



DEPARTMENT OF THE ARMY

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

REPLY TO
ATTENTION OF:

CEMVD-PD-KM

MEMORANDUM FOR Commander, Memphis District

SUBJECT: Transmittal and Approval Request of the West Tennessee Tributaries GRR Review Plan

1. Reference:

a. Memorandum, CEMVM-PM, 12 March 2013, subject as above (encl).

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

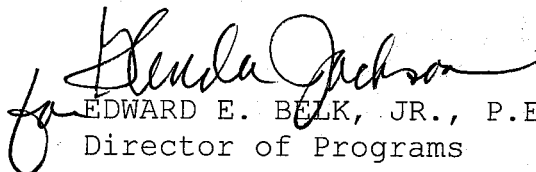
2. MVD staff has reviewed the Review Plan (RP) and related documents for the subject project. The RP was also reviewed and endorsed by the Flood Risk Management Planning Center of Expertise (FRM-PCX) (encl 2 to encl). The RP was developed in accordance with reference 1.b., which establishes an accountable, 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).

3. The subject review plan is approved. Non-substantive changes to this RP do not require further approval.

4. The District should post the RP to its web site and provide a link to the FRM-PCX for its use.

5. The MVD point of contact for this action is Ms. Sarah Palmer, CEMVD-PD-KM, (601) 634-5910.

Encl


EDWARD E. BELK, JR., P.E., SES
Director of Programs



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TN 38103-1894

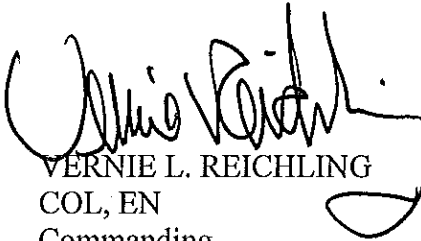
CEMVM-PM

12 MAR 13

MEMORANDUM FOR Commander, Mississippi Valley Division (CEMVD- MVM-DST/Mr. Brian Chewning)

SUBJECT: Transmittal and Approval Request of the West Tennessee Tributaries GRR Review Plan

1. Enclosed are the Review Plan and the Flood Risk Management Center of Expertise endorsement.
2. CEMVM requests approval of the subject Review Plan.
3. Please contact Marsha Raus, Planner, at (901) 544-3455 or Danny Ward, Project Manager, at (901) 544-0709 if you have any questions.


VERNIE L. REICHLING
COL, EN
Commanding

Encls



DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

CESPD-PDP (FRM-PCX)

11 March 2013

MEMORANDUM FOR Daniel Ward and Marsha Raus, Memphis District

SUBJECT: West Tennessee Tributaries Project, Tennessee General Reevaluation Report Review Plan

1. The Flood Risk Management Planning Center of Expertise (FRM-PCX) has reviewed the Review Plan (RP) dated February 2013 for the subject study and concurs that the RP satisfies peer review policy requirements outlined in Engineering Circular (EC) 1165-2-214 Civil Works Review, dated 15 December 2012 and outlines an appropriate initial scope and level of review.
2. The review was performed by Michelle Kniep, St. Paul District. The FRM-PCX comments and District responses are attached. All comments have been resolved.
3. The FRM-PCX recommends the RP for approval by the Major Subordinate Command (MSC). Upon approval of the RP, please provide a copy of the approved RP, a copy of the MSC Commander's approval memorandum, and the link to where the RP is posted on the District website to Eric Thaut, FRM-PCX Deputy Director (eric.w.thaut@usace.army.mil) and Michelle Kniep, FRM-PCX Regional Manager for Mississippi Valley Division (michelle.r.kniep@usace.army.mil).
4. The RP is a living document and should be updated as the study progresses, and at minimum at each interim study milestone. Please provide any updates to the Agency Technical Review (ATR) Lead, FRM-PCX Regional Manager, and me to enable us to provide effective and timely PCX support for the study.
5. Thank you for the opportunity to assist in the preparation of the RP. Please coordinate the peer review efforts defined in the review plan with Michelle Kniep.

