

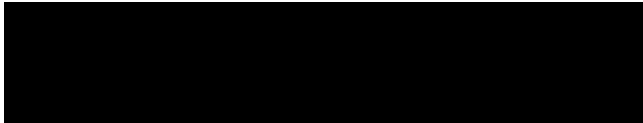
# REVIEW PLAN

HOUSTON GALVESTON NAVIGATION CHANNEL (HGNC)  
GALVESTON CHANNEL EXTENSION

P2 # 401250

VALIDATION REPORT AND SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT  
Southwestern Division – Galveston District

APPROVED BY:



Regional Programs Director  
USACE, SWD

**Last Revision Date:** DECEMBER 2023



US Army Corps  
of Engineers®



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT  
2000 FORT POINT RD.  
GALVESTON, TEXAS 77550

DEC 01 2023

CESWG-ZA

MEMORANDUM FOR COMMANDER, Southwestern Division, (ATTN: [REDACTED]  
[REDACTED] CESWD-PDP), 1100 Commerce Street, Dallas, TX 75242

Subject: Review Plan Submittal for Houston Galveston Navigation Channel (HGNC)  
Galveston Channel Extension Validation Report, Galveston, Texas

1. The Galveston District is formally submitting the enclosed HGNC Galveston Channel Extension Validation Report Review Plan for review for Major Subordinate Command Review and Comment.
2. If you have any questions, or need any previous submissions, please contact Project Manager [REDACTED] at (409) 741-5764 or email her at [REDACTED]

Encl

A handwritten signature in black ink, appearing to read "R. Blackmon".

RHETT A. BLACKMON, P.E.  
COL, EN  
Commanding

**1 PROJECT SUMMARY**

**Project Name:** HGNC Galveston Channel Extension

**Location:** Galveston, Galveston County, Texas

**P2 Number:** 401250

**Decision and Environmental Compliance Document Type:** Validation Report and Supplemental Environmental Assessment (SEA)

**Congressional Authorization Required:** No

**Authority:** Section 216 of the Flood Control Act (FCA) of 1970, P.L. 91-611

**Project Purpose(s):** Deep Draft Navigation

**Non-Federal Sponsor:** The Port of Galveston, representing the Board of Trustees of the Galveston Wharves

**Type of Study:** Post Authorization Change Report (PACR)

**SMART Planning Status:** N/A

**Points of Public Contact for Questions/Comments on Review Plan:**

**District:** Galveston (SWG)

**District Contact:** Project Manager, (409) 741-5764 (██████████)

**Major Subordinate Command (MSC):** Southwestern Division

**MSC Contact:** Senior Planner, (469) 487-7069 (██████████)

**Review Management Organization (RMO):** Southwestern Division

**RMO Contact:** Senior Economist, (469) 487-7065 (██████████)

**Key Review Plan Dates**

Date of RMO Endorsement of Review Plan	Pending
Date of MSC Approval of Review Plan	Pending
Date of IEPR Exclusion Approval	Upon Review Plan Approval
Has the Review Plan changed since RMO Endorsement?	N/A
Date of Last Review Plan Revision	None
Date of Review Plan Web Posting	Pending

**Milestone Schedule and Other Dates**

<b>Milestone</b>	<b>Scheduled</b>	<b>Actual</b>
<b>FCSA Execution</b>	N/A	N/A
<b>Alternatives Milestone</b>	N/A	N/A
<b>Tentatively Selected Plan</b>	N/A	N/A
Release Draft Report to Public	2023-11-15	Pending
<b>SWD CCB</b>	2024-02-15	Pending
<b>HQ CCB</b>	2024-03-18	Pending
<b>Agency Decision Milestone</b>	N/A	N/A
<b>Final Policy Guidance Memorandum</b>	2024-06-11	Pending
<b>SWD PACR Approval</b>	2024-07-22	Pending

**2 REFERENCES**

- CECW-P Memorandum, Model Coordination for Civil Works Planning Studies, 28 July 2023
- Engineer Circular (EC) 1105-2-412, Assuring Quality of Planning Models, 31 March 2021, as updated in CECW-P Memo dated December 7, 2017.
- Engineer Pamphlet (EP) 1105-2-61 Planning Feasibility and Post-Authorization Study Procedures and Report Processing Requirements, 1 July 2023
- Engineer Regulation (ER) 1165-2-217, Review Policy for Civil Works (CW), 01 May 2021
- ER 1105-2-100, Planning Guidance Notebook, Appendix E
- Director of Civil Works (DCW) Memorandum, Revised Delegation of Authority in Section 2034(a)(5)(A) of the Water Resources Development Act of 2007 (WRDA 2007), as amended (33 U.S.C. 2343), 7 June 2018
- Director’s Policy Memorandum (DPM) CW Programs 2018-05, Improving Efficiency and Effectiveness in USACE CW Project Delivery (Planning Phase and Planning Activities), 3 May 2018
- DPM 2019-01, Policy and Legal Compliance Review, 9 January 2019
- Planning Bulletin (PB) 2018-01, Feasibility Study Guidelines, 26 September 2018 and it’s supplemental PB 2018(S) dated 20 June 2019

The online USACE Planning Community Toolbox provides more review reference information at: <https://planning.ercd.dren.mil/toolbox/current.cfm?Title=Peer%20Review&ThisPage=Peer&Side=N0>.

### 3 STUDY OR PROJECT AREA

Galveston Bay, the largest inland bay on the Texas coast, is an important commercial and recreational fishing resource and provides access to the deep-water ports of Houston, Texas City, and Galveston. The Houston and Galveston Channels traverse the Galveston Bay area. This area is located along the northeastern Texas coastline.

