



**US Army Corps  
of Engineers®**

**Chicago District  
Great Lakes and Ohio River Division**

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# South Branch Pike River Ecological Restoration Continuing Authority Program Section 206

P2/Project Number: 487444

## **Review Plan – Decision Document**

PREPARED

BY:

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RECOMMENDED

BY:

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ENDORSED

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Review Management Organization (RMO)

APPROVED

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MSC APPROVAL DATE: DD MON YYYY

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## 1. PURPOSE, AUTHORITY, STUDY DESCRIPTION, AND PRODUCTS

- a. Purpose. This review plan defines levels and scopes of review required for the feasibility phase products.
- b. Authority. Continuing Authorities Program (CAP). Section 206 of the Water Resources Development Act (WRDA) 1996 as amended for Aquatic Ecosystem Restoration [Public Law 104-303-OCT 12, 1996].
- c. Study Description. The goal for this project is to restore the aquatic ecosystem within the South Branch Pike River to a more natural condition. The river exhibits flashy and powerful discharges with significant aggradation and degradation of the streambed and the surrounding wetlands. Bank stability is low and there is significant erosion during high flow conditions. Restoration efforts would include: improving in-stream fishery habitat and wildlife habitat by enhancing wetland and upland habitat within the river corridor while decreasing flooding impacts, enhancing water quality, and repairing bank erosion. These objectives would be accomplished by the following measures: the creation of scarce wet-mesic and upland prairie, sedimentation reduction, providing emergent/submergent habitat, improving in-stream fishery habitat and establishing native vegetation to stabilize the river banks and provide habitat. The Feasibility Study Report (FS) would complete the plan formulation process, identify cost effective plans for ecosystem restoration purposes and complete feasibility level design of the recommended plan. The FS will serve as the decision document for the approval of construction funding. The sponsor has started or completed the following data collection activities as work-in-kind (WIK) under an existing Memorandum of Understanding (MOU) dated March 16, 2018, for work provided or performed prior to the execution of a Project Partnership Agreement between the sponsor and U.S. Army Corps of Engineers (USACE).
  - Southeastern Wisconsin Regional Planning Commission (SEWRPC) Hydraulic Modeling - complete
  - Phase I Environmental Site Assessment (ESA) - complete
  - Geotechnical Site Investigation Report - complete
  - Applied Ecological Services (AES) – Wetland Delineation - in progress
  - Sediment Characterization - planned
  - Hydraulic Structural Survey – complete

d. Products.

<b>Table 1. List of Products to Be Prepared and Reviewed</b>					
<b>Product / Document</b>	<b>Prepared By</b>	<b>Type of Review to be Performed</b>			
		<b>DQC</b>	<b>ATR</b>	<b>Type I IEPR</b>	<b>Policy/ Legal</b>
Detailed Project Report (DPR) and Environmental Assessment (Main Report / Integrated DPR/EA)	In-house Resources	X	X		X
Civil / Structural Engineering Appendix A	In-house Resources	X	X		X
Cost Estimate Appendix B	In-house Resources	X	X		X
Real Estate Plan Appendix C	In-house Resources	X	X		X
Geotechnical Engineering Appendix D	In-house Resources	X	X		X
HTRW Assessment Appendix E	In-house Resources	X	X		X
Monitoring and Adaptive Management Plan Appendix F	In-house Resources	X	X		X
Planning Information Appendix G	In-house Resources	X	X		X
404(b)(1) Analysis Appendix H	In-house Resources	X	X		X
Hydrology and Hydraulic (H&H) Engineering Appendix I	In-house Resources	X	X		X
Environmental Coordination Appendix J Including: <ul style="list-style-type: none"> <li>• Summary of Comments &amp; Responses from Public and Agency Review</li> <li>• FONSI</li> <li>• Cultural Resources Report</li> </ul>	In-house Resources	X	X		X

**2. REVIEW REQUIREMENTS**

a. Types of Review. The feasibility phase activities and documents are required to be reviewed in accordance with ER 1110-1-12 and EC 1165-2-217. Based upon the factors under each heading, this study will undergo the reviews identified and described below.

