

# **REVIEW PLAN**

**IMPLEMENTATION PHASE  
PLANS & SPECIFICATIONS**

**FOR**

**PIKE RIVER AQUATIC ECOSYSTEM RESTORATION  
MT. PLEASANT, WISCONSIN**

*Initial MSC Approval Date*

**DDMM YYYY**

*Last Revision Date*

**DDMM YYYY**

**U.S. ARMY CORPS OF ENGINEERS  
DETROIT DISTRICT**

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## REVIEW PLAN – IMPLEMENTATION PHASE

### PLANS & SPECIFICATIONS

#### PIKE RIVER AQUATIC ECOSYSTEM RESTORATION MT. PLEASANT, WISCONSIN

#### 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This Review Plan (RP) is for the implementation phase of the project and defines the scope, level of risk, and level of peer review for the design and construction. Specifically, restoration efforts would include: improving in-stream fishery habitat and wildlife habitat by enhancing wetland and upland habitat within the river corridor while also decreasing flooding impacts, enhancing water quality, and repairing bank erosion.

#### **b. References**

- (1) Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012
- (2) Engineer Regulation (ER) 1110-1-12, Quality Management, 31 July 2006
- (3) CELRE Quality Management Plan, CELRE DC 5-1-1 and, in particular, Appendix C-3 – Engineering Subplan dated November 30, 1998
- (4) Quality Assurance Plan (QAP), if applicable
- (5) Quality Management Plan (QMP)

**c. Requirements.** This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). It provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and work products. The EC outlines three levels of review: District Quality Control, Agency Technical Review, and Independent External Peer Review.

- (1) District Quality Control (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). Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. It is managed in the home district. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Additionally, the PDT is responsible for a complete reading of any reports and accompanying appendices prepared by or for the

PDT to assure the overall coherence and integrity of the report, technical appendices, and the recommendations before approval by the District Commander. The Major Subordinate Command (MSC)/District Quality Management Plans address the conduct and documentation of this fundamental level of review. DQC is addressed later in this review plan.

- (2) Agency Technical Review (ATR). ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assures that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel, preferably recognized subject matter experts with the appropriate technical expertise such as regional technical specialists (RTS), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC.
- (3) Independent External Peer Review (IEPR). 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. For clarity, IEPR is divided into two types, Type I is generally for decision documents and Type II is generally for implementation documents.

A Type II IEPR (SAR) shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities. External panels will review the design and construction activities prior to initiation of physical construction and periodically thereafter until construction activities are completed. The review shall be on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring that good science, sound engineering, and public health, safety, and welfare are the most important factors that determine a project's fate.

## **2. REVIEW MANAGEMENT ORGANIZATION (RMO)**

The RMO is responsible for managing the overall peer review effort described in this review plan. The RMO for the implementation document is the home MSC. The home District will post the MSC approved review plan on its public website. The RMO will assist the District in coordinating with ATR team members, ATR team development, and ensuring the necessary resources are available to conduct reviews.

### 3. PROJECT INFORMATION

#### a. **Project.** Pike River Aquatic Ecosystem Restoration,

Estimated Construction Cost = \$4,500,000

**b. General Site Location and Description.** The proposed ecosystem restoration project is located on the Pike River between Braun Road and CTH KR near the Village of Mount Pleasant, Wisconsin. The purpose of the Pike River project is to restore the aquatic ecosystem within Pike River to a more natural condition. Specifically, restoration efforts would include: improving in-stream fishery habitat and wildlife habitat by enhancing wetland and upland habitat within the river corridor while also decreasing flooding impacts, enhancing water quality, and repairing bank erosion. The project will also create prairie habitat. The restoration activities include realigning the course of the channel to more natural contours, channel widening and bank stabilization, in-stream modifications such as meanders, excavating a series of bank-side deep pools, and planting and establishing native vegetation on the river banks, wetland, and prairie areas.

