



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
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CENWD-RBT

11 February 2016

MEMORANDUM FOR Commander, Kansas City District (CENWK-PM-CJ /Whitney Wolf)

SUBJECT: Review Plan (RP) Approval for the Overton North Missouri River Recovery Program (MRRP) Chute Modification Project.

1. References:

a. Review Plan for the Overton North Missouri River Recovery Program (MRRP) Chute Modification Project.

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

2. Reference 1.a. above has been prepared in accordance with reference 1.b. above.

3. The RP has been coordinated with the Business Technical Division, Northwestern Division, U.S. Army Corps of Engineers, which is the Review Management Organization for the plan. The Review Plan includes District Quality Control and Agency Technical Review.

4. I hereby approve this RP, which is subject to change as circumstances require, consistent with the study development process and the Project Management Business Process. Subsequent revisions to this RP or its execution will require written approval from this office.

5. For further information, please contact Mr. Douglas Putman, P.E. at (503) 808-3883.

KELLETT.JOSEPH.

P.1231299269

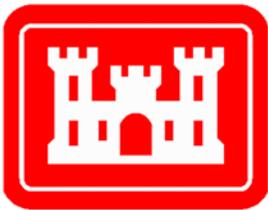
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Encl

Joseph P Kellett, PE
Chief Regional Business Technical
Northwestern Division, USACE

**Review Plan
U.S. Army Corps of Engineers
Northwest Division
Kansas City District**

**Missouri River Recovery Program
Overton North Chute Modification**



**US Army Corps
of Engineers®**

DECEMBER 2015

1. PURPOSE AND REQUIREMENTS

1.1 PURPOSE

This Review Plan is intended to ensure a quality-engineering project is developed by the U.S. Army Corps of Engineers – Kansas City District (NWK) and is developed for the Overton North Chute Modification Project Environmental Assessment and Plans/Specifications/Design Documentation Report/O&M Manual Draft. This Review Plan was prepared in accordance with Engineering Circular (EC) 1165-2-214, “Civil Works Review Policy” and provides a value added process that assures the correctness of the information shown. It is imperative that vertical teaming efforts are proactive and well coordinated to assure collaboration of the report findings, conclusions, and recommendations, and that there is consensus at all levels of the organization with the recommended path forward. This Review Plan describes the scope of review for this project and is included in the Project Management Plan (P2 #454316). All appropriate levels of review are included in this Review Plan and identifies the skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project.

1.2 GUIDANCE AND POLICY REFERENCES

- ER 5-1-11, USACE Business Processes
- EC 1165-2-214, Civil Works Review Policy, 15 DEC 2012
- ER 1110-2-1156, Safety of Dams – Policy and Procedure, 31 MAR 2014
- ER 1110-1-12, Quality Management, 31 MAR 2011

1.3 REQUIREMENTS

This Review Plan is 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.

1.4 REVIEW MANAGEMENT ORGANIZATION

The U.S. Army Corps of Engineers – Northwest Division (NWD) is the Review Management Organization (RMO) for this project.

2. PROJECT DESCRIPTION AND INFORMATION

The Overton North chute was constructed in 2000 as a shallow, narrow pilot channel intended to erode to achieve a more natural shape. (note to reviewers: the original construction was before the development of the Review Plan requirement). The pilot channel was approximately 9,770 feet (ft) long with a bottom width of 6 ft and side slopes of 1.5H:1V from RM187.6 to RM185.3. To control flow through the chute, 2 grade control structures were constructed, one approximately 4,150 ft from the pilot chute entrance and one at the exit of the chute. Additionally dikes were notched above the entrance to control flow through the chute.

Large flows in 2001 led to the accumulation of large woody debris at the chute entrance, thereby constricting inflow and preventing further development of the chute. The channel was subsequently altered by mechanically deepening the downstream end by approximately 5 feet in the spring of 2002 and finally deepening the entire chute and realigning the entrance through excavation in 2003. The realigned entrance shortened the total chute length by approximately 1,690 ft. Since realigning the chute entrance debris jams have not formed in the current entrance and the chute has been allowed to develop through natural erosion processes.

The intent of the Overton North Chute was to create new, off-channel, shallow water habitat that could serve a variety of functions ranging from food production and foraging area to velocity refuge for intercepted drifting larval fish. However, several factors related to the current geomorphic condition of the chute are preventing this type of habitat from developing.

