



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

## **PROJECT REVIEW PLAN**

### **TOPEKA, KANSAS FLOOD RISK MANAGEMENT PROJECT FEASIBILITY STUDY PHASE**

**DECEMBER 2007**

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**HEARTLAND ENGINEERS**



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## TOPEKA, KANSAS, FLOOD RISK MANAGEMENT PROJECT FEASIBILITY STUDY PHASE

### Table of Contents

<b>1. DOCUMENT OBJECTIVE.....</b>	<b>1</b>
<b>2. GENERAL INFORMATION.....</b>	<b>1</b>
<b>Executive Summary -- Study Purpose and Background.....</b>	<b>1</b>
<b>Study Authority.....</b>	<b>1</b>
<b>Original Project Authority.....</b>	<b>1</b>
<b>Feasibility Study Objectives.....</b>	<b>2</b>
<b>Summary Study Scope and Execution Parameters. ....</b>	<b>2</b>
<b>Local Sponsorship and Funding.....</b>	<b>2</b>
<b>Description of Existing Overall Project and Problem.....</b>	<b>2</b>
<b>3. LEVELS OF REVIEW .....</b>	<b>3</b>
<b>Internal Peer Review (IPR).....</b>	<b>3</b>
<b>Independent Technical Review (ITR).....</b>	<b>3</b>
<b>External Peer Review (EPR).....</b>	<b>4</b>
<b>Architect-Engineer (A-E) or Consulting Contacts.....</b>	<b>4</b>
<b>4. SELECTED REVIEW PROCESS(S) .....</b>	<b>4</b>
<b>ITR References: .....</b>	<b>5</b>
<b>5. PRIMARY DISCIPLINES AND EXPERTISE NEEDED FOR THE ITR.....</b>	<b>6</b>
<b>Discipline-Specific Guidance &amp; Requirements.....</b>	<b>6</b>
<b>ITR Team Leader. ....</b>	<b>7</b>
<b>Independent Technical Review Team Members and Organization.....</b>	<b>7</b>
<b>6. ITR SCHEDULE. ....</b>	<b>7</b>
<b>ITR Team Site Visit.....</b>	<b>8</b>
<b>7. ITR BUDGET.....</b>	<b>8</b>
<b>8. PUBLIC COMMENT OPPORTUNITIES .....</b>	<b>8</b>
<b>9. AVAILABILITY OF PUBLIC COMMENTS TO REVIEW TEAM.....</b>	<b>8</b>

Appendix A – Review Team Members (separate document)

**PROJECT REVIEW PLAN**  
**TOPEKA, KANSAS, LEVEES**  
**SECTION 216 FLOOD RISK MANAGEMENT PROJECT**  
**FEASIBILITY STUDY PHASE**

**1. DOCUMENT OBJECTIVE**

This Project Review Plan (PRP) is a part of the Project Management Plan (PMP) under the QC/QA element in accordance with EC 1105-2-408 and the Standard Operating Procedures for Planning Centers of Expertise. This PRP provides guidance to the Project Delivery Team (PDT) on the specific review levels, responsibilities, and process requirements for execution of review on the Topeka, Kansas Levee project.

**2. GENERAL INFORMATION**

**Executive Summary -- Study Purpose and Background**

The U.S. Army Corps of Engineers Kansas City District, along with local project sponsors, are conducting a feasibility study of the existing flood risk management project for the Topeka metropolitan area. The study is authorized under Section 216 of the 1960 Flood Control Act (review of completed civil works).

The feasibility study will update and verify data on the reliability of the existing flood risk management units and develop alternative plans (including a review of the “no Federal action” alternative) for reliability (performance) improvement to reduce damages from potential flooding on the Kansas River in the vicinity of Topeka. The recommended plan for increasing the reliability of the system will be selected through the basic tests of technical effectiveness & completeness, economic feasibility, and environmental acceptability.

**Study Authority**

Section 216 of the 1970 Flood Control Act provides authority to reexamine completed civil works. Section 216 reads as follows:

*The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects, the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to the significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying structures or their operation, and for improving the quality of the environment in the overall public interest.*

**Original Project Authority**

The original Topeka, Kansas, Local Flood Protection Project was authorized by the Flood Control Act approved 22 Jun 1936 (Public Law 738, 74<sup>th</sup> Congress) and further expanded by the Flood Control Act approved 3 September 1954 (Public Law 780, 83<sup>rd</sup> Congress).

**Feasibility Study Objectives**

The Kansas City District is undertaking this feasibility study with the following objectives:

1. Adequately evaluate the reliability/performance of the existing Topeka levee system.
2. Formulate plans for increasing the levee system reliability through a cost-shared construction project.
3. If such plans are deemed feasible, then develop the documentation necessary to seek project authorization and implementation.