**c. Project Delivery Team (PDT).** The PDT in charge of designing this project includes the following:

N/A

### 4. RISK INFORMED DECISIONS ON APPROPRIATE REVIEWS

#### a. **Project Risks**

- (1) Weather impact to project cost and schedule. The project involves the widening of an existing river channel. During construction, periods of heavy rain and high water levels could impact the project schedule and therefore increase project costs. There are no flood plain issues/impacts associated with the proposed project.
- (2) Development of an Ecosystem Restoration Project that allows for the establishment of vegetation and other habitat, both in stream and on land.

**b. Risk Analysis.** The Pike River Aquatic Ecosystem Restoration project, despite an estimated construction cost of approximately 4.5 million dollars, has an overall low level of potential risks. There is no risk for potential life loss. The primary risk to the project will be weather impacts relating to heavy rain that could occur during construction. The project requires excavation to widen the river channel and thus, depending on construction methods, would be susceptible to high water levels that would impact project schedule and cost. This risk will be mitigated by allowing the project to be constructed during two construction seasons and, to reduce erosion impacts, limit the amount of disturbed areas. In addition, technical risks to the project are present in the effort to develop a project that allows for the proper establishment of native vegetation and habitat in stream and on land. The project requires the evaluation of geomorphology to determine that the required project will restore the river to a more natural state. To mitigate those risks, a geomorphology study was completed during the

Feasibility Phase of the project. In addition, lessons learned from the Local Sponsor's construction of six previous project phases have been applied to the project design during Feasibility. Also, the Local Sponsor has consulted with local wetland ecologist and a local university to select proper native plant species and in stream habitat features. Both the wetland ecologist and local university have been involved with previous project phases. It has been determined that the most appropriate level of review would be to conduct DQC/QA reviews including BCOES, Plan in Hand, and Supervisory reviews along with a brief ATR during the Implementation Phase. The Pike River project was designed to a 90% level by the local sponsor. The 90% plans and design were reviewed by LRE and revised as needed. The local sponsor design plans were included in the Feasibility Study of the project as an alternative. The feasibility study concluded that the local sponsor design was the recommended alternative. As required for the Feasibility Study process, ATR, LRD, and Public reviews will be completed. Despite the advanced level of the design documents during feasibility and low level of risk, it was determined that an additional ATR would be necessary during the implementation phase. The implementation phase ATR is needed due to the fact the specifications were not included in the Feasibility Study ATR. In addition, a Type II IEPR will not be required. The project utilizes standard construction practices and schedules that have been proven in seven previous project phases. All lessons learned have been incorporated into the project plans and specifications. Overall, the Pike River Aquatic Restoration project has a very low risk level and the selected level of review is reflective of that.

## **5. REVIEW TYPES AND REQUIRED DISCIPLINES**

### **a. District Quality Control (DQC/QA).**

DQC/QA efforts will include the necessary expertise to address compliance with published Corps policy. The PDT will develop a Quality Management Plan (QMP) for this project. The Detroit District will execute DQC/QA review which will include: Plan-In-Hand (PIH) Review, BCOES review and Supervisory Review. All review comments will be submitted into DrChecks.

(1) **Plan-In-Hand (PIH) Review:** On-site review to ensure design engineers and CADD technicians have a proper understanding of existing site conditions, the new design will coordinate with existing conditions, and the design meets customer's requirements. The plan-in-hand review will be performed after the 50% plans and specifications review. If a project is halted after the performance of the PIH, an additional PIH can be held based on engineering judgment of the PDT and approved by the Chief of Engineering and Construction. The Plan-In-Hand reviewers are as follows:

N/A

(2) **Supervisory Review:** Review to ensure Ready to Advertise (RTA) package is ready for final routing, all reviews have been completed and back checked, all files are properly labeled as dictated by project milestone and filed in ProjectWise, and package is ready for advertisement. The Supervisory reviewers are as follows:

N/A

**b. Agency Technical Review (ATR)**

This project involves the development of the following implementation design documents: plans and specifications. Because implementation documents are being produced, an ATR of the project is required. The project Feasibility study included design documents (drawings and selected portions of the technical specifications) at an approximately 90% design level. Those documents, including the evaluation of any alternatives and recommendations, were reviewed during an ATR of the Detailed Project Report. During the implementation phase of the project, the design plans and technical specifications will be reviewed through the District Quality Control processes outlined in this Review Plan. In addition, the design team will develop general specifications (Division 01), additional technical specifications, and solicitation documents. There are no anticipated major design modifications or project additions during the implementation phase; however an additional ATR for the Implementation Phase is required to ensure review of the complete project including all technical specifications. The ATR team from the Feasibility phase was as follows:

N/A

The ATR team for the Implementation Phase shall be the team listed below.

