US Army Corps of Engineers®

REVIEW MANAGEMENT PLAN

Alligator Bayou Pump Station
Section 408 Permit Request
Port Arthur and Vicinity, Texas Hurricane - Flood Protection

Port Arthur, Texas

August 2012

REVIEW MANAGEMENT PLAN

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Management Plan (RMP) defines the scope and level of peer review for the Alligator Bayou Pump Station 408

b. References

(1) Engineer Regulation (ER) 1110-2-12, Quality Management, 30 Sep 2006
(2) Engineer Circular (EC) 1165-2-209, Civil Works Review Policy, 31 January 2010

c. Requirements. This review plan was developed in accordance with EC 1165-2-209 and Director of Civil Works' Policy Memorandum #1, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and work products. The EC outlines three levels of review: District Quality Control, Agency Technical Review, and Independent External Peer Review. In addition to these three levels of review, documents are subject to policy and legal compliance review and, if applicable, safety assurance review and model certification/approval.

(1) District Quality Control (DQC). DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements. 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 being reviewed. Basic quality control tools include this Review Management Plan (RMP) providing for seamless quality checks and reviews including quality control performed by contractors, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete review of plans, specifications, and design documentation to assure overall integrity. The Major Subordinate Command (MSC)/District quality management plans address the conduct and documentation of this fundamental level of review.

(2) Agency Technical Review (ATR). ATR is an in-depth review 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. The purpose of this review is to ensure the 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 will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc.) and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC.

(3) Independent External Peer Review (IEPR), Safety Assurance Review (SAR). A Type II IEPR (SAR) shall be conducted on design and construction activities for flood risk management projects. This applies to major repair, rehabilitation, replacement, or modification of existing facilitates. External panels will conduct reviews of the design and construction activities prior to the initiation of physical construction and,

until construction activities are completed, periodically thereafter on a regular schedule. The Federal Advisory Committee Act (FACA) does not apply to peer reviews undertaken by non-Federal interests.

2. PROJECT INFORMATION

a. Project Description. The project is located in Jefferson County, Texas. The hurricane-flood protection project protects approximately 60 square miles of Port Arthur, neighboring communities and a significant amount of the Nation's petrochemical production capacity. It consists of 27.8 miles of earthen levees and 6.6 miles of concrete and steel sheet piles. The system has numerous closure structures, five Corps constructed pump stations, and seven existing pump stations. The project is maintained by the Sponsor, Jefferson County Drainage District No. 7 (DD#7). The Sponsor is seeking approval to construct a new pump station at the Alligator Bayou discharge point adjacent to the existing federally constructed pump station to increase the interior drainage capacity of the system. They have obtained a $25 million FEMA hazard mitigation grant to fund the construction of the pump station and are currently seeking 408 approval for the project. The Sponsor is currently developing the 408 package for review. Current design is for an 11 year event frequency and the Drainage District #7 is proposing to increase this to a 25 yr frequency. This will be accomplished by improving the interior drainage layout and conveyance along with additional pumping capacity at the Alligator Bayou discharge point. DD#7 has had a desire to improve drainage for many years. The current funding stream, a FEMA hazard mitigation grant, for the improvements was initiated after Hurricane Rita in 2005 and extended after Hurricane Ike. The Corps of Engineers is responsible for issuing the 404 permit and 408 approval for the proposed modifications. DD#7 has until 2015 to expend the FEMA grant. This creates a need for the Corps 408 approval of the proposed modification by July 2011, to allow time for bidding and construction of the project. This will be very difficult to achieve without streamlining the process. The 408 approval review process requires DQC, Agency Technical Review and type II Interagency External Peer Review to be completed prior to the district's Levee Safety Officer recommending approval to the District Commander who will forward to Division for approval so the package can go to Headquarters for RIT and CECW-PC review prior to the Chief of Engineers signing the approval letter

(1) Existing Levee – The existing levee will be excavated in the area where the new pump station will be constructed, the new pump station will become the line of protection for the levee. .
(2) Proposed Levee Improvement – The proposed improvement will consist of a new pump station that will allow the interior drainage to improve performance from an 11yr level to a 25 yr level of protection

b. Project Phasing. Not applicable.

c. In-Kind Contributions. Not applicable.

