



**US Army Corps
of Engineers** ®
Galveston District

Appendix F

Coastal Zone Management Act Compliance

for

**Coastal Texas Protection and Restoration
Feasibility Study**

August 2021



TEXAS GENERAL LAND OFFICE
GEORGE P. BUSH, COMMISSIONER

January 28, 2021

Amanda M. McGuire
U.S Army Corps of Engineers – Galveston District
Environmental Branch
P.O. Box 1229
Galveston, Texas 77553-1229
Via e-mail: Amanda.M.McGuire@usace.army.mil

**Re: Coastal Texas Protection and Restoration Feasibility Study
Texas CMP#: 21-1079-F2**

Dear Ms. McGuire:

The U.S. Army Corps of Engineers, Galveston District (USACE), in partnership with the Texas General Land Office (GLO), have undertaken the Coastal Texas Protection and Restoration Feasibility Study (the Study), which is examining coastal storm risk management (CSRМ) and ecosystem restoration (ER) opportunities within 18 counties of the Texas Gulf coast. The recommended plan includes a combination of CSRМ and ER that together function as a system to reduce the risk of coastal damages to natural and man-made infrastructure and to restore degraded coastal ecosystems. The recommended plan is divided into three groups: a Coastwide ER plan, a lower Texas coast CSRМ plan, and an upper Texas coast CSRМ plan.

The Coastwide ER projects under review are: Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection, West Bay and Brazoria GIWW Shoreline Protection, Keller Bay Restoration, Powderhorn Shoreline Protection and Wetland Restoration, East Matagorda Bay Shoreline Protection, Redfish Bay Protection and Enhancement, and Port Mansfield Channel, Island Rookery, and Hydrologic Restoration. The lower Texas coast CSRМ project under review is the South Padre Island Beach Nourishment project.

On October 30, 2020, the USACE published the Draft Feasibility Report and Draft Environmental Impact Statement. On the same date, the USACE submitted a consistency determination to the GLO, as required for proposed federal activities in the state's coastal zone. USACE's Consistency Determination asserted that the proposed activities were consistent with the goals and policies of the Texas Coastal Management Program (TCMP). Upon being deemed administratively complete the GLO posted the matter for public notice and comment in the Texas Register.

After close coordination between USACE and GLO staff, GLO can confirm that at this feasibility phase, both the CSRМ and ER projects are generally consistent with the TCMP. Because the project is at the Feasibility Study stage, detailed information about project design and construction, and the potential effects on coastal resources, has not yet been generated. Therefore, TCMP's concurrence with your consistency

determination has been evaluated appropriately under the provisions of NOAA's federal consistency regulations for phased consistencies per 15 CFR 930.36(d).

Consistency determinations, broadly, are prepared when sufficient information has been developed to reasonably determine the consistency of the activity with the State's approved coastal management plan. The consistency determination must include a detailed description of the proposed activity and foreseeable coastal effects, and comprehensive data and information sufficient to support consistency determination. When this level of detail is not available, the phased consistency provides the State agreement that the federal activity is consistent at the early stage of planning, while anticipating that additional information and decisions will be developed in later phases, such as Preconstruction Engineering and Design, and will be subject to further consistency review. The phased consistency affords the USACE and the State of Texas the opportunity to work towards full consistency as project design proceeds.

Each specific measure in the recommended plan will have details of design and construction which must be determined before their coastal effects can be fully evaluated. Also, over the period of implementation adaptive management responses to changes in technology, varied site conditions and project performance might result in refinements to the plan measures. The phased consistency will help expedite future efforts to evaluate coastal effects and ensure compliance with the TCMP.

GLO has collaborated with the USACE on numerous projects along the Texas coast and finds no reason for concern that would prevent implementation of the recommended study or any feature of the plan. The Galveston District has successfully completed numerous consistency determinations for activities in the Texas coastal zone; our experience suggests that the consistency requirements for later phases of this project will be achieved through the usual project development process, and will be similar in nature to that of prior USACE projects in Texas.

Through continued close collaboration between USACE and GLO staff to ensure continued consistency with the TCMP, GLO anticipates concurring with the full consistency determination for each of the CSR and ER projects. Proceeding by way of the phased consistency determination assures that both our agencies can be successful in meeting our missions.

I look forward to continuing a close collaboration between our organizations. If you have any questions please contact me at (361) 886-1630 or at Federal.Consistency@glo.texas.gov.

Sincerely,



Jesse Solis, Jr.
Federal Consistency – Coastal Resources
Texas General Land Office

Cc: Jeff Pinsky, USACE



D DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

October 30, 2020

REPLY TO THE ATTENTION OF
CESWF-PEE-C

Ms. Allison Buchtien
Texas General Land Office
Coastal Permit Service Center TAMU-Galveston
P.O. Box 1675
Galveston, TX 77553-1675

Dear Ms. Buchtien,

The U.S. Army Corps of Engineers (USACE) Galveston District, in partnership with the Texas General Land Office, is conducting the Coastal Texas Protection and Restoration Feasibility Study. As part of the study process, a recommended plan has been selected. The process of arriving at the recommended plan is documented in the Coastal Texas Protection and Restoration Feasibility Study Feasibility Report and impacts from alternatives considered are documented in the Draft Environmental Impact Statement, both of which are available on the study website at:

<https://www.swg.usace.army.mil/Business-With-Us/Planning-Environmental-Branch/Documents-for-Public-Review/>.

The recommended plan includes a combination of Coastal Storm Risk Management (CSRM) and Ecosystem Restoration (ER) features that function as a system to reduce the risk of coastal damages to natural and man-made infrastructure and to restore degraded coastal ecosystems. CSRM features providing protection to the Galveston Bay area are part of the Galveston Bay Storm Surge Barrier System which consists of a system of beach and dune nourishment, seawall improvements, a ring levee, storm surge gates, and non-structural improvements. A second CSRM feature consisting of beach and dune nourishment and sediment management is proposed at South Padre Island. ER measures are proposed at eight locations along the coast and include restoration of 15.2 miles of bird rookery islands, 12.32 miles of oyster reef, 19.5 miles of beach and dune system, 2,052 acres of marsh, and 112,864.1 acres of hydrologic connection, as well as approximately 114 miles of breakwaters intended to protect existing habitat from erosion.

The Coastal Texas Study employs a tiered NEPA compliance approach, in accordance with the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500—1508, specifically 1502.20). Under this structure, all but one of the ER measures and the South Padre Island feature are considered actionable measures and have a complete NEPA analysis, while all other features will require future Tier Two environmental analysis prior to construction.

Pursuant to the Coastal Zone Management Act of 1972 (Public Law 92-583, 15 CFR §930.34(a)), the USACE has prepared a consistency determination report for the actionable measures (Enclosure). The report documents no adverse impacts to the 16 Coastal Natural Resource Areas (CNRAs), of which fourteen occur in the project area. Additionally, consistency with the nine enforceable policies that apply to this project has been demonstrated. The report also briefly reviews the potential adverse impacts to CNRAs from implementing the Tier 1 measures and if consistency can be demonstrated, but acknowledges there are impacts that need to be further investigated during future assessments.

The USACE has concluded that the actionable measures of the project complies with the Texas Coastal Management Program and will be conducted in a manner consistent with all rules and regulations of the program. Please accept this letter and enclosed report as a formal request to initiate the consistency review process of the actionable measures. Formal requests to initiate the consistency review process for the Tier 1 measures will come at a later date when refinements to those measures occur and when the impacts are more certain. Please note, this letter supersedes any previous letters requesting consultation and/or certification.

If you have any question or need additional information to conduct your review, please contact Mr. Jeff Pinsky, Biologist, Environmental Branch, Regional Planning and Environmental Center at (409) 766-3039 or Jeffery.F.Pinsky@usace.army.mil.

Sincerely,

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Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosure



D DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

October 30, 2020

REPLY TO THE ATTENTION OF
CESWF-PEE-C

Mr. Jesse Solis
Texas General Land Office
602 N. Staples St., Suite 240
Corpus Christi, TX 78401

Dear Mr. Solis,

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If you have any question or need additional information to conduct your review, please contact Mr. Jeff Pinsky, Biologist, Environmental Branch, Regional Planning and Environmental Center at (409) 766-3039 or Jeffery.F.Pinsky@usace.army.mil.

Sincerely,

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Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosure

Coastal Texas Protection and Ecosystem Restoration Feasibility Study

Texas Coastal Management Plan Consistency
Determination

Prepared by:

**United States Army Corps of Engineers
Regional Planning and Environmental Center**

October 2020

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INTRODUCTION

The U.S. Army Corps of Engineers, Galveston District (USACE), in partnership with the Texas General Land Office, have undertaken the Coastal Texas Protection and Restoration Feasibility Study (the Study), which is examining coastal storm risk management (CSRМ) and ecosystem restoration (ER) opportunities within 18 counties of the Texas Gulf coast (Figure 1). This Study seeks to develop a comprehensive plan along the Texas coast to mitigate coastal erosion, relative sea level rise (RSLR), coastal storm surge, habitat loss, and water quality degradation.

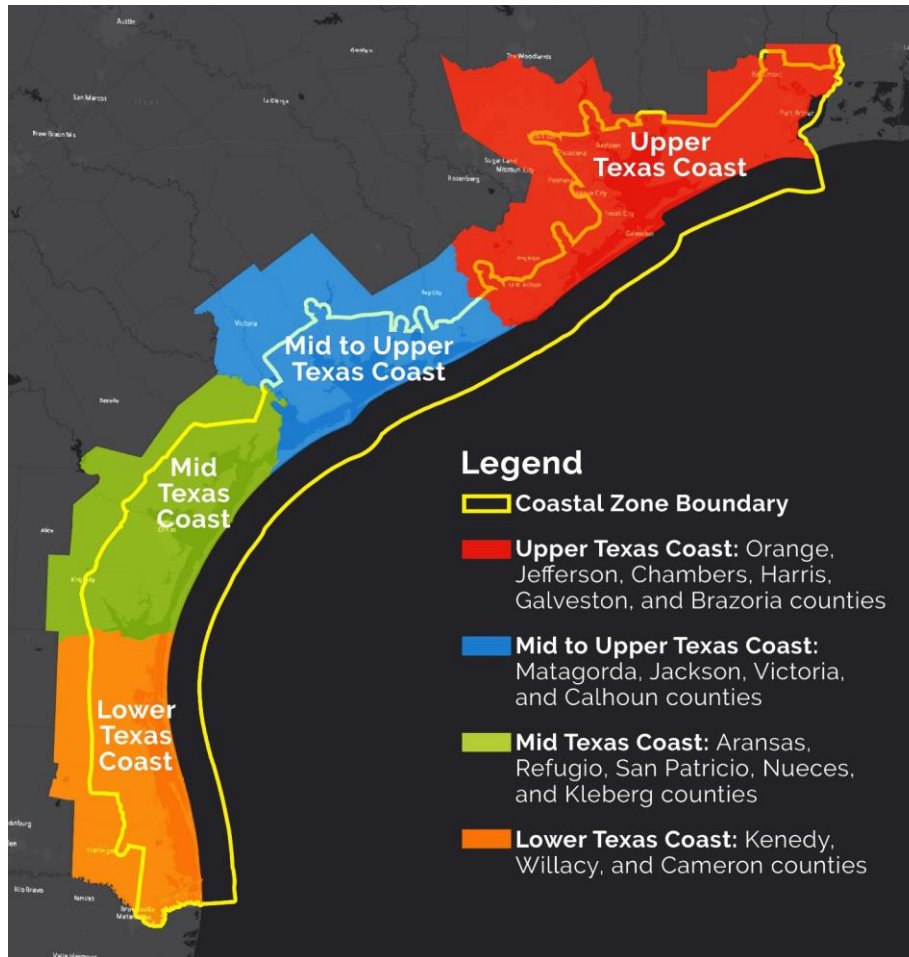


Figure 1. Coastal Texas Study Area

Currently, the Coastal Texas Study has completed the Agency Decision Milestone (ADM) meeting phase of the USACE Specific, Measurable, Attainable, Risk Informed, Timely (SMART) Civil Works planning process, where a plan has been recommended by the USACE vertical chain of command. At this stage of the planning, the major components of the plan have been identified and evaluated at a higher level of analysis. Consistent with USACE policy in Planning Bulletin PB 2017-01, there is a certain level of uncertainty expected in the size and make-up of the RP, and other plans identified from the suite of alternatives analyzed in this initial phase, including the National Economic Development (NED) Plan, or a variant preferred by the non-Federal sponsor. As such, the final size of the measures (width, length, etc.), and location

presented in this Consistency Assessment may change in the next planning phase. These changes can affect the habitat impacted. Because of the conservative nature of economic and engineering assumptions used during the initial planning of the RP, it is anticipated that the design of proposed structures will result in equal or lesser environmental impacts.

