



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

CENWD-RBT

13 DEC 2012

MEMORANDUM FOR Commander, Kansas City District (CENWK-PM-PF/Mr. Eric Lynn)

SUBJECT: Review Plan (RP) Approval for Fairfax BPU Floodwall Modification Review Plan (P2# 144611)

1. References:

a. Memorandum, CENWK-ED, 5 December 2012, subject: Fairfax BPU Floodwall Modification Review Plan (P2# 144611) (Encl. 1).

b. EC 1165-2-209, Civil Works Review Policy Change 1, 31 January 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, and with the Risk Management Center (RMC). The RP includes District Quality Control, Agency Technical Review (ATR), and Type II Independent External Peer Review (IEPR). NWD will be the Review Management Organization (RMO) for the ATR, while the RMC will be the RMO for the Type II IEPR.

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 Review Plan or its execution will require written approval from this office.

5. For further information, please contact Mr. Steve Bredthauer at (503) 808-4053.

Encl

ANTHONY C. FUNKHOUSER, P.E.
COL, EN
Commanding



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
635 FEDERAL BUILDING
601 E. 12TH STREET
KANSAS CITY, MISSOURI 64106-2824

REPLY TO
ATTENTION OF:

CENWK-ED

5 DEC 2012

MEMORANDUM FOR Commander, Northwestern Division, USACE, ATTN: Mr. Steve Bredthauer

SUBJECT: Fairfax BPU Floodwall Modification Review Plan (P2# 144611)

1. The review plan for the Fairfax BPU Floodwall Modification is attached for Northwestern Division's review and approval. The Review Plan was prepared in accordance with EC 1165-2-209.
2. The Fairfax BPU Floodwall Modification project is currently in the implementation phase. As required by EC 1165-2-209, we request review and approval of the Review Plan.
3. The point of contact for this memorandum is the project manager, Eric Lynn, at (816) 389-3258 or eric.s.lynn@usace.army.mil

A handwritten signature in black ink, appearing to read "David L. Mathews".

DAVID L. MATHEWS, P.E.
Chief, Engineering Division
Kansas City District



DEPARTMENT OF THE ARMY
RISK MANAGEMENT CENTER, CORPS OF ENGINEERS
13952 DENVER WEST PARKWAY SUITE 200
GOLDEN, CO 80401

REPLY TO
ATTENTION OF
CEIWR-RMC-WD

CEIWR-RMC

10 December 2012

MEMORANDUM FOR: Commander, Kansas City District, ATTN: CENWK-PM-PR

SUBJECT: Risk Management Center Endorsement – Fairfax BPU Floodwall Modification, KS Review Plan

1. The Risk Management Center (RMC) has reviewed the Review Plan (RP) for the Fairfax BPU Floodwall Modification Project, dated December 2012, and concurs that this RP provides for an adequate level of peer review and complies with the current peer review policy requirements outlined in EC 1165-2-209 "Civil Works Review Policy", dated 31 January, 2010.
2. This review plan was prepared by the Kansas City District, reviewed by the Northwestern Division and the RMC, and all review comments have been satisfactorily resolved.
3. The RMC endorses this document to be approved by the MSC Commander. Upon approval of the RP, please provide a copy of the approved RP, a copy of the MSC Commander's approval memorandum, and a link to where the RP is posted on the District website to Tom Bishop, RMC Senior Review Manager (thomas.w.bishop@usace.army.mil).
4. Thank you for the opportunity to assist in the preparation of this RP. Please coordinate all applicable aspects of the Safety Assurance Review. For further information, please do not hesitate to contact me at (303) 963-4556.

Sincerely,

BISHOP.THOMAS.WA
LDRON.1228686030

Digitally signed by
BISHOP THOMAS WALDRON.1228686030
DN: c=US, o=U.S. GOVERNMENT, ou=DA, ou=PEL,
ou=USA, ou=BISHOP THOMAS WALDRON.1228686030
Date: 2012.12.10 13:33:25 -0700

THOMAS W. BISHOP, P.E.
Senior Review Manager
Risk Management Center

CF:
CEIWR-RMC-ZA (Mr. Snorteland)
CENWD (Division Quality Manager)



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
635 FEDERAL BUILDING
601 E. 12TH STREET
KANSAS CITY, MISSOURI 64106-2824

