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

CELRD-PD-S 2 February 2018

MEMORANDUM Commander, U.S. Army Engineer District, Chicago, (ATTN: CELRC-PM-PL/Susanne Davis), 231 S. LaSalle St., Suite 1500, Chicago, IL 60604-1437

SUBJECT: Decision Document Review Plan for Michigan City Harbor and Trail Creek, Michigan City, Indiana CAP Section 204 Small Feasibility Study – LRD Approval

1. Reference CELRC-PMD-EP Memorandum, dated 29 NOV 17, Subject: Michigan City Harbor and Trail Creek, Michigan City, Indiana CAP 204 Feasibility Study – Review Plan.

2. The subject Decision Document Review Plan (RP) was presented to the Great Lakes and Ohio River Division for approval in accordance with Engineering Circular (EC) 1164-2-214 "Civil Works Review" dated 15 Dec 12. LRD received the review plan on 29 November 2017. The RP addresses the technical and policy review requirements for the feasibility study, which will evaluate alternatives to beneficially use dredged material from Michigan City Harbor and Trail Creek for the purpose of ecosystem restoration, flood risk management, or coastal storm damage reduction.

3. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes an appropriate scope and level of review. The RP satisfies peer review policy requirements described in EC 1165-2-214, and adequately defines the scope and level of peer review for the activities to be performed for the subject project phase. The size of the review team has been appropriately scaled based upon consideration of relative risk of the respective disciplines.

4. I concur with the recommendations of the RMO and approve the enclosed RP. 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.

5. The LRD POC for this action is Mr. Matthew Shanks, CELRD-PD-S, who can be reached at (513) 684-6240, or email at Matthew.R.Shanks@usace.army.mil.

BUILDING STRONG and Taking Care of People!

2 Encls
1. Comment Report
2. Review Plan

PAUL J. KREMER
Colonel, EN
Commanding

DECISION DOCUMENT REVIEW PLAN

Michigan City Harbor and Trail Creek, Michigan City, Indiana
Continuing Authority Program Section 204
Beneficial Use of Dredged Materials

Chicago District

LRD Commander Approval Date: February 5, 2018

Last Revision Date: None

US Army Corps
of Engineers ®

TABLE OF CONTENTS

TABLE OF ATTACHMENTS

I. PURPOSE AND REQUIREMENTS

A. Purpose

This Review Plan defines the scope and level of peer review for the Michigan City Harbor and Trail Creek, Michigan City, Indiana, Section 204 Beneficial Use of Dredged Materials project decision document.

Section 204 of the Water Resources Development Act of 1992, Public Law 102-580, provides the authority to carry out projects to reduce storm damage to property, to protect, restore and create aquatic and ecologically related habitats, including wetlands, and to transport and place suitable sediment, in connection with dredging for construction, operation, or maintenance by the Secretary of an authorized Federal water resources project. 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 Great 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.

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 Michigan City Harbor and Trail Creek 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

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 204 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 if deemed appropriate.

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 Michigan City Harbor and Trail Creek Project.

III. STUDY INFORMATION

A. Decision Document

The Michigan City Harbor and Trail Creek, Michigan City, Indiana CAP Section 204 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.

Michigan City Harbor and Trail Creek is located within the city limits of the City of Michigan City in LaPorte County, Indiana. It is located in the northeast corner of the state just 5 miles south of the Michigan - Indiana State line. Michigan City Harbor, which has Federal involvement dating back to 1836, is located at the mouth of Trail Creek, where it empties into Lake Michigan. The navigation project

consists of in-lake navigation structures (breakwaters/piers) protecting the entrance to the harbor, an inshore recreational boat harbor basin, located immediately adjacent to Trail Creek, and immediately inshore of the Michigan City beach and a maintained portion of Trail Creek, extending about 1-1/2 miles upstream of the Trail Creek mouth. Figure 1 includes a site map highlighting the Trail Creek dredge area.

Figure 1: Michigan City Harbor and Trail Creek CAP Section 204 Study Area.