Factors of concern include:

- 1) Depth of the chute – The majority of the chute consists of areas with the bed more than 10 feet below CRP.
- 2) Lack of depth diversity in chute – As noted in the Amended Biological Opinion (USFWS, 2003), shallow depth habitat historically existed at a variety of flows meaning that a diversity of depths is desired.
- 3) Insufficient retention time in chute due to short, straight nature – As noted in the Effects Analysis (USGS, 2015), retention of free drifting pallid sturgeon embryos benefit from exiting the main channel flows into areas where they are transported more slowly. Chutes with travel times similar to the adjacent main channel offer no benefit in this regard.

These factors are closely related to each other and are largely driven by the low sinuosity of the current configuration of the chute and the low chute-to-river ratio (C/R). The current sinuosity is 1.06 and the C/R is 0.83. This effectively makes the chute act as an unimpeded “shortcut” for the river creating a more rapid drop in head which in turn

increases the flow diversion and velocity. The flow and velocity in turn cause more erosion and scours the bed of the chute deeper. In order to control these factors with the current configuration, the flow must be heavily controlled with entrance structures thus restricting fish interception.

To increase the likelihood of the adaptive management solutions being implemented quickly and effectively; the project must adhere to the original design intent and project area to avoid new environmental impacts and utilize cost effective methods that can be implemented within the existing chute.

In an effort to meet the needs stated above, the following elements are proposed for design: A series of internal rock dikes in the chute to create additional meanders and lengthen the chute. The internal dikes will be placed strategically to direct flow into the banks at key locations to force an increase in sinuosity and C/R ratio through natural erosion and deposition processes.

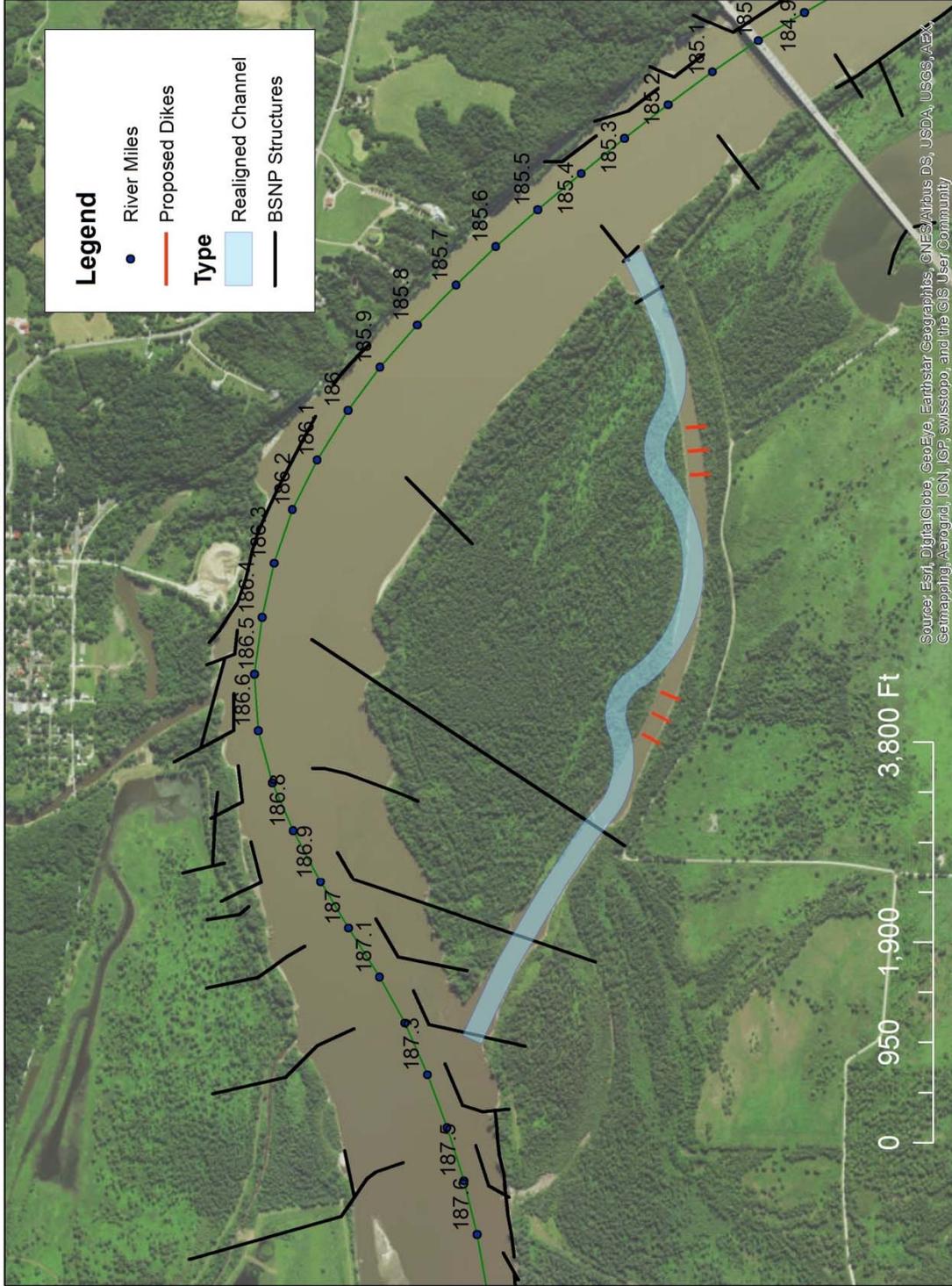
The scope of this project is to develop a design for the above solution and contract this work out to the Bank Stabilization and Navigation Project MATOC contractor pool for construction of the proposed design.

