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**REVIEW PLAN  
FOR THE  
HARRY S. TRUMAN STILLING BASIN OVERLAY PROJECT  
WARSAW, MISSOURI  
KANSAS CITY DISTRICT  
NORTHWESTERN DIVISION**

---



**US Army Corps  
of Engineers** ®  
Kansas City District

P2# 149791

23 JUNE 2010



REPLY TO  
ATTENTION OF

CENWD-RBT

**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, NORTHWESTERN DIVISION**  
PO BOX 2870  
PORTLAND OR 97208-2870

02 AUG 2010

MEMORANDUM FOR Commander, Kansas City District (CENWK-ED-D/James Turner)

SUBJECT: Truman Stilling Basin Repair Review Plan (RP) (P2#149791)

1. References:

- a. Memorandum, CENWK, 23 June 2010, subject as above (Encl).
- b. EC 1165-2-209, Civil Works Review Policy, 31 January 2010.

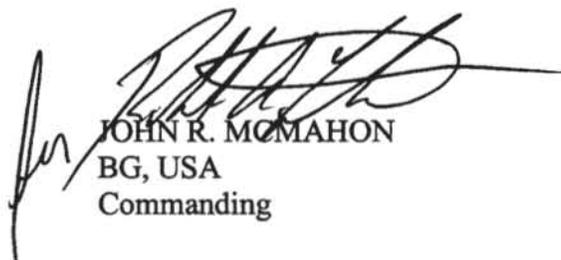
2. Reference 1.a. above has been prepared in accordance with reference 1.b. above.

3. The RP has been coordinated with Business Technical Division of the Northwestern Division, which is the lead office to execute this plan. Independent external peer review is not required for this project.

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

5. For further information, please contact Steven J. Fink

Encl



JOHN R. MCMAHON  
BG, USA  
Commanding



**DEPARTMENT OF THE ARMY**  
CORPS OF ENGINEERS, KANSAS CITY DISTRICT  
700 FEDERAL BUILDING  
601 E. 12<sup>TH</sup> STREET  
KANSAS CITY, MISSOURI 64106-2896

REPLY TO  
ATTENTION OF:

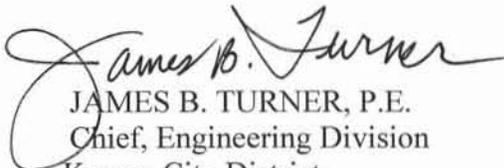
CENWK

23 June 2010

MEMORANDUM FOR Commander, Northwestern Division, USACE, ATTN: Mr. Steven Fink

SUBJECT: Truman Stilling Basin Overlay Review Plan (P2# 149791)

1. The review plan for the Truman Stilling Basin Overlay is attached for Northwestern Division's review and approval. The Review Plan was prepared in accordance with EC 1165-2-209.
2. The Truman Stilling Basin Overlay project is currently in the implementation phase. As required by EC 1165-2-209, request review and approval of the Review Plan.
3. The point of contact for this memorandum is the project manager, Seth LaLiberty, at

  
JAMES B. TURNER, P.E.  
Chief, Engineering Division  
Kansas City District

## TABLE OF CONTENTS

<b>1.0 PURPOSE AND REQUIREMENT.....</b>	<b>5</b>
<b>2.0 REVIEW DOCUMENTS INFORMATION .....</b>	<b>6</b>
<b>3.0 LEVELS OF REVIEW.....</b>	<b>6</b>
<b>5.0 REVIEW SCHEDULES AND COSTS .....</b>	<b>10</b>
<b>6.0 PUBLIC PARTICIPATION.....</b>	<b>11</b>

## TABLES

<b>Table 1. ATR Costs.....</b>	<b>11</b>
<b>Table 2. Project Delivery Team .....</b>	<b>12</b>
<b>Table 3. Peer Reviewers .....</b>	<b>12</b>
<b>Table 4. Internal Technical Review (conducted prior to the release of EC 1165-2-209).....</b>	<b>12</b>
<b>Table 5. Agency Technical Review Team .....</b>	<b>13</b>
<b>Table 6. BCOE Reviewers.....</b>	<b>13</b>
<b>Table 7. Drawings Approval for In-House Design.....</b>	<b>13</b>
<b>Table 8. Risk Assessment Matrix.....</b>	<b>3-1</b>
<b>Table 9. Type II IEPR Risk Assessment (Implementation Documents) .....</b>	<b>3-1</b>

