exist on the subject project, the LRD CAP Programmatic Review Plan Model is not applicable and a study specific review plan must be prepared by the home district, coordinated with the appropriate Planning Center of Expertise (PCX) and approved by LRD in accordance with EC 1165-2-214. EC 1165-2-214 , specifies the threshold programmatic criteria listed above that trigger a requirement to conduct Type I IEPR, and it explicitly requires a case-by-case risk informed decision on whether to conduct a Type I IEPR for CAP Section 205 projects. Section 3.c. below provides a project specific assessment of the factors affecting the scope for each level of feasibility study review; District Quality Control, Agency Technical Review and Type I IEPR. Section 6.a. provides the District's recommendation on Type I IEPR with supporting rationale relevant to the threshold programmatic criteria above.

Applicability of the LRD CAP Programmatic Review Plan Model for a specific project is initially determined by the Chicago District and subsequently reviewed and approved by the LRD Commander. If the LRD determines that the model plan is applicable for a specific study, the LRD Commander may approve the plan (including exclusion from IEPR) without additional coordination with a PCX or Headquarters, USACE. The initial decision as to the applicability of the model plan shall be made no later than the Federal Interest Determination (FID) milestone (as defined in Appendix F of ER 1105-2-100, F-10.e.1) during the feasibility phase of the project. A review plan for the project will subsequently be developed and approved prior to execution of the Feasibility Cost Sharing Agreement (FCSA) for the study. In addition, per EC 1165-2-214, the home district and LRD shall assess at the MSC Decision Meeting (MDM) whether the initial decision on Type I IEPR is still valid based on new information. If the decision on Type I IEPR has changed, the District and LRD shall promptly begin coordination with the appropriate PCX.

After approval of the project decision document and prior to execution of a Project Partnership Agreement with the non-federal sponsor to implement the McCook Levee Project, this review plan shall be updated and revised for the Implementation Phase by the Chicago District, and subsequently reviewed by the LRD staff and approved by the LRD Commander. The revised and approved review plan shall specify the Design and Implementation phase products to be reviewed and the associated level of peer review of each, including the appropriateness of a Type II IEPR (Safety Assurance Review).

C. 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 2010
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007
(5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(6) LRD Continuing Authority Program Management Plan and Standard Operation Procedures, 1 Oct 2015.

(7) ISO Process; Document ID:14610 Great Lakes and Ohio River Division, Preparation and Approval of Civil Works Review Plans, 22 Sept 2011
(8) McCook Levee, Illinois CAP 205 Project Management Plan Jan 2017

D. Requirements

This review plan was developed from the LRD CAP Programmatic Review Plan Model. It was developed in accordance with EC 1165-2-214 and 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 Major Subordinate Command (MSC) 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). Additionally, it ensures that planning models and analysis are compliant with Corps policy, theoretically sound, computationally accurate, transparent, described to address any limitations of the model or its use, and documented in study reports (per EC 1105-2-412).

II. REVIEW MANAGEMENT ORGANIZATION (RMO)

The Review Management Organization (RMO) is responsible for managing the overall peer review effort described in this review plan. The RMO for CAP Section 205 decision documents is typically LRD, because the LRD Commander is responsible for approving the Review Plan and the decision to implement projects under this authority. However, an appropriate National Planning Center of Expertise (PCX) may also serve as the RMO. Because of the potential for CAP Section 103 and Section 205 projects to have significant life safety implications, determination of the RMO for the decision document for those type projects is made on a case-by-case basis at the FID approval stage. Also, during the FID review and approval process, the home District may request LRD to delegate its RMO responsibility to the most appropriate PCX for any CAP project.

The information presented in Section 3 below provides the basis for the determination that LRD will serve as the RMO for the Feasibility Phase of the McCook Levee Project.

