REVIEW PLAN
Using the MVD Model Review Plan
Dated 15 June 2011

VALLEY CITY, NORTH DAKOTA
SHEYENNE RIVER
FEASIBILITY STUDY

St. Paul District

MSC Approval Date: 18 May 2012
Last Revision Date: 22 May 2012

US Army Corps
of Engineers ®

REVIEW PLAN
VALLEY CITY, NORTH DAKOTA
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TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS 1
2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION 1
3. STUDY INFORMATION 1
4. DISTRICT QUALITY CONTROL (DQC) 7
5. AGENCY TECHNICAL REVIEW (ATR) 7
6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR) 9
7. POLICY AND LEGAL COMPLIANCE REVIEW 12
8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION 12
9. MODEL CERTIFICATION AND APPROVAL 12
10. REVIEW SCHEDULES AND COSTS 13
11. PUBLIC PARTICIPATION 14
12. REVIEW PLAN APPROVAL AND UPDATES 15
13. REVIEW PLAN POINTS OF CONTACT 15
ATTACHMENT 1: TEAM ROSTERS 16
ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS 17
ATTACHMENT 3: REVIEW PLAN REVISIONS 18
ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS 19

1. PURPOSE AND REQUIREMENTS

Purpose. This Review Plan defines the scope and level of peer review for the Valley City, North Dakota Sheyenne River Feasibility Study.

a. References

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(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) Valley City, North Dakota Sheyenne River Reconnaissance Study, Corps of Engineers St. Paul District, December 2011
(6) Valley City, North Dakota Sheyenne River – Specifically Authorized Feasibility Study Project Management Plan
(7) Sheyenne River, North Dakota, Valley City Federal Interest Study, Corps of Engineers St, Paul District, April 2000

b. 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 the peer review effort described in this Review Plan is the Flood Risk Management 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

a. Decision Document. The Valley City, North Dakota Sheyenne River Feasibility Study will develop a feasibility study focused on flood damage reduction for the project area and identify if there is a federally implementable flood damage reduction project. This project will require congressional authorization. In accordance with the National Environmental Policy Act, an Environmental Assessment will be developed with this feasibility study.

b. Study/Project Description. The Valley City, North Dakota Sheyenne River Feasibility Study is slated

to begin in early 2012 with the execution of a Feasibility Cost Sharing Agreement between the St. Paul District US Army Corps of Engineers and the City of Valley City, North Dakota (sponsor). The sponsor will provide 50% of all study costs through non-federal cash and in-kind contributions. The Corps of Engineers funds the remaining 50% of study costs. The study is currently estimated to cost $1,560,000. The project is a single purpose flood risk management project with associated environmental and recreational objectives. The study will assess alternative measures including but not limited to non-structural measures (flood-proofing or flood-plain evacuation), levees, floodwalls, diversion channels, and bridge modifications.

The reconnaissance study conducted in 2000 evaluated a system of levees throughout the city at an estimated cost of $39 to $42 million. The benefit cost ratio estimated for this alternative was on the range of 0.2 and further Federal study was not justified. The 2011 reconnaissance study focused on evaluating flood risk management alternatives for specific areas of the city and also evaluated non-structural alternatives. The costs of the measures identified in the 2011 study for specific sites ranged from $500,000 to $2 million and seven preliminary sites were evaluated in the report. As such, the project cost for a flood risk reduction project in Valley City is estimated on the range of $2 million to $20 million. The low end of this range suggests implemented a flood risk management measure at only one location, while the upper end of this range suggests implementing measures that benefit multiple locations in the city.

The study was recommended in the Valley City, North Dakota Section 905(b) (WRDA 1986) Analysis, North Dakota, dated December 2011 and is authorized by a 30 Sep 1974 Resolution of Senate Committee on Public Works:

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, That the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review reports on the Red River of the North Drainage Basin, Minnesota, South Dakota and North Dakota, submitted in House Document Numbered 185, 81st Congress, 1st Session, and prior reports, with a view to determining if the recommendations contained therein should be modified at this time, with particular reference to flood control, water supply, waste water management and allied purposes."

Valley City is located in Barnes County in southeast North Dakota, approximately 60 miles west of Fargo, North Dakota. Valley City is located in the at large Congressional District of North Dakota (R – Rick Berg). Valley City was founded in 1874 and it is the county seat of Barnes County. The population of Valley City was 6,286 in the 2008 census, and the total Barnes County population was 10,682. The city is located in the heart of the Sheyenne River Valley on the banks of the Sheyenne River, a sub-basin within the Red River of the North. Valley City is nicknamed the City of Bridges and the historic bridges along with the scenic riverfront make the area a regional tourist attraction. The city is home of Valley City State University, a member of the state's North Dakota University System offering four year degree programs.