N/A

**c. Independent External Peer Review (IEPR)**

- (1) **General.** Type I and Type II IEPRs are conducted in accordance with the guidance promulgated in EC 1165-2-214. Type I IEPRs are conducted on project studies. It is of critical importance for those decision documents and supporting work products where there are public safety concerns, significant controversy, a high level of complexity, or significant economic, environmental and social effects to the nation. However, it is not limited to only those cases and most studies should undergo Type I IEPR. In accordance with EC 1165-2-214 a Type II IEPR (SAR) shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities
  
- (1) **Decision on Type II IEPR.** In accordance with EC 1165-2-214 a Type II IEPR (SAR) is not required for the following reasons: The project is not a hurricane, storm risk management or flood risk management project. The primary purpose of the project is aquatic ecosystem restoration through excavation and planting and doesn't have potential hazards that pose a significant threat to human life. In addition, the following factors were considered. The evaluation of each factor follows the factor description

- (i) The project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices

Evaluation: The design materials and methods utilize industry standards. The local sponsor for the project utilized similar design methods for the previous seven phases of the project. All lessons learned from those phases have been incorporated into the project drawings.

- (ii) The project design requires redundancy, resiliency, and robustness.

Evaluation: The purpose of the project is for aquatic ecosystem restoration and to allow for the existing channel to return to a natural state. Hydraulic analysis indicates no significant impacts to flood levels, life, or property. Redundancy, resiliency and robustness are not required.

- (iii) The project has unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems.

Evaluation: The project will be designed and constructed using a standard design-bid-build methodology. The project is expected to be constructed in two construction seasons, thus limiting schedule pressures.

Based on the assessment of the above answers a Type II IEPR will not be required. The project utilizes standard construction practices and schedules that have been proven in seven previous project phases. All lessons learned have been incorporated into the project plans and specifications.

- (2) **Decision on Type I IEPR.** This document is not a decision document. Therefore, Type I IEPR is not required.

- d. **Value Engineering:** A Value Engineering (VE) study was performed for this project in accordance with ER 11-1-321, 01 Jan 2011, change 1 and ER 1110-2-1150, Para. 14.7, 31Aug 99. The VE study was completed on December 18, 2013.
- e. **BCOES Reviews:** Reviews to assure solicitation documents are readily understood; the product can be bid, built, operated and maintained efficiently; environmental concerns are protected, and sustainability is addressed. A Pre-Design BCOES, 50% and 95% BCOES and a backcheck review will be conducted for this project. Design team members will conduct the BCOES reviews utilizing DrChecks. All DrChecks comments must be resolved and closed out by the reviewer. Comments not entered in DrChecks, but discussed during the BCOES meeting will be recorded and inserted in the BCOES Technical Memorandum.



Prior to the start of the BCOES Review, the Technical Coordinator (TC) should contact each office element to ascertain the name(s) of their representative(s) participating in the review. The TC should also determine from each office element listed above the number of Certified Final Submittals – BCOES Review Plans and Specifications required for the review. The plans and specifications shall be distributed to the office elements by memorandum or email link to the appropriate ProjectWise folder. As a minimum, the memorandum should state:

- (i) Whether the plans and specs were prepared in-house, by an A-E or both
- (ii) Start and end dates for the Review
- (iii) Review Comments will be entered into DrChecks
- (iv) Project Review Name in DrChecks
- (v) Labor Cost Codes and amounts (Provided by PM)

The BCOES reviewers are as follows:

N/A

## 6. PUBLIC INVOLVEMENT

- a. **Public Comment Period:** The Detailed Project Report (DPR) has been provided to stakeholders for comment during the Feasibility Phase. Upon completion, public involvement for this project will be considered to be complete. This Review Plan will be posted to the LRE web site after approval to allow the public an opportunity to review. This will not result in a formal comment period and there is no set time frame for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary.
- b. **Review Participation from Public:** There is no expectation of obtaining support from personnel outside of the USACE to conduct reviews.