Because Type I IEPR is scheduled for the McCook Levee Project, the Chicago District and LRD will coordinate the Type I IEPR effort with the appropriate PCX. The LRD maintains approval and oversight responsibilities of this review plan, but may delegate the coordination and management of decision document reviews to the appropriate PCX, as specified in Sections IV.A., V.A. and VI.B. The PCX will administer the Type I IEPR. A copy of the approved review plan (and any updates) will be provided to the Flood Risk Management Planning Center of Expertise (FRM-PCX) to keep the PCX apprised of requirements and review schedules for each LRD CAP decision document subject to Type I IEPR.

III. STUDY INFORMATION

A. Decision Document

The McCook Levee, Illinois CAP Section 205 decision document will be prepared in accordance with ER 1105-2-100, Appendix F. The preferred decision document format is contained in the Detailed Project Report (DPR) template in the LRD CAP Program Management Plan/Standard Operating Procedures, which integrates the environmental documentation required under NEPA and other relevant environmental statutes into the project decision document. The purpose of a DPR is to document the basis for a recommendation to invest Federal and non-Federal resources to address a local water resource problem or opportunity of significance to the Nation. The approval level of the decision document is the LRD Commander.

B. Study/Project Description.

McCook Levee is located on the west bank of the Des Plaines River in western Cook County, about 12 miles southwest of Downtown Chicago. The surrounding area is mostly urbanized, with a strong industrial base. The study area is shown in Figure 1. While this study focuses specifically on overbank flooding associated with the Des Plaines River and interior drainage related to the McCook Levee, the figure includes the entire Summit Conduit sub-watershed. Drainage from this sub-watershed is conveyed in a system of ditches, sewers, and culverts to a large ditch which runs parallel to the McCook Levee, called the McCook Ditch. Flow in the McCook Ditch is routed to the east under the McCook Levee and the Des Planes River directly to the Chicago Sanitary and Ship Canal (CSSC) via the Summit Conduit.

