



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-SP

18 JUN '15

MEMORANDUM FOR Commander, St. Louis District

SUBJECT: Review Plan (RP) Approval for St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration, Saint Louis and Jefferson Counties, Missouri, Feasibility Report

1. References:

a. Memorandum, CEMVS-PD, 23 April 2015, subject: IL Decision Document Review Plan (encl 1).

b. Memorandum, CEMVD-PD-N (ECO-PCX), 17 April 2015, subject: St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration, Saint Louis and Jefferson Counties, Missouri Feasibility Report, St. Louis District, Ecosystem Planning Center of Expertise Recommendation for Review Plan Approval (encl 2).

c. EC 1165-2-214, 15 December 2012, Civil Works Review Policy.

2. The enclosed Review Plan (encl 3) is a decision document review plan. It includes the review plan checklist for decision documents and has been prepared in accordance with EC 1165-2-214. The RP has been coordinated between the Upper District Support Team and the Ecosystem Planning Center of Expertise, who concurred with the plan in reference 1.b.

3. MVD hereby approves the RP for St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration, Saint Louis and Jefferson Counties, Missouri, feasibility report, which is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this RP or its execution will require new written approval from this office. Non-substantive changes to this RP do not require further approval. The District should post the approved RP to its web site.

4. The MVD point of contact is [REDACTED], CEMVD-PD-SP,
[REDACTED]

3 Encls

Major General, USA
Commanding



DEPARTMENT OF THE ARMY
SAINT LOUIS DISTRICT CORPS OF ENGINEERS
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103

CEMVS-PD

APR 23 2015

MEMORANDUM FOR Commander, US Army Corps of Engineers, Mississippi Valley Division (CEMVD-PD-SP [REDACTED]), PO Box 80, 1400 Walnut Street, Vicksburg, Mississippi 39181-0080

SUBJECT: IL Decision Document Review Plan

1. The Subject Decision Document Review Plan (Encl 1) and ECO-PCX endorsement letter (Encl 2) for the Saint Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration feasibility report is submitted for your review and approval.
2. An electronic copy of the Subject Decision Document Review Plan and ECO-PCX endorsement letter has been sent to Mr. Phil Hollis, CEMVD-PD-SP.
3. The points of contact are [REDACTED] Study Manager, at [REDACTED] or e-mail: [REDACTED] or [REDACTED] Project Manager, at [REDACTED], or e-mail: [REDACTED]

Encls

[REDACTED]
COL, EN
Commanding

Encl 1



DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-N

17 April 2015

MEMORANDUM FOR Commander, Mississippi Valley Division
ATTN: [REDACTED] CEMVD-PD-SP)

SUBJECT: St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration, Saint Louis and Jefferson Counties, Missouri Feasibility Report, St. Louis District, Ecosystem Planning Center of Expertise Recommendation for Review Plan Approval

1. References:

- a. Engineering Circular (EC) 1165-2-214, Water Resources Policies and Authorities, CIVIL WORKS REVIEW, 15 December 2012
- b. EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011
- c. Engineering Regulation (ER) 1110-2-12, Quality Management, 30 Sep 2006

2. The enclosed Review Plan (RP) complies with all applicable policy and provides an adequate Agency Technical Review (ATR) of the plan formulation, engineering, and environmental analyses, and other aspects of plan development. The Ecosystem Restoration Planning Center of Expertise (ECO-PCX) has reviewed the RP.

3. A Type I Independent External Peer Review (IEPR) would be required on this study unless it is otherwise waived. A final decision on Type I IEPR has not been made for this study yet. The study does not meet the mandatory triggers for Type I IEPR described in EC 1165-2-214 however the risks and uncertainties associated with working with the Environmental Protection Agency (EPA) in a known Superfund area may warrant Type I IEPR. The RP should be revised when this decision has been made. If a risk informed decision for exclusion is made the ECO-PCX should be included on the coordination of the exclusion request. Final approval for exclusion must be obtained from the Director of Civil Works (DCW).

