

REVIEW PLAN

HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS GALVESTON HARBOR CHANNEL EXTENSION PROJECT POST AUTHORIZATION CHANGE REPORT

Galveston District

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US Army Corps
of Engineers ®

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**HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS
GALVESTON HARBOR CHANNEL EXTENSION PROJECT
POST AUTHORIZATION CHANGE REPORT**

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS..... 1

2. STUDY INFORMATION..... 3

3. DISTRICT QUALITY CONTROL (DQC)..... 6

4. AGENCY TECHNICAL REVIEW (ATR) 6

5. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)..... 8

6. MODEL CERTIFICATION AND APPROVAL..... 9

7. REVIEW SCHEDULES AND COSTS 9

8. PUBLIC PARTICIPATION..... 9

9. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION 10

10. REVIEW PLAN APPROVAL AND UPDATES..... 10

11. REVIEW PLAN POINTS OF CONTACT 10

ATTACHMENT 1: TEAM ROSTERS (Removed Previous to Posting on Webpage) 11

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS..... 12

ATTACHMENT 3: REVIEW PLAN REVISIONS..... 13

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS 14

1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Houston-Galveston Navigation Channels, Texas, Galveston Harbor Channel Extension Post Authorization Change Report (Galveston Harbor Channel Extension PACR) and National Environmental Policy Act (NEPA) Document.

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-407, Planning Models Improvement Program: Model Certification,
- (3) Engineering Regulation (ER) 1110-2-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) Limited Reevaluation Report for the Houston-Galveston Navigation Channels, Texas
- (6) 2007 Houston-Galveston Navigation Channels, Texas, Limited Reevaluation Report

c. **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 1105-2-407).

(1) District Quality Control/Quality Assurance (DQC). All **decision documents** (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home Major Subordinate Command (MSC).

(2) Agency Technical Review (ATR). ATR is mandatory for all **decision 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 US Army Corps of Engineers (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 by a designated Risk Management Organization (RMO) and is conducted by a qualified team from outside the home district that is not involved in 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. To assure independence, the leader of the ATR team shall be from outside the home MSC.

- (3) Independent External Peer Review (IEPR). IEPR may be required for **decision 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 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 is generally for decision documents and Type II is generally for implementation products.
 - (a) Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and a biological opinion of the project study. Type I IEPR will cover the entire decision document or action and will address all the underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
 - (b) Type II IEPR. 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.

- (4) Policy and Legal Compliance Review. All **decision documents** will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the Chief of Engineers. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.
- (5) Cost Engineering Review and Certification. All **decision documents** shall be coordinated with the Cost Engineering Directory of Expertise (DX), located in the Walla Walla District. The DX, or in some circumstances regional cost personnel that are pre-certified by the DX, will conduct the cost ATR. The DX will provide certification of the final total project cost.
- (6) Model Certification/Approval. 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. Planning models, for the purposes of the EC, are defined 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 use of a certified/approved planning model does not constitute technical review of the planning product. 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. EC 1105-2-412 does not cover engineering models used in planning. 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. Engineering models are also subject to DQC, ATR, and IEPR.

2. STUDY INFORMATION

- a. Decision Document. The Galveston Harbor Channel Extension Study will result in a decision document that is a PACR requiring Congressional authorization. The study will address the feasibility of deepening the remainder of the Galveston Harbor Channel to 45 feet. This study will include an Environmental Assessment (EA). The project is located in Galveston County, Texas.

b. Study/Project Description. The Houston and Galveston Channels traverse the Galveston Bay area. Galveston Bay is the largest inland bay on the Texas coast and is an important commercial and recreation fishery resource and provides access to the deep-water ports of Houston, Texas City, and Galveston.

The Houston-Galveston Navigation Channel Project is divided into four main reaches referred to as the Offshore Reach (the entrance channel), the Galveston Harbor Channel (which includes this project), the Bay Reach and the Bayou Reach (Figure 1). All of the aforementioned reaches have been constructed except for the deepening of the Galveston Harbor Channel which did not proceed due to the non-Federal sponsor's lack of funds. The recommended plan, as identified in the Limited Reevaluation Report (LRR) for the Houston-Galveston Navigation Channels, Texas (1995 LRR), for deepening the Galveston Harbor Channel was updated by the 2007 Houston-Galveston Navigation Channels, Texas, Limited Reevaluation Report (2007 LRR).