## ATTACHMENTS

<b>Attachment 1: ATR Certification.....</b>	<b>1-1</b>
<b>Attachment 2: Statement of Legal Review .....</b>	<b>2-1</b>
<b>Attachment 3: IEPR Decision Documentation.....</b>	<b>3-1</b>

**1.0 Purpose and Requirement.**

**1.1 Purpose and Authority.** The purpose of this Review Plan (RP) is to define the scope and level of review for implementation documents for the Harry S. Truman Stilling Basin (HTSB) Overlay project. At some time in the future an Operating Project Review Plan for the Truman Dam and Stilling Basin will be developed, but until then review plans will be developed for each individual project. This RP is a stand-alone document but is also included in an appendix of the HTSB Overlay Project Management Plan (PMP). The HTSB project is authorized and funded by the Operations and Maintenance program of the Kansas City District for dam safety assurance program (DSAP) purposes. The reference for DSAP is ER 1110-2-1155. The Kansas City District will execute the project and report to the Northwestern Division in Portland, Oregon. There are no in-kind contributions.

**1.2 Documents for review.** The project is in the implementation phase. The implementation documents are the 100% plans, specifications, design documentation report, and updates (as required) to the Truman Dam operations and maintenance manual.

**1.3 Requirement.** This review plan is required by EC 1165-2-209 (31 JAN 10), which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision and implementation documents through independent review. The EC outlines three levels of review: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR). In addition to these three levels of review, decision documents are subject to policy and legal compliance review and, if applicable, safety assurance review and model certification/approval.

**1.3.1** Address inquiries on the review plan to the contacts listed below:

**District Quality Control**

Kansas City District.....Mr. Seth LaLiberty

**ATR and IEPR**

Review Management Office  
Northwestern Division.....Mr. Steven Fink

**1.3.2 References.**

- a. Engineer Circular 1105-2-408, Peer Review of Decision Documents, 31 MAY 05
- b. Engineer Circular 1105-2-410, Review of Decision Documents, 22 AUG 08
- c. Engineering Circular 1165-2-209, Water Resources Policies and Procedures: Civil Works Review Policy, 31 JAN 10
- d. Engineer Regulation 1105-2-100, Planning Guidance Notebook, 20 NOV 07
- e. Engineer Regulation 1110-1-12, Quality Management, 30 SEP 06
- f. Engineer Regulation 1110-2-1155, *Dam Safety Assurance Program*, 12 SEP 97
- g. US Army Field Manual 5-19, *Composite Risk Management*, 21 AUG 06
- h. Harry S. Truman Stilling Basin Overlay Project Management Plan

i. Harry S. Truman Dam Operations and Maintenance Manual

## 2.0 Review Documents Information

**2.1 Project Background and Description.** The Truman Stilling Basin Overlay project repairs erosion in the concrete floor of the Truman Dam stilling basin. Over the course of several years, debris circulating in the basin eroded the basin floor up to two feet or more. The repairs place a four foot thick abrasion resistant concrete overlay across the full width of the basin (181 feet) that extends 60 feet downstream and is three to six feet deep. The concrete is placed under approximately 48 feet of water using a tremie tube. The repairs also include cleaning the basin of debris before and after construction, drilling new drains to equalize hydraulic uplift pressures, and installing anchors in the overlay to resist the uplift forces.

**2.2 Site Description.** The Truman Stilling Basin is part of the Truman Dam on the Osage River. The dam, completed in 1979, has six turbines that generate power from Truman Lake near Warsaw, MO. The water flows downstream into the Lake of the Ozarks.

**2.3 Implementation Documents.** Implementation documents include the plans, specifications, design documentation report (DDR), and any required updates to the dam Operations and Maintenance manual. The purpose of implementation documents is to provide a detailed plan for construction. The plans, specifications, and DDR were developed by a USACE project delivery team (PDT). A construction contractor will complete the construction.