4. The Large Mouth Bass model used in this study is approved for use by HQ Memorandum Policy Guidance on Certification of Ecosystem Output Models (Aug 2008). The IWR Planning Suite and HEC-EFM planning models proposed for use in this study are approved for nationwide use in accordance with documented geographic range, best practices and its designed limitations. The ECO-PCX is comfortable with application of these planning models and/or the models have been reviewed and issues concerning the models and their documentation have been resolved to the satisfaction of the ECO-PCX.

Enc 12

CEMVD-PD-N

17 April 2015

SUBJECT: St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration, Saint Louis and Jefferson Counties, Missouri Feasibility Report, St. Louis District, Ecosystem Planning Center of Expertise Recommendation for Review Plan Approval

5. The ECO-PCX concurs with the RP. Upon approval by the MSC Commander, please provide the approved RP, the MSC Commander's approval memorandum, and the link to the District posting of the RP to Jodi Creswell. When substantive revisions are made to the RP, due to a decision on IEPR, selection of models that require review or changes in project scope, or Corps policy, a revised RP should be provided to the ECO-PCX for review. Non-substantive changes do not require further PCX review.

6. Thank you for the opportunity to assist in the preparation of the Review Plan. We look forward to working with you on Agency Technical Review. Please keep us informed of any further decisions regarding IEPR and/or Model Selection.

Enclosures (1)



Operational Director,
National Ecosystem Planning
Center of Expertise

CF:

CEMVD-PD-N

CEMVD-PD-SP

CEMVP-PD-F

CEMVS-PM

CENAO-WR-P



REVIEW PLAN

St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration
Saint Louis and Jefferson Counties, MO
Feasibility Report

Saint Louis District

MSC Approval Date: Pending
Last Revision Date: none



US Army Corps
of Engineers ®

REVIEW PLAN

St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration
Saint Louis and Jefferson Counties, MO
Feasibility Report

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1. PURPOSE AND REQUIREMENTS

Purpose. This Review Plan defines the scope and level of peer review for the [St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration, Saint Louis and Jefferson Counties, MO Feasibility Report.](#)

a. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012 (expired)
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011 (expired)
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) [MVS PMP June 2015](#)
- (6) [MVD Regional Quality Management Plan June 2014](#)
- (7) [MVS Quality Management Plan October 1999](#)

b. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the [National Ecosystem Planning Center of Expertise.](#)