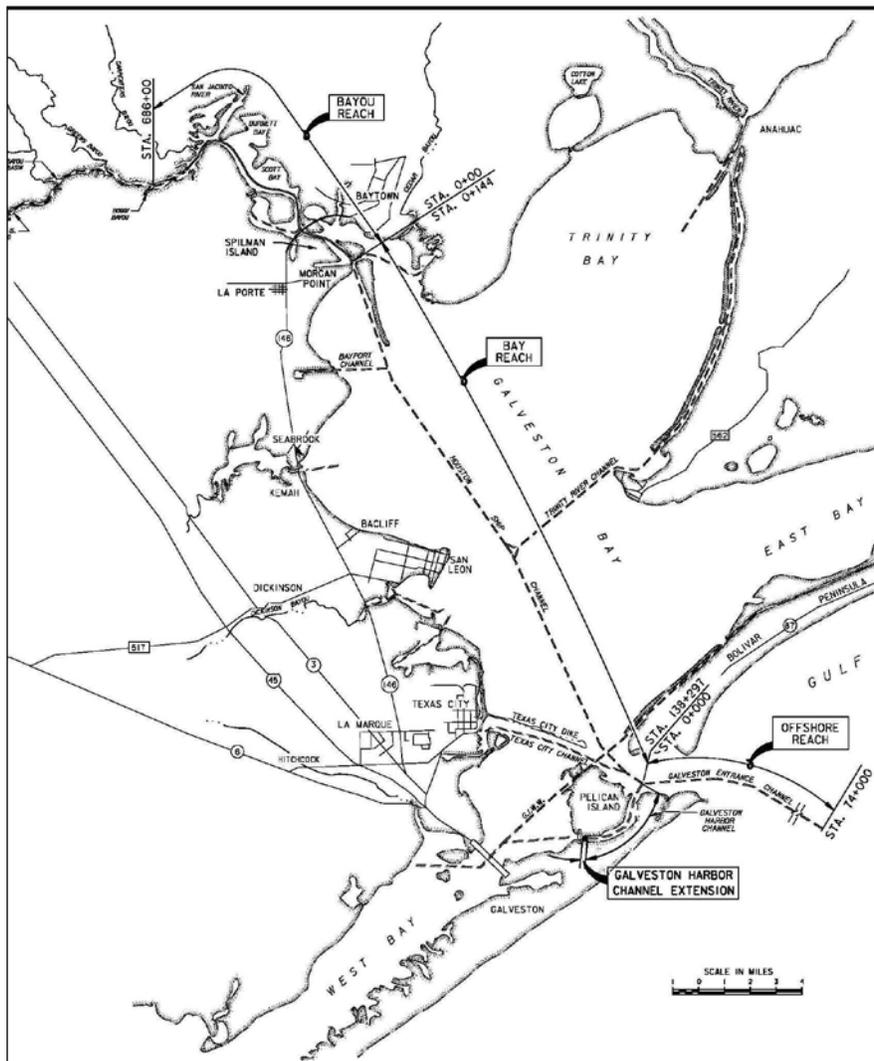


Figure 1 – Map of Houston-Galveston Reach Designations

The 1995 LRR presented a plan that consisted of deepening the channel entrance from 42 feet to 47 feet, deepening and widening the Houston Ship Channel from 40 feet deep by 400 feet wide to 45 feet deep by 530 feet wide for most of its length and deepening the Galveston Channel from 40 feet to 45 feet. The project included an Environmental Restoration Plan that incorporated environmental navigation design measures and the beneficial use of dredged material to initially construct 690 acres of marsh habitat (wetlands) and a 12-acre colonial waterbird nesting island using new work dredged material, incrementally develop an additional 3,560 acres of marsh over a 50-year period using maintenance dredge material, and construct other island restoration features using the initial and future maintenance dredged material. Construction on the Galveston Channel Reach is currently underway.

The Galveston Harbor Channel is about 22,571 feet long from the Bolivar Roads at Station 00+000 to Station 22+571. However, the authorized 45-foot channel ends at Station 20+000. The remainder of the channel (Station 20+000 to 22+571) is only authorized to 40 feet deep. The portion of the Galveston Harbor Channel referred to as the Galveston Harbor Channel Extension is that portion demarcated from the end of the authorized 45 foot channel at Station 22+000 to the end of the authorized 40 foot channel at Station 22,571, a distance of about 2,571 feet (Figure 2).