The design will meet all current guidance, regulations, and requirements, and ensure continued operation in the future with minimal O&M costs.

This project includes the generation of an Environmental Assessment, construction drawings, specifications, design documentation, and creation of an Operations and Maintenance Manual and Record Drawings. All items will be reviewed in accordance with this Review Plan.

Refer to Figure 1 below for a project location map and general position of the proposed dikes in red.

Overtown North



3. REVIEW REQUIREMENTS

3.1 DISTRICT QUALITY CONTROL

District Quality Control (DQC) consists of quality assurance reviews, in-progress reviews, and chiefs' reviews. Peer reviews will be conducted by an engineering peer within each discipline for all design products. DQC will be conducted on calculations, conceptual analysis, system designs, decision documentation, risk determinations, completeness of the plans and specifications, ensure all aspects of the project are included in the documentation, etc. Interdisciplinary reviews will be conducted by the PDT to ensure cross coordination between disciplines. All team members will review all products to ensure it accurately accounts for all discipline specific aspects and the documents collectively correlate with each other.

Select section, branch, and division level chiefs in Engineering, Construction and Project Management will review the documentation, analysis, and decision-making process in the documentation to verify the plans, specifications, and design documentation are correct and accurately reflect current policy and guidance in accordance with Engineering Regulation (ER) 415-1-11.

3.2 AGENCY TECHNICAL REVIEW

An Agency Technical Review (ATR) is mandatory for all implementation 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.

The four key parts of a quality review comment will normally include:

- The review concern. Identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
- The basis for the concern. Cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- 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
- The probable specific action needed to resolve the concern. Identify the action(s) that the reporting officers must take to resolve the concern.

At the conclusion of the 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.

3.2.1 ATR Team Expertise

The ATR team shall be chosen based on each individual's qualifications and experience with similar projects. Specifically for this project, the reviewers should be familiar with large river design, dike construction, and large river pallid sturgeon habitat development. Therefore, this ATR team shall consist of a River Engineer, Geotechnical Engineer, Environmental/ NEPA Ecologist, and Civil Engineer. All members are required to have a minimum of five years of experience in design of similar projects, be a licensed engineer, and registered in CERCAP.

The draft charge question for the ATR team is: do the implementation documents support the goal of introducing increased velocity and depth diversity in the chute with the intent of increasing habitat potential.

The ATR for this project is to be conducted by the St Louis (MVS) and St. Paul District (MVP) qualified cadre. The reviewers are identified and listed below. The ATR will be in compliance with EC 1165-2-214. Comments from the ATR team will be captured, resolved, and backchecked via DrChecks. After resolution of the comments, and in accordance with NWK BQP 7.3.01, an ATR Certification will occur. Certification requires that the reviewers have witnessed the resolution of their comments sufficiently and accurately addressed on the contract documents. Disputes and significant unresolved ATR concerns will be handled in accordance EC 1165-2-214. A site visit will not be scheduled for the ATR team.