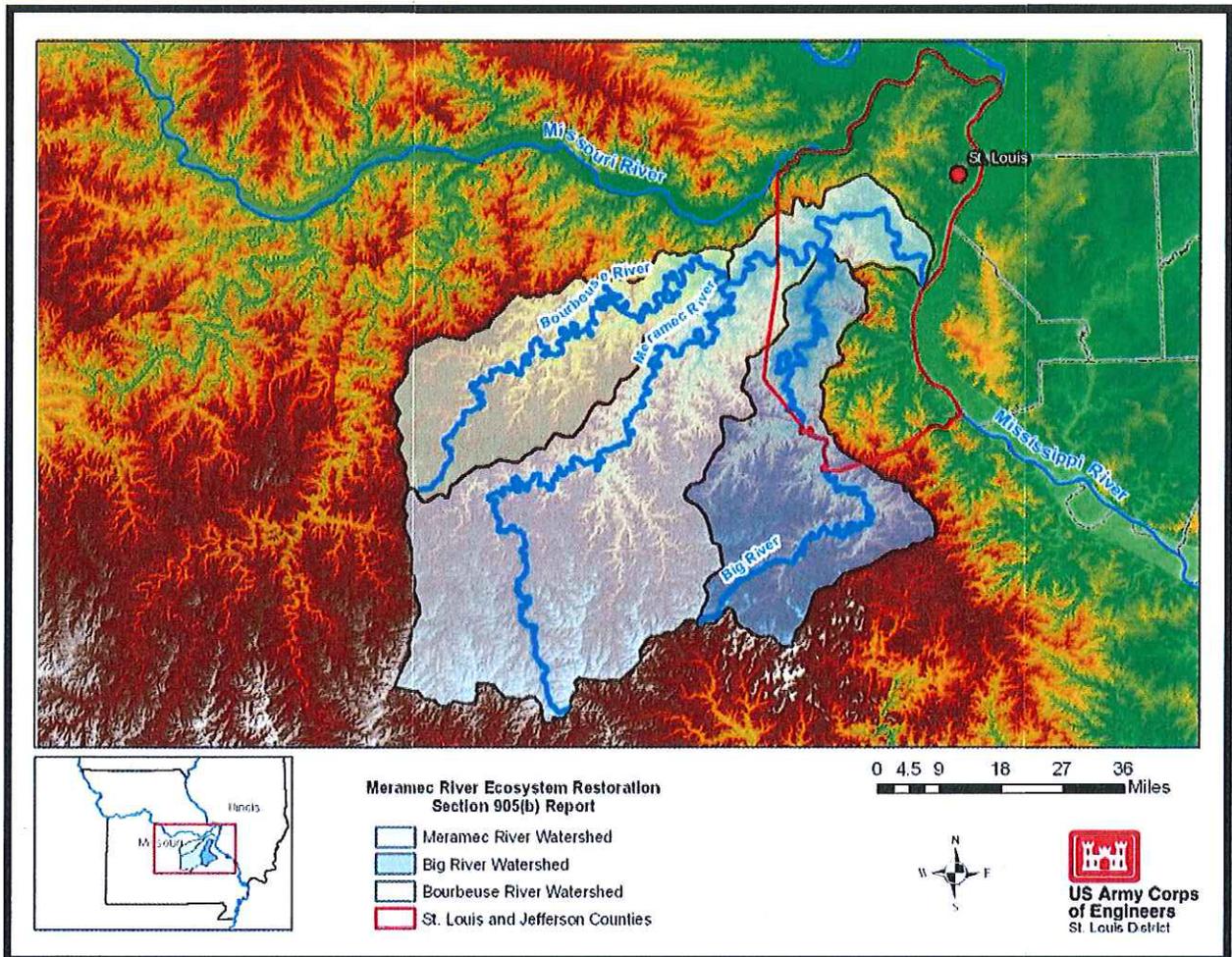
The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

Decision Document. [St. Louis Riverfront, Missouri and Illinois, Meramec River Ecosystem Restoration Feasibility Report is an ecosystem restoration project located in Jefferson and Saint Louis Counties of Missouri. The single purpose feasibility study is specifically authorized by a 21 June 2000 resolution by the Committee on Transportation and Infrastructure, U.S. House of Representatives, Docket 2642. The decision document will be a feasibility report approved by the Chief of Engineers and will require](#)

Congressional authorization to implement. An integrated environmental assessment is anticipated and will be prepared with the feasibility report.

- a. **Study/Project Description.** The intent of this single purpose ecosystem restoration project is to restore the attributes of a natural functioning river ecosystem and preserve and restore aquatic habitat for fish and wildlife, including federally endangered mussel species in a portion of the Meramec River Basin. The non-Federal sponsor is the Missouri Department of Natural Resources. The primary problems identified in the reconnaissance study were restricted movement of fish due to mill dams; in-stream transport of contaminated sediments downstream to less impacted areas and impacts of both sediment quantity and contaminants on biota, humans, and federally endangered species; and an influx of floodplain sediments during flooding and other erosion events. Alternatives to be considered are sediment capture structures, wetland restoration, riparian corridor restoration, and restoring critical mussel habitat. The project is expected to restore connectivity to 199 stream miles (Big River and Lower Meramec) benefitting 1850 acres of riverine habitat and is estimated to cost between [REDACTED]



b. **Factors Affecting the Scope and Level of Review.**

- A portion of the project area was deemed a superfund site by the EPA in October 1992 due to mine tailings containing elevated levels of lead, cadmium and zinc. Surface water and fish are

contaminated by lead and there is a risk from dust. While the five tailings sites have been mitigated to date there has not been an EPA Record of Decision for the residual contaminants that need to be addressed. This project is being done as a collaborative effort with the EPA, state agencies and aligning the scope and schedule may prove to be challenging since the Corps cannot construct in contaminated areas.