On March 31, 2016, the U.S. Army Corps of Engineers (USACE), Galveston District published a Notice of Intent (NOI) in the Federal Register (Volume 81, Number 62, 18601) declaring its intent to prepare an EIS to determine the feasibility of implementing the Coastal Texas Study. Because of the uncertainty and complexity of a number of the potential solutions to the problems, the Study employs a tiered NEPA compliance approach, in accordance with the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500—1508, specifically 1502.20). Under this structure, rather than preparing a single definitive EIS as the basis for approving the entire project, the USACE will conduct two or more rounds – or “tiers” – of environmental review. For projects as large and complex as the Study, this approach has been found to better support disclosure of potential environmental impacts for the entire project at the initial phase. Subsequent NEPA documents are then able to present more thorough assessments of impacts and mitigation need as the proposed solutions are refined and more detailed information becomes available in future phases of the project. This tiered approach also provides for a timely response to issues that arise from specific, proposed actions and supports forward progress toward completion of the overall study.

A Tier One assessment analyzes the project on a broad scale, while taking into account the full range of potential effects to both the human and natural environments from potentially implementing proposed solutions. The purpose of the Tier One EIS is to present the information considered to selected a preferred alternative, describe the comprehensive list of measures, and identify data gaps and future plans to supplement the data needed to better understand the direct, indirect, and cumulative effects of the proposed solutions.

Once refinements and additional information is gathered, USACE will shift to a Tier Two assessment, which involves preparation of one or more additional NEPA documents (either an EIS or Environmental Assessment) that build off the original EIS to examine individual components of the Recommended Plan in greater detail. Whether an EIS or EA is developed will be dependent on the significance of impacts anticipated from the action. In either situation, Tier Two assessments will comply with CEQ Regulations, including providing for additional public review periods and resource agency coordination. The Tier Two document would disclose site specific impacts to the proposed solution and identify the avoidance, minimization, and compensatory mitigation efforts to lessen adverse effects.

Recommended Plan

The Recommended Plan includes a combination of ER and CSRSM features that function as a system to reduce the risk of coastal storm damages to natural and built infrastructure and to restore degraded coastal ecosystems through a comprehensive approach employing multiple lines of defense. Focused on redundancy and robustness, the proposed system provides increased resiliency along the Bay and is adaptable to future conditions, including relative sea level change. The Recommended Plan can be broken into three groupings: a Coastwide ER plan, a lower Texas coast CSRSM plan, and an upper Texas coast CSRSM plan.

Coastwide ER Plan: A Coastwide ER plan was formulated to restore degraded ecosystems that buffer communities and industry on the Texas coast from erosion, subsidence, and storm losses. A variety of measures have been developed for the study area, including construction of breakwaters, marsh restoration, island restoration, oyster reef restoration and creation, dune and beach restoration, and hydrologic reconnections. Figure 2 shows the location of the ER measures and the following describes what each measure includes:

- Bolivar Peninsula and West Bay Gulf Intracoastal Waterway (GIWW) Shoreline and Island Protection (G-28):
 - Shoreline protection and restoration through the nourishment of 664 acres of eroding and degrading marshes and construction of 40.4 miles of breakwaters along unprotected segments of the GIWW on Bolivar Peninsula and along the north shore of West Bay,
 - Restoration of 326 acres (approximately 5 miles) of an island that protected the GIWW and mainland in West Bay, and
 - Addition of oyster cultch to encourage creation of 18.0 acres (26,280 linear feet) oyster reef on the bayside of the restored island in West Bay.
- Follets Island Gulf Beach and Dune Restoration (B-2)
 - Restoration of 10.1 miles (1,113.8 acres) of beach and dune complex on Gulf shorelines of Follets Island in Brazoria County.
- West Bay and Brazoria GIWW Shoreline Protection (B-12)
 - Shoreline protection and restoration through nourishment of 551 acres of eroding and degrading marshes and construction of about 40 miles breakwaters along unprotected segments of the GIWW in Brazoria County,
 - Construction of about 3.2 miles of rock breakwaters along western shorelines of West Bay and Cow Trap lakes, and
 - Addition of oyster cultch to encourage creation of 3,708 linear feet of oyster reef along the eastern shorelines of Oyster Lake.
- East Matagorda Bay Shoreline Protection (M-8)
 - Shoreline protection and restoration through the nourishment 236.5 acres of eroding and degrading marshes and construction of 12.4 miles of breakwaters along unprotected segments of the GIWW near Big Boggy National Wildlife Refuge (NWR) and eastward to the end of East Matagorda Bay,
 - Restoration of 96 acres (3.5 miles) of island that protects shorelines directly in front of Big Boggy NWR, and
 - Addition of oyster cultch to encourage creation of 3.7 miles of oyster reef along the bayside shorelines of the restored island.
- Keller Bay Restoration (CA-5)
 - Construction of 3.8 miles of rock breakwaters along the shorelines of Keller Bay in order to protect submerged aquatic vegetation (SAV), and
 - Construction of 2.3 miles of oyster reef along the western shorelines of Sand Point in Lavaca Bay by installation of reef balls in nearshore waters.

- Powderhorn Shoreline Protection and Wetland Restoration (CA-6)
 - Shoreline protection and restoration through the nourishment of 529 acres of eroding and degrading marshes and construction of 5.0 miles of breakwaters along shorelines fronting portions of Indianola, the Powderhorn Lake estuary, and Texas Parks and Wildlife Department (TPWD) Powderhorn Ranch.
- Redfish Bay Protection and Enhancement (SP-1)
 - Construction of 7.4 miles of rock breakwaters along the unprotected segments of the GIWW along the backside of Redfish Bay and on the bayside of the restored islands,
 - Restoration of 391.4 acres of islands including Dagger, Ransom, and Stedman islands in Redfish Bay, and
 - Addition of oyster cultch to encourage creation of 1.4 miles of oyster reef between the breakwaters and island complex to allow for additional protection of the Redfish Bay Complex and SAV.
- W-3 – Port Mansfield Channel, Island Rookery, and Hydrologic Restoration
 - Restoration of the hydrologic connection between Brazos Santiago Pass and the Port Mansfield Channel by dredging 6.9 miles of the Port Mansfield Channel, providing 112,864.1 acres of hydrologic restoration in the Lower Laguna Madre,
 - 9.5 miles of beach nourishment along the Gulf shoreline north of the Port Mansfield Channel using beach quality sand from the dredging of Port Mansfield Channel, and
 - Protection and restoration of Mansfield Island with construction of a 0.7 mile rock breakwater and placement of sediment from the Port Mansfield Channel to create 27.8 acres of island surface at an elevation of 7.5 feet (NAVD 88).

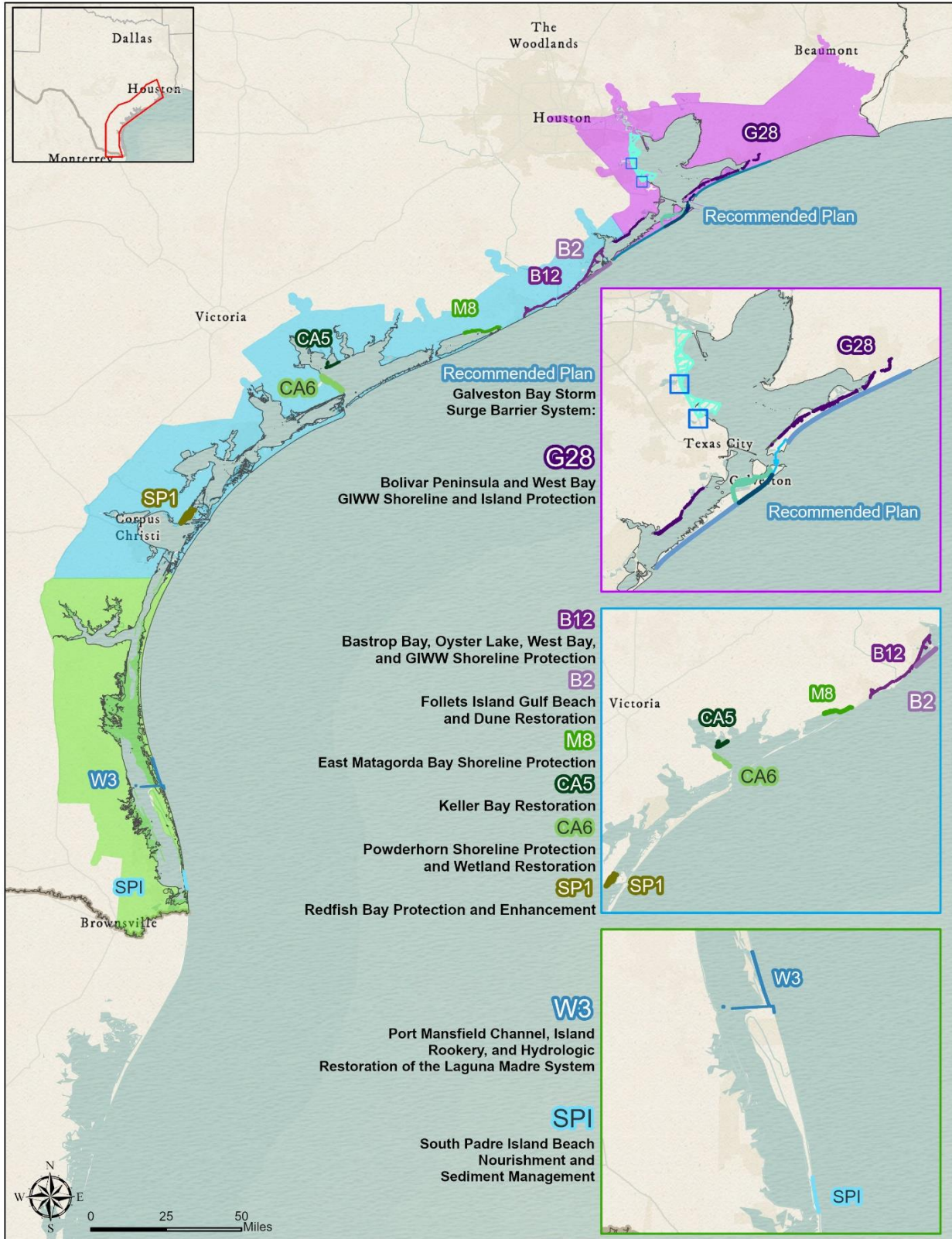


Figure 2. Coastwide ER Measures of the Recommended Plan

Lower Texas Coast Plan: The lower Texas coast component of the recommended plan includes 2.9 miles of beach nourishment at South Padre Island to be completed on a 10-year cycle for the authorized project life of 50 years (Figure 3).