As the twelfth largest city in all of North Dakota and the largest city in the county, Valley City is the regional social and economic hub of Barnes County. Much of the surrounding area is rural, making Valley City an important center for commerce, recreation, medicine, education, and regional government.

The Sheyenne River is one of the major tributaries of the Red River of the North (Figure 1). It begins about 30 miles north of McClusky, North Dakota and flows east to McVille, North Dakota; from here the Sheyenne River flows south through several counties and forms Lake Ashtabula behind the Baldhill Dam north of Valley City (Figure 2). The Sheyenne flows southeasterly into Valley City, then flows south until Main Street, and continues through the city on a southwesterly course. The river meanders through a fairly narrow, steep sided valley cut about 200 feet below the adjacent upland (Figure 3). From Lisbon, North Dakota, the river flows north-northeastward to the Red River of the North. Much of Valley City is located within the 1% chance event floodplain (Figure 4).

Figure 1: Sheyenne River highlighted in the Red River drainage basin

Figure 2: Valley City, North Dakota

Figure 3: Valley City, North Dakota Aerial Photograph

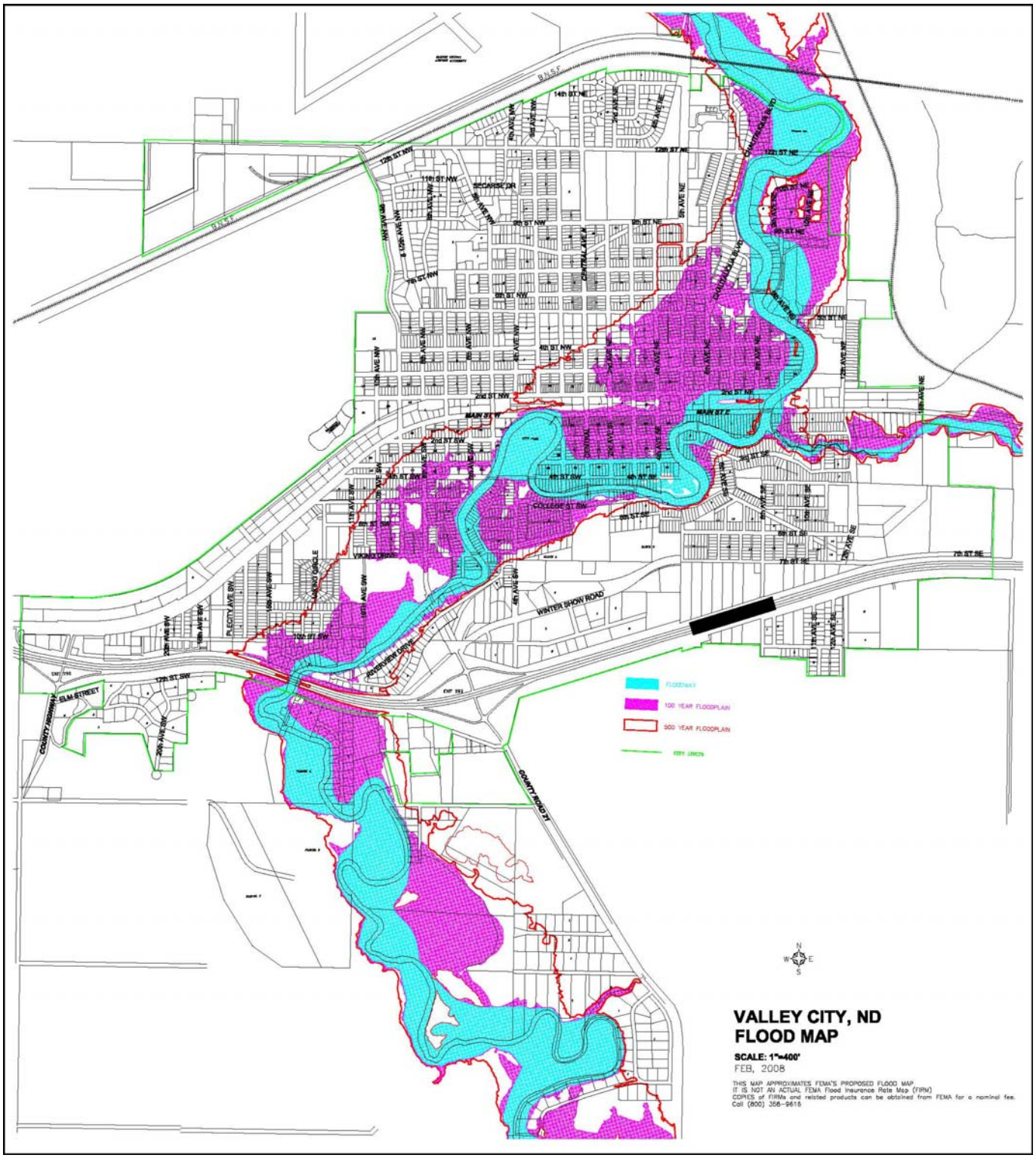

Figure 4: Valley City 2008 Flood Map

c. **Factors Affecting the Scope and Level of Review.** The Valley City, North Dakota Sheyenne River Flood Risk Management Feasibility Study has been determined to be of low to moderate risk for the factors listed below. The ATR team should focus on the technical analysis, hydrology/hydraulic analysis and development of alternatives to assure quality control in the projects forwarded for MSC consideration.

- Most aspects of the study will not be technically challenging; flood risk management measures have been successfully engineered and implemented on similar projects in the area. Updating the hydrology to include recent record flood events may be a technically challenging task; the location of Valley City downstream of Baldhill Dam may complicate this task.
- There is a moderate level of uncertainty associated with this study. The hydraulic and hydrologic analyses performed during the feasibility study will require a rigorous analysis with a strong risk and uncertainty analysis.
- Implementation of a flood risk management project could potentially reduce flood related risks to human life/safety. As such, the recommended plan may be partially justified by life safety. However, there is also a potential to involve a threat to human life/safely depending on recommended solution. The overall study has limited risks and would most likely be a very traditional flood risk management project. The study is considering both structural and non-structural flood risk management measures including flood proofing, relocation, increased channel conveyance, and flood barriers. Non-performance or design exceedance of these measures could result in risks to life safety. If a flood barrier were to be overtopped, the benefited area, including critical infrastructure and the population would be at risk; however, there would likely be adequate warning time to allow preparation or evacuation before flooding occurs. The District Chief of Engineering has determined that there is a potential for significant life safety risk associated with some of the measures being considered in the event of non-performance or design exceedance.