The planned ATR reviewers from MVP/MVS/MVR include the following:

ATR Lead –
Kniep, Michelle R
MVS-CEMVP-PD-F Michelle.R.Kniep@usace.army.mil

Hydraulic Engineering-
Gordon, David
MVS-CEMVS-EC-HD David.Gordon@usace.army.mil

Ecologist-
George, Timothy K
MVS-CEMVP-PD-C Timothy.K.George@usace.army.mil

Geotechnical-
Conroy, Patrick J
MVS-CEMVS-EC-GT Patrick.J.Conroy@usace.army.mil

Civil Engineering
Sunderman, Kirk J MVR
MVR-CEMVR-EC-DM Kirk.J.Sunderman@usace.army.mil

3.2.2 ATR Lead

The ATR team lead shall be a senior professional with extensive experience in preparing Civil Works documents and conducting ATRs. The lead shall have the necessary skills and experience to lead a virtual team through the ATR process.

The ATR lead for this review is Michelle Kniep. Michelle is a Water Resources Planner, St. Paul District Michelle Kniep serves as a Water Resources Planner in the Plan Formulation Section of MVD's Regional Planning and Environment Division North. She is currently a Regional Technical Specialist for General Plan Formulation in the Mississippi Valley Division. She received her Bachelor of Science degree in civil engineering from Washington University in 1997. She has been a study manager and project manager for civil works projects involving flood risk management and ecosystem restoration for both Continuing Authorities and specifically-authorized projects since 1997.

3.3 INDEPENDENT EXTERNAL PEER REVIEW DETERMINATION

An Independent External Peer Review (IEPR) is required for some implementation 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 an IEPR is appropriate. Type I IEPR, which is conducted on project studies, is not applicable to the this project as it is in the implementation phase.

The dike construction/chute modification project is not considered a flood risk management project, but is considered adaptive management to influence the project to operate as fully intended. Furthermore, the project does not include the use of innovative materials or techniques, does not present complex challenges, does not contain precedent-setting methodology, or present conclusions that differ from prevailing practices. The project does not include any unique construction sequencing or scheduling challenges. The project does require construction of rooted dikes very much like those constructed and/or maintained by the MATOC Contractor pool annually for the Bank Stabilization and Navigation Project (BSNP) maintenance effort.

The project has low life safety risks. The probability of un-intended erosion during or after construction that would affect public areas of this project is unlikely. However, if irregular erosion were to occur, the scope and severity impact would be low as sufficient space is available for flexibility in the project area. There is a low risk that construction problems occur during the construction process.

The NWK Chief of Engineering has determined that the project does not pose a significant threat to human life and therefore a Type II IEPR is not necessary for this project. The decision process is document in Attachment 2 of this Review Plan.

3.4 POLICY AND LEGAL COMPLIANCE REVIEW

All documents will be reviewed throughout the project for their compliance with current 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.

4. REVIEW SCHEDULE AND COSTS

To the extent practical, reviews should not extend the design schedule but should be embedded in the design process. Reviewers should be involved at key decision points and are encouraged to provide timely over the shoulder comments.

4.1 ATR COST

The anticipated cost for the ATR is \$16,000. The team will consist of 4 reviewing disciplines and the ATR Team Lead.

4.2 REVIEW SCHEDULE

Peer Reviews, Inter-disciplinary reviews, ATRs, and BCOES reviews will be completed at the 65% submittal and all comments will be closed out with the final 100% submittal. The current schedule for the reviews is listed below. The schedule has been setup to accommodate these constraints. The ATR team have agreed to this schedule.

Task	Review Start	Review Complete
ENVIRONMENTAL ASSESSMENT (EA)		
35% BCOES Concept Reviw	12/04/2015	12/04/2015
95% Submittal development	12/01/2015	12/24/2015
DQC (Peer, InterDisciplinary Reviews)	12/25/2015	1/15/2016
95% ATR - ATR Comment Closeout	1/15/2016	1/22/2016
Pre-Public Notice Checklist	1/22/2016	
65%to 95% to 100% Plans/SPECs/DDR O&M		
35% BCOES Concept Reviw	12/04/2015	12/04/2015
65% ATR Review Comments	02/15/2016	02/25/2016
95% Submittal development	02/26/2016	03/05/2016
95% ATR Review coments	03/06/2016	03/16/2016
95% to 100% Submittal development	03/17/2016	03/25/2016
ATR Comment Closeout	03/28/2016	03/30/2016
Final BCOES Review	04/04/2016	04/12/2016
Ready to Advertise	04/15/2016	