Figure 3. South Padre Island CSR

Upper Texas Coast Plan: The upper Texas coast component of the recommended plan includes a multiple-lines-of-defense system known as the Galveston Bay Storm Surge Barrier System. The system is designed to provide a resilient, redundant, and robust solution to reduce risks to communities, industry, and natural ecosystems from coastal storm surge. The system includes a Gulf line of defense which separates the Galveston Bay system from the Gulf of Mexico to reduce storm surge volumes entering the Bay system. It also includes Bay defenses which enable the system to manage residual risk from waters already in Galveston Bay. Figure 4 shows the spatial relationship between the Gulf and Bay lines of defense. Measures which make up the system include:

- The Bolivar Roads Gate System, across Bolivar Roads, between Bolivar Peninsula and Galveston Island (Figure 5)
- 43 miles of beach and dune improvements on Bolivar Peninsula and West Galveston Island that work with the Bolivar Roads Gate System to form a continuous line of defense against Gulf of Mexico surge, preventing or reducing storm surge volumes that would enter the Bay system (Figure 5);
- Improvements to the existing 10-mile Seawall on Galveston Island to complete the continuous line of defense against Gulf surge (Figure 5);
- An 18-mile Galveston Ring Barrier System (GRBS) that impedes Bay waters from flooding neighborhoods, businesses, and critical health facilities within the City of Galveston;
- 2 surge gates on the west perimeter of Galveston Bay (at Clear Lake and Dickinson Bay) that reduce surge volumes that push into neighborhoods around the critical industrial facilities that line Galveston Bay; and
- Complementary non-structural measures, such as home elevations or floodproofing, to further reduce Bay-surge risks along the western perimeter of Galveston Bay.

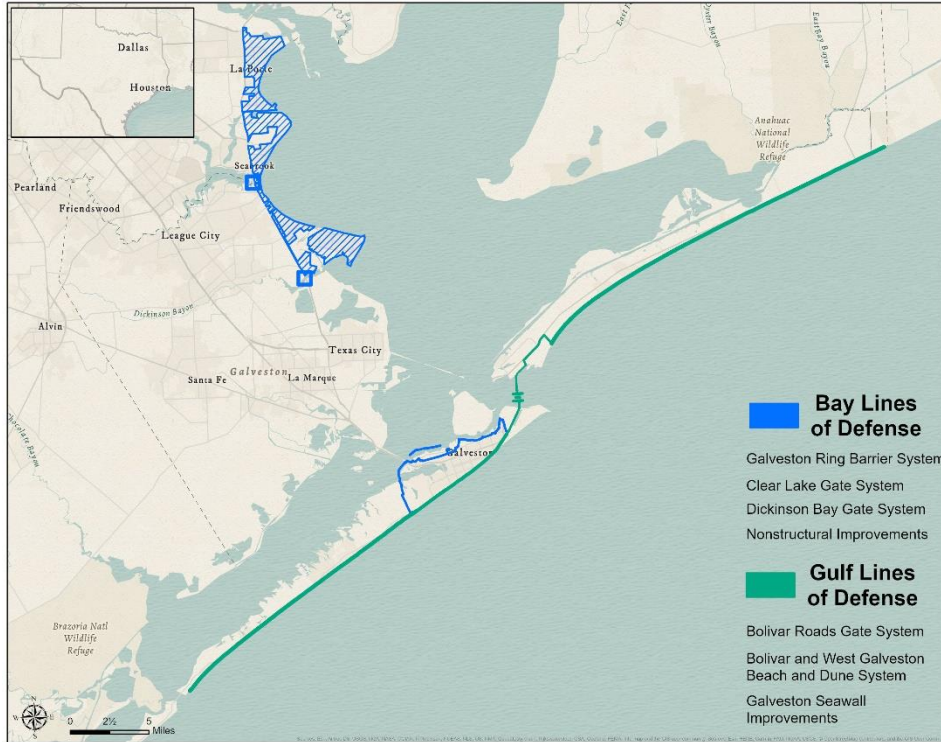


Figure 4. Galveston Bay Storm Surge System



Figure 5. Gulf Lines of Defense of the Galveston Bay Storm Surge System

Within the recommended plan, it has been determined that several features, identified as “actionable” measures, have a sufficient level of site-specific detail to fully understand the context and intensity of the anticipated impacts of the feature. Therefore, the EIS has incorporated a site-specific analysis for some features for which the measures would be fully compliant with NEPA and all environmental laws and regulations, including CZMA. Features identified as “Tier One” measures will require separate independent NEPA analysis once the impacts are fully understood, at which time a separate Consistency Determination would be sought for those measures. Table 1 shows which measures are actionable and which are not.

Table 1. Actionable and Tier One Measures of the Recommended Plan

Recommended Plan Component	Actionable	Tier One*
G-28 – Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection	X	
B-2 – Follets Island Gulf Beach and Dune Restoration		X
B-12 – West Bay and Brazoria GIWW Shoreline Protection	X	
CA-5 – Keller Bay Restoration	X	
CA-6 – Powderhorn Shoreline Protection and Wetland Restoration	X	
M-8 – East Matagorda Bay Shoreline Protection	X	
SP-1 – Redfish Bay Protection and Enhancement	X	
W-3 – Port Mansfield Channel, Island Rookery, and Hydrologic Restoration	X	
South Padre Island Beach Nourishment	X	
Bolivar Roads Gate System		X
Bolivar and West Galveston Beach and Dune System		X
Galveston Seawall Improvements		X
Galveston Ring Barrier System		X
Clear Lake Surge Gate		X
Dickinson Bay Surge Gate		X
Nonstructural Measures		X

* Requires additional NEPA analysis and CZMA consultation

CONSISTENCY WITH THE TEXAS COASTAL MANAGEMENT PROGRAM

This document analyzes components of the recommended plan identified as “actionable” for consistency with the policies of the Texas Coastal Management Program (TCMP). “Tier One” components have been only broadly and generally assessed and will be noted where applicable. In all but the Hydrologic Reconnection (W-3) measure, transportation to and placement of the dredged material in the restoration units and all associated restoration activities will be analyzed in this document for consistency with. Dredging is not assessed for these measures as they have been assessed in other feasibility reports, as part of the dredged material management plan or long-term operations and maintenance plans for the areas being dredged and dredging would occur whether or not this project is implemented. These documents have identified dredging and placement activities as consistent with the policies of the TCMP. The proposed activities for these measures would not include additional dredging needs greater than described in the applicable documents. For W-3, dredging will be assessed for consistency with the TCMP because this would be considered new work and not completed if this project is not implemented.

Impacts on Coastal Natural Resource Areas

Potential impacts to Coastal Natural Resource Areas (CNRAs) listed in 31 Texas Administrative Code (TAC) §501.3, and methods to minimize or avoid potential impacts, are discussed below. Two of the CNRAs would not be temporarily or permanently affected (negatively/adversely or beneficially) by project implementation including: Hard Substrate Surfaces and Coastal Historic Areas, due to the lack of the resource, as defined in §501.3, in the project area.

Waters of the Open Gulf of Mexico

Actionable Measures

W-3 and South Padre Island Beach Nourishment and Sediment Management would occur in or near waters of the open Gulf of Mexico. Placement of dredged material on the beach would increase the width of sacrificial land that would be subjected to erosion from wave energies. Loss of sediment from erosion would be transported through long-shore sediment transport and may temporarily increase turbidity; however, this would not be expected to exceed turbidity levels currently occurring as a result of wave energy erosion.

Tier One Measures

The Galveston Bay Storm Surge Barrier System and B-2 measures that target beach and dune restoration may use shoreface and offshore sediment sources for large-scale nourishment. Potential shoreface sources could include areas in front of Bolivar Peninsula, Galveston Island, and Follets Island; potential offshore sources include the Sabine and Heald banks. During dredging temporary decreases in water quality are expected due to the disturbance of sediment causing increased turbidity and lower Dissolved Oxygen (DO). Future assessments will further analyze the impacts of these actions on water of the open Gulf of Mexico.

Waters under Tidal Influence

Waters under tidal influence are defined as water in the state that is subject to tidal influence according to the Texas Commission on Environmental Quality (TCEQ) stream segment map, which includes coastal wetlands. All action areas are located in tidally influenced regions. Implementation of the project would result in minimal, temporary localized adverse impacts from dredging and placement activities. Temporary impacts include release of suspended solids and turbidity, both which lead to decreased water quality.

Actionable Measures

In the long-term, restoration activities, including South Padre Island Beach Nourishment and Sediment Management, would be beneficial to waters under tidal influence because proposed activities would restore form and function within the restoration unit, which should allow tidal energies to work as nature designed, including reducing subsidence, increasing sediment inputs into the system and creating nursery, foraging, and migrating habitat for a host of freshwater, marine, and terrestrial species, and creating a sustainable and resilient system.

Specifically for W-3, dredging of the Mansfield Channel, is anticipated to positively influence hydrosalinity within the Lower Laguna Madre by increasing water exchange with the Gulf thereby restoring estuarine conditions similar to what was present before the channel silted in. The change in hydrosalinity is expected to increase suitable habitat for a number of estuarine species and provide an overall lift to the estuarine communities.

Tier One Measures

The Galveston Bay Storm Surge Barrier CSR measure would have the following impacts to waters under tidal influence within Galveston Bay (Lackey and McAlpin 2020):

- Relatively minor amounts of vertical salinity stratification may result from the Storm Surge Barrier component of the recommended plan; however, minor amounts of vertical salinity stratification are present under the existing conditions.
- Modeling predicts a 2.4-5.7% tidal prism change across all of the stations in Galveston Bay and a tidal amplitude reduction of 0.01-0.02 meters (0.4-0.8 inch)
- Freshwater retention times would increase; due to increased freshwater retention times, average salinity is expected to decrease by no more than 2 parts per thousand (ppt), but on average 1 ppt.

B-2 would be expected to experience similar impacts to those described for the actionable measures.

Submerged Lands

Submerged lands are lands located under waters under tidal influence or under waters of the open Gulf of Mexico, without regard to whether the land is owned by the state or a person other than the state. The GLO shapefile for "State Submerged Lands" shows all open water areas of the bays, estuaries, navigation channels and Gulf of Mexico as having submerged lands.

Actionable Measures

Placement of dredged materials into marsh areas and on the beach or dune would not occur within submerged lands; however, the dredged material used to restore marshes and the shoreline may come from areas in which dredging activities could impact submerged lands; however, these impacts have already been assessed in other documents.

Placement of oyster reefs and breakwaters would permanently impact submerged lands by placing a material over the lands that was not previously there. However, constructing these types of ER measures, as well as the others in the recommended plan, have beneficial impacts by restoring degraded habitat, increasing the amount of suitable habitat, and protecting existing habitat that far outweigh any impacts to submerged lands.

Tier One Measures

Construction of the Galveston Bay Storm Surge Barrier System would result in areas of submerged lands being converted to impervious surface and the space used to construct the gate structures and other features.

Placement of dredged material on the beach at Follets Island (B-2) would not impact submerged lands because the work would be performed outside of submerged lands areas. However, borrow source areas for the dredged material would impact submerged lands as sediments would be dredged from areas classified as having submerged lands.

The impacts of constructing the system and dredging would be further described in future assessments.