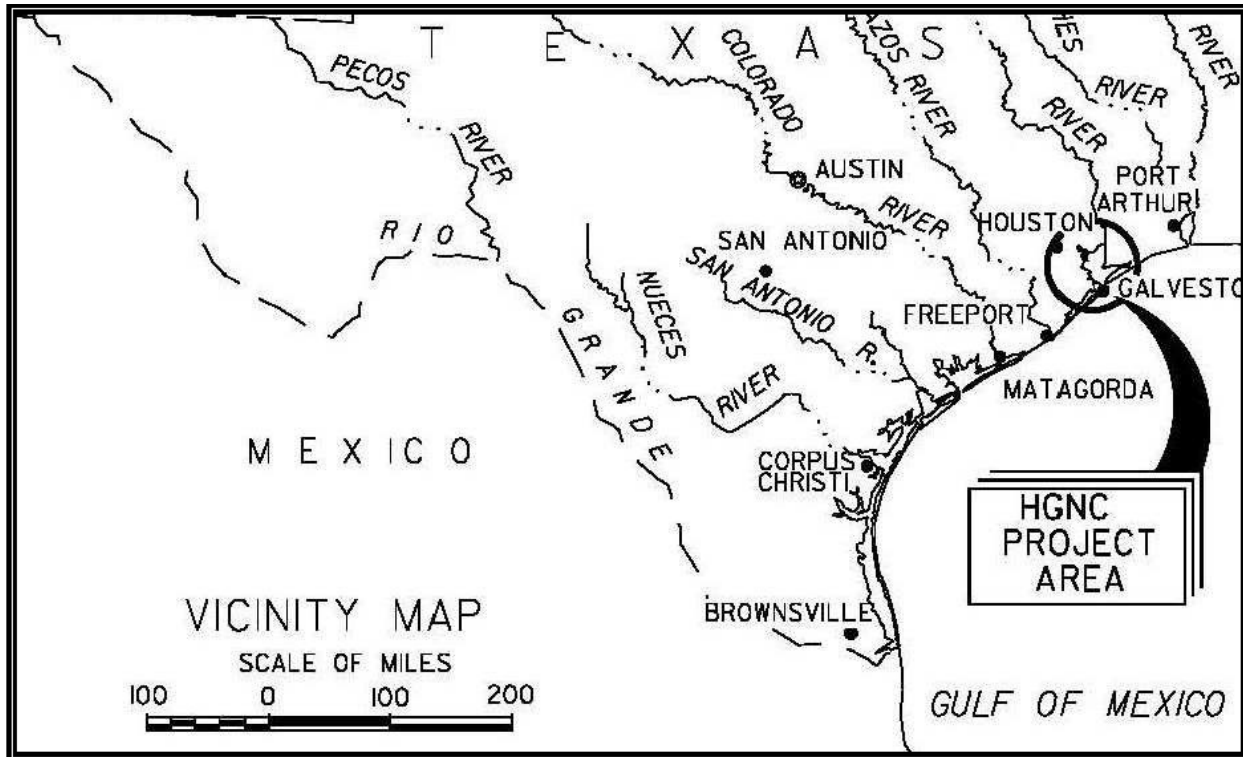


Figure 1 - Houston-Galveston Navigation Channels Project Location on Texas Coastline

**Authority:** The Validation Report seeks to approve minor design changes to the project authorized in the Water Resources Development Act (WRDA) 2018 and described in the Chief’s Report dated August 8, 2017, Galveston Harbor Channel Extension Project, Houston-Galveston Navigation Channels, Texas. The original study was conducted under Section 216 of the Flood Control Act of 1970. The existing Galveston Harbor Channel project was authorized by Section 101(a)(30) of WRDA 1996, PL 104-303.

**Problem Statement:** In 2011, deepening of the Galveston Harbor Channel (GHC) from 41 feet mean lower low water (MLLW) to 46 feet MMLW up to Station 20+000 was completed as part of the Houston-Galveston Navigation Channels (HGNC) Project authorized by Section 101(a)(30) of the Water Resources Development Act (WRDA) of 1996, P.L. 104-303. The deepening was completed in accordance with the Report of the Chief of Engineers dated May 9, 1996, and the Houston-Galveston Navigation Channels, Texas, Limited Reevaluation Report and Final Supplemental Environmental Impact Statement (1995 LRR) dated November 1995 as updated by the Houston-Galveston Navigation Channels, Texas, Galveston Channel Project, Final Limited Reevaluation Report, dated May 31, 2007. In 2018, in accordance with the Report of the Chief of Engineers dated 8 August 2017 and the Galveston Harbor Channel Extension Feasibility Study, Houston-Galveston Navigation Channel, Texas Feasibility Report dated February 2017, Congress authorized extending the 46 feet deep Galveston Harbor Channel the remaining 2,571 feet to Station 22+571 to reach the end of the limits of the authorized and currently maintained 41-foot

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channel. This extension of the 46 feet deep GHC (or Galveston Harbor Channel Extension, GHCE) provided navigation transportation benefits to portside service facilities including two end users, Gulf Sulphur Services and Texas International Terminals (TXIT).

In 2019, during preconstruction engineering and design of the authorized GHCE, a ship simulation study was performed by Locus LLC, the Galveston – Texas City Texas Pilots and G & H Towing and demonstrated that an additional 500 feet of 46 feet deep channel length was necessary to allow the pilots sufficient space to maneuver vessels in the terminal end of the channel and enter and exit the TXIT docks safely and efficiently. Based on changed conditions the non-federal sponsor requested that USACE conduct further engineering and economic analysis to include this additional channel area in a rescoped plan (Figure 4 area in yellow box.)

**Federal Interest:** The Federal Interest was confirmed by the 2017 Galveston Harbor Channel Extension Feasibility Study – Houston-Galveston Navigation Channel, Texas and the Chief's Report. The project was authorized by America's Water Infrastructure Act (AWIA) of 2018.