REPLY TO
ATTENTION OF:

CENWK-ED

5 DEC 2012

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DAVID L. MATHEWS, P.E.
Chief, Engineering Division
Kansas City District

REVIEW PLAN

*Fairfax BPU Floodwall Modification
Kansas City, Kansas
Implementation Phase*

*Kansas City District
Northwestern Division*

**P2 Number: 144611
MSC Approval Date: TBD
Last Revision Date: XX**



**US Army Corps
of Engineers ®**

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REVIEW PLAN

***Fairfax BPU Floodwall Modification
Kansas City, Kansas
Implementation Phase***

***Kansas City District
Northwestern Division***

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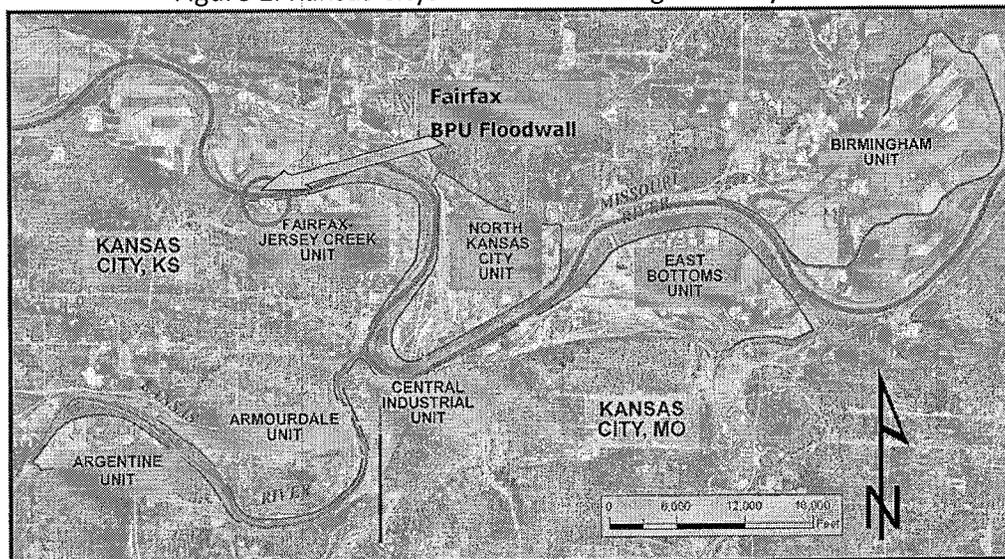
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Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

1. PURPOSE AND REQUIREMENTS.

Purpose. This Review Plan (RP) and attachments describe the scope and level of review for the *Fairfax-Jersey Creek Levee Unit, Board of Public Utilities (BPU) Floodwall Modification Project, Kansas City, Kansas, Implementation Phase, Kansas City District, Northwestern Division.*

Figure 1. Kansas Citys Flood Risk Management System



a. References

Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007
ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

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).

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall review effort described in this Review Plan. Typically the Risk Management Center would perform RMO duties for all reviews on projects in the implementation phase involving life safety concerns; however, the RMC recommends that Northwestern Division (NWD) perform the RMO duties for the ATR portion of this project. The RMC will be the RMO for the Independent External Peer Review (IEPR). Type II IEPR is not exempted by statute from the Federal Advisory Committee Act (FACA).

3. STUDY INFORMATION

a. Implementation Documents. The implementation documents will be the updated environmental assessment (EA), plans, specifications, design documentation report (DDR), and the operations and maintenance (O&M) manual. There will be three sets of plans, specifications, and DDR; one set for the structural modification of the existing floodwall, one for the strength and capacity modification of an existing pump station, and one set for the installation of underseepage pressure relief wells. They will be prepared by in-house labor resources and approved at the district level and do not require MSC approval. The documents will not require congressional authorization. National Environmental Policy Act (NEPA) documentation will include an updated Environmental Assessment (EA) to accompany the implementation documents.

b. Project Description. The Fairfax –Jersey Creek Levee Unit, Board of Public Utilities Floodwall Modification Project (Project) is proposed to restore the reliability of the existing levee unit. The basis of this project is the Recommended Plan as described in the Kansas City Levees, Missouri and Kansas, Interim Feasibility Report, completed August 2006 and approved by the Chief of Engineers on 19 Dec 2006.