- The most significant project risk is the uncertainty of the future without project conditions since it hinges on the ability of the EPA to control significant amounts of contaminated sediment upstream of the project area from harming the habitat in the project area. Another risk is the uncertainty on how much sediment will be transported if there is increased connectivity.
 - There is no threat to human life/safety assurance based on the type of alternatives (sediment capture structures, wetland restoration, riparian corridor restoration) being considered for this ecosystem restoration project as was assessed by the Saint Louis District Chief of Engineering. Furthermore the project area is known as a highly used aquatic recreation area with a warning for fish consumption so our project of habitat enhancement will not negatively impact the economics, environment or the social well-being of the area. It is anticipated that the project has potential to increase the economic and social well being in the area.
 - There has been no request by the Governor of an affected state for a peer review by independent experts and none is anticipated.
 - The PDT does not anticipate any significant public dispute as to the size, nature, or effects of the project since the projects potential alternatives decrease sedimentation movement which can increase the water quality in the area, it is anticipated that the decrease in contaminated sediment will be widely accepted by the public. Also based on past ecosystem restoration projects enhancing fish habitat in area that has high aquatic recreation is usually widely accepted by the public.
 - The alternatives being considered for this project are not based on novel methods, nor do they involve the use of innovative materials or technique, nor does it contain precedent setting method or models. And while this project is being done in collaboration with the EPA the PDT does not think that there are complex challenges for interpretation since it is clearly defined that the Corps will not construct in areas that have contaminated sediments until the land has been mitigated.
 - It is not anticipated that the project design will require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule within the Corps. However there maybe some overlapping construction between the Corps and EPA.
- c. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: Expected in-kind products/analyses to be provided by the sponsor is a robust engineering sediment transport model.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. Documentation of DQC.

DrChecks review software will be used to document all pertinent DQC milestones. DrChecks will be used to document the DQC comments, responses and associated resolutions accomplished throughout the formal review process. Comments will 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 be 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.

b. Products to Undergo DQC. Products to undergo a DQC are the report synopsis, risk register, draft report with the integrated environmental assessment and all supporting documents, and final report with the integrated environmental assessment and all appendices.

c. Required DQC Expertise.

<u>DQC Team Members</u>	<u>Expertise Required</u>
<u>Plan Formulation</u>	<u>The plan formulation reviewer will be a senior water resources planner with experience in environmental restoration projects, incremental cost analysis, and the necessary review and certification processes.</u>
<u>NEPA Compliance</u>	<u>NEPA compliance specialist, preferably with expertise in studies regarding ecosystem restoration.</u>
<u>Environmental Resources</u>	<u>The environmental resources reviewer will be a senior environmental resources planner with experience in endangered mussel species.</u>
<u>Environmental Engineer</u>	<u>The environmental engineer reviewer will be a senior environmental engineer with experience with HTRW concerns, environmental restoration projects and designing features dealing with sedimentation.</u>
<u>Hydraulic Engineering</u>	<u>The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of HEC-RAS computer modeling techniques, MIKE-SHE, and SWAT and as well as an expert in sedimentation analysis.</u>
<u>Geotechnical Engineering</u>	<u>The geotechnical engineering reviewer will be an expert in the field of geotechnical analysis and have a thorough understanding of soil and rock mechanics.</u>
<u>GIS</u>	<u>The GIS reviewer will be a senior GIS specialist with experience in both geospatial analysis and cartographic expertise.</u>
<u>Cost Engineering</u>	<u>The cost engineering reviewer will be a senior cost engineer with experience in the cost certification process.</u>
<u>Real Estate</u>	<u>The real estate reviewer will be a senior real estate specialist with experience in real estate ownership research, right of way maps, and real estate plans.</u>
<u>Economics</u>	<u>The economics Reviewer will be a senior economist with experience in evaluating the ICA.</u>
<u>Construction/Operations</u>	<u>The construction or operations reviewer will have experience in the constructability of various ecosystem restoration features to include sediment capture structures, wetland restoration structures, riparian corridor restoration structures, and mussel habitat structures.</u>
<u>Hazardous, Toxic and Radioactive Waste (HTRW)</u>	<u>The HTRW reviewer will be an expert in the field of HTRW parameters and Federal guidelines to ensure this project is done within the standards set forth by the USACE.</u>

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

- a. **Products to Undergo ATR.** Products to undergo an ATR are the report synopsis, risk register, draft report with the integrated environmental assessment and all supporting documents, and final report with the integrated environmental assessment and all appendices.
- b. **Required ATR Team Expertise.** The following technical reviewers are anticipated to be selected by the lead PCX without being nominated by the district or MSC. Others will be added if significant issues are identified during the study. All reviewers will be certified to conduct ATR review of this type of project (if the discipline has certified reviewers).

