



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

REPLY TO
ATTENTION OF:

JUN 17 2013

CEMVD-PD-SP

MEMORANDUM FOR Commander, Rock Island District

SUBJECT: Review Plan Approval for the Iowa-Cedar Watershed Assessment Reconnaissance-level Study Conducted under the Upper Mississippi River Comprehensive Plan

1. References:

a. Memorandum, CEMVR-PM-M, 29 May 2013, subject as above (encl).

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

2. The enclosed Review Plan (RP) for the Iowa-Cedar Watershed Assessment Reconnaissance-level Study has been prepared in accordance with EC 1165-2-214. The RP has been coordinated with and reviewed by the Upper District Support Team.

3. I hereby approve this RP, 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 District should immediately prepare using FY13 work plan funds, a RP for the Upper Mississippi River Comprehensive Plan and submit to MVD for approval by 31 July 2013.

5. The MVD point of contact for this action is Mr. Gabe Harris, CEMVD-PD-SP, (601) 634-5926.

A handwritten signature in black ink, appearing to read "Edward E. Belk, Jr.", written in a cursive style.

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

Encl



REPLY TO
ATTENTION OF

CEMVR-PM-M

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
PO BOX 2004 CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61204-2004

MAY 29 2013

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

SUBJECT: Review Plan (RP) for the Iowa-Cedar Watershed Assessment conducted under the Upper Mississippi River Comprehensive Plan.

1. The Subject RP is enclosed for your review and approval. This Review Plan is for the Iowa-Cedar Watershed Assessment carried out under the authority of the Upper Mississippi River Comprehensive Plan. This watershed assessment is a reconnaissance-level study. An electronic copy of the Subject RP has been sent to Mr. Gabe Harris, CEMVD-PD-SP.

2. The point of contact for this project is Mr. Hank DeHaan, Project Manager, at (309) 794-5853 or e-mail: Henry.C.DeHaan@usace.army.mil.

Encl
as


MARK J. DESCHENES
COL, EN
Commanding

REVIEW PLAN

Iowa-Cedar Watershed Assessment
conducted under the
Upper Mississippi River Comprehensive Plan (UMRCP)
Upper Mississippi River and Illinois Rivers (IA, IL, MN, MO, WI)

Reconnaissance-level Study

St. Louis, Rock Island, and St. Paul Districts

MSC Approval Date: *Pending*
Last Revision Date: *17 May 2013*



US Army Corps
of Engineers

REVIEW PLAN

*Iowa-Cedar Watershed Assessment
conducted under the
Upper Mississippi River Comprehensive Plan (UMRCP)
Upper Mississippi River and Illinois Rivers (IA, IL, MN, MO, WI)
Reconnaissance-level Study*

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1. PURPOSE AND REQUIREMENTS

A. Purpose. This Review Plan defines the scope and level of peer review for the Iowa-Cedar Watershed Assessment carried out under the general authority of the Upper Mississippi River Comprehensive Plan (UMRCP). This watershed assessment is a reconnaissance-level study.

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

C. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation. 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 or the Risk Management Center, depending on the primary purpose of the decision document. The RMO for the peer review effort associated with this study is the Mississippi Valley Division.

3. STUDY INFORMATION

A. Decision Document. This Watershed Assessment is being carried out under the authority of the Upper Mississippi River Comprehensive Plan (UMRCP). The UMRCP authority calls for development of a plan to address water resource and related land resource problems and opportunities in the Upper Mississippi River Basin (UMRB), from Cairo, Illinois to the headwaters of the Mississippi River, in the interest of systemic flood risk management (FRM) by means of (1) structural and nonstructural FRM and floodplain management strategies; (2) continued maintenance of the navigation project; (3) management

of bank caving and erosion; (4) watershed nutrient and sediment management; (5) habitat management; (6) recreation needs; and (7) other related purposes.

The authorizing language states that the plan shall (1) contain recommendations on management plans and actions to be carried out by the responsible federal and non-federal entities; (2) specifically address recommendations to authorize construction of a systemic FRM project for the UMR; and (3) include recommendations for federal action where appropriate and recommendations for follow-on studies for problem areas for which data or current technology does not allow immediate solutions.