5. PUBLIC PARTICIPATION

As required by EC 1165-2-214, the approved Review Plan will be posted on the District public website ([http://www.nwk.usace.army.mil/Missions/CivilWorks/CivilWorksPrograms and Projects/CivilWorksReviewPlans.aspx](http://www.nwk.usace.army.mil/Missions/CivilWorks/CivilWorksProgramsandProjects/CivilWorksReviewPlans.aspx)). Information will be conveyed to the public through the use of press releases and media interviews, as necessary, and through the use of posting information to the Kansas City District's website. There is no formal public review planned for the plans and specifications under development. The PDT has not yet determined the need for a Public Meeting for the Environmental Analysis /Project at the time of this writing. However, a public comment period is likely to occur with the development of the Environmental Assessment

6. REVIEW PLAN APPROVAL AND UPDATES

The MSC Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input as to the appropriate scope and level of review for the study. Like the PMP, the Review Plan is a living document and may change as the study progresses. NWK is responsible for keeping the Review Plan up to date. Minor

changes to the review plan since the last MSC Commander approval will be documented. Significant changes to the Review Plan (such as changes to the scope and/or level of review) will 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, will be posted on the Kansas City District's webpage and linked to the HQUSACE webpage. The latest Review Plan will also be provided to the MSC.

ATTACHMENT 1

COMPLETION OF AGENCY TECHNICAL REVIEW

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

Name

ATR Team Leader

Office Symbol/Company

Date

Name

Project Manager (home district)

Office Symbol

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution. As noted above, all concerns resulting from the ATR of the project have been fully resolved.

Name

Chief, Engineering Division (home district)

Office Symbol

Date

Name

Dam Safety Officer² (home district)

Office Symbol

Date

ATTACHMENT 2

DOCUMENTATION OF TYPE II IEPR RISK-INFORMED DECISION

This attachment documents the vertical team's risk informed recommendation to not conduct Type II IEPR.

The following table, based on the US Army Field Manual 5-19, *Composite Risk Management*, was used to assess each identified risk.

Risk Assessment Matrix

	Risk Probability			
Risk Severity	Frequent	Likely	Seldom	Unlikely
Catastrophic	Extremely High	Extremely High	High	Medium
Critical	Extremely High	High	Medium	Low
Marginal	High	Medium	Medium	Low
Negligible	Medium	Low	Low	Low

The following table details the risks, frequency, severity, risk assessment, and how the risk contributes to the IEPR decision. The risks were developed by reviewing the IEPR triggers from EC 1165-2-214.

Based on the below assessment, it is the risk-informed decision of the vertical team that a Type II IEPR is not required for this project.

TODAY'S DATE		11-DEC-15		Overton North Chute Modification		RISK MATRIX	
UPDATED		11-DEC-15					
BY WHOM		WKW					
RISK IDENTIFICATION		PROBABILITY	SEVERITY	TOTAL RISK	MITIGATION/PREVENTION		
Does the project address hurricane and storm risk management and flood risk management.		UNLIKELY	MARGINAL	LOW	This project involves work within the chute channel during non flood stage periods. The work will not impact any flood control structures. If abnormal flooding were to occur the contract duration would be extended.		
Does the project include a Federal action justified by life safety.		UNLIKELY	NEGLIGIBLE	LOW	The purpose of the work is focused on pallid sturgeon habitats development by causing the chute's water velocity & depth to diversify.		
Does a failure in the project pose a significant threat to human life.		UNLIKELY	MARGINAL	LOW	The probability of a failure during this project is low. Failure would be defined as the new dikes do not cause the far bank of a riverward island to erode as intended or the intended sinuosity excessively erodes the landward chute bank. The site is large enough to allow for this without critical results though this is not likely to occur.		
Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, present complex challenges for interpretations, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices.		UNLIKELY	NEGLIGIBLE	LOW	This project does not contain any innovative or complex design or construction methods. The work is anticipated to be performed by the same contractors that perform dike construction on the MO River main channel.		
Does the project require redundancy, resiliency, and robustness.		UNLIKELY	NEGLIGIBLE	LOW	The design parameters dictate three dikes of specific spacing in order to cause the proper erosive effect on the far bank. This specification is inherently robust and redundant. Sediment deposition and vegetative accretion over time is expected which will add to the dike complex's resiliency to chute flood level flows.		
Does the project include unique construction sequencing or a reduced or overlapping design and construction schedule.		UNLIKELY	NEGLIGIBLE	LOW	The chute is obviously narrower than the MO river and barge positioning will be different than working on the big river. The plan allows for land based construction if this is a challenge.		