The Recommended Plan provided for the correction of design and construction deficiencies to reduce the probability of structural wall failure by installation of additional landside foundation piles and buttressing of the existing floodwall.

During the initial scope verification and field investigation portion of the PED phase, additional information and data was made available regarding the existing condition of the floodwall and its foundation. This additional information led to a reevaluation of the existing structure and the potential failure modes under flood conditions. It was found that a significant portion of the foundation concern is due to high hydrostatic underseepage pressures. The Recommended Plan was modified to reduce the original scope of structural modification and include installation of underseepage relief wells along the landside of the wall with a collector system to route flows to an existing pump station. The installation of relief wells reduces, but does not completely eliminate, the need for structural modification in some portions of the wall.

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

The revised plan is estimated to be 99 percent reliable in passing the authorized design flood, which has an approximate 0.2% chance of occurrence in any year.

The PDT will develop detailed plans, design documentation, and an O&M Manual appendix for the design, construction, and maintenance of: stainless steel pressure relief wells at the landward toe of the existing floodwall including discharge lines to the existing pump station and all pressure relief well development and testing; modification and upgrade of the existing pump station; additional foundation support piles on the landside of a portion of the floodwall with buttress connections to the wall; and restoration of the site. The work shall include all the features and requirements identified within the technical plans and specifications. The work shall comply with the project's technical plans and specifications.

c. **Project Status.** As of November, 2012, the project is moving forward with completion of the draft Design Documentation Report (DDR) and the initiation of Agency Technical Review. The project has received funding in the FY13 President's Budget and the PDT is scheduled to complete the plans & specifications for awarding the first contract for structural wall modification (~\$5M). Future contracts will be prepared in later fiscal years for pump station modifications and relief well installation.

d. **Factors Affecting the Scope and Level of Review.**

- **Life Safety.** The project includes an existing floodwall that protects human life. While the project ultimately will improve the reliability of the existing features, it is critical that these features are protected during construction of the modifications to ensure they continue to perform as intended.
- **Project Cost.** The total cost of the project is authorized at \$13.6M (FY12 Basis). This cost includes preliminary engineering and design, completion of the design, reviews required by law, construction supervision and administration, contracting costs, project management, quality assurance labor costs, LERRD (lands, easements, rights of way, relocations, and disposal) costs, project coordination team costs, and construction.
- **Public Support.** There is strong public support for this project. The project features will ensure the continued protection of businesses and infrastructure from flooding, which in turn helps support jobs in the area. No negative public comments have been received to date and few are expected.

e. **Factors considered but not deemed influential.** The engineering disciplines employed to support the implementation documents include structural design, hydraulics and hydrology, biology, 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. This project does not have

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

significant environmental impacts nor does it disturb known cultural or historically significant sites. Little to no public controversy is expected.

f. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. Currently no in-kind product contributions are expected.

4. DISTRICT QUALITY CONTROL (DQC)

In accordance with EC 209 all work products and reports, evaluations, and assessments shall undergo necessary and appropriate District Quality Control (DQC). DQC is the internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the project Quality Management Plan (QMP) of the Project Management Plan (PMP). DQC is performed by the supervisors, senior staff, peers and the PDT within the home District and is managed by the home District. DQC consists of;

- a. Quality Checks and reviews. These are routine checks and reviews carried out during the development process by peers not responsible for the original work. These are performed by staff such as supervisors, team leaders or other senior designated to perform internal peer reviews.
- b. PDT reviews. These are reviews by the production team responsible for the original work to ensure consistency and coordination across all project disciplines.

DQC will be performed on all products in accordance with the QMP within the PMP.

5. AGENCY TECHNICAL REVIEW (ATR)

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.

ATR is managed within USACE and will be conducted by a qualified team from outside the home District that is not involved with the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

- a) **Products to Undergo ATR.** All sets of plans and specifications and Design Documentation Reports will undergo ATR.