(1) District Quality Control (DQC): DQC procedures will be performed and formally documented for all study products, including supporting documents.

- The District will perform and manage DQC procedures in accordance with the District DQC process.
- DQC will be documented with a summary report / certification.
- Supervisors within each area of responsibility will assign appropriate, qualified staff to

perform QC on their respective products. Personnel performing QC shall have the necessary expertise to address compliance with Corps policy.

- The following disciplines will be playing a critical role in the DQC for this flood risk management study:

<b>Table 2a. DQC Team Technical Disciplines and Expertise</b>		
<b>Technical Discipline</b>	<b>Peer DQC Reviewer</b>	<b>Chief Level DQC Reviewer*</b>
Plan Formulation	Each peer-level DQC reviewer will have no production role in the study/project and will have the necessary expertise/experience to thoroughly review the study products identified in Table (1).	PDB-M Chief
Civil Engineer		ENG-C Chief
Cost Estimator		RE Chief (Regional)
Real Estate Specialist		PDB-R Chief
Biologist/Cultural Resources		ENG-G
Geotechnical Engineer		ENG-H Chiefs
Hydraulic Engineer		
Environmental Engineer		

\*Need to update the DQC reviewer office symbols.

(2) Agency Technical Review (ATR): ATR will be scaled to a level commensurate with the risk and complexity of the products to be reviewed. 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 mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.).

- 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.
- All ATR reviewers must be certified to perform ATR by USACE. Multiple disciplines may be covered by a single reviewer based on appropriate experience, expertise, and certification.
- The team lead will be from outside LRD.
- The ATR review will be documented using DrChecks, and an ATR Summary Report and certification will be completed.

**Table 2b. ATR Technical Disciplines and Expertise Required**

<b>ATR Disciplines</b>	<b>Expertise Required</b>	<b>Justification / Rationale</b>
ATR Lead	The ATR lead should be a senior professional preferably with experience in preparing CAP Section 206 decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline.	Coordinate all ATR activities.
HTRW	This expertise is not anticipated to be required on this ATR Team.	A Phase 1 Environmental Site Assessment (ESA) has been completed by the NFS.
Plan Formulation	The Planning Reviewer should be a senior aquatic ecosystem restoration specialist and experienced in preparing CAP Section 206 projects.	This is a CAP 206 project.
Economics	This expertise is not anticipated to be required on this ATR Team.	No quantitative economic analysis for CAP 206 projects.
Mechanical Design	This expertise is not anticipated to be required on this ATR Team.	Do not anticipate pump houses will be included in measures and alternatives.
Civil Design Engineering	The Civil Engineering Reviewer should be experienced in designing ecosystem restoration projects.	This is a CAP 206 project, which is an aquatic ecosystem restoration project.
Structural Design Engineering	This expertise is not anticipated to be required on this ATR Team.	No structural alternatives expected to be considered.
Geotechnical Engineering	The Geotechnical Reviewer should be experienced in slope stability to review GeoStudio slope stability results.	Stream banks in some areas are currently unstable. A model will be developed to analyze the stability of proposed new channel slopes.
Environmental (NEPA)	The Environmental Reviewer should be experienced in analysis of impacts as required by the National Environmental Policy Act (NEPA), Section 7 Consultation, Section 106	The DPR will contain an environmental assessment.

	Consultation, and other applicable laws, regulations, executive orders and policy.	
Hydrology and Hydraulic Engineering	The Hydrology and Hydraulic Engineering Reviewer should be an expert in the field of hydraulics and have a thorough understanding of open channel one-dimensional and two-dimensional unsteady flow hydraulic models	Developing a model for stream flow.
Climate Preparedness and Resiliency	Climate reviewer should be an expert in performing climate analysis on ecosystem restoration projects.	As required by Engineering and Construction Bulletins (ECB) 2018-14, at least one member of an ATR Team for projects covered by this ECB will be Climate Preparedness and Resiliency (CRP) certified. The CRP Community of Practice (CoP) may help identify those who can perform, assist, or review qualitative assessments. The CRP Reviewer must be certified by the CRP CoP in the USACE Certification and Access Program (CERCAP). The CRP reviewer may also serve as a reviewer for a specific discipline.
Cost Engineering Reviewer	Experience preparing costs of ecosystem restoration projects.	A Cost Engineering reviewer is required by the Cost Mandatory Center of Expertise (MCX). A Cost MCX staff member or Pre-Certified Professional will be assigned by the Walla Walla MCX. Cost engineers performing the review should be well versed in ecosystem features and methods generally including concepts of construction in a riverine environment, glacio-fluvial stone material sources, invasive plant species