**2.3.1 Factors Affecting the Scope and Level of Review.** This section addresses the factors necessary to determine the appropriate scope and level of review for these documents. This information is used by the PDT and vertical team to assess the appropriate level of review and types of expertise represented on the review teams. Following are factors considered in selecting the type of review.

**2.3.1.1 Project Cost.** The total cost of the project is estimated between \$3-5 million. The total project cost includes about 2-3% for environmental assessment development, 4-6% for design, and less than 1% for operations, maintenance, supervision, and administration during construction. The remainder (90-93%) is used for construction.

**2.3.1.2 Factors considered but not deemed influential.** The engineering employed to support the implementation documents is water quality monitoring, hydraulics, biology, materials science, geotechnical evaluation, and civil engineering. The design and design methods in the implementation documents are not be based on novel methods, do not present complex challenges for interpretation, do not contain precedent-setting methods or models, and do not present conclusions that are likely to change prevailing practices. The Truman Dam is a source of historic public controversy; however, this project does not have significant environmental impact, does not change any visible aspect of the dam or stilling basin, disturbs no known cultural or historically significant sites, has a small land-based construction area with less than 1 acre of disturbed ground, and has a minimal construction period (six months). Little to no public controversy is expected.

## 3.0 Levels of Review.

**3.1** There are four levels of review considered for the HTSB project: 1. District Quality Control, 2. Agency Technical Review, 3. Type I Independent External Peer Review, and 4. Type II Independent External Peer Review. Each level, and how it applies to the project, is explained below.

**3.2 District Quality Control.** DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). It is managed in the home district and may be conducted by staff in the home district as long as they are not doing the work involved in the study, including contracted work that is under review. The design products for the HTSB project were developed entirely internal to the Corps of Engineers by the project delivery team. Basic quality control tools used on the HTSB project include a Quality Management Plan providing for seamless review, peer quality checks and reviews, supervisory reviews, project delivery team (PDT) reviews, a biddability, constructability, operability, and environmental (BCOE) review, in-house product development checklists, and established Business Quality Practices (BQPs) used to ensure quality procedures are followed. Prior to implementation of EC 1165-2-209, the HTSB plans and specifications also received an Independent Technical Review (ITR) from reviewers of disciplines similar to those used for the ATR on the project. DQC also includes certification of the plans, specifications, and DDR by BCOE, which includes the chiefs of construction, engineering, and operations divisions and the chiefs of the civil construction and geotechnical branch chief.

**3.2.1** DQC efforts include the necessary expertise to address compliance with published Corps policy. When policy and/or legal concerns arise during DQC efforts that are not readily and mutually resolved by the PDT and the reviewers, the district seeks issue resolution support from Northwestern Division and Headquarters, U.S. Army Corps of Engineers (HQUSACE) in accordance with the procedures outlined in Appendix H, ER 1105-2-100 or other appropriate guidance.

**3.2.2** The Northwestern Division and Kansas City District quality management plans address the conduct and documentation of this fundamental level of review. DQC is required for this project.

**3.3 Risk Informed Decisions on Appropriate Reviews.** All work products undergo DQC and all implementation documents must undergo ATR. However, there is some level of judgment applied to determine if IEPR is required. Therefore, this RP includes documentation in Attachment 3 of the risk-informed decision on the IEPR level of review.

**3.4 Agency Technical Review (ATR).** ATR is an in-depth review undertaken to ensure the quality and credibility of the government's scientific information, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. ATR is mandatory for all decision and implementation documents. For other work products, a case specific risk-informed decision is made as to whether ATR is appropriate. The purpose of ATR is to ensure proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assures that all the parts fit together in a coherent whole. ATR teams are comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team is selected from outside the Northwestern Division.

**3.4.1** Since the requirement from EC 1165-2-209 for a review plan was added as the project was nearing completion of the design, comments from the Independent Technical Review, a component of DQC prior to publication of EC 1165-2-209, are available to the ATR team.

**3.4.2 Required ATR Team Expertise.** The ATR team consists of 6 members including the ATR team lead. The following paragraphs describe the list of required disciplines as well as the experience required by each of the ATR team members. See Table 5 for a list of ATR team members.

**3.4.2.1 Hydraulics.** Team member will be an expert in the field of stilling basin hydraulics, have a thorough understanding of the dynamics of dams and stilling basins and be familiar with the effects of stilling basin currents, erosion, and impacts of structural modifications.