**Review Plan for
FAIRFAX BPU FLOODWALL MODIFICATION**

- b) **Timing of ATR.** ATR of the initial draft DDR, including initial design phase investigations and engineering analyses, and underseepage alternatives analysis, is scheduled to begin in Dec 2012, following DQC. ATR of plans and specifications for the first contract will occur at the 65% and 95% levels during the spring and summer of 2013. ATR of future contracts will occur in FY14 and FY15.
- c) **Required ATR Team Expertise.** ATR team members should be senior professionals with at least 10 years experience in their discipline. Possession of professional licenses and certifications appropriate to each discipline are preferred. Specific experience and expertise required for this project is detailed in the table below.

ATR Team Members/Disciplines	Expertise Required
ATR Team Lead	The ATR team lead should be a senior professional with experience conducting ATRs. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The Team Lead duties may also be combined with one of the Engineering disciplines below
Geotechnical	The Geotechnical reviewer should have experience in subsurface investigations, floodwall and levee design, seepage and slope stability evaluations, underseepage control design, erosion protection design, and earthwork.
Civil	The Civil Engineer reviewer should have experience in construction site layout, utility conflicts and relocations, and collection system and pump station design and operations.
Structural	The Structural reviewer should have with experience in floodwall and pile foundation analysis and construction, and pump station strength analysis.
Construction	The reviewer for construction shall possess experience with at least one of the following types of project features: levees, floodwalls, pile foundations, gatewells, and relief wells. The reviewer must be familiar with USACE regulations and standards.

- d) **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. 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 been properly followed;

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

- (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) Where appropriate, provide a suggested action needed to resolve the comment or 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 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 1110-2-12 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 including any disparate and dissenting views.

ATR shall 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).

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for 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 1165-2-209, is

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

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 is required for decision documents under most circumstances. This project does not involve the production of decision documents and this review is not required.
- Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. Decision on IEPR: The District considered risks and risk triggers as described in EC 1165-2-209 and determined that Type II IEPR (SAR) is required for the project covered under this plan because it meets the mandatory IEPR triggers of addressing/modifying an existing Flood Risk Management Project where failure will pose significant threat to human life. The review shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare.

Other criteria considered in evaluating the need for Type II IEPR (SAR) review of a project, or components of a project, are as follows:

- The 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 presents conclusions that are likely to change prevailing practices. This project does not use innovative materials or techniques.
- The project design requires redundancy, resiliency, and robustness.
 - Redundancy. Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or fail-safe. The design does not require redundancy.
 - Resiliency. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use. The project will require resiliency.
 - Robustness. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system), with minimal damage, alteration or loss

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

of functionality, and to fail gracefully outside of that range. The project will require robustness.

- The project has unique construction sequencing or a reduced or overlapping design and construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems. This project does not have a unique construction sequence or design construction schedule.

b. Products to Undergo Type II IEPR. The plans, specifications, and DDR for each construction contract.

c. Timing of IEPR. Type II IEPR will occur after DQC and either concurrent with ATR or after ATR, depending on schedules and budgets. The IEPR panels will conduct reviews (and site visits, as necessary) after the completion of the plans and specifications but prior to the initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule as determined by the RMO.

d. Required Type II IEPR Panel Expertise. The IEPR will be performed by an A/E firm using a USACE Indefinite Delivery Indefinite Quantity (IDIQ) Contract. The A/E firm selected to perform this project's IEPR will provide a project manager, who will serve as the team leader, and team members for each discipline listed in the table below. Additional disciplines may be added as necessary. The IEPR team members' names will be listed in Attachment 1 of this Review Plan when selected.

Expert reviewers shall have experience in design and construction of projects similar in scope to the project. Expert reviewers shall be registered professional engineers in the United States, or similarly credentialed in their home country. The expert reviewers must have an engineering degree. A Master's degree in engineering is preferable, but not required, as hands-on relevant engineering experience in the listed disciplines is also important. Expert reviewers shall have a minimum of 15 years experience and responsible charge of engineering work in there discipline.