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The planning reviewer should be a senior water resources planner with expertise in <u>ecosystem restoration projects, ICA, endangered species, and watershed level planning.</u>
Economics	The economist reviewer should be a senior economist with experience in <u>ecosystem restoration projects and the IWR planning suite.</u>
Environmental Resources	The reviewer should be a senior water resources environmental resource planner with experience in <u>ecosystem restoration projects, habitat analysis, ICA, endangered mussel species and their fish host, the NEPA process as well as watershed level analysis.</u>
Hydraulic Engineering	<u>The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of sedimentation analysis as it pertains to hydraulic dynamics, as well as computer modeling techniques that will be used HEC-RAS, MIKE-SHE, SWAT to ensure proper review of the anticipated WIK sedimentation modeling.</u>

Geotechnical Engineering	<u>The geotechnical engineering reviewer will be an expert in the field of geotechnical analysis and have a thorough understanding of soil and rock mechanics particularly related to sediment and contaminant transport.</u>
Civil Engineering	<u>The civil engineer reviewer will be a senior civil engineer with experience with HTRW concerns, environmental restoration projects and designing features to reduce sedimentation.</u>
Cost Engineering	<u>The cost engineering reviewer will be a senior cost engineer with experience is the cost certification process.</u>
Construction/Operations	<u>The construction or operations reviewer will have experience in the constructability of various ecosystem restoration features to include sediment capture structures, wetland restoration structures, riparian corridor restoration structures, and mussel habitat structures.</u>
Real Estate	<u>The real estate reviewer will be a senior real estate specialist with experience in real estate ownership research, right of way maps, and real estate plans.</u>
Hazardous, Toxic and Radioactive Waste (HTRW)	<u>The HTRW reviewer will be an expert in the field of HTRW parameters and Federal guidelines to ensure this project is done within the standards set forth by the USACE. It would be beneficial for the HTRW reviewer to have an understanding of EPA Superfund processes and procedures.</u>

c. **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be

elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- **Type I IEPR.** Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.
- **Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk

management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

Decision on IEPR. The decision document does not meet the mandatory triggers for Type I IEPR described in EC 1165-2-214 but the PDT identified several risks and uncertainties associated with working with the EPA in a known Superfund area and believes that a Type I IEPR is warranted. The PDT will revisit this decision and coordinate with the ECO PCX after the Alternatives Milestone.

- The proposed project does not meet the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix E of EC 1165-2-214, including:
 - If the Federal action is justified by life safety or failure of the project would pose a significant threat to human life;
 - If 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;
 - If the project design requires redundancy, resiliency, and/or robustness; and/or
 - If the project has unique construction sequencing or a reduced or overlapping design construction schedule.

a. **Products to Undergo Type I IEPR.** Products to undergo an IEPR are the draft report with the integrated environmental assessment and all supporting documents.

Required Type I IEPR Panel Expertise. The expertise represented on the Type I IEPR panel will be similar to those on the ATR team. At a minimum, the panel should include the necessary expertise to assess the planning, engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-214. The PDT has made the initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan. The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table provides the types of disciplines that might be included on the IEPR team and a description of the expertise required. Others will be added if significant issues are identified during the study.