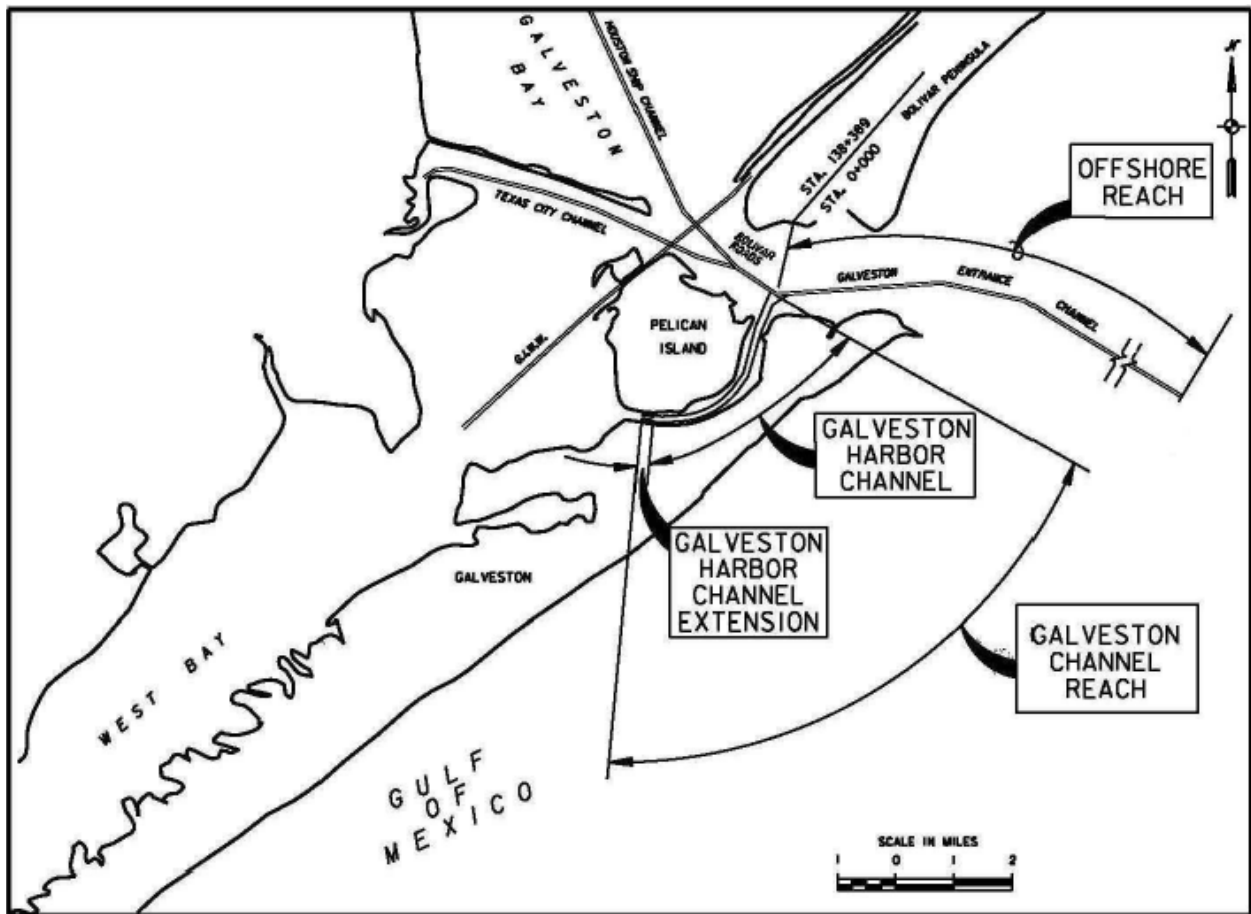


Figure 2 - Map of Galveston Portion of HGNC Reach Designations

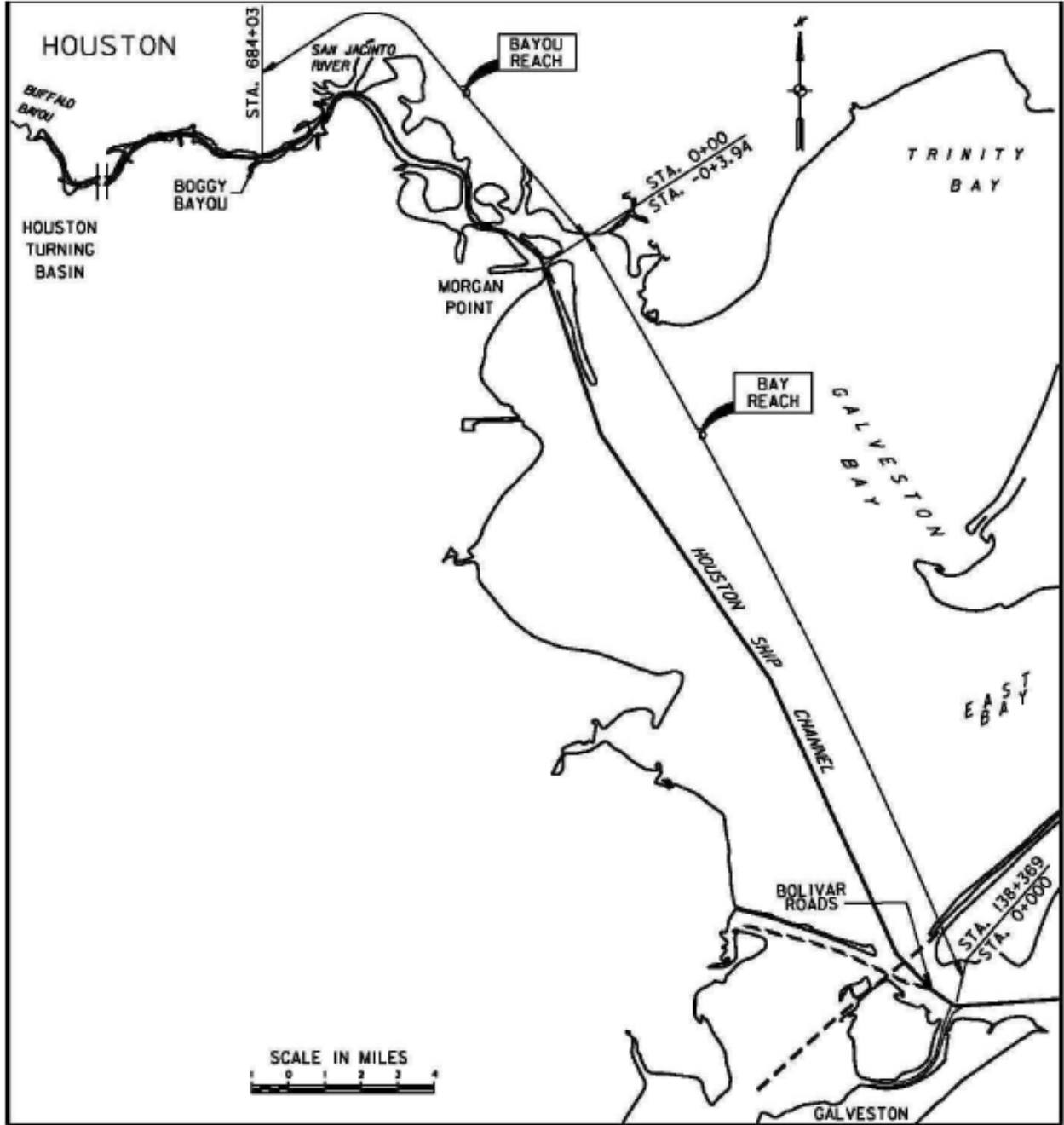


Figure 3 - Map of Houston Portion of HGNC Reach Designations

**Study or Project Area Map**



Figure 4 - Location of Proposed ~500' Extension within Galveston Harbor Channel

**Risk Identification:**

**Scope and Schedule:** Post Chief's Report, the NFS asked USACE to evaluate changes to the project scope to include an expanded footprint of the authorized plan to provide the larger ships more maneuverability into dock spaces at the terminal end of the channel.