The following types of expertise should be represented on the Type II IEPR team:

IEPR Panel Members/Disciplines	Expertise Required
Structural	The reviewer shall have experience in the design, layout, and construction of large urban flood risk management projects. Reviewer should be familiar with the design and construction of tall flood walls, closure structures, interior drainage facilities, concrete placement, and relocation of underground utilities. The reviewer should have experience USACE design regulations for Civil Works projects including soil-structure interaction evaluation

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

	and design.
Geotechnical	The reviewer shall have experience in subsurface investigations, floodwall and levee design, foundation piles, seepage and slope stability evaluations, erosion protection design, and construction and earthwork construction. The reviewer must be familiar with USACE regulations and standards.
Civil Engineering	The reviewer for civil engineering shall have experience in civil design analysis as it relates to flood risk management projects. Reviewer should have experience in the analysis and design involving interior drainage, pump station strength and capacity, utility relocations, and construction site layout and access. Reviewer should be experienced with similar projects in an urban setting and participated in review of riverine flood risk management projects.

e. Documentation of Type II IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix E. 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 5.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 (without specific attributions), or provide a single comment that summarizes the views of the group as a whole, including any disparate and dissenting views.

After receiving the report from the IEPR panel, the District will consider all comments contained in the report and prepare a written response for all comments and note concurrence and subsequent action or non-concurrence with an explanation. The District Chief of Engineering shall submit the panel's report and the District's responses to the MSC for final MSC Commander approval, and then make the report and responses available to the public on the District's website (<http://www.nwk.usace.army.mil/Missions/CivilWorks/CivilWorksProgramsandProjects/CivilWorksReviewPlans.aspx>).

f. IEPR Panel Approval. The A/E firm will provide USACE with the final independent external expert reviewer list, including their credentials. The RMO will approve the panel members selected by the A/E. The RMO may only disapprove a selected panel member if the member does not meet the objective criteria established in this review plan.

g. Panel Selection. The Type II IEPR panel members will be comprised of individuals that have not been involved in the development of the decision document, meet the National Academy of Sciences guidelines for independence, and will be chosen by an outside

Review Plan for FAIRFAX BPU FLOODWALL MODIFICATION

organization. The National Academy of Sciences' policy for committee selection with respect to evaluating the potential for conflicts (e.g., those arising from investments; agency, employer, and business affiliations; grants, contracts and consulting income) shall be adopted or adapted. External Reviewers will be paid labor and any necessary travel and per diem expenses in accordance with their contract.

Peer reviewers will be advised whether information about them (name, credentials, and affiliation) will be disclosed. The MSC shall notify reviewers in advance regarding the extent of disclosure and attribution planned by USACE. The MSC shall comply with the requirements of the Privacy Act. Review shall be conducted in a manner that respects confidential business information and intellectual property.

h. IEPR Charge. The RMO will prepare the charge to the reviewers, containing the instructions regarding the objective of the peer review and the specific advice sought. Reviewers shall be charged with reviewing scientific and technical matters, leaving policy determinations for USACE and the Army. The charge should specify the structure of the review comments to fully communicate the reviewer's intent by including: the comment, why it is important, any potential consequences of failure to address, and suggestions on how to address the comment. It should include specific technical questions while also directing reviewers to offer a broad evaluation of the overall document. The charge should be determined in advance of the selection of the reviewers.

The District shall provide reviewers with sufficient information, including background information about the project, to enable them to understand the data, analytic procedures, and assumptions. Reviewers shall be informed of applicable access, objectivity, reproducibility and other quality standards under the federal laws governing information access and quality. Information distributed for review must include the following disclaimer: "This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It has not been formally disseminated by USACE. It does not represent and should not be construed to represent any agency determination or policy."

The panel of experts established for a review for a project shall:

- Conduct the review for the subject project and submit reports in a timely manner in accordance with the study milestones and RP schedule;
- Follow the "Charge", but when deemed appropriate by the team lead, request other products relevant to the project and the purpose of the review.
- Receive from USACE any public written and oral comments provided on the project;
- Provide timely written and oral comments throughout the development of the project, as requested;
- Assure the review avoids replicating an ATR and focuses on the questions in the "Charge". However, the panel can recommend additional questions for consideration. The IEPR panel may recommend to the RMO additional or alternate questions.
- Offer any lessons learned to improve the review process.
- The team panel lead shall be responsible for insuring that comments represent the group, be non-attributable to individuals, and where there is lack of consensus, note the non-concurrence and why.