Encl

Eric Thaut
Deputy Director, FRM-PCX

REVIEW PLAN

West Tennessee Tributaries Project, Tennessee
General Reevaluation Report

Memphis District

MSC Approval Date: 27 March 2013

Last Revision Date: [None](#)



US Army Corps
of Engineers ®

REVIEW PLAN

West Tennessee Tributaries Project, Tennessee
General Reevaluation Report

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS.....	1
2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION	1
3. STUDY INFORMATION.....	2
4. DISTRICT QUALITY CONTROL (DQC).....	4
5. AGENCY TECHNICAL REVIEW (ATR)	4
6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR).....	7
7. POLICY AND LEGAL COMPLIANCE REVIEW	9
8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION	9
9. MODEL CERTIFICATION AND APPROVAL.....	9
10. REVIEW SCHEDULES AND COSTS	11
11. PUBLIC PARTICIPATION	11
12. REVIEW PLAN APPROVAL AND UPDATES.....	11
13. REVIEW PLAN POINTS OF CONTACT	12
ATTACHMENT 1: TEAM ROSTERS.....	13
ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS.....	15
ATTACHMENT 3: REVIEW PLAN REVISIONS.....	16
ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS	17

1. PURPOSE AND REQUIREMENTS

- a. **Purpose.** This Review Plan defines the scope and level of peer review for the West Tennessee Tributaries Project, TN General Reevaluation Report (GRR). The West Tennessee tributaries project covers 9 counties (4300 sq. miles) in West Tennessee. See map on page 3.

This study will follow SMART Planning guidance. SMART Planning focuses on risk-informed decision-making and engages the entire Vertical Team early in the process. This review plan anticipates the reviews that will be necessary throughout the study process, but it will be revised upon completion of each milestone. The first milestone will validate the alternatives to be analyzed and the tools that will be used for that analysis. This review plan lists several possible models that may be used, but some may be changed, added or dropped when the first milestone is complete. The decisions on IEPR will also be reviewed at each milestone.

b. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (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) Project Management Plan, currently being revised and updated
- (6) All previous planning documents:
 - (i) General Design Memorandum No. 1, December 1959
 - (ii) Fish and Wildlife Mitigation Plan, March 1971
 - (iii) Letter report forwarded to the Mississippi River Commission and Chief of Engineers, April 1981
 - (iv) Supplemental GDM, August 1982, revised July 1983
 - (v) Final Supplemental EIS, December 1982
 - (vi) Consent Order, May 1985
 - (vii) Consent Decree, May 1985
 - (viii) Project Shutdown Plan, October 1991
 - (ix) Limited Reevaluation Report, June 1996

- c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, 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 1165-2-209) 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 Flood Risk Management Planning Center of Expertise (FRM-PCX).

The RMO will coordinate with the Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. The FRM-PCX may coordinate with the RMC during the course of the study to review the documented risks and assess the life safety risk in the study area. Life safety risk will be continually evaluated as the study/project progresses.

3. STUDY INFORMATION

a. Decision Document. The decision document will be a General Reevaluation report for the West Tennessee Tributaries Project. The GRR will be a reformulation of a plan set forth in a 1982 General Design Memorandum and EIS. Since major changes are anticipated to the overall design of authorized project features, approval will lie at HQUSACE. If only minor changes are recommended, approval will remain at the Major Subordinate Command (MSC). Further Congressional Authorization will not be required. An Environmental Impact Statement is required.

b. Study/Project Description.

The West Tennessee Tributaries Project (Figure 1) was authorized by the Flood Control Act of 1948 (225 miles of channel modifications), Rivers and Harbors Act of 1966 (relocation of all gas transmission lines at a Federal expense), and the Water Resources Development Act of 1974 (Federal acquisition of 32,000 acres of mitigation lands). The project area is 4300 square miles and covers the drainage basins of the Forked Deer and Obion River systems in West Tennessee. The project purpose is agricultural flood risk reduction. The Project is 100% federal and the sponsor is the West Tennessee River Basin Authority.