This validation report is being prepared to analyze and document changes to the scope of the project based on changed conditions identified during PED using input provided by the Port of Galveston, the non-federal sponsor (NFS) and the pilots. In accordance with implementation guidance from the Assistant Secretary of the Army for Civil Works dated 25 April 2022, on project funded for construction under the Implementation of Infrastructure Investment and Jobs Act (Public Law 117-58), this VR is being prepared to describe the changed conditions and rescoping of the authorized plan described in the 2017 Feasibility Study and Chief's Report. The VR includes the district's analysis and rationale for the re-scoped plan, as well as legal analysis on whether the re-scoped plan, including modifications, is within the Chief's discretionary authority to implement and provides the benefits of the authorized project.

**Human Life and Environment:** None of the identified risks are expected to pose a significant threat to human life or the environment.



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Study Schedule

Table 1 - Validation Report Schedule

Galveston Harbor Channel Extension, Texas PACR (Validation Report) - Schedule	Start Date	Duration Working Days	End Date
Pick a Starting Point			2023-02-10
<b>PDT Performs Post-Feasibility Tasks</b>			
<b>Required PDT Tasks</b>			<b>14-Jun-23</b>
▶ Civil Engineering - Update quantities / Plans & Profiles / ROW footprints / # pipelines / O&M ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)			07-Apr-23
▶ Hydrology & Hydraulic Engineering [Climate?] - Fred Fenner ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)			07-Apr-23
▶ Real Estate Report ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)	10-Apr-23	10	24-Apr-23
▶ Environmental Resources - Ecological Assessment ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)	10-Apr-23	20	08-May-23
▶ Economics - DDN PCX requirements - ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)	10-Apr-23	46	<b>14-Jun-23</b>
Cost Updates ▶ MII - ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)	15-Jun-23	0	15-Jun-23
Cost Updates ▶ CSRA / TCPS ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)	16-Jun-23	0	16-Jun-23
Economic Update Level 2 Re-evaluation ▶ To Include Internal Tech Reviews (Before giving to others for their use, Ex. Red Dot)	15-Jun-23	10	30-Jun-23
Each Discipline Complete Validation Writeup submit to Team Lead (Lead Planner)	20-Jun-23	10	06-Jul-23
Lead Planner compile appendices and DRAFT main report	07-Jul-23	10	21-Jul-23
PDT / Chief's Review Start - Comments Due	24-Jul-23	3	27-Jul-23
PDT responses to PDT / Chief's comments, along with Report revisions based on comments	28-Jul-23	3	02-Aug-23
PDT / Chief's Back check	03-Aug-23	2	07-Aug-23
DQC / Legal Review Start - Comments Due ( <b>DRAFT / FINAL</b> )	08-Aug-23	10	22-Aug-23
DQC / Legal Kickoff Meeting	08-Aug-23	10	22-Aug-23
PDT responses to DQC / Legal comments, along with Report revisions based on comments	23-Aug-23	47	31-Oct-23
DQC / Legal backcheck	01-Nov-23	5	08-Nov-23
DQC / Legal Certification	09-Nov-23	2	14-Nov-23
<b>DRAFT</b> Public & Policy Review Start - Comments Due	15-Nov-23	21	22-Dec-23
<b>DRAFT</b> ATR / <b>Conditional Cost Cert</b> Review Start - Comments Due	15-Nov-23	10	01-Dec-23
ATR / Policy / Review IPR (w/HQ mix)	15-Nov-23	5	22-Nov-23
PDT responses to ATR comments, along with Report revisions based on comments	04-Dec-23	10	22-Dec-23
ATR backcheck	02-Jan-24	10	17-Jan-24
ATR Report, Certification & Statement of Technical Review	18-Jan-24	5	25-Jan-24
PDT responses to Policy comments, along with Report revisions based on comments	02-Jan-24	10	17-Jan-24
Policy backcheck	18-Jan-24	5	25-Jan-24
DRAFT PGM	26-Jan-24	3	31-Jan-24
SWD CCB	01-Feb-24	10	15-Feb-24
HQ ▶ Engineering Tech Review ▶ On Board ▶ CCB Meeting	16-Feb-24	20	18-Mar-24
PDT development of final report (If any work needs to be redone / updated that changes costs)	19-Mar-24	10	02-Apr-24
<b>DRAFT/FINAL</b> Policy Review Start - Comments Due	03-Apr-24	20	01-May-24
PDT responses to Policy comments, along with Report revisions based on comments	02-May-24	10	16-May-24
Policy backcheck	17-May-24	10	03-Jun-24
Final PGM, Policy Guidance Memorandum	04-Jun-24	5	11-Jun-24
PACR Approval MSC	12-Jun-24	25	22-Jul-24

#### 4 FACTORS AFFECTING THE LEVEL OF REVIEW

All planning products are subject to the conduct and completion of District Quality Control. Most planning products are subject to Agency Technical Review and a smaller sub-set of products may be subject to Independent External Peer Review and/or Safety Assurance Review. Information in this section helps in the scoping of reviews through the considerations of various potential risks.

##### Mandatory IEPR Triggers:

- Has the Chief of Engineers determined the project is controversial? No
- Has the Governor of an affected state requested an IEPR? No
- Is the cost of the project more than \$200 million? No

##### Discretionary IEPR:

- Has the head of another Federal Agency requested an IEPR?
  - No.

##### Potential IEPR Exclusion:

- Will an Environmental Impact Statement be prepared as part of the study?
  - No.
- Is the project controversial?
  - No.
- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources?
  - No. There is no indication at this time there would be more than negligible impacts to the subject resources.
- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures?
  - No. There is no indication at this time there would be more than negligible impacts to the subject resources.
- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat?
  - No. The Supplemental EA will document the impacts to the subject resources. There is no indication at this time there would be more than negligible impacts to the subject resources. Designs would be developed to avoid, minimize and mitigate per policy. The SEA will include documentation on Endangered Species Act (ESA) compliance.
- Does the project involve only the rehabilitation or replacement of existing hydropower turbines, lock structures, or flood control gates within the same footprint and for the same purpose as an existing water resources project?
  - No.
- Is for an activity for which there is ample experience within USACE and the industry to treat the activity as being routine?
  - Yes.