USACE is responsible for maintenance dredging within the Federal Navigation Channel of Michigan City Harbor and Trail Creek. The River and Harbor Act of January 1927 authorized dredging of an entrance channel and Turning Basin Number 1 in Trail Creek, 120 to 425-feet wide and 18-feet deep up to the first bridge opening at Franklin Street. Franklin Street is considered to be the division between the Harbor and Trail Creek. Dredging depths currently maintained are 14-feet in the entrance channel lakeward of the Outer Basin entrance gap in the East Pier, and 12-feet south of the gap to the Franklin Street Bridge. This same Act also authorized dredging of a 50-foot wide channel in Trail Creek to a depth of 18-feet from Franklin Street to Turning Basin Number 2, located midway between the bridges at Michigan Street and 6th Street. This reach is currently maintained at a depth of 10-feet. The farthest upstream project

reach is from Turning Basin Number 2 to the E Street Bridge and consists of a 50-feet wide authorized channel dredged to a depth of 6-feet. This reach was authorized under the Continuing Authority of Section 107 of the River and Harbor Act of July 1960, and was approved by the Chief of Engineers in September 1966. Trail Creek was last dredged in 2002; the harbor was last dredged in 2008.

The purpose of this study is to determine if a Federal interest exists in beneficially using dredge material from Michigan City Harbor and Trail Creek for the purpose of ecosystem restoration, flood risk management, or coastal storm damage reduction. Project alternatives include using the dredged material to restore riparian habitat along upstream areas of Trail Creek or using the material to restore or create aquatic or ecologically related habitat in the vicinity of Trail Creek.

C. Factors Affecting the Scope and Level of Review.

Technical Complexity: The anticipated project design will take advantage of prevailing practices and methodologies. It is not expected to be based on novel methods or involve the use of innovative techniques, or present complex challenges for interpretation. The sediment being used must meet specific standards, but other than that the measures involved in the project are not expected to generate significant technical, institutional, or social challenges.

Controversy: The project/study is not anticipated to be controversial nor result in 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.

Project Risks: If ecosystem restoration
The major risk is that environmental outputs may not be achieved to the extent desired. In addition, unfavorable weather or physical conditions may cause the project to not perform as expected. An adaptive management plan will be developed and implemented as a method to mitigate these ecological challenges. Another risk is the perception that sediment in the Federal Navigation channels may not be suitable for ecosystem restoration. Sediment analyses will be conducted to identify the suitability of the sediments for beneficial use

Requested External Review: The Governor of Indiana has not requested peer review by independent experts.

Life Safety: The project will neither be justified by life safety nor will it involve significant threat to human life/safety assurance. There is no reason to believe that any measures involved in the project are associated with a significant threat to human life. In accordance with EC 1165-2-214 (Appendix B, Section 4.a), the District Chief of the Technical Services Division, which includes the Engineering and Construction and Operations Branches, has determined that there are no life-safety concerns associated with the study.

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 however, no in-kind contributions are anticipated for this 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 DPR, the Final DPR, 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 EC 1165-2-214 (Appendix C: District Quality Control and Agency Technical Review). The ATR shall be documented and discussed at the MSC Decision Milestone (MDM). Certification of the ATR will be provided prior to the District Commander signing the final report. An ATR of the MDM 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 204 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 CAP 204 beneficial use projects.
Environmental Resources (Biology/NEPA/Ecosystem Output Evaluation)	Team member will be experienced in the NEPA process and analysis, and have a biological or environmental background that is familiar with the project area and ecosystem restoration. Team member should be familiar with cultural/historic resource and ecosystem restoration projects. Should also be familiar with models used for assessing ecological outputs. They should also be experienced in analysis of impacts as required by the National Environmental Policy Act (NEPA) and other applicable laws, regulations, and executive orders. This reviewer should be

	an expert in characterizing sediments and former industrial sites for the presence of toxic substances.
Operations/ Dredging	The operations reviewer should be experienced in dredging and beneficial use projects.
Real Estate	The real estate reviewer will be approved by the Real Estate COP as a CAP study reviewer and have experience with preparing real estate plans
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 dredging and beneficial use 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 those 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 Michigan City Harbor and Trail Creek, Michigan City, Indiana 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.

EC 1165-2-214 exempts CAP Section 204 projects from Type I IEPR, and based on the consideration of project specific factors presented in Section III.C relative to the criteria in Paragraph I.B above, the level of risk of the Michigan City Harbor and Trail Creek, Michigan City, Indiana project does not warrant a Type I IEPR of the project decision documents.

B. Products to Undergo Type I IEPR.

Not Applicable.

C. Required Type I IEPR Panel Expertise.

Not Applicable.