		eradication, and native planting and establishment.
Real Estate Reviewer	Experience with preparing real estate plans for ecosystem restoration projects.	Ensure the REP conforms to the real estate regulations , policies and guidance.

(3) Type I Independent External Peer Review (IEPR): A Type I IEPR is not required based on the mandatory triggers outlined in the Memorandum for Major Subordinate Command (MSC) and District Commanders dated April 05, 2019; the memorandum provides interim guidance on streamlining IEPR for improved civil works product delivery. Paragraph 4 states a project study may be excluded from Type I IEPR if the project does not meet any of the three mandatory IEPR triggers. This feasibility study does not meet any of the three mandatory IEPR triggers for the following reasons:

- The estimated total cost of the project, including mitigation costs, is not greater than \$200 million.
- The Governor of Wisconsin has not requested a peer review by independent experts.
- The study is not controversial due to significant public dispute over size, nature, or effects of the project or the economic or environmental costs or benefits of the project.

When none of the three mandatory triggers for IEPR are met, MSC Commanders have the discretion to conduct IEPR on a risk-informed assessment of the expected contribution of IEPR to the project. An IEPR would not provide additional benefit to the study for the following reasons:

- a. This study does not include the development or use of any novel methods.
- b. This project does not pose likely threats to health and public safety.
- c. There is no anticipated inter-agency interest.
- d. Chicago District has not received a request from the head of any Federal or State agency for an IEPR.
- e. The proposed project is not anticipated to have unique construction sequencing or a reduced or overlapping design construction schedule.

(4) Type II Independent External Peer Review (IEPR): Type II IEPR, or Safety Assurance Review (SAR), 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. Since this document does not involve life safety concerns, as confirmed by the LRC Chief of Engineering and Construction in the District Chief of Engineering Assessment of Life-Safety Risk, a Type II IEPR would not be considered.

(5) Policy and Legal Review: All decision documents will be reviewed for compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100.

- (6) Public Participation.
  - a. A public involvement program will be included to satisfy NEPA requirements and solicit public and government agency input.

- b. The District shall contact agencies with regulatory review for coordination as required by applicable laws and procedures.
- c. The District will review comments resulting from public and agency review, and will provide the ATR team copies of public and agency comments and responses.

3. **MODEL CERTIFICATION OR APPROVAL.** The following models may be used to develop the decision documents:

<b>Table 3a. Planning Models</b>		
<b>Model Name and Version</b>	<b>Model Description and How It Will Be Used</b>	<b>Certification / Approval Status &amp; Date</b>
IWR Planning Suite II (v2.0.9)	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 & Approved May 31, 2018
Floristic Quality Assessment (FQA) Coefficients of Conservatism for the Chicago Region	This assessment tool was designed to be used as an all-inclusive method for assessing the quality of plant communities. The FQA 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 & Approved March 7, 2017
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	Certified & Approved



<b>Table 3a. Planning Models</b>		
<b>Model Name and Version</b>	<b>Model Description and How It Will Be Used</b>	<b>Certification / Approval Status &amp; Date</b>
	<p>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.”</p> <p>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 characteristics (e.g., current velocity, depth).</p> <p>The QHEI is 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 summarized to provide the total QHEI site score, with a maximum possible score of 100. The QHEI model is extensively used within Ohio and suitable for other ecoregions including the South Branch of the Pike River in Kenosha County, Wisconsin, generally for the purposes of biological monitoring or determining stream impairment.</p>	December 11, 2014