**Summary Study Scope and Execution Parameters**

This is a feasibility study of the Kansas River and tributaries and the associated flood risk management works within the immediate metropolitan area and vicinity of Topeka, Kansas. The overall project contains six official levee units located along the Kansas River and two local tributaries, Soldier Creek and Shunganunga Creek. Engineering, economic, and environmental studies are underway to evaluate the possibilities of increasing the performance reliability of the units within the system.

**Local Sponsorship and Funding**

The two owner-operators of the Topeka, Kansas, Local Flood Protection Project are listed below. These non-Federal organizations own and maintain the systems with the Corps providing regular inspections and technical review of significant modifications to the system. Feasibility funding source is 50% Federal General Investigations (GI) -- Civil Works Appropriation & 50% local cost share funding. All local funding will be provided from the City of Topeka, Kansas. The City of Topeka signed a Feasibility Cost Sharing Agreement (FCSA) with the Corps 19 August 1998.

City of Topeka, Kansas	Waterworks Unit Auburndale Unit South Topeka Unit Oakland Unit
North Topeka Drainage District	North Topeka Unit Soldier Creek Diversion Unit

**Description of Existing Overall Project and Problem**

The existing project includes approximately 40 miles of main and 2.91 miles of tie back levees, 0.7 miles of floodwall, 9.2 miles of improved channel on Soldier Creek, 5.5 miles of improved channel on Shunganunga Creek, and 2.6 miles of improved and enlarged channel along the Kansas River. The project also includes pumping plants, gated outlets for drainage structures, sandbag and stoplog gaps, and ponding areas. Each of the six flood risk management units was designed and constructed in coordination with the other, but each is operationally independent.

In the early 1990's, a private engineering consultant working for the Kansas Department of Transportation conducted studies for the Oakland Expressway, a new highway bridge to cross the Kansas River within the project area. Concern arose from their review that the levee in the

area of the new highway may no longer be providing the expected level of flood risk management. As a result of these concerns, the City of Topeka requested a Reconnaissance Study in a letter dated March 26, 1992.

The Reconnaissance Study was initiated in September 1996 and completed in September 1997. The Reconnaissance Study found that there was a Federal interest in one or more alternatives to improve the level of flood risk management at Topeka by raising the top of levee elevation. The Feasibility Study was initiated in August 1998 with the signing of a Feasibility Cost Sharing Agreement between the Corps and the City of Topeka. It is financed on a cost-share basis in accordance with the Water Resources Development Act of 1986. The cost of the study is shared between the Corps (50%) and the non-Federal Sponsors (50%).

Early in the feasibility study, a delay in study activities was authorized to await completion of the Upper Mississippi and Missouri River Flow Frequency Study (UMMRFFS). As part of this study, updated hydraulic models were developed for the Upper Mississippi and Missouri River and several tributaries, including the Kansas River, using updated gage records and state of the art technology – the UNET model. The results of the UMMRFFS study were published in 2004. When the feasibility study resumed with updated hydraulic data, it was determined that the hydraulic overtopping reliabilities for the existing levee units range from 94 to 99 percent for the 1-percent chance flood event and a raise in the system would not be necessary to meet the criteria for continued FEMA certification.

The focus of the study was then directed to examining the reliabilities of the geotechnical and structural features of the system. The reliabilities of several features within the system have been found deficient, creating potential failure locations within the levee system. Potential methods of failure include levee underseepage, structure uplift and cracking, floodwall sliding, and floodwall foundation failure.

### **3. LEVELS OF REVIEW**

#### **Internal Peer Review (IPR)**

Internal Peer Review will be conducted on the project feasibility study. As part of the Quality Management Plan on any project, there are internal reviews or design checks that constitute quality control for each deliverable product. It is the responsibility of each product development team member, their supervisors, and the project manager to ensure that every product receives an internal quality control review. It is the responsibility of the supervisor or section chief for each team member to ensure that a qualified internal peer review is selected and conducts a review of their product prior to delivery to the project manager, or prior to completion.

#### **Independent Technical Review (ITR)**

Independent Technical Review will be conducted on the Topeka Levees Feasibility Study. Independent Technical Review is an independent review, outside of Kansas City District, of the deliverables for the project and constitutes an independent review of the entire project. In accordance with EC 1105-2-408 dated 31 May 2005, and CECW-CP Memorandum dated 8 November 2006, all outside independent review teams for qualifying projects are coordinated through the Corps of Engineers' Flood Risk Management Center of Expertise (CX, South Pacific

Division ) by the District. The CX works collaboratively with the Division staff and the District Project Manager to find team member staff outside the Kansas City District with the requisite experience and qualifications to review the project. Review comments will be documented, processed, and resolved through the Dr. Checks software package.