3. DISTRICT QUALITY CONTROL (DQC) REVIEWS

a. General. Reviews for the Alligator Bayou Pump Station 408 under the DQC heading may include Agency Technical Reviews performed within the District/Division boundaries; over the shoulder peer reviews; and Bid-ability, Constructability, Operability, and Environmental (BCOE) Reviews. Project stakeholders including Jefferson County Drainage District 7 and others may be asked to perform reviews for quality control.

b. Products for Review. Key products for review include plans, specifications, design documentation reports, final design review and periodic on site construction inspection.

4. AGENCY TECHNICAL REVIEW (ATR)

a. General. ATR for implementation documents covered by EC 1165-2-209 paragraph 9 and Appendix C is managed and performed outside of the home district. The ATR shall ensure that the product is consistent 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 the results in a reasonably clear manner for the public and decision makers. Members of the ATR team will be from outside the home district. The ATR lead will be from outside the home MSC.

b. Products for Review. Key products for review include plans, specifications, design documentation reports, final design review and construction inspection on an as needed basis.

c. Required ATR Team Expertise. ATR teams will comprise senior USACE personnel (Regional Technical Specialists (RTS), etc.), and may be supplemented by outside experts as appropriate. The disciplines represented on the ATR team will reflect the significant disciplines involved in the engineering and design effort. These disciplines include a geotechnical, structural, civil, and hydraulic engineer along with an environmental specialist. A list of the ATR members and disciplines is provided in ATTACHMENT 1. The chief criterion for being a member of the ATR team is knowledge of the technical discipline and a minimum of ten years of relevant experience in projects similar to the proposal being reviewed.

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 be properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the design components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(4) The probable specific action needed to resolve the concern – identify the action(s) that the PDT must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order 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 will be considered an integral part of the ATR documentation and shall also:

- 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 and the PDT's responses.

ATR may be certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. A sample certification based on the one included in ER 1110-2-12 can be found in ATTACHMENT 2.

5. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. General. The IEPR panel will be selected by DD7. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. The reviewers shall consider the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring that good science, sound engineering, and public health, safety, and welfare are the most important factors that determine a project's fate. IEPR panel members will be reviewed by the DQC team.

b. Products for Review. The key products for review will be the required documentation for the 408 package, final design documents and periodic on site construction inspection and especially for the cofferdam construction.

c. Required IEPR Panel Expertise. DD7 will use contracts with A/E firms. The A/E firms will be responsible for assembling a panel that meets the requirements set forth by the National Academy of Sciences. Each member of the IEPR panel shall have a professional engineer license and/or a professional geologist license, and a minimum of 20 years of experience in their field of expertise. The IEPR should consist of a four person panel to include members that have expertise in the following areas: a) structural; b) hydraulic design; c) geotechnical, including levee safety design, seepage and piping analysis; and d) environmental concerns. The information on proposed panel disciplines is in ATTACHMENT 1

d. Documentation of IEPR. Dr Checks review software will be used to document IEPR comments and aid in the preparation of the Review Report. Comments should address the adequacy and acceptability of the economic, engineering and environmental methods,

models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4. The IEPR team will prepare a Review Report that will accompany the publication of the final report for the project and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

After receiving the report from the panel, the District Chief of Engineering and Construction Division shall 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 and Construction Division shall submit the panel's report and District 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.

6. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. The estimated cost per ATR is $50,000. The next scheduled milestone for ATR is the geotech ATR, which is scheduled to begin 01 April 2011 and be complete by 08 April 2011.

b. IEPR Schedule and Cost. Milestones to consider for a Type II IEPR (SAR) are at the record of final design in the Design Documentation Report including the completion of the plans, and specifications. DD7 is organizing the IEPR and paying for the cost associated with it.

c. Model Certification/Approval Schedule and Cost. Not applicable.