- A peer review by independent experts has not been requested by the Governor of an affected state.
- The study is not likely to involve significant public dispute as to the size, nature, or effects of the project. The project delivery team (PDT) will conduct public outreach efforts to engage all stakeholders and the public throughout the study. Valley City will be represented on the PDT and local officials are supportive of the study.
- The study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project. The primary goal of the study is to reduce Sheyenne River flood risk in Valley City. Current analysis shows that non-structural flood risk management measures are likely to have the highest net benefits. Such measures are not likely to involve dispute as to the cost or benefit of the project.
- The information in the decision document is not likely to 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.
- At this early stage, it is unknown to what degree the project design will require redundancy, resiliency, and/or robustness. However, these qualities will be built into the range of flood risk management alternatives considered as part of the study.

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:

(1) Hydraulic modeling provided through local AE contract.

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. Any discrepancies between a reviewer and a Project Delivery Team (PDT) member will be resolved face-to-face. If a concern cannot be satisfactorily resolved between the DQC team and the PDT, it will be elevated to the section supervisor for further resolution.

DQC will be performed by members of the same discipline within the district and in most cases will be reviewed by the PDT member's immediate supervisor.

a. Documentation of DQC. Technical supervisors will assure that experienced personnel, who have been involved with similar work, check team members' technical work for completeness, accuracy and clarity. The DQC of the feasibility portion of the project will be documented in DrChecks. At a minimum all reviews shall place a comment in DrChecks that states they have performed the review and all comments have been adequately addressed. Any major comment regarding the documents shall also be placed in DrChecks. Comments minor in nature can be provided to the PDT and address outside of DrChecks. A District Quality Control Review (DQCR) will be conducted prior to ATR. The ATR team will be provided a summary of the DQCR comments and evaluations from DrChecks.

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. Given the scope and nature of this single purpose flood risk management study, review team members with expertise across more than one discipline will be engaged where appropriate to limit the size and cost of the ATR effort.

a. Products to Undergo ATR. The feasibility study will be conducted in phases, with a product deliverable and decision checkpoint at the completion of each phase. Each of these phased deliverables will undergo ATR. ATR will be performed for the Feasibility Scoping Meeting (FSM) documentation, Alternative Formulation Briefing (AFB) documentation, Draft Report (including NEPA and supporting documentation) and Final Report (including NEPA and supporting documentation). Additional ATR of key products may be performed if needed.