**3.4.2.2 Structural.** Team member should have experience in dam design, especially in managing upward forces created by underseepage. Team member should also have experience designing drains to relieve the upward forces and anchors to secure overlays to underlying foundations.

**3.4.2.3 Materials.** Team member should have experience in concrete mix design for abrasion resistance, concrete testing and reinforcement, concrete flow, tremie tubes, and underwater concrete placement in a variety of temperatures and water conditions.

**3.4.2.4 Construction Management.** Team member will be familiar with underwater construction methods, risks, limitations, and requirements.

**3.4.2.5 Dive Operations.** Team member should have experience using divers in underwater construction and concrete placement.

**3.4.2.6 Geotechnical.** Team member should have experience in drilling into bedrock, dam safety, and assessing dam stability.

**3.4.2.7 Other disciplines/functions involved in the project included as needed with appropriate experience and educational requirements.**

**3.4.3 Documentation of ATR.** EC 1105-2-408 requires the use of DrChecks (<https://www.projnet.org/projnet/>) to document all ATR comments, responses, and associated resolution accomplished. ATR team members must register with the DrChecks website and they will receive access to DrChecks through the project manager. A PDT member is assigned to take the lead in resolving comments for each of the primary project disciplines. It is the PDT member's responsibility to coordinate resolution of the comment with other team members as required, evaluate the DrChecks comment, enter the PDT's response into DrChecks, and ensure the ATR team member conducts a comment backcheck. It is the PDT member's responsibility to ensure all DrChecks ATR comments in their discipline are properly addressed, resolved, and closed.

**3.4.4** In some situations, especially addressing incomplete or unclear information, comments may seek clarification or try to 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 coordination, and lastly the agreed upon resolution. The ATR team will prepare a Review Report which includes a summary of each unresolved issue; each unresolved issue will be raised to the vertical team for resolution. Review Reports are considered an integral part of the ATR documentation and will:

- 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.

**3.4.5 ATR Issue Resolution.** ATR efforts include the necessary expertise to address compliance with applicable published policy. When policy and/or legal concerns arise during ATR that are not readily and mutually resolved by the PDT and the reviewers, the District will seek issue resolution support from the Northwestern Division and HQUSACE in accordance with the procedures outlined in ER 1105-2-100 (Appendix H), or other appropriate guidance.

**3.4.6 ATR Completion.** ATR is considered complete and certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. A sample ATR certification is included as Attachment 1.

**3.5 Independent External Peer Review (IEPR).** 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. Any work product that undergoes ATR may also undergo Type I and/or Type II IEPR. In general, decision documents undergo Type I IEPR and implementation documents undergo Type II IEPR (or Safety Assurance Review). Meeting the specific conditions identified for possible exclusions is not, in and of itself, sufficient grounds for recommending exclusion.

**3.5.1 Type I IEPR.** This project is not anticipated to require Type I IEPR because it is in the implementation phase and not the study phase.

**3.5.2 Type II IEPR.** A Type II IEPR is conducted to insure public health, safety, and welfare. The circumstances requiring a Type II IEPR are described in Appendix E of EC 1165-2-209. Each of those circumstances is explicitly considered in developing a risk-informed rationale for determining the appropriate level of review, including the need for a safety assurance review. This project is not anticipated to require Type II IEPR because it does not pose a significant threat to public health, safety, or welfare.

**3.5.3 Type II IEPR Decision.** Based on the analysis provided in Attachment 3 Table 8, it is recommended that Type II IEPR is not required. NWD review POC Steve Fink discussed this review Plan with Surya Bhamidipaty, Chief, RBT, Laila Berre, Dam Safety Program Manager, and Dave Carlson, RMC. They concur that IEPR Type II is not required for this project.

**3.6 Policy and Legal Compliance Review.** The Kansas City District Office of Counsel is responsible for legal review of decision and implementation documents and signs a certification of legal sufficiency prior to construction of the project.