- Does the project have minimal life safety risk?
  - Yes.

#### **4.1 Assessing Other Risk Considerations**

- Will the study likely be challenging?
  - No. The project is straight forward.
- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks.
  - The PDT believes that the modification is justified, consistent with USACE policies and within the Chief's discretionary authority.
- Is the project likely to be justified by life safety or is the study or project likely to involve significant life safety issues?
  - No. While, the extension is not expected to have significant life safety impacts, it will allow more room for ship maneuvering and thereby decrease the risks to life and property.
- Is the information in the decision document or anticipated project design likely to be based on novel methods, involve innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices?
  - No. The extension will use the same methods of dredging as the channel adjacent.
- Does the project design require redundancy, resiliency, and/or robustness, unique construction sequencing or a reduced or overlapping design/construction schedule?
  - No.
- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources?
  - See prior response.
- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures?
  - See prior response.
- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat?
  - See prior response.
- Has the Governor of an affected state requested a peer review by independent experts?
  - No.
- Will the project likely involve significant public dispute as to the project's size, nature or effects?
  - No disputes are anticipated.
- Is the project/study likely to involve significant public dispute as to the economic or environmental cost or benefit of the project?

- No disputes are anticipated.
- Does the project present a risk of “significant life loss” due to the use of innovative materials or techniques, and if 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.
  - No. The project does not utilize innovative materials, is not complex, and utilizes standard designs and prevailing construction techniques.

## 5 REVIEW EXECUTION PLAN

This section describes each level of review to be conducted. Based upon the factors discussed in Section 4, this study will undergo the following types of reviews:

**District Quality Control.** DQC is the foundation of the USACE quality process, and it is this robust and appropriate process that is used to check models for accuracy and applicability. All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC.

This guidance applies to all Engineering modeling whether used in planning studies, feasibility, in PED or any other phase of a Civil Work’s project where models are updated or used. For computations using computer models and other complex methods of analysis, a reviewer must perform a review, hand check or other independent verification of the critical loading case or results to demonstrate that the conclusions from the model are appropriate.

This internal review process covers basic science and engineering work products. It fulfills the project quality requirements of the Project Management Plan.

MSC QA responsibilities include an assessment of the capability of the DQC Review Team and that all reviewers performing computation Quality Checks are qualified with experience and have a thorough understanding of the computations to ensure that all calculations, assumptions and models used are correct. The estimated cost for each DQC is \$15K.

**Agency Technical Review.** ATR (Agency Technical Review) is “undertaken to ensure the quality and credibility of USACE scientific and technical information is consistent with ER 1165-2-217, Review Policy for Civil Works (CW), 01 May 2021. The role of the ATR is to “assess the adequacy of DQC, validate key PDT decisions, and bring up important issues, concerns and lessons learned. ATR Teams are charged to review that “appropriate computer models and methods of analysis were used, and basic assumptions are valid and used for the intended purpose.

ATR is performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ALL engineering reviewers for ATR shall be nominated and approved in CERCAP (Corps of Engineers Reviewer Certification and Access Program) and ALL planning reviewers shall be nominated and approved in the planner database. Other ATR reviewers must be certified to be competent within their subject matter expertise for the review being completed and part of their specific charge is to review that appropriate models are used and were checked on a project.

The ATR lead and RMO (Review Managing Organization) are charged with ensuring that all technical disciplines relevant to the project are included in the review. The ATR team lead will be from outside the home MSC. Targeted ATR might be performed on the economic spreadsheet prior to the scheduled ATR. The PM should coordinate with the RMO on the need for targeted ATR. If significant life safety issues are involved in a study or project a safety assurance review should be conducted during ATR. The estimated cost for each ATR is \$20-25K.

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Table 2 provides the schedules for DQC and ATR reviews embedded into the larger schedule. The validation report and SEA will undergo two reviews, DQC/ATR of the draft/final report prior to the CCB and Policy Review of the draft/final report after the CCB. The specific expertise required for both the DQC, and ATR teams are identified in Table 2.

**Cost Engineering Review.** All decision documents will be coordinated with the Cost Engineering Mandatory Center of Expertise (MCX). The MCX will provide the cost engineering expertise needed on the ATR team and will provide certification of cost estimates. The district will provide quality control for the cost products developed by the NFS and is responsible for coordinating with the MCX for the draft/final report ATRs and Cost Certification.

**Policy and Legal Compliance Review (P&LCR).** All decision documents will be reviewed for compliance with law and policy. These reviews culminate in determinations that report recommendations 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.

**Public Review.** The home District will post the RMO endorsed and MSC approved RP on the District’s public website. Internet posting of the RP provides opportunity for the public to comment on that document. It is not considered a formal comment period, and there is no set timeframe for public comment. The PDT should consider any comments received and determine if RP revisions are necessary.