### **External Peer Review (EPR)**

External Peer Review (EPR) does not apply to the Topeka Levee project and will not be conducted. EPR is an additional national level independent review process, outside the Corps of Engineers, to ensure that the projects are of national or regional interest and meet the requirements of Federal participation. Specific criteria that trigger the development and implementation of EPR are projects where novel methods are utilized, where the project presents complex challenges, where the use of precedent setting methods or models, where the project will be likely to present landmark conclusions that will affect policy, or where the project is centered or focused on an issue or proposal that is highly controversial.

The Topeka Levee project is an evaluation of the condition and performance of an existing levee system. There are currently no features or components of this project that are anticipated to be highly controversial or significant to national policy. The anticipated overall cost of the project is considered to be well below any threshold that might trigger EPR under any future provisions of the Water Resources Development Act (WRDA). In the proposed evaluation of the Topeka levees, Corps of Engineers criteria, methods, and models to be utilized are recognized standard criteria and methods with no novel or precedent setting methods anticipated. Based on the proposed levee evaluation project plan and the criteria established for development of EPR, no External Peer Review process will be developed for this project.

### **Architect-Engineer (A-E) or Consulting Contacts**

Contracts used on this project will undergo a Quality Assurance Review of each deliverable product by assigned District PDT members. Additionally, any products developed by contract will also undergo ITR along with other products as outlined in the ITR paragraph above. All contractors are required to develop a Quality Management Plan to be submitted as the first deliverable for the contract. This will detail the firm's internal quality management and design check review processes, and is subject to prior approval by the Project Manager and PDT in accordance with the established Kansas City District Business Quality Procedures.

## **4. SELECTED REVIEW PROCESS(S)**

The selected review process level for the Topeka Levee project is the Independent Technical Review. The ITR will be developed in coordination with the CX for Flood Risk Management, and the CX Representative. This process will be coordinated through the Northwestern Division Planning Office. Internal peer review (IPR) or internal design checks will be conducted in accordance with the approved District Business Quality Procedures, as outlined above. It is anticipated that A-E contracts may be utilized for development of technical products for this project. As needed, contracts will be procured in accordance with the prior approval of the District Acquisition Strategy Board, as outlined in the approved District Business Quality Procedures.

**ITR References:**

- Refer to ER 1110-1-105, the primary Corps ITR regulation (see enclosed exhibit for summary of the major ITR requirements described in this regulation).
- EC 1105-2-408 dated 31 May 2005
- CECW-CP Memoranda dated 8 November 2006 and 30 March 2007.
- Refer to Kansas City District Business Quality Procedure (BQP) 5.5.04 (Quality Plans). Pertinent excerpts are quoted below.

*5.6 ITRT Members:*

- *Verify compliance with established policy, principles and procedures*
- *Verify criteria applied*
- *Verify assumptions, methods, procedures, and material used in analyses*
- *Evaluate alternatives*
- *Verify the appropriateness of data used and level of data obtained*
- *Verify completeness of design and documents*
- *Verify reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy.*
- *Conduct spot checks for interdisciplinary coordination*
- *Identify the specialized knowledge, experience, or training required to competently complete the product*
- *Verify comments are resolved by:*
  - *Verifying incorporation of their comments or,*
  - *Accepting the verification conducted by either the PM or ITRT Leader or,*
  - *Withdrawing the comment*

*6.1.7.7.3 Independent Technical Review: Qualified staff verifies the work meets reasonable professional levels and satisfies the client's need and expectation. For small, simple, low complexity, low risk projects, independent technical review can be accomplished at the section level. Independent technical review can be managed at branch levels when a few disciplines are involved, the project is of moderate cost and complexity and the risk for life safety is relatively low. Independent technical review for all other projects should include individuals who do not have a vested interest in the project and are not involved in the day-to-day direction of the product. The PMP should define the level of independent technical review. Independent technical review is not a detailed check but a broad overview including:*

- *Review of criteria applied*
- *Review of the methods of analysis and design*
- *Compliance with client and/or program requirements*
- *Completeness of design and documents*
- *Spot checks for interdisciplinary coordination*

- *Biddability, constructability, operability and environmental*

*6.1.7.7.4 Independent reviewers are brought on board early on to participate in establishing criteria selection and broad approaches to be taken in addressing potential issues thus ensuring seamless review.*

- Reviewers will be required to use the Dr Checks web-based system for comments. Refer to <https://www.projnet.org/projnet/home/version1/index.cfm> for additional Dr. Checks access information.

## **5. PRIMARY DISCIPLINES AND EXPERTISE NEEDED FOR THE ITR**

### **Discipline-Specific Guidance & Requirements**

ITR Team representation is required in the disciplines listed below. A statement of qualifications will be required for each team member prior to acceptance as an ITR Team member and for any subsequent changes thereto. Multiple requirements may be filled by one ITR team member, depending on individual qualifications.