<b>Table 3b. Engineering Models</b>		
<b>Model Name and Version</b>	<b>Model Description and How It Will Be Used</b>	<b>Approval Status</b>
HEC-RAS (v5.0.7)	HEC-RAS is a hydraulic model developed by the Hydrologic Engineering Center. The program is designed to perform one and two-dimensional steady and unsteady flow calculations as well as sediment transport and water quality modeling. It will be used to evaluate the hydraulic impacts of the project on the study reach.	Certified & Approved September 9, 2013
HSPF	Hydrologic Simulation Program-Fortran (HSPF) is a hydrologic model developed by the U.S. Environmental Protection Agency (EPA). The program is designed to perform continuous simulation of hydrologic processes. SEWPRC used this for the hydrologic modeling of the Pike River watershed.	Certified & Approved September 9, 2013
HEC-HMS (v4.5)	The Hydrologic Modeling System (HEC-HMS) is a hydrological model developed by the Hydrologic Engineering Center. The program is designed to perform watershed-scale hydrologic rainfall runoff computations and flood routing. It may be used for further evaluation of the hydrology of the Pike River watershed and determine flows for evaluation in the hydraulic model.	Certified & Approved September 9, 2013
HEC-SSP (v2.2)	HEC-SSP is a computational software that was developed by the Hydrologic Engineering Center. The program is used to perform statistical analyses of hydrologic data, particularly of flood flow frequency analysis. It may be used to perform flood frequency analysis on the Pike River to determine frequency flows for evaluation in the hydraulic model.	Certified & Approved September 9, 2013
GEOSLOPE GeoStudio 2020 10.2.1	GEOSLOPE computes the factor of safety of earth and rock slopes. SLOPE/W can effectively analyze both simple and complex problems for a variety of slip surface shapes, pore-water pressure conditions, soil properties, analysis methods and loading conditions. Using limit equilibrium, SLOPE/W can model heterogeneous soil types, complex stratigraphic and slip surface geometry, and variable pore-water pressure conditions using a large	Certified & Approved

	<p>selection of soil models. Analyses can be performed using deterministic or probabilistic input parameters. Stresses computed by a finite element stress analysis may be used in addition to the limit equilibrium computations for the most complete slope stability analysis available. With this comprehensive range of features, SLOPE/W can be used to analyze almost any slope stability problem you will encounter in your geotechnical, civil, and mining engineering projects.</p> <p>It will be used to analyze proposed stream slopes for acceptable factors of safety.</p>	
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4. **REVIEW SCHEDULE AND BUDGET.** The schedule and budgets for reviews are shown in below table.

<b>Table 3. Product and Review Schedule</b>				
<b>Product(s) to undergo Review</b>	<b>Review Level</b>	<b>Start Date</b>	<b>Finish Date</b>	<b>Budget (\$)</b>
Draft Detailed Project Report and Integrated Environmental Assessment (DPR & EA)	District Quality Control	12 JUL 2021*	25 JUL 2021*	\$10K
Draft DPR & EA	Agency Technical Review	26 JUL 2021*	30 Nov 2021*	\$29K
Draft DPR & EA	Policy and Legal Review (LRC)	30 AUG 2021*	5 SEP 2021*	\$5K
Draft DPR & EA	Public and Agency Review	13 SEP 2021*	12 OCT 2021*	N/A
Final DPR & EA	District Quality Control	25 OCT 2021*	7 NOV 2021*	\$5K
Final DPR & EA	Policy and Legal Review	22 NOV 2021*	28 NOV 2021*	\$5K
*Scheduled dates are tentative and may be updated as the project progresses.				