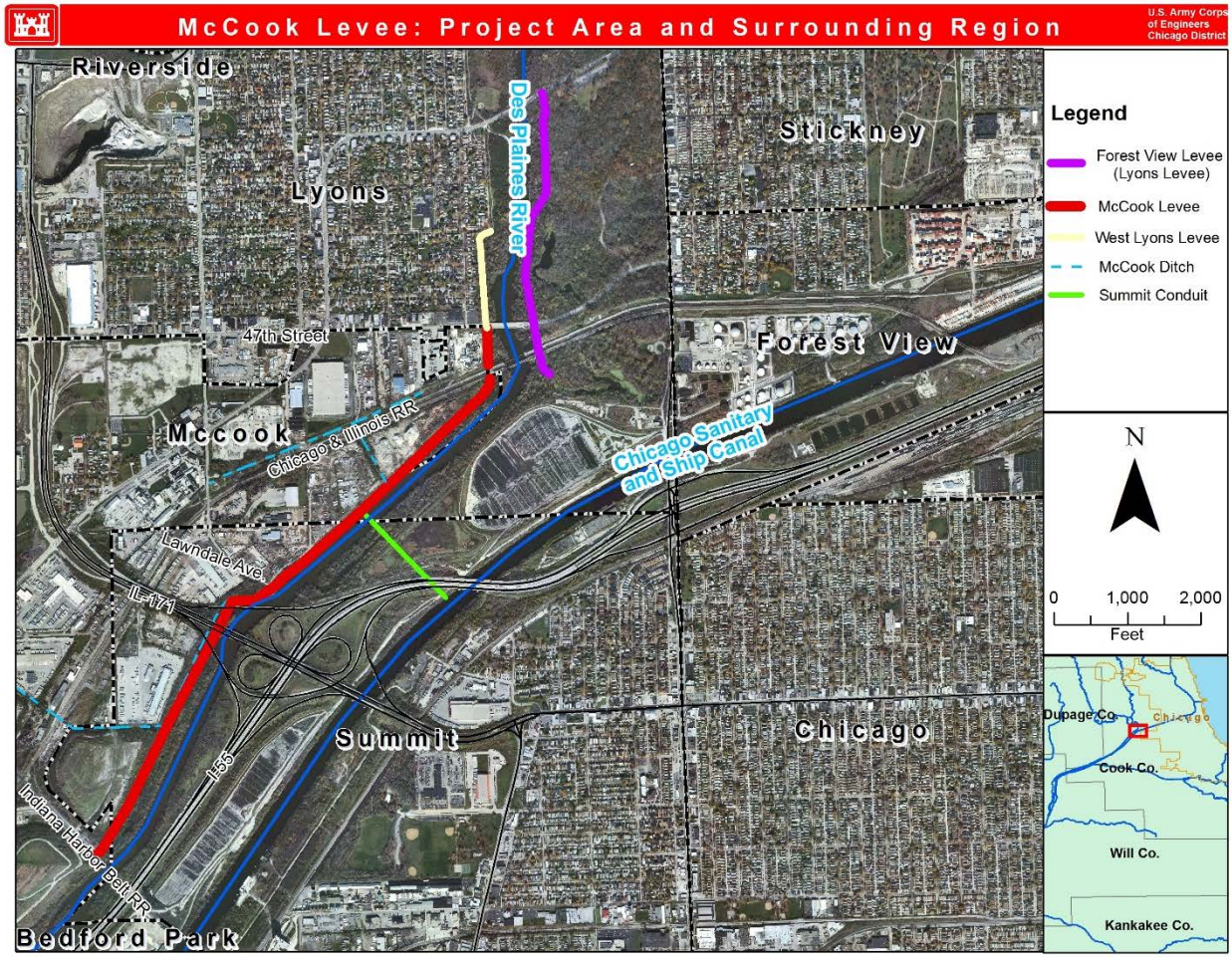

Figure 1: McCook Levee Study Area.

The McCook Levee was originally constructed around the turn of the 20th century by the Metropolitan Water Reclamation District of Chicago (MWRDGC), then known as the Sanitary District of Chicago. It is essentially segmented in two sections: the southern portion, and the northern portion. The West Lyons Levee is also identified in the above figure and described below.

Southern McCook Levee The southern portion of the levee extends between Lawndale Avenue and the Indiana Harbor Belt Railroad tracks, approximately 3,300 feet south of IL-171. This portion of the levee has several low spots at which the level of protection is lower than the 1% annual chance flood profile as identified by MWRDGC hydraulic modelling. MWRDGC estimates that the Des Plaines River has overtopped the McCook Levee at this ditch overflow location at least 17 times since 1948 and at the dip in the levee under the IL-171 bridges 10 times over the same period. Presently, most of this area behind this section of the levee is higher than the levee and no structures are considered to be at risk of flooding behind the southern portion of the levee.

Northern McCook Levee – The northern portion of the levee extends northeast from Lawndale Avenue approximately 4,100 feet to the Chicago & Illinois Railroad tracks. The levee continues approximately

550 feet north to tie into high ground at 47th Street. In 1979, a section of the levee breached and MWRDGC repaired the damaged portion and drove steel sheet pile along the length of the levee to increase the height of flood protection and to prevent seepage through, but not under, the levee. The top of the levee along this portion is above the 1% annual chance flood profile for the Des Plaines River and there are no known overtopping occurrences since the repairs and elevation were completed in 1979. The area behind this portion of the levee contains several industries which are in danger of flooding, either from breaching or overtopping of the McCook Levee or from the McCook Ditch overbanking as a result of limited outlet capacity via the Summit Conduit.

The area potentially impacted by flooding behind the McCook Levee is entirely industrial. The industries include a recycling company, repair shops, trucking and intermodal facilities, manufacturing operations, and an oil and fuel handling facility.

West Lyons Levee – The West Lyons Levee is located in the Village of Lyons north of McCook and is a separate system than the McCook Levee. It extends approximately 1,400 feet between of 47th Street and 45th Street. The top of the levee is above the 1% annual chance flood profile for the Des Plaines River and there are no known overtopping occurrences. The area behind this portion of the levee is a residential neighborhood. Although it is a separate system than the McCook Levee based on its existing elevation, if a plan is selected to raise the McCook Levee, the West Lyons levee may become part of the McCook Levee project to ensure a complete levee system with a tie-in to high ground.