D. Documentation of Type I IEPR.

Not-Applicable

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 may 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
IWR Planning Suite (1.0.11.0)	IWR Planning Suite assists with plan formulation by combining user-defined solutions to planning problems and calculating the effects of each combination or "plan." The program can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are best financial investments and displaying the effects of each on a range of decision variables.	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 for Regional Use

Qualitative Habitat Evaluation Index (QHEI)	The QHEI in flowing waters was originally developed by the Ohio EPA as an index of macro-habitat quality of streams in Ohio and associated ecoregions. The QHEI was designed to provide a measure of habitat that generally corresponds to the physical and chemical characteristics which influences the presence and abundance of stream fishes, and which are generally important to other aquatic life (e.g., invertebrates). The author described the goal of the QHEI as "filling a gap between completely subjective habitat descriptions and more labor intensive Habitat Suitability Indices developed for each species in a fish community." As a macro-scale approach, the QHEI measures emergent properties of habitat (e.g., sinuosity, pool/riffle development, bank erosion) rather than the individual factors which shape these characters (e.g., current velocity, depth). The QHEI is as a rapid, index-based, community-focused, ecological assessment. Calculation of the index is based on field observations and scoring of reach-scale habitat metrics organized under substrate quality, riffle-pool quality, bank and riparian quality, channel morphology development, and instream cover. Local stream gradient is scored using topographic maps. Each metric contains submetrics – for instance, the "channel morphology" metric is scored based on sinuosity, development, channelization, and stability. The metrics are individually scored and then summed to provide the total QHEI site score, with a maximum possible score of 100. The QHEI model is extensively used within Ohio and adjacent ecoregions, generally for the purposes of biological monitoring or determining stream impairment.	Certified

B. Engineering Models.

The following engineering models are anticipated to be used in the development of the decision document. As indicated in the 'approval status' column below, all models used comply with ER 1110-2-1150 (Engineering and Design for Civil Works Projects) guidance.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
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
HEC-RAS 5.0.3 (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 The program may be used to determine hydraulic design requirements and evaluate project impacts of evaluated plans.	HH&C CoP Preferred Model
HEC-HMS 4.2.1 (Hydrologic Modeling System)	The Hydrologic Modeling System (HEC-HMS) is designed to simulate the complete hydrologic processes of dendritic watershed systems. The program may be used generate hydrographs for the watershed to be used as inputs to the HEC-RAS hydraulic models.	HH&C CoP Preferred Model

X. REVIEW SCHEDULES AND COSTS

A. ATR Schedule and Cost.

ATR will be conducted during completion of the study. This will include (1) before submittal of the MDM Draft DPR, currently scheduled for January 2019, and (2) before submittal of the Draft Final DPR, to include final cost certification and a targeted review of any significant changes to the report. The review is expected to have a duration of approximately six weeks, including preparation of comments, responses, and backcheck review. The total review cost is expected to be approximately $[redacted].

B. Type I IEPR Schedule and Cost.

Not Applicable.

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.

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:

- Project Manager, 312-846-5591
- Chief of Planning, 312-846-5580

ATTACHMENT 1: TEAM ROSTERS.

Project Delivery Team

Technical Discipline	Team Member	District
Project Manager	[redacted]	LRC
Lead Planner	[redacted]	LRC
NEPA Specialist	[redacted]	LRC
Biologist	[redacted]	LRC
Surveying	[redacted]	LRC
Environmental Engineer	[redacted]	LRC
Civil Engineer	[redacted]	LRC
Cost Engineer	[redacted]	LRC
Geotechnical Engineer	[redacted]	LRC
Real Estate	[redacted]	LRC
Operations	[redacted]	LRC

District Quality Control Team

Technical Discipline	Team Member	District
Planner	[redacted]	LRC
Civil Design	[redacted]	LRC
Environmental	[redacted]	LRC
Real Estate	[redacted]	LRE

Agency Technical Review Team*

Technical Discipline	Team Member	District	Credentials	Years Experience
ATR Lead	[redacted]	MVP		20
Plan Formulation	TBD			
NEPA/Environmental Resources/Cultural Resources	TBD			
Operations	TBD			
Real Estate	TBD			
Civil Engineering	TBD			
Cost Engineering	TBD			

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

Vertical Team

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

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
LERRDs	Lands, Easements, Rights-of-Way, Relocations, Disposal/borrow areas	RMO	Review Management Organization
MCX	Mandatory Center of Expertise	RTS	Regional Technical Specialist
MDM	MSC Decision Meeting	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act