## 7. IN-KIND CONTRIBUTION BY SPONSOR

The Village of Mt. Pleasant, WI (the Village) is the sponsor for this project. As a section 206 study, this project is cost shared 65% Federal/35% Non-Federal for the post feasibility costs associated with project construction.

## **8. MODEL CERTIFICATION AND APPROVAL**

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

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

### **a. Model Certification/Approval Schedule and Cost**

- (1) For implementation documents prepared under the model National Programmatic Review Plan, use of existing certified or approved planning models is encouraged. Where uncertified or unapproved models are used, approval of the model for use will be accomplished through the ATR process. The ATR team will 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.
- (2) The models listed below were used in the design of the lock replacement project. Any models required for new work packages will be identified in the package-specific QCP. This may include engineering and cost models. Certifications for those models will be addressed at that time.

Model Name	Model description	Model Type
MCACES or MII	These are cost estimating models. This is a cost estimating model that was developed by Building System Design Inc. Crystal Ball risk analyses software will also be used.	Cost Engineering

## 9. SCHEDULE AND COST OF REVIEWS

**a. DQC Schedule and Cost.** The cost for DQC is included in the costs for PDT activities. Cost is broken out separately for the PIH, and BCOES reviews as indicated, below. DQC will occur seamlessly throughout the DDR and the P&S development. Quality checks and reviews occur during the development process and are carried out as a routine management practice.

(1) **PIH Schedule and Cost:** The PIH is scheduled to occur in October 2014. The PIH is budgeted at \$4,500.

**b. ATR Schedule and Cost:** The Feasibility Phase ATR was completed on April 11, 2014 with a total cost of \$27,350. The Implementation Phase ATR is scheduled for November 2014 with an estimated cost of \$20,000.

**c. IEPR Schedule and Cost.** N/A

**d. BCOES Schedule and Cost:** The Pre Design BCOES is scheduled for August 2014. The 50% BCOES is scheduled to begin in October 2014 and the 95% BCOES is scheduled to begin in December 2014. The total BCOES is budgeted at \$11,000.

## 10. MSC APPROVAL

The Great Lakes and Ohio River Division is responsible for approving the review plan. Approval is provided by the MSC Commander. The commander's approval should reflect vertical team input (involving district, MSC, and HQUSACE members) as to the appropriate scope and level of review for the project. Like the PMP, the review plan is a living document and may change as the project progresses. The review plan must be updated and approved by the MSC throughout the PED phase (and the construction Phase, as applicable). Changes to the review plan should be approved by following the process used for initially approving the plan. MSCs will review the changes and the appropriate level of review as they relate to project updates.

## 11. REVIEW PLAN POINTS OF CONTACT / VERTICAL TEAM CONTACTS

Questions and/or comments on this review plan can be directed to the following points of contact: N/A

**ATTACHMENT 1: STATEMENT OF TECHNICAL REVIEW FOR IMPLEMENTATION DOCUMENT**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the *Plans and Specifications for the Pike River Aquatic Ecosystem Restoration Project*. 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<sup>sm</sup>.

*SIGNATURE*

\_\_\_\_\_  
*Name*  
ATR Team Leader  
*Office Symbol/Company*

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
*Name*  
Project Manager (home district)  
*Office Symbol*

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
*Name*  
Architect Engineer Project Manager<sup>1</sup>  
*Company, location*

\_\_\_\_\_  
Date

*SIGNATURE*

\_\_\_\_\_  
*Name*  
Review Management Office Representative  
*Office Symbol*

\_\_\_\_\_  
Date

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

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

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

*SIGNATURE*

\_\_\_\_\_  
*Name*  
Chief, Engineering Division (home district)  
*Office Symbol*

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 2: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>

**ATTACHMENT 3: ACRONYMS AND ABBREVIATIONS**

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