Based on the investigations conducted to support the Federal Interest Determination (FID) Report, alternatives to be considered during the Feasibility Phase include relocation of the McCook Ditch outlet combined with rehabilitation or elevation of the northern portion of the levee as well as non-structural measures. Estimated project costs reported in the FID range from $[redacted] to $[redacted] The non-Federal sponsor for the study is MWRDGC.

C. Factors Affecting the Scope and Level of Review.

- *Technical complexity.* The study will investigate measures to address the impacts of overbank and interior drainage flooding to industrial structures and a roadway in the study area. 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 associated with the design of the recommended plan.

- *Controversy.* The Feasibility Study is not expected to be controversial. The current plans do involve mostly repair of the existing levee and are completely contained within an industrial area. The improvements proposed by the study are likely be be supported by adjacent property owners.

- *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 focus on addressing the economic impacts of flooding. The area potentially impacted by flooding behind the McCook Levee is entirely industrial. Twenty businesses have been identified as potentially impacted by flooding behind the levee. The industries include a recycling company, repair shops, trucking and intermodal facilities, manufacturing operations, and an oil and fuel handling facility. Loss of life is considered to be a low risk in this industrial area because individuals within the area are expected to be alert and able to respond and evacuate quickly at all times that they are present. Although risk to life is considered to be low and any plan recommended by the study will manage flood risks in the study area, it is expected that there will also be residual risks associated with the potential for levee overtopping or breaching or catastrophic project failure. For this reason, the District Chief of the Technical Services Division, which includes the Engineering and Construction and Operations Branches, has determined that there are life-safety concerns associated with the impacts of flooding in the study area.

  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 Type II IEPR or Safety Assurance Review (SAR) should be incorporated into the Type I IEPR when life-safety issues exist.

D. In-Kind Contributions.

Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC and ATR, similar to any products developed by USACE. The non-Federal sponsor, MWRDGC, will provide a portion of the H&H analysis to be used in the Feasibility Study.

IV. 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 District and LRD QMS procedures. Attachment 1 lists the DQC team members according to each significant area of expertise needed to accomplish the feasibility study objectives.

A. 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, the Draft Detailed Project Report, the Final Detailed Project Report, and all supporting documents.

B. Required DQC Expertise.

While DQC will be conducted by PDT members and their supervisors throughout the product development process, a final DQC review will be conducted by a team that is independent of the PDT. At a minimum this team will include representatives from Planning and Design Branches.

C. 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.

V. 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 LRD. At a minimum, the name of the ATR lead will be provided at the time of initial decision document review plan submission. Remaining ATR team members will be selected and identified in a revised review plan (Attachment 1) once the study funds are obtained.

A. Products to Undergo ATR.

ATR will be performed throughout the study in accordance with the regional QMS as found in Qualtrax. The ATR shall be documented and discussed at the MDM milestone. Certification of the ATR will be provided prior to the District Commander signing the final report. An ATR of the MSC Decision Milestone Draft DPR, including NEPA and supporting documentation, will be completed prior to submittal to LRD for review. A targeted review of the Final Report will include 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 Table below lists the technical disciplines and requisite expertise deemed appropriate to successful accomplishment of the subject feasibility study objectives. The selected ATR members are listed according to discipline in Attachment 1.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional preferably with experience in preparing Section 205 decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc). The ATR Lead MUST be from outside LRD.
Planning	The Planning reviewer should be a senior water resources planner with experience in FRM plan formulation and CAP Section 205 projects.
Economics	The economics reviewer should have experience with economic analyses to support flood risk management studies, with modeling structural in HEC-FDA, and with evaluation of non-structural measures. The Economic Reviewer should also perform a Risk Analysis review and should be experienced with performing and presenting risk analyses in accordance with ER 105-2-101 and other related guidance.
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 and Hydraulic Engineering	The hydrology and hydraulics reviewer will be CERCAP certified and should be a senior engineer with experience using HEC-HMS and HEC-RAS. They should have an understanding of open channel one-dimensional and two-dimensional unsteady flow hydraulic models and have a knowledge of the application of levees and flood walls, flap-gate control structures, and non-structural solutions involving flood proofing. This reviewer should be capable of determining system non-stationarity and assessing system climate change vulnerability, adaptability, and resilience.