Coastal Wetlands

Actionable Measures

Several ER measures are intended to restore degraded coastal wetlands and long-term positive impacts are anticipated. Short-term localized impacts are expected during marsh restoration activities as a result of increased turbidity, or thin-layer placement; however, the long-term beneficial impacts of restoring and protecting marshes far outweigh the short-term adverse impacts expected.

Tier One Measures

The Galveston Bay Storm Surge Barrier system may indirectly affect coastal wetlands by altering hydrosalinity gradients, tidal amplitude, and tidal prism (these changes would result in some loss of coastal wetlands). Habitat Evaluation Procedure (HEP) modeling was used to identify potential impacts to coastal wetlands in the form of degradation and loss. Mitigation has been tentatively identified to compensate for wetland loss to result in no net loss of wetlands.

Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) is defined as rooted aquatic vegetation growing in permanently inundated areas in estuarine and marine systems. Submerged aquatic vegetation exists within the marsh restoration units. SAV is present within or near a number of the action areas. Surveys would be completed prior during PED to determine the extent of SAV and ways to avoid, minimize and if necessary mitigate for SAV loss.

Actionable Measures

Construction of breakwaters and oyster reefs, in particular, are expected to protect existing SAV habitats and may encourage growth in other areas as a result of a reduction in wave energies and sediment inputs. Restoring the hydrologic connection at Port Mansfield would change the hydrosalinity gradient in Laguna Madre which is expected to improve the overall habitat of the estuary thereby increasing suitable habitat for SAV. Placement of dredged material to construct dune or nourish beaches would have no impact on SAV as the construction activities would occur outside of SAV habitat.

Tier One Measures

SAV may be removed by construction or indirectly impacted through changes in the water column during construction of the Galveston Bay Storm Surge Barrier System. Placement of dredged material to construct dune or nourish beaches as part of the B-2 components would have no impact on SAV as the construction activities would occur outside of SAV habitat. However, the borrow source for material has not been defined, so there is a potential for impacts to occur to SAV through removal of vegetation and decreased water quality. The impacts of implementing the Tier One measures on SAV will be further analyzed in future assessments.

Tidal Sand and Mud Flats

Actionable Measures

Placement of dredged material into marsh areas would impact some areas of tidal sand and mud flats. In general, these areas historically were not this habitat type but have developed as marshes degraded and were lost over time. Restoring marshes in these areas would result in a permanent loss of tidal sand and mud flats. However, other ER measures such as breakwater construction and oyster reef restoration would protect sand and mud flats from further erosion and subsequent loss that is anticipated under future sea level rise conditions. As well, island restoration would introduce additional tidal and/or mud flat habitats. In general, any loss anticipated would be offset by the benefits of the other restoration measures which work to preserve the flats.

Tier One Measures

Based on current designs, impacts to tidal sand or mud flats are not anticipated due to the lack of the habitat type in or near the action areas of the Tier One measures. Once more site specific designs are available, additional review would be completed.

Oyster Reefs

Actionable Measures

All actionable measures have avoided mapped oyster reefs; however, it is possible that unmapped oyster reefs exist in or along the alignment of some breakwaters, where islands would be restored, or in Port Mansfield. Prior to construction, oyster surveys would be completed to determine the presence or absence of oyster reefs and where possible, the alignment of the feature would be modified to avoid the oyster reef. If unavoidable, the extent of the impacts would be compared to the anticipated benefits of the ER feature. If a net loss is

expected, mitigation would be completed. Marsh restoration and beach nourishment would not be expected to impact any oyster reefs as these areas do not provide suitable habitat.

The recommended plan would encourage growth and establishment of oyster reefs through restoration of oyster reefs through placement of cultch and construction of reef balls. As well, placement of hardened breakwater structures which may encourage colonization. Establishment of oyster reefs would yield long-term benefits including increasing sources of larval oysters to promote general resiliency and sustainability.

Tier One Measures

Mapped oyster reefs were avoided with the Galveston Bay Storm Surge Barrier System CSR measure. Unmapped scattered oysters may occur the system component action area, such as within Offatts Bayou, Dickinson Bayou, and Clear Lake. Pre-construction surveys would identify any oyster reefs in or near the action area that could be either directly removed or indirectly impacted by water quality degradation. If losses are identified, mitigation would be undertaken to offset any losses.

Coastal Barriers

Coastal barriers is an undeveloped area on a barrier island, peninsula, or other protected areas in which certain development actions are not permitted. The entire coast has a number of coastal barrier System Units and Otherwise Protected Areas designated as part of the John H. Chafee Coastal Barrier Resources System (CBRS) by US Fish and Wildlife Service (USFWS). Table 2 shows which measures are located either wholly or partially within a CBRS area. CBRS areas are designated by the first letter of the state they are found in, followed by a number indicating which unit it is. If a letter follows the unit number, it is considered an Otherwise Protected Area. If no letter follows the unit number it is considered a System Unit. Coordination with USFWS is ongoing to ensure compliance with the Coastal Barrier Resource Act and to prevent adverse impacts, such as encouraging development, within the CBRS.

Table 2. Measures located wholly or partially within a Coastal Barrier Resource System area.

Measure	CBRS Units Affected
Actionable Measures	
G-28: Bolivar Peninsula and West Bay GIWW Shoreline and Island Protection	T02A and T03A
B-12: West Bay and Brazoria GIWW Shoreline Protection	T04, T05, and T06
W-3: Port Mansfield Channel, Island Rookery, and Hydrologic Restoration	T11
Tier One Measures	
B-2: Follets Island Gulf Beach and Dune Restoration	T04
Bolivar Peninsula Beach and Dune System	T02A and T03A
Bolivar Peninsula Tie-In feature for the Bolivar Roads Surge Barrier	T03A

Coastal Shore Areas

A coastal shore area is defined as an areas within 100 feet landward of the high water mark on submerged land.

Actionable Measures

Marsh restoration and beach nourishment actions may occur in some coastal shore areas. However, these areas would not be adversely impacted by project implementation because all restoration efforts seek to improve the form and function of the current coastal system. It is anticipated that the coastal shore areas would improve in form and function after construction is complete.

Tier One Measures

Implementation of the Galveston Bay Storm Surge Barrier System would result in some areas being construction in coastal shore areas. However, the overall purpose of the system is to mitigate storm surge and RSLC impacts to coastal shore areas. For B-2, the impacts would be similar to those described for the actionable measures.

Gulf Beaches

Gulf Beaches are defined as beaches bordering the Gulf of Mexico that is: (A) located inland from the mean low tide line to the natural line of vegetation bordering the seaward shore of the Gulf of Mexico or (B) part of a contiguous beach area to which the public has a right of use or easement continuously held by the public or acquired by the public by prescription, dedication, or estoppel.

Actionable Measures

The only actionable measure that would occur within an area defined as a gulf beach is W-3 which would seek to nourish 9.5 miles of beach. During construction, the beach would be temporarily unavailable for public use and experience a temporary decrease in quality (e.g. soil compaction, visibility of construction equipment and personnel, etc). In the long-term, beach nourishment would result in a beneficial increase in quality. The Kemp's Ridley Sea Turtle HEP model predicts that after nourishment, the restoration area would increase by 316 average annual habitat units (AAHUs). Benefits of nourishment include: a wider beach profile that allows for a gradual slope to mimic historic conditions, provide sacrificial sediment to eliminate adjacent wetland encroachment, and increase recreation opportunities; and, a dune which is expected to significantly reduce the amount of overwash into the wetlands under all but extreme conditions. The beach and dune system work in concert to protect adjacent wetlands and provide additional habitat to shore-dependent species, including three federally listed species (sea turtles, piping plovers, and red knot).

Tier One Measures

Each of the Tier One measures includes beach nourishment. The impacts described for the actionable measures would apply to these action areas as well. No other components are anticipated to alter gulf beaches.

Critical Dune Areas

Critical dune areas are defined as a protected sand dune complex on the Gulf shoreline within 1,000 feet of mean high tide designated by the land commissioner under Texas Natural Resource Code §63.121.

Actionable Measures

The only measures which would perform activities in or near a critical dune area is the beach nourishment and dune construction of W-3 and South Padre Island Beach Nourishment and Sediment Management, although currently both areas are nearly non-existent and provides minimal protection to the adjacent wetlands and development at best. The project involves construction and restoration of the dune, which would beneficially increase the value of the coastal system for the long-term by: significantly reducing the amount of overwash/saltwater intrusion into the wetlands under all but extreme conditions; absorb the impact and protect inland areas from high energy storms; act as a resilient barrier to wind and waves; and create habitat for shore-dependent species.

Tier One Measures

The only Tier One measures that would occur in critical dune areas would involve construction of dunes associated with B-2 and the dune construction component of the Galveston Bay Storm Surge Barrier System. The impacts described for the actionable measures would be expected to also be realized for the Tier One measures if they were implemented.

Special Hazard Areas

Special hazard areas are areas designated by the Administrator of the Federal Insurance Administration under the National Flood Insurance Act as having special flood, mudslide, and/or flood-related erosion hazards and shown on a Flood Hazard Boundary Map or Flood Insurance Rate Map as Zone A, AO, A1-30, AE, A99, AH, VO, V1-30, VE, V, M, or E. Most areas in the action areas are designated as within the 100-year coastal floodplain and have a V19 or A15 designation on the Federal Emergency Management Flood Maps.

Actionable Measures

Implementation of the actionable measures may ease the impacts of flooding under relative sea level change (RSLC) by increasing beach widths and dune heights, as well as constructing buffers such as breakwaters and oyster reefs which would attenuate storm surge and wave velocities. None of the actionable measures would be expected to induce development of special hazard areas.

The South Padre Island Beach Nourishment and Sediment Management actionable measure is specifically designed to reduce the risks of flooding to a reach of the South Padre Island community. Outyear nourishment cycles would provide continued risk reduction for the life of the project.

Tier One Measures

The Galveston Bay Storm Surge Barrier System is specifically designed to reduce the risks of flooding in coastal areas. It is not anticipated that the features would induce development since most of the areas benefiting from reduced risk are currently developed.

Critical Erosion Areas

Critical Erosion Areas are areas that are experiencing historical erosion, according to the most recently published data of the Bureau of Economic Geology (BEG) of The University of Texas at Austin that the commissioner finds to be a threat to:

- Public health, safety, or welfare;
- Public beach use or access;
- General recreation;
- Traffic safety;
- Public property or infrastructure;
- Private commercial or residential property;
- Fish or wildlife habitat; or
- An area of regional or national importance.

According to BEG data the Texas coast has an average rate of 4.1 feet per year from the 1930s to 2012, with shoreline rates of change greater on the upper Texas coast (from the mouth of the Colorado River to Sabine Pass) than those in the mid to lower Gulf Coast. The upper Texas coast retreat was calculated at 5.5 feet per year and the mid to lower coast retreated an average of 3.2 feet per year. However, there are many areas of the project areas that are experiencing more than 7-15 feet of erosion per year. Shoreline retreat is also a concern in the project areas along the GIWW where retreat averages 4 feet per year. Shoreline accretion has not been observed in any of the action areas where work would be performed.

Actionable Measures

Nourishment of the beach just north of Port Mansfield under W-3 would attempt to slow the rate of loss by nourishing approximately 9.5 miles of beach along the southern part of the Padre Island National Seashore. Kemp's Ridley Sea Turtle modeling predicts an increase in 316 AAHUs of shoreline, which indicates a higher value ecological community than under existing and future without project conditions.