In consideration of the size and complexity of the UMRB and the breadth of the authorization, the effort is being done in parts - systemic plan for main stems of Upper Mississippi and Illinois Rivers; strategies and plans for tributary watersheds; plan for protection of critical transportation infrastructure; and plans for reconstruction of existing flood risk management projects.

Initial efforts, culminating in a 2008 Reconnaissance-level Report included - 1) a hydrologic evaluation of the Upper Mississippi River and Illinois Waterway System; 2) a federal interest assessment in a systemic flood damage reduction project for the main stems; and 3) recommendations for subsequent work under the UMRCP authority.

While no federal interest was found for funding construction of a systemic flood risk reduction project, recommendations are categorized in four areas: 1) providing technical support and facilitating continued development of strategies and plans for the main stems, 2) developing strategies and plans for tributary watersheds, 3) developing a plan and determining federal interest in protecting critical transportation infrastructure, and 4) assessing federal interest in reconstruction of existing flood damage reduction projects. Following a public hearing and endorsement by the Mississippi River Commission, the report was submitted to Congress in January 2009. Where federal interest is found, cost-shared feasibility studies could be conducted under the UMRCP authority.

The Iowa-Cedar Watershed Assessment is being carried out under item #2 above: "developing strategies and plans for tributary watersheds". It is a robust reconnaissance-level study to determine if there is a Federal justification to move to a Feasibility-level study. No NEPA documentation will be prepared as part of the study. The study will be approved by the Mississippi Valley Division.

B. Study/Project Description. The purpose of this study is to formulate a comprehensive watershed plan and process for interagency collaboration to address water resource and related land resource problems and opportunities in the Iowa-Cedar Rivers Basin (ICRB) in the interests of increasing social and economic value, increasing ecological integrity, and managing risk.

In 1993 and 2008, the ICRB experienced monumental flood events that led to an extensive emergency response and major damage to property and infrastructure in the major urban

centers: Cedar Falls, Cedar Rapids, and Iowa City. Historical settlement throughout the ICRB has led to large-scale conversion of prairie and aquatic habitat to row crop agriculture and commercial and residential development. This has resulted in altered watershed hydrology which may be resulting in more regular and larger flooding events as well as a decline in water quality. Sediment and nutrient delivery from the Iowa and Cedar Rivers are believed to be contributing to water quality concerns in the Mississippi River and hypoxia in the Gulf of Mexico. Loss and degradation of pre-settlement habitat has resulted in reduced populations of fish, riverine mammals, waterfowl and other migratory birds.

The ICRB is located in the mid-western states of Minnesota and Iowa. The Cedar River starts in southeastern Minnesota and flows southeast to its confluence with the Iowa River. The Iowa River starts in north central Iowa and flows southeast to the Mississippi River. The Upper Iowa and portions of the Upper Cedar basin are located in the Des Moines lobe region.

There have been numerous individual efforts to work on issues within the ICRB. These efforts have focused on local areas or portions of the watersheds. To date no basin wide comprehensive plan has been developed. This study is designed to complement and enhance watershed planning in the ICRB that is ongoing through many avenues.

This study has been scoped using an Integrated Water Resources Management approach which will highlight the relationship between land use and climate. Land use and climate changes impact the beneficial uses of the water resources along a variety of areas. This reconnaissance level evaluation will look at those relationships as they relate to economic viability, environmental sustainability and social well-being.

This study will incorporate readily available data and information along with detailed models developed through various efforts to frame the general conditions in the basin and identify if there are problems and opportunities that justify a Federal interest in studying in greater detail. This reconnaissance study will also highlight the policy and governmental context in how a broad watershed plan may support state and local governments in flood risk management and environmental restoration.

C. Factors Affecting the Scope and Level of Review. The following information is considered during the risk-informed decision making process to determine the appropriate scope and level of review.

- It is unlikely that any study will present technical, institutional, or social challenges, due to the limited nature of the evaluation and the use of readily available data and information.
- Possible study risks could include limited or outdated data. These sorts of data limits can affect the project's success by possibly impacting the design, cost, or economic benefits evaluation.