Civil/ Geotechnical Engineering	The civil engineering reviewer will be CERCAP certified and should be experienced in the design of flood risk management projects, particularly levees and non-structural measures. The Civil Reviewer will also perform a review of the Geotechnical analysis.
Cost Engineering	*Cost MCX Staff or Cost MCX Pre-Certified Professional as assigned by the Walla Walla Cost Engineering Mandatory Center of Expertise with experience preparing cost estimates for* flood risk management projects.
Real Estate	The real estate reviewer will be approved by the Real Estate COP as a FRM reviewer and have experience with preparing real estate plans for structural and non-structural flood risk management projects.

C. Documentation of ATR.

DrChecks[SM] 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[SM] 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, LRD, 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 EC 1165-2-214 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed

in DrChecks[SM] with a notation in the ATR Summary Report and the DrChecks comment evaluation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare an ATR Summary Report, which will be 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 prior to the District Commander signing the final report. A sample Statement of Technical Review is included in Attachment 2.

VI. Independent External Peer Review

While CAP projects are generally smaller and less technically complicated than specifically authorized feasibility studies, IEPR may be required for CAP 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. Where designated, IEPR panels will consist of independent, recognized technical experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for planning, design and construction of a Civil Works project. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project feasibility studies, which upon approval, serve as a federal decision document. 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 covers the entire decision document, including key component actions taken to address the 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.

Section 506, 125, and CAP project decision documents are generally excluded from Type I Independent External Peer Review (IEPR) except those under Section 103 and Section 205. The exceptions are any project that requires an EIS or any project that meets the mandatory triggers stated in Appendix D of EC 1165-2-214. Due to the nature of flood risks, Section 103 and Section 205 decision documents require a case-by-case risk informed decision to conduct a Type I IEPR, which may be prepared using the LRD CAP Programmatic Review Plan Model or prepared as a project specific Review Plan that meets the requirements of EC 1165-2-214. Section VI.A below specifies the project specific circumstances and rationale for adopting or excluding Type I IEPR of the McCook Levee decision document.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), considers the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare, and in some cases may include decision document reviews during the Feasibility Phase. Type II IEPR is managed outside the USACE and is 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 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 risk informed decision on whether Type I and/or II IEPR will be required is documented below.

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 Type I 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.
- The total project cost is expected to be between $[redacted] and $[redacted] well below $45 million.

A Type II IEPR is anticipated to be required for the design and construction activities of the selected McCook Levee Plan. A Safety Assurance Review (SAR) will also be completed during the Type I IEPR per Section 2.c.(3) of Appendix D of EC 1165-2-214.

B. Products to Undergo Type I IEPR.

A Type I IEPR of the Draft Feasibility Report, including supporting documentation, 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.
Engineering	The Civil Engineering panel member should be an expert in their field, which may include civil design, hydraulic, or geotechnical engineering. The panel member will have expertise in design and implementation of flood risk management projects, including levees.

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.

VII. 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 by the MSC Commander, or warrant a recommendation by the MSC Commander to higher authority for approval. 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.

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

The home District, in conjunction with the RMO, is responsible for coordinating with the Cost Engineering MCX located in the Walla Walla District for review of the cost estimate for all CAP decision documents. For decision documents prepared under the LRD CAP Programmatic Review Plan Model, regional cost personnel that are pre-certified by the MCX, and assigned by the Cost Engineering MCX, will conduct the cost engineering ATR. The MCX will provide the Cost Engineering MCX certification. Either the designated ATR Lead or the Cost Engineering MCX shall make the selection of the cost engineering ATR team member.