**Hydrology & Hydraulics:** Team member will be an expert in the field of large-river hydrology & hydraulics, have a thorough understanding of the dynamics of the confluence of rivers & tributaries, and be familiar with interior drainage issues related to levee construction. The team member will have an understanding of computer modeling techniques that may be used for this project (HEC-HMS, HEC-RAS, and UNET).

**Structural:** Team member will have a thorough understanding of levee, flood wall, and retaining wall design, and structures typically associated with levees (pump stations, gatewell structures, utility penetrations, stoplog & sandbag gaps, and other closure structures).

**Geotechnical:** Team member will have extensive experience in levee & floodwall design, post-construction evaluation, and rehabilitation, including risk & reliability analysis.

**Economics:** Team member will have extensive experience in related projects, and have a thorough understanding of HEC-FDA.

**Environmental/NEPA:** Team member will be an expert in issues of environmental and NEPA compliance for similar projects.

**Plan Formulation:** Team member will have a thorough understanding of current planning and policy guidance, and have experience in plan formulation for large-scale flood risk management projects.

**Civil / Site / Utilities / Relocations:** Team member will have experience in utility relocations and positive closure requirements for levee construction.

Cost Estimating: Team member will be familiar with cost estimating for similar projects using MCACES. Team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. Cost estimating efforts will be coordinated with the Cost Engineering Center at USACE-Walla Walla District.

Other disciplines involved in the project include Hazardous / Toxic Waste, Real Estate, Cultural Resources, and Legal. In each case, any required Independent Technical Review within these disciplines may be accomplished within Kansas City District or by other independent sources. The principles contained in this document also apply to these disciplines/functional areas. (*Exception: Legal review is not to be under the purview of the ITR Team Leader but is instead responsible to the Corps of Engineers Office of Counsel chain-of-command*).

### **ITR Team Leader**

One member of the ITR Team will act as the team leader. Team leader designation will be finalized based on input from ITR Team members and the CENWK Project Manager, the PDT, and CENWK staff. The leader shall, in addition to discipline-specific requirements, be responsible for:

- Acting as a liaison between the Product Development Team and the ITR Team
- In conjunction with the PM, the ITR team leader will perform active coordination of the ITR process and study findings with the Corps Flood Risk Management Center of Expertise (FRM-CX) in San Francisco District, and ensure compliance with an adequate level of FRM-CX review.
- Distributing information for review and coordinating efforts of the ITR Team
- Ensuring that individual ITR Team members are operating in accordance with the guidelines established for ITR by ER 1110-1-105 (see enclosed exhibit for summary of the major ITR requirements described in this regulation).
- The ITR team is *not* geographically co-located. Therefore, it is of paramount importance that the ITR Team Leader be capable of organizing the total ITR efforts across District and Division boundaries.
- A substitute ITR Team Leader from the ITR team will be named by the ITR team leader for periods of extended (over 60 days) absence.

### **Independent Technical Review Team Members and Organization**

Team members and organization of the Topeka ITR Team is presented in Appendix A to this PRP.

The ITR team members will be contacted on a regular basis by the corresponding PDT members so as to be kept aware of criteria selection and the broad approaches employed in this study thus ensuring a seamless review when products are submitted for ITR.

## **6. ITR SCHEDULE**

The feasibility phase was initiated in 1998 and later delayed to allow resolution of key hydrologic issues. Existing conditions development was performed between 1998 and 2004. Existing conditions ITR was accomplished between Dec 2004 and Jul 2005. An Alternative

Formulation Briefing was held April 30, 2007, followed by development of the Draft Feasibility Report.

Current major milestones related to Feasibility Report product reviews are as follows (subject to change):

Completion of Draft Report ITR	September 2007
HQ/NWD/Public Review of Draft Report	January/February 2008
MSC Endorsement Letter	April 2008

### **ITR Team Site Visit**

The ITR team site visit took place Sept. 2004. This site visit provided each reviewer with the opportunity to view existing conditions and to meet corresponding Product Development Team members.

## **7. ITR BUDGET**

To date, approximately \$88,200 has been expended on the site visit, review of existing and future conditions analyses, and review of the draft report. Final report review is still pending.

## **8. PUBLIC COMMENT OPPORTUNITIES**

Review of the project review plan will be available on the Kansas City District website, link as follows: <http://www.nwk.usace.army.mil/projects/topeka/>, and at the request of interested parties.

Public and Agency Review for this project will be conducted in accordance with NEPA, as well as the provisions of the Water Resources Development Act (WRDA) 2000, and as outlined in ER 1105-2-100. As such the review plan will be available through all public and agency scoping and other processes for the project

## **9. AVAILABILITY OF PUBLIC COMMENTS TO REVIEW TEAM**

Public input from the NEPA workshops and the public scoping meetings will be available to the ITR members to ensure that public comments have been considered in the development of reviews and final reports.