Tier One Measure

Each of the Tier One measures includes beach nourishment. The impacts described for the actionable measures would apply to these action areas as well. No other components are anticipated to alter gulf beaches.

Coastal Preserves

A coastal preserve is defined as any land, including a park or wildlife management area, that is owned by the state and that is subject to Chapter 26, Parks and Wildlife Code, because it is a park, recreation area, scientific area, wildlife refuge, or historic sites; and designated by the Texas Parks and Wildlife Commission as being coastal in character.

The project would directly impact 15 acres of TPWD lands in the Justin Hurst Wildlife Management Area (WMA). Marsh lands would have dredge material placed within the restoration units to restore marsh platforms and decrease the impacts of historic erosion and land loss. As well, approximately 2.8 miles of breakwaters would be constructed, which would provide long-term protection to marshes from erosion and saltwater intrusion. Project implementation would result in no net loss of coastal preserve functions and would realize a net

increase in quality and quantity marsh lands within the WMA. Significant coordination with TPWD has been conducted to ensure a quality overall project that aligns with WMA policies, goals, and future desired conditions.

Enforceable Policies

The 20 enforceable policies were reviewed and it was determined that six policies are applicable to this study (Table 3).

Table 3. CMP Enforceable Policies

Policy	Applicability
§ 501.15 Policy for Major Actions	Yes
§ 501.16 Policies for Construction of Electric Generating and Transmission Facilities	N/A
§ 501.17 Policies for Construction, Operation, and Maintenance of Oil and Gas Exploration and Production Facilities	N/A
§ 501.18 Policies for discharges of Wastewater and Disposal of Waste from Oil and Gas Exploration and Production Activities	N/A
§ 501.19 Policies for Construction and Operation of Solid Waste Treatment, Storage, and Disposal Facilities	N/A
§ 501.20 Policies for Prevention, Response and Remediation of Oil Spills	N/A
§ 501.21 Policies for Discharge of Municipal and Industrial Wastewater to Coastal Waters	N/A
§ 501.22 Policies for Nonpoint Source (NPS) Water Pollution	N/A
§ 501.23 Policies for Development in Critical Areas	Yes
§ 501.24 Policies for Construction of Waterfront Facilities and Other Structures on Submerged Lands	N/A
§ 501.25 Policies for Dredging and Dredged Material Disposal and Placement	Yes
§ 501.26 Policies for Construction in the Beach/Dune System	Yes
§ 501.27 Policies for Development in Coastal Hazard Areas	Yes
§ 501.28 Policies for Development Within Coastal Barrier Resource System Units and Otherwise Protected Areas on Coastal Barriers	Yes
§ 501.29 Policies for Development in State Parks, Wildlife Management Areas or Preserves	Yes
§ 501.30 Policies for Alteration of Coastal Historic Areas	N/A
§ 501.31 Policies for Transportation Projects	N/A
§ 501.32 Policies for Emission of Air Pollutants	Yes
§ 501.33 Policies for Appropriations of Water	N/A
§ 501.34 Policies for Levee and Flood Control Projects	Yes

§ 501.15 Policy for Major Actions

- (a) *For purposes of this section, “major action” means an individual agency or subdivision action listed in §505.11 of this title (relating to Actions and Rules Subject to the Coastal Management Program), §506.12 of this title (relating to Federal Actions Subject to the Coastal Management Program), or §505.60 of this title (relating to Local Government Actions Subject to the Coastal Management Program), relating to an activity for which a federal environmental impact statement under the National Environmental Policy Act, 42 United States Code Annotated §4321, et seq is required.*
- (b) *Prior to taking a major action, the agencies and subdivisions having jurisdiction over the activity shall meet and coordinate their major actions relating to the activity. The agencies and subdivisions shall, to the greatest extent practicable, consider the cumulative and secondary adverse effects, as described in the federal environmental impact statement process, of each major action relating to the activity.*
- (c) *No agency or subdivision shall take a major action that is inconsistent with the goals and policies of this chapter. In addition, an agency or subdivision shall avoid and otherwise minimize the cumulative adverse effects to coastal natural resource areas of each of its major actions relating to the activity.*

Compliance: The proposed project is considered a “major action” for which an EIS is being prepared. In preparation of the EIS, significant resource agency coordination has occurred regarding the impacts of the actions. Significant consideration has been given to the cumulative impacts of the action, especially given potential indirect effects with long-shore sediment transport and changes in salinity regimes considering other projects that could also cumulatively change these conditions. Impacts to significant resources including estuarine and marine habitats such as marshes, SAV, oyster reefs, beaches, and dunes would be mitigated where a net loss in these habitats is expected. Additionally, the resource agencies have been integral in developing identifying restoration measures and potential impacts from ER and CSR features. The agencies have been significantly involved in identifying HEP models and the assumptions and projections used to calculate the benefits and impacts of the various measures.

§ 501.23 Policies for Development in Critical Areas

- (d) *Dredging and Construction of structures in, or the discharge of dredged or fill material into, critical areas shall comply with the policies in this section. In implementing this section, cumulative and secondary adverse effects of these activities will be considered.*
 - (1) *The policies in this section shall be applied in a manner consistent with the goal of achieving no net loss of critical area functions and values.*

Compliance: There is no net loss of critical area functions and values. The purpose of ER components of the recommended plan is to restore critical areas and minimize future loss due to RSLC and general critical area degradation from irreversible cultural modifications (e.g. altered hydrologic regimen) to the coastal system. The purpose of CSR components of the recommended plan is to reduce the risk to people, infrastructure, and natural areas in critical areas from storm surge and RSLC.

- (2) Persons proposing development in critical areas shall demonstrate that no practicable alternative with fewer adverse effects is available.*

Compliance: During plan formulation, all measures that would have greater impacts than others were screened from further inclusion in any of the formulated plans. The recommended plan takes advantage of sediment from existing dredging cycles from the GIWW and other waterways which reduces the need for upland placement or offshore disposal of maintenance dredge materials. All restoration units were selected based on the critical need for restoration. Units that were identified as not having as great of a need were screened from incorporation into the plans. With incorporation of beneficial use of dredge material (BUDM) and selection of only the most critical units in need of restoration, there is no practicable alternative with fewer adverse effects that also provides the same level of restoration benefits and Storm Risk Reduction.

- (3) In evaluating practicable alternatives, the following sequence shall be applied:*
- (A) Adverse effects on critical areas shall be avoided to the greatest extent practicable.*
 - (B) Unavoidable adverse effects shall be minimized to the greatest extent practicable by limiting the degree or magnitude of the activity and its implementation*
 - (C) Appropriate and practicable compensatory mitigation shall be required to the greatest extent practicable for all adverse effects that cannot be avoided or minimized.*
- (4) Compensatory mitigation includes restoring adversely affected critical areas or replacing adversely affected critical areas by creating new critical areas. Compensatory mitigation should be undertaken, when practicable, in areas adjacent or contiguous to the affected critical areas (on-site)...*
- (5) Mitigation banking is acceptable compensatory mitigation if use of the mitigation bank has been approved by the agency authorizing the development and mitigation credits are available for withdrawal...*
- (6) In determining compensatory mitigation requirements, the impaired functions and values of the affected critical area shall be replaced on a one-to-one ratio...*

Compliance: For all of the actionable measures and South Padre Island Nourishment and Sediment Management and B-2, there are no anticipated adverse effects to critical areas. Implementation of the actionable measures would result in temporary impacts to critical areas that would not rise to the level of adverse per §501.3. All long-term impacts are beneficial in nature and would result in overall higher quality critical areas due to the restoration nature of the project.

For the Galveston Bay Storm Surge Barrier System (Tier One measure), adverse effects in critical areas are expected due to the potential loss of marshes and other communities. Compensatory mitigation has been tentatively identified, but would be further refined once site-specific design-level details are available and additional investigation into the potential impacts have been completed. The tentative Mitigation Plan is available in Appendix J of the EIS.

(7) *Development in critical areas shall not be authorized if significant degradation of critical areas will occur. Significant degradation occurs is:*

- (A) *The activity will jeopardize the continued existence of species listed as endangered or threatened, or will result in likelihood of the destruction or adverse modification of a habitat determined to be a critical habitat under the Endangered Species Act, 16 United States Code Annotated, §§1531-1544;*
- (B) *the activity will cause or contribute, after consideration of dilution and dispersion, to violation of any applicable surface water quality standards established under §501.21 of this title;*
- (C) *the activity violates any applicable toxic effluent standard or prohibition established under §501.21 of this title;*
- (D) *the activity violates any requirement imposed to protect a marine sanctuary designated under the Marine Protection, Research, and Sanctuaries Act of 1972, 33 United States Code Annotated, Chapter 27;*
or
- (E) *taking into account the nature and degree of all identifiable adverse effects, including their persistence, permanence, areal extent, and the degree to which these effects will have been mitigated pursuant to subsections (c) and (d) of this section, the activity will, individually or collectively, cause or contribute to significant adverse effects on:*
 - (i) *human health and welfare, including effects on water supplies, plankton, benthos, fish, shellfish, wildlife, and consumption of fish and wildlife;*
 - (ii) *the life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, or spread of pollutants or their byproducts beyond the site, or their introduction into an ecosystem, through biological, physical, or chemical processes;*
 - (iii) *ecosystem diversity, productivity, and stability, including loss of fish and wildlife habitat or loss of the capacity of a coastal wetland to assimilate nutrients, purify water, or reduce wave energy; or*
 - (iv) *generally accepted recreational, aesthetic or economic values of the critical area which are of exceptional character and importance.*

Compliance: Actionable measures would not cause significant adverse effects on human health and welfare or any of the natural resources or systems listed above. As well, they would not reduce ecosystem diversity, productivity, or the capacity of the wetland systems to assimilate nutrients, purify water, or reduce wave energy. In fact, the actionable measures would improve ecosystem diversity and productivity, while increasing the capacity of wetland, beach/dune, rookery, and estuarine systems to function.

The B-2 Tier One measure is expected to have similar effects as the actionable measures. For the Galveston Bay Storm Surge Barrier System, significant adverse effects are expected which would affect wetland/marsh diversity, productivity and sustainability. The potential loss has been tentatively identified and a mitigation plan has been developed to offset the loss of marsh habitats as a result of constructing the system. The impacts would be further investigated, minimized and mitigated where necessary to limit the extent of impact on critical resources.

(e) The TCEQ and the RRC shall comply with the policies in this section when issuing certifications and adopting rules under Texas Water Code, Chapter 26, and the Texas Natural Resources Code, Chapter 91, governing certification of compliance with surface water quality standards for federal actions and permits authorizing development affecting critical areas; provided that activities exempted from the requirement for a permit for the discharge of dredge or fill material, described in Code of Federal Regulations, Title 33, §323.4 and/or Code of Federal Regulations, Title 40, §232.3, including...shall not be considered activities for which a certification is required. The GLO and the SLB shall comply with the policies in this section when approving oil, gas, or other mineral lease plans of operation or granting surface leases, easements, and permits and adopting rules under the Texas Natural Resources Code, Chapters 32, 33, and 51-53, and Texas Water Code, Chapter 61, governing development affecting critical areas on state submerged lands and private submerged lands, and when issuing approval and adopting rules under Texas Natural Resources Code, Chapter 221, for mitigation banks operated by subdivisions of the state.

Compliance: A 404(b)(1) analysis has been prepared and will be submitted to TCEQ for approval.

(f) Agencies required to comply with this section will coordinate with one another and with federal agencies when evaluating alternatives, determining appropriate and practicable mitigation, and accessing significant degradation. Those agencies' rules governing authorizations for development in critical areas shall require a demonstration that the requirements of subsection (a)(1)-(7) of this section have been satisfied.