IEPR Team Members/Disciplines	Expertise Required
IEPR Lead	The lead should have the necessary skills and experience to lead a virtual team through the process. The lead may also serve as a reviewer for a specific discipline.
Planning	<u>The planning reviewer should have expertise in ecosystem restoration projects, ICA, endangered species, and watershed level planning.</u>
Economics	<u>The economist reviewer should have expertise in ecosystem restoration projects and the IWR planning suite.</u>

Environmental Resources	<u>The reviewer should have expertise in ecosystem restoration projects, habitat analysis, ICA, endangered mussel species and their fish host, the NEPA process as well as watershed level analysis.</u>
Hydraulic Engineering	<u>The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of sedimentation analysis as it pertains to hydraulic dynamics, as well as computer modeling techniques that will be used HEC-RAS, MIKE-SHE, SWAT to ensure proper review of the anticipated WIK sedimentation modeling.</u>
Geotechnical Engineering	<u>The geotechnical engineering reviewer will be an expert in the field of geotechnical analysis and have a thorough understanding of soil and rock mechanics particularly related to sediment and contaminant transport.</u>
Civil Engineering	<u>The civil engineer reviewer should have expertise in HTRW concerns, environmental restoration projects and designing features to reduce sedimentation.</u>
Hazardous, Toxic and Radioactive Waste (HTRW)	<u>The HTRW reviewer will be an expert in the field of HTRW parameters and Federal guidelines to ensure this project is done within the standards set forth by the USACE. It would be beneficial for the HTRW reviewer to have an understanding of EPA Superfund processes and procedures.</u>

b. Documentation of Type I IEPR.

The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214. Panel comments will be submitted in DrChecks and compiled by the OEO and should address the adequacy and acceptability of the planning, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public as part of the final report and also on the Corps District website.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the

opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

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

a. **Planning Models.** The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
<u>IWR-Planning Suite v. 2.0.6.0</u>	<u>The IWR-Planning Suite was developed by Institute of Water Resources as accounting software to compare habitat benefits among alternatives.</u>	<u>Certified</u>
<u>HEC-EFMv.2.0</u>	<u>HEC-EFM was developed by USACE HEC and facilitates 1) statistical analyses of relationships between hydrology and ecology, 2) hydraulic modeling. This model can analyze various hydraulic scenario impacts on the existing and future ecology.</u>	<u>Certified</u>
<u>Large Mouth Bass HSI Model</u>	<u>Habitat Suitability Index models were developed by the FWS. Several of the approved fish HSI models have been used to determine the benefits of Dam removal and connectivity however it will be important to select a fish model that is a host for mussel propagation.</u>	<u>Approved for use</u>

- b. **Engineering Models.** The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
<u>HEC-RAS 4.0 (River Analysis System)</u>	<u>The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project conditions along the River and its tributaries.</u>	<u>HH&C CoP Preferred Model</u>
<u>MIKE-SHE</u>	<u>MIKE-SHE is a surface water hydrology model that has been developed for sediment modeling in conjunction with SWAT as a product from our sponsors.</u>	<u>Allowed</u>
<u>SWAT</u>	<u>The soil and water assessment tool is an effective tool for assessing water resource that has been developed for sediment modeling in conjunction with MIKE-SHE as a product from our sponsors.</u>	<u>Allowed</u>

10. REVIEW SCHEDULES AND COSTS

- a. **ATR Schedule and Cost.**

Schedule

<u>Reviews/Milestones</u>	<u>Start</u>	<u>Complete</u>
<u>PDT Review</u>	<u>4/16</u>	<u>5/16</u>
<u>DQC and Legal</u>	<u>5/16</u>	<u>6/16</u>
<u>TSP Milestone</u>	<u>6/16</u>	<u>8/16</u>
<u>Concurrent Review (ATR, IEPR, public, and policy)</u>	<u>8/16</u>	<u>11/16</u>
<u>ADM</u>	<u>1/17</u>	<u>1/17</u>
<u>Concurrent Review (DQC, ATR)</u>	<u>10/17</u>	<u>12/17</u>
<u>Submit Final Report to MVD/Transmittal to HQ</u>	<u>12/17</u>	<u>1/18</u>
<u>CWRB</u>	<u>3/18</u>	<u>4/18</u>
<u>Chief's Report Milestone</u>	<u>5/18</u>	<u>7/18</u>

Cost

<u>Reviewer</u>	<u>ATR after TSP</u>	<u>ATR after ADM</u>	<u>Milestones, IPR's Certifications</u>
<u>ECO-PCX QC</u>			
<u>ATR Lead</u>			
<u>Planning</u>			
<u>Economics</u>			
<u>Environmental Resources</u>			
<u>Hydraulic Engineering</u>			
<u>Geotechnical Engineering</u>			
<u>Civil Engineering</u>			
<u>Cost Engineering</u>			
<u>Construction/Operations</u>			
<u>Real Estate</u>			
<u>Hazardous, Toxic and Radioactive Waste (HTRW)</u>			
<u>Total \$75,000</u>			

b. Type I IEPR Schedule and Cost.