**Review Plan for
FAIRFAX BPU FLOODWALL MODIFICATION**

- **Record of Review.** The review team will prepare a review report. All review panel comments shall be entered as team comments that represent the group and be non-attributable to individuals. The team lead is to seek consensus, but where there is a lack of consensus, note the non-concurrence and why. A suggested report outline is an introduction, the composition of the review team, a summary of the review during design, a summary of the review during construction, any lessons learned in both the process and/or design and construction, and appendices for conflict of interest disclosure forms, for comments to include any appendices for supporting analyses and assessments of the adequacy and acceptability of the methods, models, and analyses used. All comments in the report will be finalized by the panel prior to their release to USACE for each review plan milestone.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All documents will be reviewed by Office of Counsel for their compliance with law and policy. 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.

8. MODEL CERTIFICATION AND APPROVAL

a. Planning Models. 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. This project is in the implementation phase and therefore will not require planning models.

b. Engineering Models. 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). The following engineering models are anticipated to be used in the development of the implementation documents (if additional models are determined necessary, this RP will be updated accordingly):

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
NA	NA	NA
NA	NA	NA

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9. REVIEW SCHEDULES AND COSTS

a. ATR Schedule – 1st Construction Contract.

Review Milestone	Review Products	Date Planned
Initial Draft DDR	DDR	December 2012
65% ATR review	Contract 1 - P&S/DDR	April/May 2013
65% backcheck	Contract 1 - P&S/DDR	May 2013
95% ATR review	Contract 1 - P&S/DDR	May/June 2013
100% backcheck	Contract 1 - P&S/DDR	June 2013
ATR Certification	Contract 1 - P&S/DDR	June 2013

The same set of milestones in the table above will be repeated in FY2014 for Contract 2 and again in FY15 for Contract 3. If future budget allocations allow, the work currently planned for Contract's 2 and 3 may overlap or be combined. O&M manuals will be prepared and reviewed at the end of the construction phase.

b. ATR COSTS - Labor/Expenses.

Review Milestone	#reviewers	Approximate cost/reviewer	Totals
Initial DDR	3	\$2,500	\$7,500
Contract 1 65%	3	\$2,500	\$7,500
Contract 1 95%	3	\$2,500	\$7,500
Contract 2 65%	3	\$2,500	\$7,500
Contract 2 95%	3	\$2,500	\$7,500
Contract 3 65%	3	\$2,500	\$7,500
Contract 3 95%	3	\$2,500	\$7,500
Total ATR costs			\$52,500

c. Design Phase Type II IEPR Schedule (Start date TBD)

Action/Activity	Calendar Days After NTP
Design Phase Type II IEPR Safety Assurance Review NTP	0
Submit Final Peer Review QCP (PRQCP)	14
Submit list of final IEPR expert reviewers	14
Expert reviewers under contract	21
Peer Review Critical Items List	28
Corps provides materials for Orientation Briefing	28
Orientation Briefing at Federal Building and Project Site in Kansas City, MO	35
Final Charge to Expert Reviewers	42
Corps provides 95% Plans & Specs and Design Documentation Report to IEPR Contractor	42

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95% Plans & Specs and Design Documentation Report Review Complete	56
95% Plans & Specs and Design Documentation Report Review Comments Closed in DrChecks	60
Comment Review Conference Call	60
Submit IEPR Review Report on 95% Plans & Specs and Design Documentation Report	74
Project Closeout	80

d. Type II IEPR Cost. The IEPR is expected to cost between \$150,000 - \$250,000. Type II IEPR costs are cost shared between the Federal and Non-Federal sponsor in accordance with the project partnership agreement.

10. 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/Missions/CivilWorks/CivilWorksProgramsandProjects/CivilWorksReviewPlans.aspx>.

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 RMO. 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. The Public will not be asked to nominate potential reviewers because the decision has been made to use an independent A/E firm. Public comments on the review plan may be made by writing or emailing the following contact:

Kansas City District, Corps of Engineers
c/o Eric Lynn, CENWK-PM-PF
601 E. 12th St.
Kansas City, MO 64106
Email: eric.s.lynn@usace.army.mil

11. REVIEW PLAN APPROVAL AND UPDATES

The Northwestern Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, RMC, and HQUSACE members as applicable) as to the appropriate scope and level of review for the

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implementation documents. Like the PMP, the Review Plan is a living document and may change as the project 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.

12. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

Contact	Role	Title	Office/District/Division	Phone
Eric Lynn	Project Manager	Project Manager	Kansas City District, US Army Corps of Engineers	816-389-3258
Corey Williams	ATR Team Lead	Chief, Geotechnical Engineering Branch	Memphis District, US Army Corps of Engineers	901-544-0667
Steve Bredthauer	RMO for ATR	Technical Review Program Manager	Northwestern Division, US Army Corps of Engineers	503-808-4053
Tom Bishop	RMO for IEPR		Risk Management Center, US Army Corps of Engineers	

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ATTACHMENT 1: Team Rosters

District level names will be redacted on the version posted for public comment to protect privacy.

PROJECT DELIVERY TEAM (PDT) ROSTER.

Name	Discipline/Role
ERIC LYNN	Project Manager
DAVID ROBERTS	Cost Estimating
RICH SKINKER	Environmental Resources
RON JANSEN	Civil Engineering
JIM MEHNERT	Geotechnical
GLEN BELLEW	Geotechnical Peer Review
PAUL MULLER	Structural Engineering
CLINT MASON	Structural Engineering
KEN OLSSON	Structures Peer Review
DREW MINERT	Economics
TIM MEADE	Cultural Resources
CARLA BUATTE	Real Estate
FRED KRAFT	Construction Field Office
STEVE DAILEY	Project Sponsor – Fairfax Drainage District

AGENCY TECHNICAL REVIEW (ATR) TEAM ROSTER

Before posting to websites for public disclosure of the RP, it may be necessary to remove names and contact information for Corps employees to comply with security policies.

Agency Technical Review (ATR) Team				
Name	Discipline/Role	District/Agency	email	Phone
CORY WILLIAMS	ATR Team Lead Geotechnical Reviewer	Memphis	See Global	See Global
SHANE CALLAHAN	Civil Reviewer	Memphis	See Global	See Global
MIKE SHERIDAN	Structural Reviewer	Memphis	See Global	See Global

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ATTACHMENT 2: Sample Statement of Technical Review for Implementation Documents

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. 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 DrCheckssm.

SIGNATURE

ATR Team Leader

Date

SIGNATURE

Project Manager

Date

SIGNATURE

Review Management Office Representative

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.

SIGNATURE

David Mathews
Chief, Engineering Division

Date

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ATTACHMENT 3: Documentation of Type II IEPR Risk-Informed Decision

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 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	Moderate
Critical	Extremely High	High	Moderate	Low
Marginal	High	Moderate	Moderate	Low
Negligible	Moderate	Low	Low	Low

The following table details the risks, frequency, severity, risk assessment, and whether the risk contributes to the IEPR decision. The risks were developed by reviewing the IEPR triggers from EC 1165-2-209, Appendix E, paragraph 2.

Type II IEPR Risk Assessment

Risk	Risk Probability	Risk Severity	Risk Assessment	Risk Contributes to IEPR Decision?	Notes
Project poses a significant threat to human life	Seldom	Catastrophic	High	Yes	The completed project will eventually fail in an event that exceeds the design flood. This failure could endanger human life, but since it is impossible to build a structure to resist every flood, some level of risk to human life must be accepted. Type II IEPR will verify the assumptions and design criteria used to design the project features to ensure an acceptable level of risk is mitigated.

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Risk	Risk Probability	Risk Severity	Risk Assessment	Risk Contributes to IEPR Decision?	Notes
Project involves the use of innovative materials or techniques	Unlikely	Critical	Low	No	This project does not involve any innovative materials or techniques based on novel methods or complex challenges.
The project design requires redundancy, resiliency, and robustness	Likely	Critical	High	Yes	There is only one line of flood protection provided by the levees and floodwalls, which requires robustness and resiliency. The design must ensure these principles are communicated to the constructors. Type II IEPR will assess the design's resiliency and robustness.
The project has unique construction sequencing or a reduced or overlapping design construction schedule	Unlikely	Critical	Low	No	
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 contractor misinterpreting design which results in project failure	Unlikely	Catastrophic	Moderate	No	Construction quality control procedures and oversight will mitigate this risk.

Based on the above assessment, it is the risk-informed recommendation of the vertical team that Type II IEPR is required for this project.

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ATTACHMENT 4: Review Plan Revisions

Revision Date	Description of Change	Page / Paragraph Number