**6 REVIEW SCHEDULE**

**Table 2 - Review Schedule**

PDT / Chief's Review Start - Comments Due	24-Jul-23	3	27-Jul-23
PDT responses to PDT / Chief's comments, along with Report revisions based on comments	28-Jul-23	3	02-Aug-23
PDT / Chief's Back check	03-Aug-23	2	07-Aug-23
DQC / Legal Review Start - Comments Due (DRAFT / FINAL )	08-Aug-23	10	22-Aug-23
DQC / Legal Kickoff Meeting	08-Aug-23	10	22-Aug-23
PDT responses to DQC / Legal comments, along with Report revisions based on comments	23-Aug-23	11	08-Sep-23
Pause	11-Sep-23	18	05-Oct-23
PDT responses to DQC / Legal comments, along with Report revisions based on comments	06-Oct-23	22	08-Nov-23
DQC / Legal backcheck	09-Nov-23	5	17-Nov-23
DQC / Legal Certification	20-Nov-23	2	22-Nov-23
DRAFT Public & Policy Review Start - Comments Due	27-Nov-23	21	09-Jan-24
DRAFT ATR / Cost Cert Review Start - Comments Due	27-Nov-23	10	11-Dec-23
ATR / Policy / Review IPR (w/HQ mix)	27-Nov-23	5	04-Dec-23
PDT responses to ATR comments, along with Report revisions based on comments	12-Dec-23	10	09-Jan-24
ATR backcheck	10-Jan-24	10	25-Jan-24
ATR Report, Certification & Statement of Technical Review	26-Jan-24	5	02-Feb-24
PDT responses to Policy comments, along with Report revisions based on comments	10-Jan-24	10	25-Jan-24
Policy backcheck	26-Jan-24	5	02-Feb-24
DRAFT PGM	05-Feb-24	3	08-Feb-24
SWD CCB	09-Feb-24	10	26-Feb-24
HQ ▶ Engineering Tech Review ▶ On Board ▶ CCB Meeting	27-Feb-24	20	26-Mar-24
PDT development of final report (If any work needs to be redone / updated that changes costs)	27-Mar-24	10	10-Apr-24
DRAFT/FINAL Policy Review Start - Comments Due	11-Apr-24	20	09-May-24
PDT responses to Policy comments, along with Report revisions based on comments	10-May-24	10	24-May-24
Policy backcheck	28-May-24	10	11-Jun-24
Final PGM, Policy Guidance Memorandum	12-Jun-24	5	20-Jun-24
PACR Approval MSC	21-Jun-24	25	30-Jul-24



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Table 3 - DQC & ATR Teams

Discipline / Role	Expertise	DQC	ATR
DQC Team Lead	Extensive experience preparing Civil Works decision documents and leading DQC. The lead may serve as a DQC reviewer for a specific discipline (planning, economics, environmental, etc.).	Yes	No
ATR Team Lead	Professional with extensive experience preparing Civil Works decision documents and conducting ATR. Skills to manage a virtual team through an ATR. The lead may serve on the ATR team for a specific discipline (such as planning, economics, or environmental work).	No	Yes
Planning	Skilled water resources planner knowledgeable in complex planning investigations and the application of SMART principle to problem solving.	Yes	Yes
Economics	Experience with applying theory, methods and tools used in the economic evaluation of water resources projects for DDN studies.	Yes	Yes
Environmental Resources	Experience with environmental evaluation and compliance requirements, national environmental laws and statutes, applicable Executive Orders, and other planning requirements for DDN studies.	Yes	Yes
Cultural Resources	Experience with cultural evaluation and compliance requirements, national environmental laws and statutes, applicable Executive Orders, and other planning requirements for DDN studies.	Yes	Yes
Coastal H&H	Engineer with experience applying hydrologic & hydraulic engineering principles and analytic / technical tools to project planning, design, construction, and operation for DDN studies.	Yes	Yes
Geotechnical Engineering	Engineer with experience applying geotechnical engineering principles and analytic / technical tools to project planning, design, construction, and operation for DDN studies.	Yes	Yes
Cost Engineering	Experience using cost estimation software; working knowledge of water resource project construction; capable of making professional determinations using experience for DDN studies.	Yes	Yes
Construction / Operations	Extensive construction management experience and operations work for DDN studies.	Yes	Yes
Real Estate	Experience developing Real Estate Plans and experience in real estate fee/easement acquisition and residential/business relocations for Federal and/or Federally Assisted Programs for implementation of Civil Works projects for DDN studies.	Yes	Yes
Climate Preparedness and Resilience (ATR Only)	A member of the Climate Preparedness and Resiliency Community of Practice knowledgeable of coastal hydrology climate change assessment policy and practice for DDN studies.	No	Yes

## 7 DISTRICT QUALITY CONTROL

The home district shall manage DQC and will appoint a DQC Lead to manage the local review (see ER 1165-2-217, section 8.a.1). The DQC Lead will prepare a DQC Work Plan and provide it to the review team prior to starting DQC reviews. Table 3 identifies the required expertise for the DQC team. Prior to DQC, the full PDT will review the feasibility report for accuracy and completeness.

Potential work in-kind products provided by the nonfederal sponsor will be submitted to the PDT and internally/peer-reviewed for applicability to study. If applicable, it then will be reviewed in Draft Report technical and policy reviews, in accordance with Corps' Policy compliance.

**Documentation of DQC.** Quality Control should be performed continuously throughout the study. A specific certification of DQC completion is required at the draft and final report stages. For this Validation Report, one DQC will be conducted on the draft report prior to the CCBs. DQC Certification is signed by the PDT and DQC Review Team and confirms that the DQC was sufficient and documented. Documentation of DQC should follow the District Quality Manual and the MSC Quality Management Plan. An example DQC Certification statement is provided in ER 1165-2-217, Appendix D, on page 81.

Dr. Checks documentation of completed DQC will be provided to the MSC, RMO and ATR Team leader prior to initiating an ATR or public review. A legal certification will be supplied to the MSC prior to the release of the SEA for public review. The ATR team will examine DQC records and comment in the ATR report on the adequacy of the DQC effort. Missing or inadequate DQC documentation can result in delays to the start of other reviews (see ER 1165-2-217, section 5).

## 8 AGENCY TECHNICAL REVIEW

The ATR will assess whether the analyses are technically correct and comply with guidance, and that the reports explain the analyses and results in a clear manner. The RMO manages ATR. The review is conducted by an ATR Team whose members are certified to perform reviews. Lists of certified reviewers are maintained by the various technical Communities of Practice (see ER 1165-2-217, section 5). Table 3 identifies the disciplines and required expertise for this ATR Team. Note, some reviewers can cover more than one discipline for their ATR review, such as coastal engineering and climate preparedness, risk analysis and economics, or other possible combinations. If deemed justified, the Project Manager will request the appropriate ATR specialist to conduct ATR on a section of the report before submittal of the final report (e.g., Economics).

**Documentation of ATR.** DrChecks will be used to document all ATR comments, responses and resolutions. Comments should be limited to those needed to ensure product adequacy. If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team for resolution using the ER 1165-2-217 issue resolution process. Concerns can be closed in DrChecks by noting the concern has been elevated for resolution. The ATR Lead will prepare a Statement of Technical Review (see ER 1165-2-217, Section 5), for the draft and final reports, certifying that review issues have been resolved or elevated. ATR may be certified when all concerns are resolved or referred to the vertical team and the ATR documentation is complete.

### 8.1 ATR Consideration at Review:

**PACR (Validation Report) Review** – The review is to ensure the post authorization change documentation is compliant with Section 2 References and that the changes are within the

Chief’s discretionary authority. This PACR is a validation report and includes a Supplemental EA for public review.