### ATTACHMENT 1 – Contacts

Function	Name	Phone	Office	E-Mail
RMO Contact	Daniel Linkowski	513-684-3598	CELRD-PDS-P	Daniel.P.Linkowski@usace.army.mil
MSC Contact – District Support Program Manager	Matthew Burkett	(513) 684-2049	CELRD-PD-S	Matthew.S.Burkett@usace.army.mil

PROJECT DELIVERY TEAM			
Function/Discipline	Name	Phone	Office
Project Manager	Nicole Toth	312-846-5517	CELRD-PDP-S
Lead Planner	Beth Adler	312-846-5525	CELRD-PDB-M
Biologist/NEPA Compliance	Shawna Herleth-King	312-846-5407	CELRD-PDB-R
Reviewer/Fish Biologist	Frank Veraldi	312-846-5589	CELRD-PDB-R
Archaeologist	Ashley Dailide	312-846-5581	CELRD-PDB-R
Engineering Tech (GIS)	Adam Karr	312-846-5413	CELRD-ENG-S
Hydraulic Engineer	Samantha Carlstrom	312-846-5354	CELRD-ENG-H
Environmental Engineer	Jennifer Miller	312-846-5505	CELRD-ENG-H
Civil Engineer	Matt Lindeen	312-846-5492	CELRD-ENG-C
Cost Engineer	Dave Druzbecki	312-846-5433	CELRD-ENG-C
Geotechnical Engineer	Mike Haefeli	312-846-5335	CELRD-ENG-G
Real Estate	Jessica Harbert	313-226-7504	CELRD-RE

DISTRICT QUALITY CONTROL (DQC) TEAM			
Function/Discipline	Name	Phone	Office
Plan Formulation/NEPA Compliance	Frank Veraldi	312-846-5589	CELRD-PDB-R
Environmental Engineering	Casey Pittman	312-846-5506	CELRD-ENG-H
Hydrology & Hydraulics	Kristine Meyer	312-846-5510	CELRD-ENG-H
Civil Engineering	Laura Vanden Berg	312-846-5403	CELRD-ENG-C
Cost Engineering	Witold Kluza	312-846-5425	CELRD-ENG-C

AGENCY TECHNICAL REVIEW (ATR) TEAM*			
Function/Discipline	Name	Phone	Office
ATR Lead	Craig Evans	651-290-5594	CEMVP-RPEDN-PD-F
Planning Review	TBD		
NEPA Review	TBD		
Technical Design Reviewer	TBD		
Hydrology and Hydraulic Engineering and Climate	TBD		
Cost Engineering Reviewer	TBD		
Real Estate Reviewer	TBD		

The District has coordinated with the appropriate PCX to determine the ATR Lead. The ATR Lead will compose the ATR Team sooner to when ATR is scheduled.

<b>MSC / Policy and Legal Compliance Review Team</b>			
<b>Function/Discipline</b>	<b>Name</b>	<b>Phone</b>	<b>Office</b>
District Counsel	Kim Sabo	312-846-5350	CELRC-GAC
Chief, Environmental Formulation and Analysis	Gene Fleming	312-846-5585	CELRC-PMB-R
Planning Branch Chief	Sue Davis	312-846-5580	CELRC-PDB
Chief, Economic Formulation Section	Dave Handwerk	312-846-5455	CELRC-PDB-M

## REVIEW PLAN REVISIONS LOG

<All revisions after the initial LRD Commander approved review Plan shall be documented here, including major revisions (i.e. at initiation of Design and Implementation Phase) where LRD Commander is required and the cover page updated to reflect the latest Commander approval date. >

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>
11/2020	Updated format to follow the latest template	Entire document
11/2020	Updated Planning and Engineering Models	Pages 7-10
11/2020	Updated project review schedule and budget	Table 3, page 10
11/2020	Updated PDT, DQC, and ATR team members due to the project being transferred from the Detroit District to the Chicago District	Attachment 1, page 12
11/2020	Updated MSC/Policy and Legal Compliance Review Team	Page 13
4/5/2021	Updated ATR Team Function Discipline Table. Added a NEPA Reviewer based on email with Craig Evans ATR lead on 4/5/21.	Page 11
4/5/2021	Updated Table 3. Product and Review Schedule for ATR review of Draft DPR and EA. Was \$40K. Updated to reflect \$4,000/reviewer and \$5,000 for ATR lead = \$29,000.	Page 10