Required ATR Team Expertise. The expertise represented on the ATR team reflects the significant expertise involved in the work effort and generally mirrors the expertise on the PDT. The ATR Team Leader follows the requirements as outlined in the "ATR Lead Checklist" developed by the National Planning Centers of Expertise. The following table provides a list of disciplines included on the ATR team and descriptions of the expertise required:

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 experience in flood risk management studies.
Economics	The Economics reviewer should be a senior level economist with experience in evaluating the benefits and costs associated with a flood risk management study.
Environmental Resources	The Environmental reviewer should be a senior biologist with experience in flood risk management studies and NEPA compliance.
Cultural Resources	The Cultural Resources reviewer should be a senior archaeologist.
Hydrology	The Hydrology review should be a senior level hydrologic engineer with experience in flood risk management studies and the development of flow frequency curves.
Hydraulic Engineering	The Hydraulic Engineering reviewer should be an expert in the field of hydraulics and have a thorough understanding and knowledge of open channel dynamics, enclosed channel systems, application of detention/retention basins, application of levees and flood walls, non-structural solutions involving flood warning systems and flood proofing, etc and/or computer modeling techniques that will be used 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 be a senior geotechnical engineer.
Civil Engineering	The Civil Engineering reviewer should be a senior civil engineer.
Cost Engineering	The Cost Engineering reviewer should be a senior cost engineer.
Real Estate	An expert in real estate acquisition and appraisals.

b. 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. Any editorial

comments should be provided informally by email to the PDT. 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.

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.

Decision on IEPR. Application of an IEPR requires a risk informed decision considering the following factors (Appendix D of EC 1165-2-209):

a) The consequences of nonperformance on project economics, the environment, and social well-being (public safety and social justice).

b) Whether the product is likely to contain influential scientific information or be highly influential scientific assessment.

c) If and how the study meets any of the possible IEPR exclusions described in Paragraph 11.d.(3) and Appendix D of EC 1165-2-209.

d) If and how the study contains a mandatory triggers for IEPR.

This study does not meet the all of the IEPR exclusion criteria. Because of the potential risks associated with the study, Type I IEPR is recommended for the Valley City, North Dakota Sheyenne River Flood Risk Management Feasibility Study. This study will be subject to Type I IEPR on the basis of potential life safety risks. The general purpose of the IEPR is to consider the adequacy, appropriateness, and acceptability of the design in assuring public health, safety, and welfare. Type II IEPR, or Safety

Assurance Review (SAR) is anticipated to be required on project design and implementation document. As such, SAR will be done in type I IEPR for the Feasibility Study.

a. **Products to Undergo Type I IEPR.** Type I IEPR should be performed for the entire decision document (including supporting documentation) at the draft report stage. Safety Assurance will be addressed during the Type I IEPR.

b. **Required Type I IEPR Panel Expertise.** Type I IEPR will be conducted for this study. The expertise represented on the IEPR panel should be similar to those on the ATR team. The panel will include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-209, Appendix D.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member reviewer will be responsible for reviewing the required economic analyses, project benefits, anticipated future costs, and residual damages for the project alternatives as well as ensuring that the proper information was included in the Environmental Assessment.
Environmental	The Environmental reviewer will be responsible for assessing environmental impacts, coordinating ecosystem restoration studies and ensuring the proper NEPA and cultural resource compliance activities were completed. This may include verifying any NER calculations and completion of the Fish and Wildlife Service Coordination Act requirements.
Engineering	The Hydraulic engineering and Hydrology reviewers will ensure that the hydrologic and hydraulic analysis was properly completed and that the alternatives will actually achieve the desired results. The cost engineering reviewer will ensure that the estimated project costs are accurate and that the assumptions made to develop these costs were reasonable. The civil engineering reviewer will ensure that the designed project meets Corps standards that the quantities estimated and assumptions are reasonable.

c. **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 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 and Engineering Models.** The following planning and 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	Certification / Approval Status
HEC-FDA 1.2.5a (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plan in the study area to aid in the selection of a recommended plan to manage flood risk.	HH&C CoP Preferred
HEC-RAS 4.0 (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 was be used for steady flow analysis to evaluate the future without- and with-project	HH&C CoP Preferred
Statistical Software Package (HEC-SSP)	Developed by the Hydrologic Engineering Center, this software allows you to perform statistical analyses of hydrologic data. The current version of HEC-SSP can perform flood flow frequency analysis based on Bulletin 17B, "Guidelines for Determining Flood Flow Frequency" (1982), a generalized frequency analysis on not only flow data but other hydrologic data as well, a volume frequency analysis on high and low flows, a duration analysis, a coincident frequency analysis, and a curve combination analysis.	HH&C CoP Preferred
Reservoir System Simulation program (HEC-ResSim)	HEC-ResSim is designed to be used to model reservoir operations at one or more reservoirs whose operations are defined by a variety of operational goals and constraints. HEC-ResSim has been developed by the Hydrologic Engineering Center of the US Army Corps of Engineers to aid engineers and planners performing water resources studies in predicting the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations.	HH&C CoP Preferred