<u>Reviews/Milestones</u>	<u>Start</u>	<u>Complete</u>
<u>PDT Review</u>	<u>4/16</u>	<u>5/16</u>
<u>DQC and Legal</u>	<u>5/16</u>	<u>6/16</u>
<u>TSP Milestone</u>	<u>6/16</u>	<u>8/16</u>
<u>Concurrent Review (ATR, IEPR, public, and policy)</u>	<u>8/16</u>	<u>11/16</u>
<u>ADM</u>	<u>1/17</u>	<u>1/17</u>
<u>Concurrent Review (DQC, ATR)</u>	<u>10/17</u>	<u>12/17</u>
<u>Submit Final Report to MVD/Transmittal to HQ</u>	<u>12/17</u>	<u>1/18</u>
<u>CWRB</u>	<u>3/18</u>	<u>4/18</u>
<u>Chief's Report Milestone</u>	<u>5/18</u>	<u>7/18</u>

<u>Reviewer</u>	<u>IEPR</u>
<u>ECO-PCX QC</u>	
<u>IEPR Lead</u>	
<u>Planning</u>	
<u>Economics</u>	
<u>Environmental Resources</u>	
<u>Hydraulic Engineering</u>	
<u>Geotechnical Engineering</u>	
<u>Civil Engineering</u>	
<u>Cost Engineering</u>	
<u>Construction/Operations</u>	
<u>Real Estate</u>	
<u>Hazardous, Toxic and Radioactive Waste (HTRW)</u>	
<u>Total</u>	

c. Model Certification/Approval Schedule and Cost. All models anticipated for use during the feasibility phase are already certified or approved for use.

11. PUBLIC PARTICIPATION

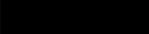
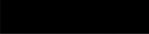
At a minimum, the district will pursue two opportunities for public comment on the feasibility study. The first will be public/stakeholder scoping meeting during alternatives formulation and the second will occur when the draft Feasibility Report and environmental assessment is distributed for formal public review as part of the NEPA review process. Release of the draft feasibility report with integrated environmental assessment for public review will occur concurrently along with technical, policy and legal review after the TSP Milestone. This is in accordance with the SMART Planning framework. The current schedule has a 45-day public review initiating in 2017. Upon completion of the public review period, comments will be consolidated and addressed, if needed. A summary of the comments and resolutions will be included in the final report. Extensive coordination with these state and federal agencies will occur concurrently with the planning process.

12. REVIEW PLAN APPROVAL AND UPDATES

The [Mississippi Valley Division](#) Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

-  [Project Manager \(MVS\), 314-331-8129](#)
-  [District Support Team \(MVD\), 601-634-5293](#)
-  [Ecosystem Restoration Planning Center of Expertise \(MVD\), 309-794-5448](#)

ATTACHMENT 1: TEAM ROSTERS

Position	Name	Email
Project Manager		
Study Manager/Plan Formulator		
Environmental Resource Planner	TBD	TBD
Cultural Resource Planner	TBD	TBD
Real Estate	TBD	TBD
Cost Engineer	TBD	TBD
Water Quality Specialist	TBD	TBD
H&H Engineer	TBD	TBD
Geotech Engineer	TBD	TBD
Environmental/Civil Engineer	TBD	TBD
Program Analyst	TBD	TBD
Survey	TBD	TBD
Regulatory	TBD	TBD
Office of Counsel	TBD	TBD
GIS	TBD	TBD

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name
ATR Team Leader
Office Symbol/Company

Date

SIGNATURE

Name
Project Manager
Office Symbol

Date

SIGNATURE

Name
Architect Engineer Project Manager¹
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
Office Symbol

Date

SIGNATURE

Name
Chief, Planning Division
Office Symbol

Date

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
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
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	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSD	The District or MSC responsible for the preparation of the decision document	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
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act