Construction of the authorized project began in 1961 but was suspended in 1973 due to environmentally based litigation. In 1974, Congress amended the original authority to add a requirement for 32,000 acres of land to be purchased for mitigation and specified a procedure for doing so. Work resumed after this and mitigation land purchases began. The project was reformulated in 1982 to reduce the environmental impact of the project. The plaintiffs' case continued and in 1985, the parties agreed to a Consent Decree specifying how the mitigation land was to be acquired and managed. Work briefly resumed on the project but was stopped when the State of Tennessee denied Water Quality Certification for the project. The Natural Resources Conservation Service, U.S. Fish and Wildlife Service, U.S. Geological Survey, Tennessee Wildlife Resources Agency, Obion-Forked Deer Basin Authority collaborated to develop a plan for reformulation of the project. A demonstration project on the Middle Fork of the Forked Deer River and Stokes Creek was proposed in 1996. It would have required an inordinate amount of mitigation purchase or an amendment to the Consent Decree. Therefore, it was not pursued. To date, 85.1 miles of channel has been completed with 139.8 miles remaining; and 13,527 acres of mitigation acquired with 18,473 remaining.



Figure 1. West Tennessee Tributaries project area.

The project purpose is flood risk management as authorized. It has a long and complex history and has generated substantial controversy. Although flood risk management may still be desirable in the project area, achieving flood risk management via channelization is no longer environmentally acceptable. The GRR will analyze several flood risk management alternatives. These could include but are not limited to reconnecting meanders to re-establish drainage, detention/retention reservoirs, on farm flood storage, etc. The authorized project cost estimate is \$120 million to complete, but the GRR will likely propose a project that is less than this amount.

c. Factors Affecting the Scope and Level of Review.

The study will present several challenges. It has a long history of public dispute and there have been numerous court proceedings. There are specific mitigation requirements in the amended authority. The prescribed mitigation was not authorized to respond directly to project impacts and it may not adequately mitigate actual impacts. The cost of mitigation for the project could be very high.

Project risks are primarily related to the difficulty in developing an environmentally acceptable, cost-effective project. The authorized project is not environmentally acceptable and the cost of making it so and buying the required mitigation land could exceed the benefits.

The authorized project is a channelization project and had minimal life safety risks. The reevaluation will consider all methods of flood control including levees and detention/retention reservoirs. These features could pose some threat to human life/safety. The area is rural and the size and specific location of such features will determine their threat.

The governor has not requested IEPR.

The size and nature of the project are not anticipated to be an issue.

The study has a history of public dispute especially as regards loss of waterfowl habitat. The mitigation requirement also causes some public concern as many landowners are reluctant to sell and fear condemnation.

The reevaluation will consider all approaches to flood risk reduction. Novel approaches could be considered. Some techniques common in other parts of the country might be novel in West TN.

The project is not anticipated to require redundancy, resiliency and/or robustness beyond that which is required under the USACE design standards. No unique construction sequencing is anticipated.

d. 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: No in-kind cost-share products are anticipated, but the Sponsor will be heavily involved in the project design. The study is 100% federal.

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 will be used to document DQC. The DrChecks DQC report will be provided to ATR reviewers.

b. Products to Undergo DQC. DQC will be done on all of the products prepared during the charette, including the report synopsis, risk register, decision management plan, et al. DQC will be done prior to the Alternatives meeting. The District Planning Chief has final responsibility for DQC. Other interim products will undergo DQC prior to SMART milestone meetings.

The GRR, EIS and all technical documents (H&H, Real Estate Plan, Waterfowl analysis, sediment analysis, economics, et al.) will undergo DQC.

c. Required DQC Expertise. DQC reviewers will be senior leaders in H&H, Environmental, Planning, Design, Cost, Geotech, Economics, Real Estate and Counsel.

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. The GRR will follow the SMART planning process. ATR will be done on the draft GRR, EIS and all technical documents (as above) after the TSP Milestone. ATR may also be performed on the preliminary designs and MCACES after the Agency Decision Milestone.

b. Required ATR Team Expertise

ATR Team Members/Disciplines	Expertise Required
ATR Lead- An ATR lead will be chosen and vetted through the MSC prior to the charette and will stay with the study through its completion. The ATR lead will participate in the charette and Alternatives milestone meeting and all other IPRs.	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 experience in large, controversial agricultural flood risk management studies.
Economics	The Economics reviewer should be a senior economist with experience in agricultural economics.
Environmental Resources	The environmental reviewer should be a senior biologist with experience in controversial NEPA documents. The reviewer should also have experience in waterfowl and bottomland hardwood forests.
Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of open channel dynamics, application of detention/retention basins, application of levees and flood walls, and non-structural solutions. The reviewer should also have a thorough understanding of sediment dynamics and modeling and computer modeling technique such as HEC-RAS.
Risk Analysis	The risk analysis reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis

	interact and affect the results.
Geotechnical Engineering	The geotechnical reviewer should have experience with issues related to the proposed features e.g. levees, detention basins, & channels.
Civil Engineering	The civil Engineering reviewer should have experience in designing channels, levees and detention/retention basins.
Structural Engineering	The structural review will only be necessary if structural features like detention basins are proposed. The reviewer should have experience in designing the features proposed.
Cost Engineering	The cost reviewer will be Cost DX Staff or a Cost DX Pre-Certified Professional with experience preparing cost estimates for large flood risk reduction studies.
Real Estate	The Real Estate Reviewer will be a Senior Real Estate Specialist with experience in mitigation land acquisition and condemnations.

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 1165-2-209, 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 1165-2-209.
- **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.

a. Decision on IEPR.

Type I IEPR will be required because the project trips some of the mandatory triggers. Type II IEPR is not anticipated at this time. This assessment will be reviewed after each SMART planning milestone and during the Implementation Phase.

The cost of the authorized project exceeds \$100 million. It is likely that the redesigned project will exceed \$45 million.

The governor has not requested IEPR at this time.

No Federal or State agency has requested IEPR at this time.

The project has a history of public dispute.

The project will require an EIS.

The authorized project is a channelization project and had minimal life safety risks. The reevaluation will consider all methods of flood control including levees and detention/retention reservoirs. These features are unlikely to pose a threat to human life/safety. The area is rural and the size and specific location of such features would determine its threat. A Safety Assurance Review will be completed if the final proposed project includes these features. The District Engineering Chief has determined that there are no significant risks to human life expected at this time. This assessment will be reviewed during the Implementation Phase.

The reevaluation will consider all approaches to flood risk reduction. Novel approaches could be considered. Some techniques common in other parts of the country might be novel in West TN.

The project is not anticipated to require redundancy, resiliency and/or robustness beyond that which is required under the USACE design standards. No unique construction sequencing is anticipated.

b. Products to Undergo Type I IEPR.

Type I IEPR will be required for the GRR, economics analysis, hydraulic analysis and waterfowl analysis and EIS. It will be done after the TSP milestone is complete.

c. Required Type I IEPR Panel Expertise.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member should have experience in agricultural and silvicultural economics.
Environmental	The environmental reviewer should have experience in bottomland hardwood/wetland ecosystems and waterfowl habitat.
Engineering -Hydraulic Engineer	The hydraulic engineer reviewer should have experience in

	sediment dynamics, channel restoration, flood frequency calculations and detention/retention reservoirs. (may require more than one reviewer)
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d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

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

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

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 AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering and ATR MCX, located in the Walla Walla District. The MCX 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 MCX will also provide the Cost Engineering certification. The RMO is responsible for coordination with the Cost Engineering MCX.

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 may be used in the development of the decision document: Under the SMART planning process, the models to be used will be determined during at the completion of the Alternative Milestone. The models listed below are examples; every effort will be made to choose models that have already been certified.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Hydrogeomorphic Model (HGM)	The HGM Approach is a wetland assessment procedure that is based on three fundamental factors that influence how wetlands function: position in the landscape (geomorphic setting), water source (hydrology), and the flow and fluctuation of the water once in the wetland (hydrodynamics). The HGM Approach first classifies wetlands based on their differences in functioning, second it defines functions that each class of wetland performs, and third it uses reference to establish the range of functioning of the wetland. Regional assessment models are developed based on the functional profile that describes the physical, biological, and chemical characteristics of a regional wetland subclass. It would be used to compare alternatives and determine mitigation needs.	Certified in some areas, but not currently for TN
TBD	A model analyzing agricultural flood damage to calculate benefits of flood risk reduction.	TBD
Waterfowl Assessment Methodology	The model assesses duck use days of various different types of land cover and flood frequencies. It would be used to compare alternatives and determine mitigation needs.	Model is certified for use in the Lower Mississippi

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS	The Hydrologic Engineering Center’s River Analysis System (HEC-RAS) program provides the capability to perform flood stage, flowline and one-dimensional steady and unsteady flow river hydraulics calculations. The programs will be used to evaluate the future without- and with-project conditions.	HH & C CoP Preferred Model

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. ATR of the draft GRR is expected to begin in October 2014, after the TSP Milestone, and take 6 weeks to complete. The estimated cost is \$60,000.