**3.7 Model Certification/Approval.** EC 1165-2-209 requires certification (for Corps models) or approval (for non-Corps models) of planning models used for all planning activities. The EC defines planning models 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 EC does not cover engineering models used in planning; however engineering software used for models is currently addressed under the Engineering and Construction (E&C) Science and Engineering Technology (SET) initiative. Until an appropriate process that documents the quality of commonly used engineering software is developed through the SET initiative, engineering activities in support of planning studies will proceed as in the past. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and will follow the professional practice of documenting the application of the software and modeling results.

**3.7.1** Due to the simplicity and limited hydraulic, environmental, economic, social, geologic, and geotechnical aspects of this project, in the professional judgment of the PDT, no models are required to verify the effects of this project.

#### **4.0 Posting Review Plans.**

**4.1.1.1 District.** The Kansas City District maintains a web site that hosts electronic versions of review plans for its studies/projects as well as a list of the current and active Review Plans with links to the documents. In posted documents, lists of the names of USACE reviewers may be displayed. Northwestern Division and HQUSACE postings also link to the district's site. The district will establish a mechanism on their web site for allowing the public to comment on the adequacy of the RP, and will consider public comments on RPs. The RP is published on the Kansas City District's public internet site following approval by Northwestern Division. The Kansas City District website is located here: <http://www.nwk.usace.army.mil/index.cfm>.

**4.1.1.2 Northwestern Division.** Northwestern Division will post on its website, and update at least every three months, an agenda of RPs. The agenda describes all decision and implementation documents, the RP for each entry on the agenda, and provides a link from the agenda to each document made public. The Northwestern Division's website is located here: <http://www.nwd.usace.army.mil/home.asp>

#### **5.0 Review Schedules and Costs**

**5.1 DQC Schedule and Cost.** DQC, which includes peer reviews, independent technical review (ITR), and a biddability, constructability, operability, and environmental (BCOE) review, is accomplished prior to ATR. The entire DQC process takes about 6 months and costs are paid from project funds.

##### **5.1.1 DQC Schedule**

Plans Complete	2 June 2010
Specifications Complete	2 June 2010
DDR Complete	2 June 2010
O&M Manual Updates Complete	March 2011

**5.1.2 Peer Reviews.** Prior to ITR and ATR, all implementation documents will receive a peer review. The peer review is conducted by a peer in the same discipline and double checks calculations, assumptions, and other design details used in the design and specifications. Peer review disciplines are listed in Table 3

**5.1.3 ITR.** Prior to implementation of EC 1165-2-209, the plans and specifications underwent an ITR with comments entered into DrChecks. ITR is similar to ATR in that an independent expert examines the processes and assumptions used in the design. Prior to BCOE, all ITR comments will be considered and resolved. ITR review disciplines are listed in Table 4.

**5.1.4 BCOE.** The BCOE review reviews all aspects of the documents used to bid for a construction contract to ensure they will result in a biddable and constructible project. BCOE occurs prior to advertising the contract for bids. The BCOE review disciplines are listed in Table 6.

**5.1.5 Certification of Technical and Legal Review.** Also prior to awarding the contract, the implementation documents will receive a certification of technical and legal review from the Kansas City District's Office of Counsel.

**5.2 ATR Schedule and Cost.** Due to the timing of the release of EC 1165-2-209, the project was already on schedule to start construction. The district made the decision to proceed with advertising the construction contract while ATR was ongoing, accepting the risk that we may receive ATR comments that require amendments to the advertised documents. Following is the schedule for the ATR review:

**5.2.1 Review Plan Schedule**

Review plan receives District approval	D*+0
Draft Review Plan sent to NWD	D+0
ATR begins on implementation documents (start point for ATR schedule below)	D+5
Public notice and comment period opens	D+7
Public comment period closes	D+37
PDT completes addressing public comments	D+44
NWD approves review plan	D+51
Review plan sent to RIT	D+51
Director of Civil Works approves IEPR decision	D+81

\*"D" is the date NWK approves the review plan, which is currently unknown

**5.2.2 ATR Schedule**

NWD approves ATR Team1	22 April (complete)
Review documents and charge sent to ATR Team	22 April (complete)
Charge approved by PDT and ATR Team	30 April (complete)
Review documents sent to ATR Team	30 April (complete)
ATR DrChecks comments complete	21 May (complete)
PDT DrChecks evaluations complete	2 June (complete)
ATR backchecks complete; DrChecks closed	11 June
ATR certification form signed	11 June
ATR final report complete	30 June
Report sent to NWD for approval	30 June
Report approved by NWD	9 July