Compliance: Extensive coordination has been conducted with U.S. Fish and Wildlife Service, National Marine Fisheries Service, Texas Parks and Wildlife Department, and GLO. Other agencies, such as the Environmental Protection Agency, Natural Resource Conservation Service, TCEQ, TWDB, and THC, were involved in the beginning phases of project development but have been less involved since this is an ecosystem restoration study.

(g) For any dredging or construction of structures in, or discharge of dredge or fill material into, critical areas that is subject to the requirements of §501.15 of this title (relating to Policy for Major Actions), data and information on the cumulative and secondary adverse affects of the project need not be produced or evaluated to comply with this section if such data and information is produced and evaluated in compliance with §501.15(b)-(c) of this title.

Compliance: The project complies with §501.15(b) – (c).

§501.25 Policies for Dredging and Dredged Material and Placement

(a) Dredging and the disposal and placement of dredge material shall avoid and otherwise minimize adverse effects to coastal waters, submerged land, critical areas, coastal shore areas, and Gulf beaches to the greatest extent practicable. The policies of this section are supplement to any further restrictions or requirements relating to the beach access and use rights of the public. In implementing this section, cumulative and secondary adverse effects of dredging and the disposal and the placement of dredge material and the unique characteristics of affected sites shall be considered.

Compliance: For actionable measures, dredged material would be beneficially used to restore coastal marshes, the shoreline, and rookery islands. Placement in each of the restoration units and along the South Padre Island Beach Nourishment and Sediment Management reaches would have some effects on coastal waters, tidally influenced areas, coastal wetlands and other CNRAs. Effects include but are not limited to: burying benthic organisms, temporary increase in turbidity in the area, and temporary restrictions to specific areas. Restoration activities would result in a net increase in CNRAs and overall quality of existing CNRAs. Loss of coastal waters would occur due to shore nourishment, but would provide shoreline protection to coastal marshes behind the dune from storm surge impacts and relative sea level change (RSLC). Loss of coastal waters would also occur due to construction of the islands; however, this would increase available roosting and foraging habitat for shorebirds thereby increasing diversity and populations of avifauna.

For the Tier One measures, B-2 measure would be expected to have similar impacts as the actionable measures as they both intend to nourish the beach. Dredging completed for the Galveston Bay Storm Surge Barrier System would be beneficially used to complete the dune and beach component, for marsh restoration, or island construction. If additional sediment remains, it would be placed into a pre-existing upland placement area that would not cause adverse effects to any of the identified resources.

(1) Dredging and dredged material disposal and placement shall not cause or contribute, after consideration of dilution and dispersion, to violation of any applicable surface water quality standards established under §501.21 of this title.

Compliance: Placement of dredge material would not violate any applicable surface water quality standards.

(2) Except as otherwise provided in paragraph (4) of this subsection, adverse effects on critical areas from dredging and dredged material disposal or placement shall be avoided and otherwise minimized, and appropriate and practicable compensatory mitigation shall be required, in accordance with §501.23 of this title.

Compliance: For actionable measures, project implementation would not result in any long-term, permanent, or irreversible adverse effects on CNRAs and would realize a net increase in some critical areas; therefore, no compensatory mitigation is needed. Placement of beneficial use of dredge material into critical areas would restore function to the affected CNRAs and improve the overall system.

For the B-2 Tier One measure, the impacts described for the actionable measures would be expected to be very similar in nature due to the nature-based intent of the features. For the Storm Surge Barrier System, dredging in and near the gate structures may adversely impact some CNRAs, such as oyster reefs or coastal wetlands. Compensatory mitigation would be implemented where long-term impacts are unavoidable. Future investigations and design considerations are required before the extent of the impact is fully understood.

(3) Except as provided in paragraph (4) of this subsection, dredging and the disposal and placement of dredged material shall not be authorized if:

(A) there is a practicable alternative that would have fewer adverse effects on coastal waters, submerged lands, critical areas, coastal shore areas, and Gulf beaches, so long as that alternative does not have other significant adverse effects;

(B) all appropriate and practicable steps have not been taken to minimize adverse effects on coastal waters submerged lands, critical areas, coastal shore areas, and Gulf beaches; or

(C) significant degradation of critical areas under §501.23(a)(7)(E) of this title would result.

Compliance: For actionable measures, CNRAs would be temporarily affected by the project during construction, but not result in a net loss of any of the CNRAs. The actionable measures has net environmental benefits that would result from restoration activities. Construction activities have been minimized to the greatest extent practicable, including reducing overall construction footprint to only what is absolutely necessary and seasonal timing restrictions to avoid breeding/spawning and migrating fish and wildlife impacts.

For the Tier One measures, B-2 would be expected to have similar impacts as the actionable measures as the measure intends to nourish the beach. Borrow source locations are unknown at this time; however, all appropriate and practicable steps will be taken to minimize adverse effects on CNRAs when identifying sites and dredging for the material. For dredging associated with the Galveston Bay Storm Surge Barrier System, specifically the gate structures, future assessments and designs would identify and where appropriate avoid and minimize adverse impacts. As of now, a substantial amount of the dredged sediment would be beneficially used to restore shoreline, marshes, and islands. If excess material exists, consideration would be given to beneficially using the sediment in other locations or placing in an upland placement area which would have no adverse impacts to CNRAs.

(4) A dredging or dredged material disposal or placement project that would be prohibited solely by application of paragraph (3) of this subsection may be allowed if it is determined to be of overriding importance to the public and national interest in light of economic impacts on navigation and maintenance of commercially navigable waterways.

Compliance: Placement is not precluded by paragraph (3), as noted above.

(b) Adverse effects from dredging and dredged material disposal and placement shall be minimized as required in subsection (a) of this section. Adverse effects can be minimized by employing the techniques in this subsection where appropriate and practicable.

(5) Adverse effects from dredging and dredge material disposal and placement can be minimized by controlling the location and dimensions of the activity. Some of the ways to accomplish this include:

- (A) locating and confining discharges to minimize smothering of organisms;*
- (B) locating and designing projects to avoid adverse disruption of water inundation patterns, water circulation, erosion and accretion processes, and other hydrodynamic processes;*
- (C) using existing or natural channels and basins instead of dredging new channels or basins, and discharging materials in areas that have been previously disturbed or used for disposal or placement of dredged material;*
- (D) limiting the dimensions of channels, basins, and disposal and placement sites to the minimum reasonably required to serve the project purpose, including allowing for reasonable overdredging of channels and basins, and taking into account the need for capacity to accommodate future expansion without causing additional adverse effects;*
- (E) discharging materials at sites where the substrate is composed of material similar to that being discharged;*
- (F) locating and designing discharges to minimize the extent of any plume and otherwise dispersion of material; and*
- (G) avoiding the impoundment or drainage of critical areas.*

Compliance: For the actionable measures, placement of material into the restoration unit would not induce adverse effects. Temporary impacts associated with placement have been minimized to the greatest extent possible (see compliance discussions found in section (a) above). Open water impacts are minimized by placing dredge material in marshes, along the shoreline, and at historic island sites. All dredged material requirements to implement the project can be provided through existing maintenance dredging cycles or from construction of another project, so no modifications to channel are required to ensure sufficient quantity of sediment to implement. The project's restoration features were designed to improve ecological functions of CNRAs, including proper drainage and suitable substrate material for species composition, and increase resiliency and sustainability to future conditions. Discharges would be confined with reinforced levees where applicable.

For the Tier One measures, placement of dredged material for B-2 would be expected to be similar to the actionable measures. When identifying borrow sources for B-2, siting would be dictated by the type of sediment needed, the distance to the source, and amount of sediment available from the source. BMPs would be employed to minimize impacts during dredging and placement of material for any of the Tier One measures.

(6) *Dredging and disposal and placement of material to be dredged shall comply with applicable standards for sediment toxicity. Adverse effects from constituents contained in materials discharged can be minimized by treatment of or limitations on the material itself. Some ways to accomplish this include;*

(A) disposal or placement of dredged material in a manner that maintains physiochemical conditions at discharge sites and limits or reduces the potency and availability of pollutants;

(B) limiting the solid, liquid, and gaseous components of material discharged;

(C) adding treatment substances to the discharged material; and

(D) adding chemical flocculants to enhance the deposition of suspended particulates in confined disposal areas.

Compliance: Sediments testing would be completed prior to placement of any dredged materials. In general, dredged material from the GIWW has been tested for a variety of chemical parameters of concern. Samples yielded no cause for concern and sediments are safe for beneficial use. If sediment testing yields concerns, appropriate actions would be taken to dispose of the sediments in a way that is not adverse to any CNRA or other areas (e.g. placing in an upland placement area with caps and liners).

(7) *Adverse effects from dredging and dredged material disposal or placement can be minimized through control of the materials discharged. Some ways of accomplishing this include:*

(A) use of containment levees and sediment basins designed, constructed, and maintained to resist breaches, erosion, slumping, or leaching;

(B) use of lined containment areas to reduce leaching where leaching of chemical constituents from the material is expected to be a problem;

(C) capping in-place contaminated material or, selectively discharging the most contaminated material first and then capping it with the remaining material;

(D) properly containing discharged material and maintaining discharge sites to prevent point and nonpoint pollution; and

(E) timing the discharge to minimize adverse effects from unusually high water flows, wind, wave, and tidal actions.

Compliance: Small, temporary levees may be created during marsh restoration efforts. Shore nourishment measures may have some temporary and local impacts by increasing turbidity; however, material to be generated from construction activities has been tested and found not to contain harmful concentrations of pollutants. Discharges would not occur during conditions involving high water flows, waves, or tidal actions. These impacts would be expected for either the actionable or Tier One measures.

- (8) *Adverse effects from dredging and dredged material disposal or placement can be minimized by controlling the manner in which material is dispersed. Some ways of accomplishing this include:*
- (A) *where environmentally desirable, distributing the material in a thin layer;*
 - (B) *orienting material to minimize undesirable obstruction of the water current or circulation patterns;*
 - (C) *using silt screens or other appropriate methods to confine suspended particulates or turbidity to a small area where settling or removal can occur;*
 - (D) *using currents and circulation patterns to mix, disperse, dilute, or otherwise control the discharge;*
 - (E) *minimizing turbidity by using a diffuser system or releasing material near the bottom;*
 - (F) *selecting sites or managing discharges to confine and minimize the release of suspended particulates and turbidity and maintain light penetration for organisms; and*
 - (G) *setting limits on the amount of material to be discharged per unit of time or volume of receiving waters.*

Compliance: For actionable and Tier One measures, all of the identified placement sites minimize or avoid adverse dispersal effects to the greatest extent practicable during construction. Material to be used for restoration would be hydraulically discharged at specific discharge points on the beach (beach nourishment and dune construction) or in low elevation areas (marsh and island restoration). Material would then be mechanically moved into place with heavy equipment, which should reduce dispersal of material into undesirable areas. After all ground disturbing activities are complete, it is fully anticipated that the placed sediment will disperse through wave and wind energies in a manner consistent with the existing condition to restore sediment inputs and contribute to the sediment budget of the system. There are no sediments of concern.