7. PUBLIC PARTICIPATION

As required by EC 1165-2-209, the approved Review Management Plan will be posted on the District public website for public comment. While there is not a formal comment period, the public will have an opportunity to comment on the types of reviews to be carried out. If and when comments are received, the PDT shall consider them and decide if revisions to the review plan are necessary.

8. RMC COORDINATION

SWD will be the Review Managing Organization (RMO) and Mike Jordan, P.E will be the review manager for this Review Plan and the IEPR reviews. All review plans and related review documents will be coordinated with the Headquarters Risk Management Center. Per EC 1165-2-209, the Review Manager is responsible for coordination with the RMC

9. MSC APPROVAL

The MSC that oversees the home district is responsible for approving the review plan. Approval is provided by the MSC Commander. The commander's approval should reflect vertical team input (involving district, MSC, RMC, and HQUSACE members) as to the appropriate scope and level of review for the decision document. The review plan is a living document and may change as the project progresses. Changes to the review plan should be approved by following the process used for initially approving the plan. In all cases the MSCs will review the decision on the level of review and any changes made in updates to the project.

10. REVIEW PLAN POINTS OF CONTACT

Questions and/or comments on this review plan can be directed to the following point of contact:

- Scott Leimer, Galveston District Levee Safety Program Manager, 409-766-3078

ATTACHMENT 1: TEAM ROSTERS

Agency Technical Review

TABLE 1: Agency Technical Review Team		
NAME	**DISCIPLINE**	**OFFICE SYMBOL**
Monica Greenwell	ATR Team Leader	CELRL
Ron Wahl	Geotechnical Engineer	EDRC
Laurie Ebner	Hydrology and Hydraulic Engineer	CENWP
Terry Sullivan	Structural Engineer	CELRL
Lenny Gunnell	Environmental	CELRL

External Peer Review Panel

TABLE 2: Recommended External Peer Review Panel		
NAME	**DISCIPLINE**	**EDUCATION & EXPERIENCE**
Peter R. Cali, Ph.D., P.E.	Geotechnical, P.E.	BS in Civil/Geotechnical Engineering, 20+ years experience in the geotechnical design and construction of levees.
David Ford, Ph.D., P.E.	Hydrology and Hydraulics, P.E.	BS in Civil/Hydraulic Engineering, 20+ years experience in hydrology and hydraulic design.
Joseph J. Luke, P.E.	Structural, P.E.	BS in Structural Engineering, 20+ years experience in the structural design and construction of levee enclosure structures.

Project Delivery Team

A complete listing of the project delivery team can be obtained from Scott Leimer.

Vertical Team

The Vertical Team consists of members of the HQUSACE and CESWD Offices. The Vertical Team plays a key role in facilitating execution of the 408 review. The Vertical Team is responsible for providing the PDT with Issue Resolution support and guidance as required. The Vertical Team will remain engaged seamlessly throughout the project via monthly telecons as required and will attend In Progress Reviews and other key decision briefings. The CESWD District Liaison is the District LSPM's primary Point of Contact on the Vertical Team.

ATTACHMENT 2: ATR CERTIFICATION TEMPLATE

Statement of Completion of Agency Technical Review

The Agency Technical Review (ATR) has been completed for the Alligator Bayou Pump Station 408. The ATR was conducted as defined in the project's Review Management Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks$_{sm}$.

Reviewers:

_____ _____
Monica Greenwell, LRL Date

_____ _____
[Mike Jordan, P.E., Review Management Office, CESWD-RBT] Date

Project Delivery Team Members:

_____ _____
Scott Leimer, P.E. LSPM, CESWG-EC-ES Date

_____ _____
Date

Certification of Agency Technical Review

Significant concerns and the explanation of the resolution are as follows:

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

_____ _____
Robert B.C. Howell, P.E., Date
Chief, Engineering and Construction Division