IX. MODEL CERTIFICATION AND APPROVAL

The approval of planning models under EC 1105-2-412 is not required for CAP projects. MSC Commanders are responsible for assuring models for all planning activities are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Therefore, the use of a certified/approved planning model is highly recommended and should be used whenever appropriate. Planning models 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 selection and application of the model and the input and output data is the responsibility of the users and is subject to DQC and ATR.

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 and ATR.

A. Planning Models.

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
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 Des Plaines River.	Certified
FQI (Floristic Quality Index)	This assessment tool was designed to be used as an all-inclusive method for assessing the quality of plant communities. The FQI was originally developed for the Chicago Region, but has since been developed for regions and states throughout North America. This method assesses the sensitivity of individual plant species that inhabit an area. Each native species is assigned a coefficient of conservatism ranging from "0 to 10, with "0" assigned to species that are highly tolerant to disturbance and are considered general in their habitat distribution and "10" assigned to species with a very low tolerance to disturbance and displaying a very specific relationship to a certain habitat type. This model will be used to assess the ecological value of the existing site condition, determine whether there is a need for mitigation, and evaluate proposed mitigation measures, based on the function of the plant community.	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 4.0 (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 Des Plaines River.	HH&C CoP Preferred Model
HEC-HMS 4.1 (Hydrologic Modeling System)	The Hydrologic Modeling System (HEC-HMS) is designed to simulate the complete hydrologic processes of dendritic watershed systems. The program will be used to generate hydrographs for the watershed to be used as inputs to the HEC-RAS hydraulic models.	HH&C CoP Preferred 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.	Enterprise Model

X. REVIEW SCHEDULES AND COSTS

A. ATR Schedule and Cost.

ATR will be conducted before submittal of the MSC Decision Milestone Draft DPR. The review is currently expected to begin in November 2017 and last approximately six weeks. ATR will be conducted before submittal of the Final Feasibility Report, to include final cost certification and a targeted review of any significant changes to the Feasibility Report. This review will be conducted after the draft Feasibility Report is approved for NEPA Public Review, currently scheduled for April 2018. This review is expected to have a duration of approximately two months. The total review costs is expected to be approximately $[redacted].

B. Type I IEPR Schedule and Cost.

Type I IEPR will be conducted after the draft Feasibility Report is approved for NEPA Public Review. The review is currently expected to begin in December 2017 and have a duration of approximately six

months. This review contract is expected to cost approximately $[redacted] with an additional [redacted] in admin costs.

C. Model Review Schedule and Cost.

For decision documents prepared under the LRD CAP Programmatic Review Plan Model, use of existing certified or approved planning models is encouraged. Where uncertified or unapproved models are used, review of the model for use will be accomplished through the ATR process. The ATR team should apply the principles of EC 1105-2-412 during the ATR to ensure the model is theoretically and computationally sound, consistent with USACE policies, and adequately documented. If specific uncertified models are identified for repetitive use within a specific district or region, the appropriate PCX, MSC(s), and home District(s) will identify a unified approach to seek certification of these models.

XI. PUBLIC PARTICIPATION

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. The ATR team will be provided copies of public and agency comments. 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 Detailed Project 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 Detailed Project Report and Integrated NEPA analysis as part of the Final Report.

The Type I 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.

XII. REVIEW PLAN APPROVAL AND UPDATES

The LRD Commander is responsible for approving this review plan and ensuring that use of the LRD CAP Programmatic Review Plan Model is appropriate for the specific project covered by the plan. 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 LRD 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 LRD Commander following the process used for initially approving the plan. Significant changes may result in the MSC Commander determining that use of the LRD CAP Programmatic Review Plan Model is no longer appropriate. In these cases, a project specific review plan will be prepared and approved in accordance with EC 1165-2-214 and Director of Civil Works' Policy Memorandum #1. The Commander Approved Review Plan, along with the Commanders' approval memorandum, will be posted on the home district's webpage.