- (9) *Adverse effects from dredging and dredged material disposal or placement operations can be minimized by adapting technology to the needs of each site. Some ways of accomplishing this include:*
- (A) *using appropriate equipment, machinery, and operating techniques for access to sites and transport of material, including those designed to reduce damage to critical areas;*
 - (B) *having personnel on site adequately trained in the avoidance and minimization techniques and requirements; and*
 - (C) *designing temporary and permanent access roads and channel spanning structures using culverts, open channels, and diversions that will pass both low and high water flows, accommodate fluctuating water levels, and maintain circulation and faunal movement.*

Compliance: For actionable and Tier One measures, dredged material placement into the restoration areas would minimize impacts to the greatest extent practicable including, but not limited to: siting pumps and pipes outside of critical areas where possible; utilizing existing access roads and channels to move material, equipment and personnel; and employing Best Management Practices (BMPs) to avoid adverse impacts. During the pre-engineering design phase (PED), ways to further reduce environmental impacts to all areas and resources will be considered and employed to the greatest extent practicable.

- (10) *Adverse effects on plant and animal populations from dredging and dredged material disposal or placement can be minimized by:*
- (A) *avoiding changes in water current and circulation patterns that would interfere with the movement of animals;*
 - (B) *selecting sites or managing discharges to prevent or avoid creating habitat conducive to the development of undesirable predators or species that have a competitive edge ecologically over indigenous plants or animals;*
 - (C) *avoiding sites having unique habitat or other value, including habitat of endangered species;*
 - (D) *using planning and construction practices to institute habitat development and restoration to produce a new or modified environmental state of higher ecological value by displacement of some or all of the existing environmental characteristics;*
 - (E) *using techniques that have been demonstrated to be effective in the circumstances similar to those under consideration whenever possible and, when proposed development and restoration techniques have not yet advanced to the pilot demonstration stage, initiating their use on a small scale to allow corrective action if unanticipated adverse effects occur;*
 - (F) *timing dredging and dredged material disposal or placement activities to avoid spawning or migration seasons and other biologically critical time periods; and*
 - (G) *avoiding the destruction of remnant natural sites within areas already affected by development.*

Compliance: For actionable measures and Tier One measures, the project would be designed and implemented in such a way to avoid adverse impacts to plant and animal populations and their habitat to the greatest extent practicable including, but not limited to: seasonal timing restrictions, using existing access roads and channels, employing construction BMPs, siting pumps and pipes in areas that would have the least disturbance on the overall system, and utilizing the smallest construction footprint possible. For the actionable measures and B-2, the actions are intended to restore the natural form and function of the coastal system; therefore, all long-term impacts are expected to be beneficial to the overall ecosystem by increasing suitable habitat and increasing resiliency and sustainability. For the Storm Surge Barrier System, long-

term adverse impacts are expected and would be appropriately mitigated for adverse impacts that cannot be avoided.

- (11) *Adverse effects on human use potential from dredging and dredged material disposal or placement can be minimized by:*
- (A) *selecting sites and following procedures to prevent or minimize any potential damage to the aesthetically pleasing features of the site, particularly with respect to water quality;*
 - (B) *selecting sites which are not valuable as natural aquatic areas;*
 - (C) *timing dredging and dredged material disposal or placement activities to avoid the seasons or periods when human recreational activity associated with the site is most important; and*
 - (D) *selecting sites that will not increase incompatible human activity or require frequent dredge or fill maintenance activity in remote fish and wildlife areas.*

Compliance: Placement of dredged material into restoration sites may adversely impact the human environment in and around the placement sites by visually disturbing the scenic view with construction equipment and activity, increasing noise, and reducing the amount of recreational opportunities. All of these impacts would be temporary, only lasting as long as it takes for the material to be appropriately placed and for the restoration area to stabilize. Timing of construction is entirely dependent on dredging cycles; however, during PED it would be advised to avoid the peak recreational seasons (summer for the beach areas and fall/winter for the marsh areas) if at all possible. After construction is complete and vegetation has grown within the restoration sites, recreation and scenic value is expected to increase through increased recreational areas and opportunities (i.e. more wetlands=more hunting, wider beach=more area for beachgoers to spread out on sand rather than clay/rock outcrops).

- (12) *Adverse effects from new channels and basins can be minimized by locating them at sites:*
- (A) *that ensure adequate flushing and avoid stagnant pockets; or*
 - (B) *that will create the fewest practicable adverse effects on CNRAs from additional infrastructure such as roads, bridges, causeways, piers, docks, wharves, transmission line crossing, and ancillary channels reasonably likely to be constructed as a result of the project; or*
 - (C) *with the least practicable risk that increased vessel traffic could result in navigation hazards, spills or other forms of contamination which could adversely affect CNRAs;*
 - (D) *provided that, for any dredging of new channels or basins subject to the requirements of §501.15 of this title (relating to Policy for Major Actions), data and information on minimization of secondary adverse effects need not be produced or evaluated to comply with this paragraph if such data and information is produced and evaluated in compliance with §501.15(b)(1) of this title.*

Compliance: The project does not include constructing new channels or basins, therefore §501.25(8)(A)-D) does not apply.

- (c) *Disposal or placement of dredged material in existing contained dredge disposal sites identified and actively used as described in an environmental assessment or environmental impact statement issued prior to the effective date of this chapter shall be presumed to comply with the requirements of subsection (a) of this section unless modified in design, sign, use, or function.*
- (d) *Dredged material from dredging projects in commercially navigable waters is a potentially reusable resource and must be used beneficially in accordance with this policy.*
 - (1) *If the costs of beneficial use of dredged material area reasonably comparable to the costs of disposal in a non-beneficial manner, the material shall be used beneficially.*
 - (2) *If the costs of the beneficial use of dredged material are significantly greater than the costs of disposal in a non-beneficial manner, the material shall be used beneficially unless it is demonstrated that the costs of using the material beneficially are not reasonably proportionate to the costs of the project and benefits that will result. Factors that shall be considered in determining whether the costs of the beneficial use are not reasonably proportionate to the benefits include but are not limited to:*
 - (A) *environmental benefits, recreational benefits, flood or storm protection benefits, erosion prevention benefits, and economic development benefits;*
 - (B) *the proximity of the beneficial use site to the dredge site; and*
 - (C) *the quantity and quality of the dredged material and its suitability for beneficial use.*
 - (3) *Examples of the beneficial use of dredged material include, but are not limited to:*
 - (A) *projects designed to reduce or minimize erosion or provide shoreline protection;*
 - (B) *projects designed to create or enhance public beaches or recreational areas;*
 - (C) *projects designed to benefit the sediment budget or littoral system;*
 - (D) *projects designed to improve or maintain terrestrial or aquatic wildlife habitat;*
 - (E) *projects designed to create new terrestrial or aquatic wildlife habitat, including the construction of marshlands, coastal wetlands, or other critical areas;*
 - (F) *projects designed and demonstrated to benefit benthic communities or aquatic vegetation;*

(G) projects designed to create wildlife management areas, parks, airports, or other public facilities;

(H) projects designed to cap landfills or other water disposal areas;

(I) projects designed to fill private property or upgrade agricultural land, if cost-effective public beneficial uses are not available; and

(J) projects designed to remediate past adverse impacts on the coastal zone.

(e) If dredged material cannot be used beneficially as provided in subsection (d)(2) of this section, to avoid and otherwise minimize adverse effects as required in subsection (a) of this section, preference will be given to the greatest extent practicable to disposal in...

Compliance: Dredged material would be beneficially used to restore marsh habitat and barrier beaches throughout the project area; therefore, the project is consistent with §501.25(d)(1) –(3) and §501.25(c) and §501.25(e)(1) –(3) do not apply to this project.

(f) For new sites, dredged materials shall not be disposed of or placed directly on the boundaries of submerged lands or at such location so as to slump or migrate across the boundaries of submerged lands in the absence of an agreement between the affected public owner and the adjoining private owner or owners that defined the location of the boundary or boundaries affected by the deposition of the dredged material.

Compliance: Placement of dredged materials would not be placed directly on submerged lands; however, placement on the barrier beaches may slump into submerged lands. Appropriate real estate agreements would be in place prior to construction to ensure all land owners are appropriately notified and compensated for any loss or impacts.

(g) Emergency dredging shall be allowed without a prior consistency determination as required in the applicable consistency rule when...

Compliance: An emergency situation does not exist with implementation of the project. Consistency of the project with program policy would be determined prior to project authorization.

(h) Mining of sand, shell, marl, gravel, and mudshell on submerged lands shall be prohibited unless there is an affirmative showing of no significant impact on erosion within the coastal zone and no significant adverse effect of coastal water quality or terrestrial and aquatic wildlife habitat within a CNRA.

Compliance: Project activities do not involve mining for shell, marl, gravel or mudshell; however, sand would be dredged from submerged lands of the SNWW for use in restoration units. Dredging sand from this location has already been addressed in other documents.

(i) The GLO and the SLB shall comply with the policies in this section when approving oil, gas, and other mineral lease plans of operation and granting surface leases, easements, and permits and adopting rules under the Texas Natural Resources Code, Chapter 32, 33, and 51 – 53, and Texas Water Code, Chapter 61, for dredging and dredge material disposal and placement TxDOT shall comply with the policies in this subchapter when adopting rules and taking actions as local sponsor of the Gulf Intracoastal Waterway under Texas Transportation Code, Chapter 51. The TCEQ and the RRC shall comply

with the policies in this section when issuing certifications and adopting rules under Texas Water Code, Chapter 26, and the Texas Natural Resources Code, Chapter 91, governing certification of compliance with surface water quality standards for federal actions and permits authorizing dredging or the discharge or placement of dredged material. The TPWD shall comply with the policies in this section when adopting rules at Chapter 57 of this title (relating to Fisheries) governing dredging and dredged material disposal and placement. TPWD shall comply with the policies in subsection (h) of this section when adopting rules and issuing permits under Texas Parks and Wildlife Code, Chapter 86, governing the mining of sand, shell, marl, gravel, and mudshell.

Compliance: This project does not involve oil, gas, and other mineral lease plans of operation or granting of surface leases, easements, or permits; therefore, §501.25(i) does not apply.

§501.26 Policies for Construction in the Beach/Dune System

(a) Construction in critical dune areas or areas adjacent to or on Gulf beaches shall comply with the following policies:

(1) Construction within a critical dune area that results in the material weakening of dunes and material damage to dune vegetation shall be prohibited.

(2) Construction within critical dune areas that does not materially weaken dunes or materially damage dune vegetation shall be sited, designed, constructed, maintained, and operated so that adverse "effects" (as defined in §15.2 of this title (relating to Coastal Area Planning) on the sediment budget and critical dune areas are avoided to the greatest extent practicable. For purposes of this section, practicability shall be determined by considering the effectiveness, scientific feasibility, and commercial availability of the technology or technique. Cost of the technology or technique shall also be considered. Adverse effects (as defined in Chapter 15 of this title (relating to Coastal Area Planning) that cannot be avoided shall be:

(A) minimized by limiting the degree or magnitude of the activity and its implementation;

(B) rectified by repairing, rehabilitating, or restoring the adversely affected dunes and dune vegetation; and

(C) compensated for on-site or off-site by replacing the resources lost or damaged seaward of the dune protection line.

Compliance: For the actionable measures, the project involves restoration of 9.5 miles of dune, including vegetation establishment, and barrier beach. Restoring the dune would strengthen and restore the form and function of the existing damaged, non-functioning dune resulting in beneficial long-term impacts and no short- or long-term adverse effects.

For the Tier One measures, 56 miles of dune and beach would be constructed in lieu of constructing floodwalls and levees which would result in loss of beach/dune system rather than restoration. The impacts described for the actionable measures would be expected to be similar to the actionable measures.

- (3) *Rectification and compensation for adverse effects that cannot be avoided or minimized shall provide at least a one-to-one replacement of the dune volume and vegetative cover, and preference shall be given to stabilization of blowouts and breaches and on-site compensation.*

Compliance: The project would not involve any short- or long-term adverse effects which would require mitigation.