The PACR will include drafts of

- Validation Report
- Appendix A - Engineering
- Appendix B - Economics
- Appendix C – Real Estate
- Appendix D – Environmental and Cultural Resources

## 9 MODEL CERTIFICATION OR 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 are any models and analytical tools used 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 a planning product. The selection and application of the model and the input and output data are the responsibility of the users and are subject to DQC, ATR, and IEPR.

Table 4 lists the proposed planning and Table 5 lists the engineering models for the Validation Report.

**Table 4: Planning Models**

<b>Model Name and Version</b>	<b>Model Description and How it Will be Used in Study</b>	<b>Certification/Approval</b>
SWG Economic Benefits Spreadsheet	The spreadsheet model uses vessel operating costs (VOCs) and loading practices to calculate a savings per ton at each channel deepening alternative. The savings per ton at a given channel depth is applied to the benefiting tonnage forecast for each out-year in the period of analysis to calculate a present value of benefits. Then, the spreadsheet annualizes the benefits and costs, including interest during construction (IDC), to calculate net benefits and a benefit to cost ratio (BCR).	Approved by DDN-PCX in June 2016 for use for the GHCE Study & for the PACR. PDT will contact SWD Lead Economist to discuss need for targeted ATR of model.



Table 5: Engineering Models

Model Name and Version	Model Description and How it Will be Used in Study	Certification/Approval
Corps Shoaling Analysis Tool (CSAT)	The CSAT calculates channel shoaling volumes using historical channel surveys and uses the shoaling rates to predict future dredging volumes.	Product of USACE's Coastal Inlets Research Program.
GeoStudio's SLOPE/W	designed and developed to be a general software tool for the stability analysis of earth structures using general limit equilibrium formulations to determine interslice forces in the method of slices. The GLE formulation is based on two factors of safety equations and allows for a range of interslice shear-normal force conditions. One equation gives the factor of safety with respect to moment equilibrium (Fm) while the other equation gives the factor of safety with respect to horizontal force equilibrium (Ff)."	Industry standard for slope stability analyses

## 10 POLICY AND LEGAL REVIEW

Policy and legal compliance reviews for draft and final planning decision documents are delegated to the MSC (see Director's Policy Memorandum 2018-05, paragraph 9).

### 10.1 Policy Review

The policy review team is identified through the collaboration of the MSC Chief of Planning and Policy and the HQUSACE Chief of the Office of Water Project Review. The makeup of the Policy Review team will be drawn from Headquarters (HQUSACE), the MSC, the Planning Centers of Expertise, and other review resources as needed.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents. These engagements may include In-Progress Reviews, Issue Resolution Conferences or other vertical team meetings plus the milestone events.
- The input from the Policy Review team should be documented in a Memorandum for the Record (MFR) produced for each engagement with the team. The MFR should be distributed to all meeting participants.
- Teams may choose to capture some of the policy review input in a risk register if appropriate. These items should be highlighted at future meetings until the issues are resolved. Any key decisions on how to address risk or other considerations should be documented in an MFR.

## 10.2 Legal Review

Representatives from the Office of Counsel will be assigned to participate in reviews. Members may participate from the District, MSC and HQUSACE. The MSC Chief of Planning and Policy will coordinate membership and participation with the office chiefs.

- In some cases, legal review input may be captured in the MFR for the particular meeting or milestone. In other cases, a separate legal memorandum may be used to document the input from the Office of Counsel.

Each participating Office of Counsel will determine how to document legal review input.

## 10.3 Public Comment

This Review Plan will be posted on the district's website. Public comments on the scope of reviews, technical disciplines involved, schedules and other considerations may be submitted to the district for consideration. If the comments result in a change to the Review Plan, an updated plan will be posted on the district's website.

## 11 DOCUMENTS DISTRIBUTED OUTSIDE THE GOVERNMENT

For information distributed for review to non-governmental organizations, the following disclaimer shall be placed on documents:

***“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.”***

## 12 INDEPENDENT EXTERNAL PEER REVIEW (IEPR) AND SAFETY ASSURANCE REVIEW (SAR) ASSESSMENT

Authority: Section 2034 of the Water Resources Development Act (WRDA) of 2007 (P.L. 10-114), as amended (33 U.S.C. 2343) (Section 2034), includes requirements for review by external experts. Section 2034 requires independent peer review, known as IEPR, of project decision documents under certain conditions.

Applicability: IEPR and SAR are of critical importance for those project study reports, including supporting work products, where there is a significant federal investment, significant controversy, significant life risk, or due to a request by the Governor of an affected State. However, studies will also undergo IEPR where a risk-informed decision shows the study would significantly benefit from an external peer review.

Mandatory Decision of Conducting IEPR: The criteria for when to conduct IEPR is described in Chapter 6, Section 6.4 of ER 1165-2-217 Water Resources Policies and Authorities CIVIL WORKS REVIEW POLICY dated 1 May 2021.

- 6.4.1 When the estimated total cost of the project, including mitigation costs, is greater than \$200 million.
- 6.4.2 When the Governor of an affected State requests a peer review by independent experts.
- 6.4.3 When the Chief of Engineers determines the project study is controversial due to significant public dispute over the size, nature or effects of the project or the economic or environmental costs or benefits of the project.

The Galveston District's Chief of Engineering and Construction Division has determined that IEPR is not required for the HGNC Galveston Channel Extension (P2 Number: 401250) for the following reasons:

1. The estimated total cost of the project, including mitigation costs, is less than \$200 million.
2. The Governor of Texas has not requested a peer review by independent experts.
3. The Chief of Engineers has not determined the project study is controversial due to significant public dispute over the size, nature or effects of the project or the economic or environmental costs or benefits of the project.

The criteria for determining whether a project should undergo a SAR is outlined in Chapter 7, Section 7.4 of ER 1165-2-217 and is keyed upon the risk of "significant life loss". The evaluation of this risk considers a variety of factors such as a significant threat to human life, use of innovative materials or techniques, and if 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.

The Galveston District's Chief of Engineering and Construction Division has determined that a SAR is not required for the HGNC Galveston Channel Extension (P2 Number: 401250) because the project presents low risk to life loss since it is a harbor dredging project that does not utilize innovative materials, is not complex, and utilizes standard designs and prevailing construction techniques.