XIII. REVIEW PLAN POINTS OF CONTACT

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

- Project Manager, 312-846-5517
- Chief of Planning, 312-846-5580

ATTACHMENT 1: TEAM ROSTERS.

Project Delivery Team

Technical Discipline	Team Member	District	Credentials	Relevant Experience (Years)
Project Manager	[redacted]	[redacted]	[redacted]	[redacted]
Lead Planner	[redacted]	[redacted]	[redacted]	[redacted]
Economist	[redacted]	[redacted]		[redacted]
NEPA Specialist	[redacted]	[redacted]		[redacted]
Biologist	[redacted]	[redacted]		[redacted]
Hydraulic Engineer	[redacted]	[redacted]		[redacted]
Surveying	[redacted]	[redacted]	[redacted]	[redacted]
Environmental Engineer	[redacted]	[redacted]		[redacted]
Civil Engineer	[redacted]	[redacted]	[redacted]	[redacted]
Cost Engineer	[redacted]	[redacted]	[redacted]	[redacted]
Geotechnical Engineer	[redacted]	[redacted]	[redacted]	[redacted]
Real Estate	[redacted]	[redacted]	[redacted]	[redacted]

District Quality Control Team

Technical Discipline	Team Member	District	Credentials	Years Experience
Planner	[redacted]	[redacted]	[redacted]	[redacted]
Civil Design	[redacted]	[redacted]	[redacted]	[redacted]
Hydrology and Hydraulics	[redacted]	[redacted]	[redacted]	[redacted]
Environmental	[redacted]	[redacted]	[redacted]	[redacted]
Geotechnical	[redacted]	[redacted]	[redacted]	[redacted]
Real Estate	[redacted]	[redacted]	[redacted]	[redacted]

Agency Technical Review Team*

Technical Discipline	Team Member	District	Credentials	Years Experience
ATR Lead	[redacted]	[redacted]	[redacted]	
Plan Formulation	TBD			
Economics/Risk Analysis	TBD			
NEPA/Environmental Resources/Cultural Resources	TBD			
Hydrology and Hydraulics	TBD			
Civil/ Geotechnical Engineering	TBD			
Cost Engineering	TBD			

Real Estate	TBD			

*LRC is currently coordinating with ATR Lead to determine composition of the ATR Team

Vertical Team

Technical Discipline	Team Member	District	Credentials	Years Experience
LRD District Liaison	[redacted]	[redacted]		

Independent External Peer Review Team

Technical Discipline	Team Member	District	Credentials	Years Experience

ATTACHMENT 2: 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 and brief description of it>* 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 DrChecks[SM].

SIGNATURE _____ _____

Name Date

ATR Team Leader

Office Symbol/Company

SIGNATURE _____ _____

Name Date

Project Manager (home district)

Office Symbol

SIGNATURE _____ _____

Name Date

Architect Engineer Project Manager[1]

Company, location

SIGNATURE _____ _____

Name Date

Review Management Office Representative

Office Symbol

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 Date

Chief, Engineering Division (home district)

Office Symbol

SIGNATURE

Name Date

Chief, Planning Division (home district)

Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS LOG

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
ASA(CW)	Assistant Secretary of the Army for Civil Works	NED	National Economic Development
ATR	Agency Technical Review	NER	National Ecosystem Restoration
CAP	Continuing Authorities Program	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	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMS	Quality Management System
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RED	Regional Economic Development
IEPR	Independent External Peer Review	RMC	Risk Management Center
		RMO	Review Management Organization
LERRDs	Lands, Easements, Rights-of-Way, Relocations, Disposal/borrow areas	RTS	Regional Technical Specialist
MCX	Mandatory Center of Expertise	SAR	Safety Assurance Review
MDM	MSC Decision Meeting	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act