10. REVIEW SCHEDULES AND COSTS

a. **ATR Schedule and Cost.** ATR review will be performed for the FSM documents, Alternative Formulation Briefing (AFB) documents, the Draft Feasibility Report/Environmental Assessment, and the Final Feasibility Report/Environmental Assessment. The total cost of ATR for the four reviews

should not exceed $54,000 for all phases of review. It is anticipated that each review should not exceed 5 weeks.

Estimated ATR Schedule

Event	Kick-Off	Reviewers Comments End	PDT Evaluation	Back-Check	Complete
ATR FSM Documents	5 Oct 12	5 - 19 Oct 12	19 Oct - 2 Nov 12	2 - 9 Nov 12	9 Nov 12
ATR AFB Documents	TBD	TBD	TBD	TBD	TBD
ATR Draft Report	TBD	TBD	TBD	TBD	TBD
ATR Final Report	TBD	TBD	TBD	TBD	TBD

Total Estimated ATR Cost (FSM, AFB, Draft Report/EA and Final Report/EA)

Reviewer	Cost
ATR Lead	$10,000
Plan Formulation	$4,000
Economic Planner	$6,000
Environmental Planner	$4,000
Cultural Resource Planner	$3,000
Hydraulics	$6,000
Hydrology	$6,000
Geotechnical Engineer	$4,000
Civil Engineer	$4,000
Cost Engineer	$4,000
Real Estate	$3,000
Total	$54,000

b. **Type I IEPR Schedule and Cost.** IEPR will be performed for the entire decision document at the Draft Report stage. The total cost of the IEPR should not exceed $150,000. It is not anticipated that the review will exceed 12 weeks.

Estimated IEPR Schedule

Event	Kick-Off	Reviewers Comments End	PDT Evaluation	Back-Check	Complete
IEPR (Draft Feasibility Report)	TBD	TBD	TBD	TBD	TBD

11. PUBLIC PARTICIPATION

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Coordination with State and local agencies will be ongoing throughout the project development. Agencies with regulatory review responsibilities will be contacted for additional coordination as required by applicable laws and procedures. A public scoping meeting will be held during Phase 1 of the study in May/June 2011. A public meeting followed by the 30-day NEPA review period will be held during Phase 3 of the study at a date to be determined.

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:

St. Paul District, Project Manager, 651-290-5426 – MVP
St. Paul District, Plan Formulator, 651-290-5221 - MVP
Mississippi Valley Division, (601) 634-5310- MVD
Flood Risk Management Planning Center of Expertise, (415) 503-6852

ATTACHMENT 1: TEAM ROSTERS

PDT			
Discipline	**Name**	**Phone**	**Email**
HQ POC			
FRM PCX			
MVD POC			
Project Manager			
PM Trainee			
Valley City, Flood Task Force Chairman			
Plan Formulation			
Economics			
Hydraulics			
Hydrology			
Geotechnical			
Civil/Layout			
Environmental			
Cost Engineer			
Cultural Resources			
Real Estate			
GIS			
Geospatial POC			

ATR Team			
Discipline	**Name**	**Phone**	**Email**
ATR Lead			
Planner			
Economics			
Environmental			
Hydrology			
Hydraulics			
Geotechnical			
Civil Engineering			
Real Estate			
Cost Engineering			
Cultural Resources			

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 Feasibility Scoping Meeting documentation for the Valley City, North Dakota Sheyenne River Flood Risk Management Feasibility Study . 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 DrChecks[sm].

SIGNATURE _____ _____

Name TBD Date
ATR Team Leader
CEXXX

SIGNATURE _____ _____

Nan Bischoff Date
Project Manager
CEMVP

SIGNATURE _____ _____

Name TBD Date
Review Management Office Representative
CEXXX

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

Chief, Engineering Division
CEMVP

SIGNATURE _____ _____

Date

Chief, Planning Division
CEMVP

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
22 May 2012	Updated schedule for Feasibility Scoping Meeting materials ATR.	Page 14, Section 10.a

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
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/MSC	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