**5.2.3 ATR Cost.** Following are the estimated costs for ATR:

**Table 1. ATR Costs**

<b>Discipline</b>	<b>Estimated Labor Cost</b>
ATR Team Lead	\$10000
Supporting Disciplines	\$3000 ea. @ 5 ea. =\$15,000
<b>TOTAL</b>	<b>\$25,000</b>

**5.3 IEPR Schedule and Cost.** Not Applicable.

**5.4 Model Certification/Approval Schedule and Cost.** Not Applicable.

**6.0 Public Participation.**

Public comments are welcome on the review plan. The review plan is posted on the Kansas City District’s web page located here: <http://www.nwk.usace.army.mil/index.cfm>. The public comment period is 30 days. The Kansas City District will consider public comments and recommend changes to the review plan if necessary to the Northwestern Division. Significant and relevant public comments will also be provided to reviewers prior to conduct of the review. Also, due to changes in the project, the review plan may

require updates. Updates are posted to the same website and the Public will have a similar opportunity to comment on review plan updates. Since the project does not meet the requirements for IEPR, the Public, including scientific or professional societies, is not asked to nominate potential reviewers. Public comments on the review plan may be made by writing or emailing the following contact:

Kansas City District, Corps of Engineers  
 c/o Seth LaLiberty, CENWK-PM-CJ  
 601 E. 12<sup>th</sup> St.  
 Kansas City, MO 64106  
 Email: seth.j.laliberty@usace.army.mil

**7.0 Review Teams.**

**Table 2. Project Delivery Team**

<b>Name<sup>1</sup></b>	<b>District</b>	<b>Discipline</b>
	CENWK	Project Management
	CENWK	Environmental
	CENWK	Geology
	CENWK	Dam Operations
	CENWK	Hydraulics
	CENWK	Structural
	CESPK	Materials
	CENWK	Cost Estimating
	CENWK	Water Quality
	CENWK	CADD
	CENWK	Contracting
	CENWK	Specifications
	CENWK	Construction Management
	CENWK	Dive Operations
	CENWK	Value Engineering
	CENWK	Scheduling/P2.
CENWK	Real Estate	
CENWK	Legal	

\*Technical Lead

**Table 3. Peer Reviewers**

<b>Name<sup>1</sup></b>	<b>District</b>	<b>Discipline</b>
	CENWK	Geological
	CENWW	Structural
	CESPK	Concrete & Materials
	CENWK	Hydraulics
	CENWK	Cost Estimating

**Table 4. Internal Technical Review (conducted prior to the release of EC 1165-2-209)**

<b>Name<sup>1</sup></b>	<b>District</b>	<b>Discipline</b>
-------------------------	-----------------	-------------------

<sup>1</sup> Names will be removed in version posted for public review to protect privacy.

	CENWW	Materials
	CENWW	Structural
	Retired/CENWW	Civil/Construction Management
	Retired/CENWW	CADD/BIM
	CENWW	Hydraulics
	CELRP	Concrete & Materials
	CENWW	Cost Engineering

**Table 5. Agency Technical Review Team**

<b>Name</b>	<b>District</b>	<b>Discipline</b>
David Kiefer	Louisville District	ATR Team Lead/Materials
Bruce Collison	Walla Walla District	Structural
Glenn Bush	Pittsburgh District	Concrete & Materials
Lynn Reese	Walla Walla District	Hydraulics
Bill Harrison	Walla Walla District	Geotechnical
Michael Remington	Walla Walla District	Dive Operations

**Table 6. BCOE Reviewers**

<b>Name<sup>2</sup></b>	<b>District/Section</b>	<b>Discipline</b>
	CENWK-OD	Operations Division Chief
	CENWK-CD-C	Construction, Civil Branch Chief
	CENWK-CD	Construction Division Chief
	CENWK-ED-G	Geotechnical Branch Chief
	CENWK-ED-D	Design Branch Chief

**Table 7. Drawings Approval for In-House Design**

<b>Name<sup>2</sup></b>	<b>District/Section</b>	<b>Discipline</b>
	CENWK-ED-D	Engineering Division Chief
	CENWK-ED-H	Hydrologic Branch Chief
	CENWK-ED-G	Geotechnical Branch Chief
	CENWK-ED-D	Design Branch Chief

<sup>2</sup> Names will be removed in version posted for public review to protect privacy.