- The possibility of life safety risk will be evaluated during the study so that a determination about the likelihood of the project having life safety risks can be made for the follow-on Feasibility study (if recommended and funded).
- There is no request by a Governor for independent peer review, nor do reconnaissance-level studies do not undergo peer review by independent experts.
- At this time, it is not anticipated that the study would involve significant public dispute as to the size, nature or effects of any potential project. This is due to the very preliminary nature of the study.
- At this time, it is not anticipated that any study would involve significant public dispute as to the economic or environmental cost or benefit of any potential project. This is due to the very preliminary nature of the study.
- At this time, it is not anticipated that the study recommendation(s) will be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. This is due to the very preliminary nature of the study.
- At this time, the nature of the project design is unknown and therefore cannot be assessed for possible design requiring redundancy, resiliency, robustness, or unique construction scheduling.

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: In-kind services are not allowed for reconnaissance-level studies.

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. DQC comments and responses will be documented in DrChecks.

B. Products to Undergo DQC. DQC will be performed for the draft Watershed Assessment Report and the final report, if needed.

C. Required DQC Expertise. DQC expertise will mirror the expertise on the PDT and will be conducted by senior District personnel who have not contributed to the study.

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. Reconnaissance-level products are not required to undergo ATR.

B. Required ATR Team Expertise. N/A

C. Documentation of ATR. N/A

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.

A. Decision on IEPR. Reconnaissance-level products are not required to undergo Type I IEPR.

B. Products to Undergo Type I IEPR. N/A

C. Required Type I IEPR Panel Expertise. N/A

D. Documentation of Type I IEPR. N/A

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 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: No planning models are needed for this reconnaissance-level of planning.

B. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document: This study will utilize the published results of model applications occurring under related efforts. These models are listed in the following table. The other related efforts have already undergone their own QA process; therefore, no additional review of the models is required.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS 4.1 (River Analysis System)	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project conditions along the Wild River and its tributaries. [For a particular study the model could be used for unsteady flow analysis or both steady and unsteady flow analysis. The review plan should indicate how the model will be used for a particular study.]	HH&C CoP Preferred Model
HEC-HMS (Hydrologic Modeling System)	The Hydrologic Modeling System (HEC-HMS) is designed to simulate the precipitation-runoff processes of dendritic watershed systems.	HH&C CoP Preferred Model
Cedar River Soil and Water Assessment Tool (SWAT) Hydrologic Model	USGS-developed, reviewed, and published.	Independent QA process completed.
HAZARD United States (HAZUS)	FEMA developed, reviewed, and published.	Independent QA process completed.

10. REVIEW SCHEDULES AND COSTS

- A. DQC Schedule. 1st Quarter FY14
- B. ATR Schedule and Cost. N/A
- C. Type I IEPR Schedule and Cost. N/A
- D. Model Certification/Approval Schedule and Cost. N/A.

11. PUBLIC PARTICIPATION

The public is not generally invited to participate formally in reconnaissance-level study efforts. However, if the study team determines that public participation would be beneficial, it will implement a public involvement strategy.

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:

- Hank DeHaan, Project Manager, Rock Island District, 309-794-5853
- Jason Smith, Study Manager, Rock Island District, 309-794-5690
- Gabe Harris, District Support Team, 601-634-5926

ATTACHMENT 1: TEAM ROSTERS

Product Delivery Team

Discipline	Name	Phone
Project Manager	Henry DeHaan	309-794-5853
Plan Formulation	Jason Smith	309-794-5690
Engineering/Hydraulics	Toby Hunemuller	309-794-5222
Economics	Dianne Karnish	309-794-5006
GIS	Michael Dougherty	309-794-5491

District Quality Control Team

Discipline	Name	Phone
Plan Formulation	TBD	
Economics	TBD	
Cost Estimating	TBD	
Geotechnical Engineering	TBD	
Civil Engineering	TBD	
Real Estate	TBD	

Vertical Team

	Name	Phone
District Support Team /RMO	Gabe Harris	601-634-5926

ATTACHMENT 2: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page/Para Number