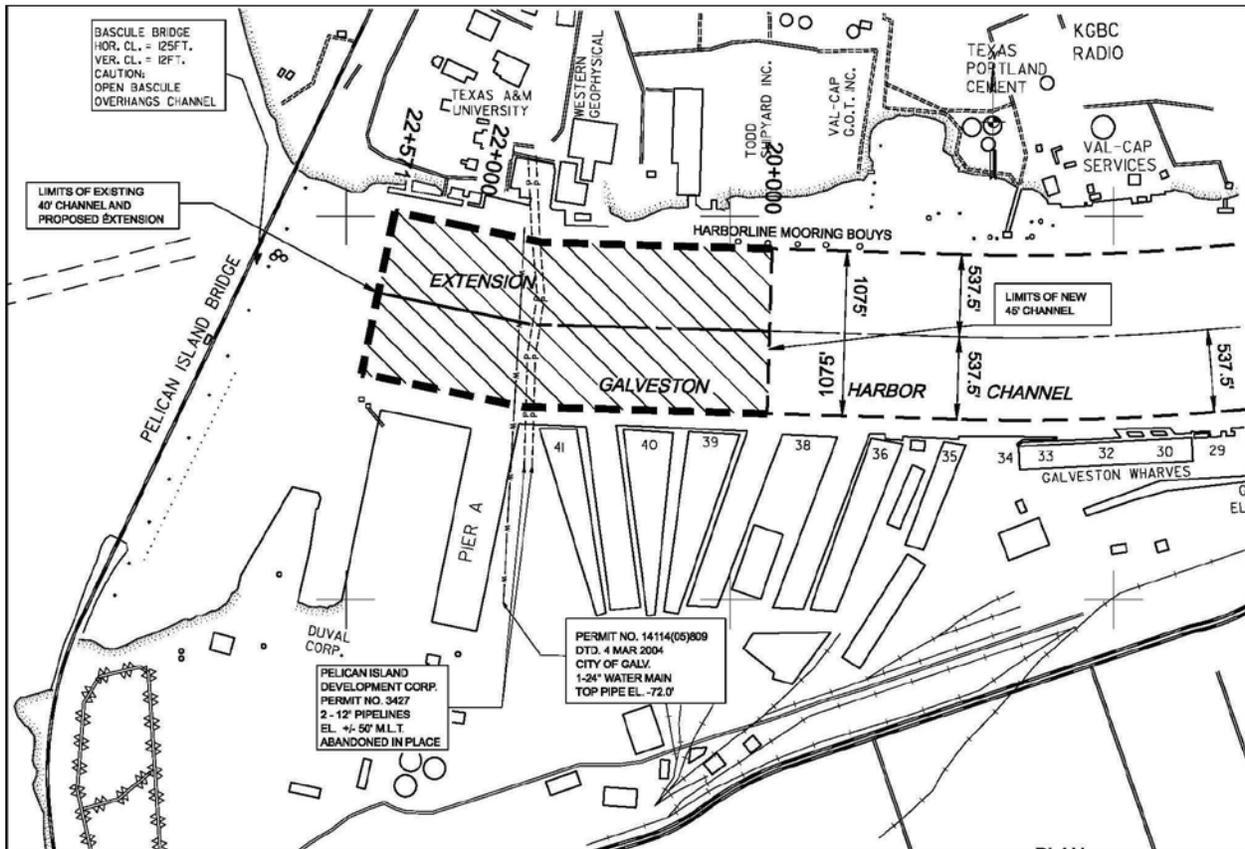


Figure 2 – Location of Proposed Extension within Galveston Harbor Channel

c. Factors Affecting the Scope and Level of Review.

The PACR addresses a request by the non-Federal sponsor, the Board of Trustees of Galveston Wharves (Port of Galveston, (POG)), to evaluate the feasibility of deepening an additional segment of the Galveston Harbor Channel to serve additional users next to the Pelican Island Causeway. The addition of this segment is beyond the authorized 45-foot channel and will require Congressional authorization. However, risk factors for threat to human life and controversy are low on this project. The work involves previously deepened channel and the total project cost is estimated to be approximately \$11,454,000.

- d. In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. No expected in-kind activities proposed by the sponsor.

3. DISTRICT QUALITY CONTROL (DQC)

- a. Documentation of DQC.** DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements. It is managed by the Galveston 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 a Quality Management Plan (QMP) providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before approval by the District Commander. For the Galveston Harbor Channel Extension PACR, non-PDT members and/or supervisory staff will conduct this review for major draft and final products, including products provided by the non-Federal sponsors as in-kind services following review of those products by the PDT. It is expected that the Major Subordinate Command (MSC)/District QMP addresses the conduct and documentation of this fundamental level of review. DQC is not addressed further in the Review Plan.

4. AGENCY TECHNICAL REVIEW (ATR)

- a. Products to Undergo ATR.** The only products to undergo ATR will be the draft PACR and EA. ATR is required for this study and will focus on the following:
- (1) Review of the planning study process,
 - (2) Review of the methods of analysis and design of the alternatives and recommended plan,
 - (3) Compliance with program and NEPA requirements, and
 - (4) Completeness of study and support documentation

b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in deep-draft navigation.
Economics	The Economics reviewer should be an economist with experience in deep-draft navigation.
Environmental Resources	The Environmental Resources reviewer should be a reviewer with experience in deep-draft navigation.
Real Estate	The Real Estate reviewer should be a reviewer with experience in deep-draft navigation.
Cost Estimating	The Cost Estimating reviewer should be a reviewer with experience in deep-draft navigation.
Engineering Design	The Engineering Design reviewer with experience in deep-draft navigation
Hydraulics and Hydrology Engineer	The H&H reviewer with experience in deep-draft navigation

c. 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 plan selection, recommended plan 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 reporting officers must take to resolve the 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 ATR 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 Headquarters, U.S. Army Corps of Engineers (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 (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may 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). A Statement of Technical Review should be completed, based on work reviewed to date, for the Alternative Formulation Briefing (AFB), draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

5. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

- a. **Decision on IEPR.** Due consideration was given to Paragraph 15 of EC 1165-2-209 as well as Appendix D of the same EC. The total project costs for this project are estimated to be under \$12 million. Further, we do not anticipate that other criteria, such as public safety concerns, significant controversy, a high level of complexity, and significant economic, environmental and social effects to the nation, innovative solutions, or life safety issues will trigger the requirement for IEPR. Lastly, the project does not include an Environmental Impact Statement (EIS) and falls within the footprint

of a currently maintained federal channel. The District petitioned for an exception from performing an IEPR. The District petitioned for an exception from performing an IEPR. **IEPR exclusion has been approved by Headquarters, USACE for the project study.**

b. Products to Undergo Type I IEPR. Not Applicable.

c. Required Type I IEPR Panel Expertise. Not Applicable.

d. Documentation of Type I IEPR. Not Applicable.

6. MODEL CERTIFICATION AND APPROVAL

a. Planning Models. The project falls within the existing footprint of the authorized 40-foot channel and as such, deepening would occur to federally maintained channel. There would be no change to the design vessel and no mitigation involved since the dredged material would be placed within an existing placement area. A one-time-use spreadsheet model was developed to support the economic analysis of Galveston Channel. No certified model is available to use in this analysis. The model is a multi-sheet Excel workbook that evaluates traffic volume and the potential for unit-cost savings at incremental channel depths.

b. Engineering Models. No Engineering Models are proposed for use in this study. The project falls within the existing footprint of the authorized 40-foot channel and as such, deepening would occur to federally maintained channel. There would be no change to the design vessel and no mitigation involved since the dredged material would be placed within an existing placement area.

7. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. ATR is scheduled to begin in February 2011 with the Deep-Draft PCX. ATR is scheduled to be completed in April 2011 and the total cost is expected to be approximately \$40K.

b. Type I IEPR Schedule and Cost. No triggers on the IEPR Checklist are applicable; therefore, a request for waiver from IEPR was submitted. **IEPR exclusion has been approved by Headquarters, USACE for the project study.**

c. Model Certification/Approval Schedule and Cost. No model certification is required for this study.

8. PUBLIC PARTICIPATION

The Environmental Assessment will be coordinated with the public for a 30-day period once ATR is complete.

9. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Deep-Draft Center of Expertise.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to conduct ATR of cost estimates, construction schedules, risk analysis, TPCS, and contingencies.

10. REVIEW PLAN APPROVAL AND UPDATES

The Southwestern Division Commander is responsible for approving this Review Plan. The Commander’s approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study 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, will be posted on the Home District’s webpage. The latest Review Plan will also be provided to the RMO and home MSC.

11. REVIEW PLAN POINTS OF CONTACT

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

Robert Heinly	Chief, Planning Section	409-766-3992
T. Cheryl Jaynes	Planning Lead	409-766-3804
Bernard Moseby	ATR Team Lead	251-694-3884

ATTACHMENT 1: TEAM ROSTERS (Removed Previous to Posting on Webpage)

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION 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
Name
ATR Team Leader
Office Symbol/Company _____ Date _____

SIGNATURE
Name
Project Manager
Office Symbol _____ Date _____

SIGNATURE
Name
Architect Engineer Project Manager¹
Company, location _____ Date _____

SIGNATURE
Name
Review Management Office Representative
Office Symbol _____ Date _____

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

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

SIGNATURE
Name
Chief, Engineering Division
Office Symbol _____ Date _____

SIGNATURE
Name
Chief, Planning Division
Office Symbol _____ Date _____

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
ATR	Agency Technical Review	PCX	Planning Center of Expertise
DQC	District Quality Control/Quality Assurance	PDT	Project Delivery Team
DX	Directory of Expertise	PACR	Post Authorization Change Report
EA	Environmental Assessment	PMP	Project Management Plan
EC	Engineer Circular	POG	Board of Trustees of Galveston Wharves (Port of Galveston)
EIS	Environmental Impact Statement	QMP	Quality Management Plan
ER	Engineering Regulation	QA	Quality Assurance
HQUSACE	Headquarters, U.S. Army Corps of Engineers	QC	Quality Control
IEPR	Independent External Peer Review	RMC	Risk Management Center
LRR	Limited Reevaluation Report	RMO	Review Management Organization
MSC	Major Subordinate Command	SAR	Safety Assurance Review
NEPA	National Environmental Policy Act	USACE	U.S. Army Corps of Engineers