**Attachment 1: ATR Certification**

STATEMENT OF AGENCY TECHNICAL REVIEW (ATR)

COMPLETION OF AGENCY TECHNICAL REVIEW:

The ATR team has completed the review. Notice is hereby given that an Agency Technical Review that is appropriate to the level of risk and complexity inherent in the project is complete as defined in the Review Plan. During the Agency Technical Review, compliance with established policy principles and procedures, utilizing justified and valid assumptions were verified. This included review of assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level of data obtained, and reasonableness of the results including whether the product meets the customer's needs consistent with law and existing Corps policy.

\_\_\_\_\_  
David Kiefer, Agency Technical Review Team Lead

Date: \_\_\_\_\_

\_\_\_\_\_  
Seth LaLiberty, Project Manager

Date: \_\_\_\_\_

**Attachment 2: Statement of Legal Review**

**STATEMENT OF LEGAL REVIEW**

**CERTIFICATION OF LEGAL REVIEW:**

This product including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Kansas City District and is approved as legally sufficient.

\_\_\_\_\_  
District Counsel

Date: \_\_\_\_\_

**Attachment 3: IEPR Decision Documentation**

**1.0** The project is in the implementation phase and therefore does not require a Type I IEPR. This attachment documents the vertical team’s risk informed recommendation to not conduct Type II IEPR. According to EC 1165-2-209, the vertical team must make a risk-informed decision whether or not to conduct Type II IEPR, make a risk-informed decision to conduct Type II IEPR or make a risk informed recommendation to the Chief of Engineers or Director of Civil Works to not conduct Type II IEPR.

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

**Table 8. Risk Assessment Matrix**

	<b>Risk Probability</b>			
<b>Risk Severity</b>	<b>Frequent</b>	<b>Likely</b>	<b>Seldom</b>	<b>Unlikely</b>
<b>Catastrophic</b>	Extremely High	Extremely High	High	Moderate
<b>Critical</b>	Extremely High	High	Moderate	Low
<b>Marginal</b>	High	Moderate	Moderate	Low
<b>Negligible</b>	Moderate	Low	Low	Low

**3.0** The following table details the risks, frequency, severity, risk assessment, and how the risk contributes to the IEPR decision.

**Table 9. Type II IEPR Risk Assessment (Implementation Documents)**

<b>Risk</b>	<b>Risk Probability</b>	<b>Risk Severity</b>	<b>Risk Assessment</b>	<b>Risk Contributes to IEPR Decision?</b>	<b>Notes</b>
Project poses a significant threat to human life	Unlikely	Catastrophic	Moderate	No	The completed project will have a negligible effect on the threat to human life.
Project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or	Unlikely	Critical	Low	No	

presents conclusions that are likely to change prevailing practices					
The project design requires redundancy, resiliency, and robustness	Likely	Critical	High	Yes	There is only one overlay which requires robustness and resiliency. However, the tests performed prior to concrete placement to optimize the mix design to the pH and temperature and the expertise of team members with experience on similar projects will mitigate this risk.
The project has unique construction sequencing or a reduced or overlapping design construction schedule	Unlikely	Critical	Low	No	
Risk of interrupting power generation	Seldom	Critical	Moderate	No	Extensive coordination with the power generation team will mitigate the risk of power generation interruption
Risk of a faulty or incomplete design making it to construction	Seldom	Critical	Moderate	No	DQC and ATR by personnel with experience on similar projects will mitigate the risk of a faulty or incomplete design
Risk of	Unlikely	Catastrophic	Moderate	No	Construction

contractor misinterpreting design which results in project failure					quality control procedures will mitigate this risk.
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**4.0** Based on the above assessment, as well as the fact that the project is so limited in scope and impact that it would not significantly benefit from Type II IEPR, it is the risk-informed recommendation of the vertical team that Type II IEPR is not required for this project.