### **13 REVIEW PLAN APPROVAL AND UPDATES**

The Southwestern Division Commander has delegated responsibility for approving this Review Plan to the SWD Programs Chief. The SWD Programs Chief'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 as modified by the MSP. Like the PMP, the Review Plan is a living document and may change as the study progresses and the MSP is finalized. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC 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 following the process used for initially approving the plan. The latest version of the Review Plan, along with the Program Chief's 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.

**ATTACHMENT 1: TEAM ROSTERS**

**PROJECT DELIVERY TEAM**

<b>Name</b>	<b>Discipline</b>	<b>Office</b>	<b>Phone Number</b>
[REDACTED]	Project Management	CESWG-PMJ	(409) 741-5764
[REDACTED]	Planning	CESWF-PER-PF	(918) 629-7031
[REDACTED]	Economics	CESWF-PEP-E	(817) 886-1663
[REDACTED]	Environmental Resources	CESWF-PEE-C	(409) 370-0624
[REDACTED]	Cultural Resources	CESWF-PEC-TN	(409) 766-3878
[REDACTED]	Coastal H&H	CESWG-EC-HB	(409) 766-3190
[REDACTED]	Cost Engineering	CESWG-ECE-P	(409) 766-3053
[REDACTED]	Civil Engineering	CESWG-ECE	(409) 766-3832
[REDACTED]	Geotechnical Engineering	CESWG-ECE-S	(409) 766-6326
[REDACTED]	Operations	CESWG-ODN	(832) 373-8940
[REDACTED]	Real Estate	CESWG-RES	(409) 766-3146

**DISTRICT QUALITY CONTROL TEAM**

<b>Name</b>	<b>Discipline</b>	<b>Office</b>	<b>Phone Number</b>
DQC Lead [REDACTED] [REDACTED]	Planning	CESWF-PEP-P	(313) 600-2338
[REDACTED]	Economics	CENAE-PDP	(978) 318-8694
[REDACTED]	Environmental Resources	CESWF-PEC-TN	(817) 886-1720
[REDACTED]	Cultural Resources	CESWF-PEC-TN	(918) 669-7661
[REDACTED]	Coastal H&H	CESWG-ECH	(409) 766-3899
[REDACTED]	Cost Engineering	CESWG-ECE-P	(409) 766-3092

REVIEW PLAN - HGNC GALVESTON CHANNEL EXTENSION - NOVEMBER 2023

Name	Discipline	Office	Phone Number
[REDACTED]	Geotechnical Engineering	CESWG-ECE-S	(409) 766-6335
[REDACTED]	Construction/ Operations	CESWG-ODN	(409) 766-3058
[REDACTED]	Real Estate	CESWG-RE-S	(409) 766-3106
[REDACTED]	Climate Change	CESWG-EC-HB	(409) 766-6383

AGENCY TECHNICAL REVIEW TEAM

Name	Discipline	Office	Phone Number
TBD	Planning		
TBD	Economics		
TBD	Environmental Resources		
TBD	Cultural Resources		
TBD	Coastal H&H		
[REDACTED]	Cost Engineering	NWW-ECE	(509)-527-7585
TBD	Geotechnical Engineering		
TBD	Construction/ Operations		
TBD	Real Estate		
TBD	Climate Preparedness and Resilience		

VERTICAL TEAM

Name	Discipline	Office	Phone Number
[REDACTED]	Chief, Planning & Policy	CESWD-PDP	
[REDACTED]	Quality Assurance/SWD POC	CESWD-PDP	(469) 487-7020
[REDACTED]	SWD-RIT	CECW-SWD	(202) 761-0297
[REDACTED]	Supplemental Programs	CESWD-PDC	(469) 487-7098

POLICY AND LEGAL COMPLIANCE REVIEW TEAM

<b>Name</b>	<b>Discipline</b>	<b>Office</b>	<b>Phone Number</b>
██████████	Review Manager	CESWD-PDP	(469) 487-7045
██████████	Planning	CESWD-PDP	469-216-9809
██████████	Economics	CESWD-PDP	(469) 487-7065
██████████	Environmental / Cultural Resources	CESWD-PDP	(469) 487-7045
██████████	H&H / Civil	CESWD-RBT	(469) 487-7073
██████████	Independent H&H Product Review Plan Manager	CESWD-RBT	(469) 487-7096
██████████	Civil / Geotech Engineering	CESWD-RBT	(918) 669-7148
██████████	Operations	CESWD-PDO	(972) 571-0706
██████████	Real Estate	CESWD-PDR	(469) 487-7046
██████████	Office of Counsel	CECC-SWD	(817) 886-1142

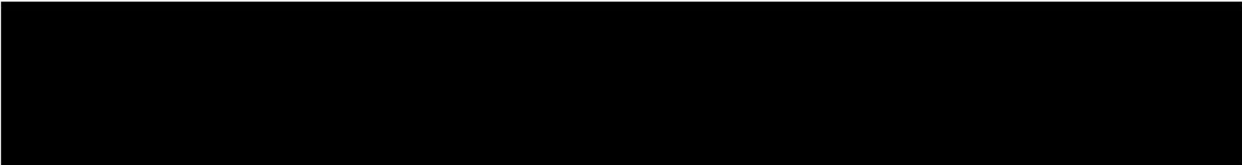
## ATTACHMENT 2: DISTRICT APPROVAL

As the Galveston District's Chief of Engineering and Construction, I confirm that that::

- The suite of engineering numerical modeling tools selected for use or to be developed specifically for the study, along with their approval/certification or validation requirements, and an update of these modeling efforts within the project delivery schedule have been identified.
- Potential significant engineering and planning issues associated with numerical modeling and a path to resolution for each have been identified.
- Confirm the experience and capability of those staff running the certified and approved models are appropriate for the level of complexity of the study.
- That engineering DQC reviewers will have the experience and capability to review these models and confirm that any ATR team member will be certified under CERCAP for the technical area where models are to be used.

As the Regional Planning and Environmental Center's Chief of Planning Branch, I confirm that that:

- The suite of planning modeling tools selected for use or to be developed specifically for the study, along with their approval/certification or validation requirements, and an update of these modeling efforts within the project delivery schedule have been identified.
- That economic DQC reviewers will have the experience and capability to review these models and confirm that any ATR team member will be certified under the Planner Database for the technical area where models are to be used.



SWG Chief, Engineering and Construction Division

RPEC Chief, Planning Branch