The ATR Lead will be assigned to the study at the beginning and will participate in the charette, IPRs and milestone meetings. The estimated cost of this is \$5,000 through the first milestone. The cost of this is not included in the cost of the ATR. It will be reviewed and adjusted after the first milestone is complete.

b. Type I IEPR Schedule and Cost. It is expected that Type 1 IEPR will be done concurrent with ATR and begin in October 2014 as allowed under the SMART planning process. It will take 6 weeks to complete and cost \$100,000.

c. Model Certification/Approval Schedule and Cost. TBD. The specific models to be used will be determined after the charette and completion of the first SMART planning milestone. Every effort will be made to find modes that have already been certified. The appropriate PCXs will be involved in the charette and inform the team regarding the acceptability of any models for this project.

11. PUBLIC PARTICIPATION

A Public Scoping Meeting was held in May 2009. Another may be scheduled after the Charette. The draft documents would also be released for public review after the TSP Milestone.

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:

- Planner, 901-544-3455
- Project Manager, 901-544-0709
- MVD DST, 601-634-5836
- [Add title and phone number for the point of contact\(s\) at the Review Management Organization](#)

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team

Team Member	Role	Phone
Danny Ward	Project Manger	901-544-0709
Marsha Raus	Planner	901-544-3455
Robert Hunt, PhD	Hydraulic Engineer	901-544-0875
Andy Gaines, PhD	Hydraulic Engineer	901-544-3055
Doug Young	Real Estate	901-544-3154
Bobby Learned	Economics	901-544-0742
Mike Thron	Environmental	901-544-0708
Barbara Key	Counsel	901-544-3776
Jennifer Rodriguez	Geospatial	901-544-0662
TBD	Geotechnical	
TBD	Civil Design	
TBD	Construction	
TBD	Relocations	

Vertical Team

Team Member	Task	OFFICE
Joe Redican	Policy	HQ
Susan Smith	Planning & Policy	MVD
TBD	Hydraulic Engineering	TBD
TBD	Real Estate	TBD
TBD	Economics	TBD
Dave Vigh	Environmental	MVD
TBD	Engineering	TBD
TBD	Cost Engineering	TBD
TBD		OWPR
TBD	Counsel	MVD

Agency Technical Review Team

Team Member	Task	Credentials
TBD	ATR Lead	TBD
TBD	Planning	TBD
TBD	Hydraulic Engineering	TBD
TBD	Real Estate	TBD
TBD	Economics	TBD
TBD	Environmental	TBD
TBD	Structural Engineering	TBD
TBD	Geotechnical Engineering	TBD
TBD	Civil Engineering	TBD
TBD	Risk Analysis	TBD
TBD	Cost Engineering	TBD

Independent External Peer Review Team

Team Member	Task	Credentials
TBD	Hydraulic Engineering	TBD
TBD	Economics	TBD
TBD	Environmental	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 1165-2-209. 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 _____ Date _____
Name
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ Date _____
Name
Project Manager
Office Symbol

SIGNATURE _____ Date _____
Name
Architect Engineer Project Manager¹
Company, location

SIGNATURE _____ Date _____
Name
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

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

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

SIGNATURE _____ Date _____
Name
Chief, Engineering Division
Office Symbol

SIGNATURE _____ Date _____
Name
Chief, Planning Division
Office Symbol

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

Term	Definition	Term	Definition
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
EA	Environmental Assessment	OEO	Outside Eligible Organization
EC	Engineer Circular	OSE	Other Social Effects
EIS	Environmental Impact Statement	PCX	Planning Center of Expertise
EO	Executive Order	PDT	Project Delivery Team
ER	Ecosystem Restoration	PAC	Post Authorization Change
FDR	Flood Damage Reduction	PMP	Project Management Plan
FEMA	Federal Emergency Management Agency	PL	Public Law
FRM	Flood Risk Management	QMP	Quality Management Plan
FSM	Feasibility Scoping Meeting	QA	Quality Assurance
GRR	General Reevaluation Report	QC	Quality Control
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RED	Regional Economic Development
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
ITR	Independent Technical Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MCX	Mandatory Center of Expertise	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act