- (4) *The ability of the public, individually and collectively, to exercise its rights of use of and access to and from public beaches shall be preserved and enhanced.*

Compliance: The project would not reduce public access or use of the public beach.

- (5) *Non-structural erosion response methods such as beach nourishment, sediment bypassing, nearshore sediment berms, and planting of vegetation shall be preferred instead of structural erosion response methods. Subdivisions shall not authorize the construction of a new erosion response structure within the beach/dune system, except as provided by subsection (b) of this section or a retaining wall located more than 200 feet landward of the line of vegetation. Subdivisions shall not authorize the enlargement, improvement, repair or maintenance of existing erosion response structures on the public beach. Subdivisions shall not authorize the repair or maintenance of existing erosion response structures within 200 feet landward of the line of vegetation except as provided in §15.6(d) of this title (relating to Concurrent Dune Protection and Beachfront Construction Standards).*

Compliance: The project does not involve construction of any hardened structures and instead relies on non-structural measures to achieve restoration and CSR goals.

- (b) Construction of structural shore protection projects, including geotextile shore protection projects, in critical dune areas or areas adjacent to or on Gulf Beaches shall comply with the following policies:

- (1) *The size and the length of a shore protection project shall be determined as part of a site-specific construction and maintenance plan, taking into account both technical requirements and policy issues as described under this subsection, and shall be limited to the minimum size necessary to fulfill the project's goals and purposes.*

Compliance: The size and length of the constructed dune was developed using several sources of information including sizing that has/hasn't worked historically in or near the project area, historic and future location and rate of shoreline retreat, future conditions under RSLC, and future beach profile and re-nourishment activities.

- (2) *A shore protection project shall only be used to protect community developments, public infrastructure, and for other lawful public purposes and shall not be used solely to protect individual structures or properties. A community development may include a neighborhood or aggregation of residences or commercial structures.*

Compliance: For all actionable measures, except South Padre Island Beach Nourishment and Sediment Management, and B-2 of the Tier One measures, the project indirectly protects community developments and public infrastructure although the rate of protection is not readily quantifiable due to distance from the project area. The project would be implemented to protect ecologically and economically valuable coastal habitats and would not be used solely to protect individual structures or properties. The South Padre Island Beach Nourishment and Sediment Management action directly reduces risk to 2.9 miles of the South Padre Island community by increasing the dune height and beach width which will reduce the extent of storm surge and overwash impacts on the community.

For the beach and dune construction associated with the Galveston Bay Storm Surge Barrier System, beach nourishment would be constructed with the specific intention of reducing the risk to community developments, public infrastructure and individual properties. However, beach nourishment is being employed in lieu of constructing hardened structures; therefore, the project would have beneficial impacts to the beach and dune system as well as coastal storm risk management.

- (3) A shore protection project located parallel to the shore shall be located landward of the boundary of state-owned submerged land as determined by a coastal boundary survey conducted in accordance with Texas Natural Resources Code §33.136, and shall avoid and otherwise minimize adverse effects to dunes and dune vegetation.*

Compliance: Beach and dune nourishment features would be implemented landward of the boundary of state-owned submerged lands and would not induce short- or long-term adverse impacts. Short-term impacts would be limited to construction activities, but would cease after construction is complete. Upon completion, the dune system would realize long-term beneficial impacts by being strengthened and restoring the form and function.

- (4) To maximize the protection offered by a shore protection project, to enhance the survivability of the project, and to minimize adverse effects to natural resources, a shore protection project shall be located according to the following preferred order:*
- (A) In an area where a foredune ridge is present, where practicable, a shore protection project shall be located landward of the foredune ridge;*
 - (B) Where there is no foredune ridge, a project shall be located landward of the line of vegetation, where practicable;*
 - (C) Where it is not practicable to locate a shore protection project landward of the line of vegetation, a project shall be located at the line of vegetation;
or*
 - (D) Where there is no other practicable location, a shore protection project shall be located at the most landward point of the public beach provided that the project sponsor has provided financial assurance that the pre-project beach width will be maintained through beach nourishment.*

Compliance: For the actionable and Tier One measures, the constructed dune would follow the current alignment, which is at the original location placed by nature and minimizes impacts to

natural resources. Beach nourishment has been incorporated into the project to provide protection to the dune over the long-term.

(5) A shore protection project shall not adversely affect sea turtle nesting areas or an endangered species.

Compliance: For actionable and Tier One measures, the existing beach and dune system in the action areas are severely eroded and have been identified by resource agencies as being a priority location for beach nourishment actions to their poor quality. Most of these areas provided at best marginal suitable habitat for sea turtles, red knot, and piping plover. A Biological Assessment has been prepared for the project in which a “not likely to adversely affect” determination was made for all federally-protected species which have the potential to occur in the project area. No long-term or permanent adverse effects are anticipated and short-term adverse effects would be limited to the construction period. During construction, BMPs and conservation measures would be employed to further reduce negative impacts. After construction, restored areas are expected to increase in habitat value and beneficially impact fish and wildlife species by increasing suitable foraging, nesting, and migration habitat.

(6) Shore protection projects shall not be constructed on stable or accreting beaches.

Compliance: The project area has been experiencing significant beach shoreline retreat over the last 80 years as described in the Critical Erosion Areas CNRA discussion. Beach nourishment actions would be taken to mitigate shoreline loss. No action is proposed or would be taken in areas that are stable or accreting.

(7) A shore protection project shall be designed to avoid and otherwise minimize any adverse effects to adjacent beaches or properties at either end of a project.

Compliance: The project would not induce adverse impacts to adjacent beaches or properties.

(8) To the extent allowed by law, a dune protection permit is required to authorize the construction of a shore protection project in the beach/dune system.

Compliance: A Dune Protection Permit would be sought where necessary prior to project completion.

(9) A mitigation plan shall be submitted for any adverse effects to critical dune areas as a result of the construction and presence of a shore protection project.

Compliance: For actionable and Tier One measures involving construction in or near dunes, no adverse effects are anticipated; therefore, a mitigation plan is not necessary.

(10) Public input shall be incorporated into a local government's review and approval of a shore protection project. Methods to obtain public input include public meetings, notices by mail to affected property owners, publication of notices in local newspapers, the Texas Register, and web sites.

Compliance: The Draft Feasibility Report and Environmental Impact Statement will be released for public review in Fall 2020. During initial public review of the 2018 Draft Integrated Feasibility and EIS, significant public concern was shared regarding construction of a floodwall as part of the Galveston Bay Storm Surge Barrier System as well as at South Padre Island. In response,

USACE revised the plan to incorporate beach nourishment instead of floodwall thereby reducing long-term impacts. Public support of the ER measures was generated during the initial round of public involvement activities. Outside of the 2018 review period, a number other opportunities such as stakeholder workshops and additional public meetings have been held to provide additional information about the project features.

(11) *The success criteria for a shore protection project shall be developed by a project sponsor with consideration for the health and maintenance of the beach/dune system.*

(12) *The sponsor of a shore protection project shall be responsible for the ongoing maintenance of the project and, if necessary, beach nourishment and/or removal of the project.*

Compliance: For the Coastwide ER Plan features (W-3 and B-2) no re-nourishment cycles have been built into the overall plan, although an adaptive management and monitoring plan has been developed which includes measures of success and ways to mitigate/reverse undesired outcomes. Current USACE policy limits the extent of outyear nourishment cycles for ER nourishment features. Lack of continual maintenance would not result in any adverse public health or safety concerns and would be similar to what would have occurred in the absence of the project, except that the impacts would be slowed by 10+ years.

For the South Padre Island and Galveston Bay Storm Surge Barrier System beach and dune construction actions, renourishment cycles would be part of the long-term plan and would likely be on a 10-year cycle. During PED, an operations and maintenance (O&M) plan would be developed that would include all specifications, guidelines, and recommendations for operating and maintaining the dune structure. The USACE and non-Federal sponsor for construction would be responsible for the renourishment cycles.

(13) *Sand from the beach/dune system shall not be used to fill or cover a shore protection project. Where appropriate, a shore protection project shall remain covered with sand and dune vegetation with a preference for natural dune vegetation. The sand and vegetation used to cover a shore protection project shall conform to the standards for dune restoration projects as described in §15.4 (relating to Dune Protection Standards) and §15.7, (relating to Local Government Management of the Public Beach) of this title.*

Compliance: For the actionable measure and Tier One measures involving the beach and dune system, the dune would be constructed by layering sand material dredged from an identified borrow source until the designed crest height, width, length, and slopes are achieved. There would be no materials besides sand, native seeds and/or plugs, and sand fencing used to construct the dune. This method of dune construction is an approved and accepted form of dune restoration.

(14) *Long-term monitoring of a shore protection project shall be required to determine the project's effect on the beach/dune system and the project's effectiveness. Prior to the construction of a shore protection project, a project sponsor shall collect scientifically valid baseline data for monitoring the line of vegetation, the extent of the dry beach, a beach profile, and any other characteristics necessary for evaluating the project's effectiveness.*

Compliance: For actionable measures, an adaptive management and monitoring plan has been developed and integrated into the EIS, which includes measures of success and ways to mitigate/reverse undesired outcomes. Prior to construction, the beach profile would be mapped to identify a baseline and for which success can be measured against. No long-term monitoring plan has been developed for the Galveston Bay Storm Surge Barrier System or South Padre Island; however, given that both of these measures would have re-nourishment cycles, a monitoring plan would be developed to determine what triggers the need for the next re-nourishment cycle. For B-2, once the Tier Two analysis has been completed, a long-term monitoring plan would be developed.

(15) *Existing public access in the area of a shore protection project shall be replicated if not enhanced. A local government shall not impair or close an existing public access point or close a public beach to pedestrian or vehicular traffic without prior approval of the GLO as required under the Open Beaches Act, Texas Natural Resource Code Annotated, Chapter 61, and the Beach/Dune rules, Chapter 15 of this title.*

Compliance: Public access would remain intact and the current use of the beach could continue into the future, except during construction, at which time the beach would be temporarily closed for public safety. After construction, the beach would be wider and could contribute to greater use of the area.

(c) *The GLO shall comply with the policies in this section when certifying local government dune protection and beach access plans and adopting rules under the Texas Natural Resources Code, Chapters 61 and 63. Local governments required by the Texas Natural Resources Code, Chapters 61 and 63, and Chapter 15 of this title (relating to Coastal Area Planning) to adopt dune protection and beach access plans shall comply with the applicable policies in this section when issuing beachfront construction certificates and dune protection permits.*

Compliance: The project does not involve adoption of dune protection or beach access plans, nor does it require issuance of a beachfront construction certificate or dune protection permit; therefore, §501.26(c) does not apply.

§ 501.27 Policies for Development in Coastal Hazard Areas

(a) *Subdivisions participating in the National Flood Insurance Program shall adopt ordinances or orders governing development in special hazard areas under Texas Water Code, Chapter 16, Subchapter I, and Texas Local Government Code, Chapter 240, Subchapter Z, that comply with construction standards in regulations at Code of Federal Regulations, Title 44, Parts 59 - 60, adopted pursuant to the National Flood Insurance Act, 42 United States Code Annotated, §§4001 et seq.*

Compliance: The actions would not be taken by a subdivision and therefore §501.27(a) does not apply.

- (b) Pursuant to the standards and procedures under the Texas Natural Resources Code, Chapter 33, Subchapter H, the GLO shall adopt or issue rules, recommendations, standards, and guidelines for erosion avoidance and remediation and for prioritizing critical erosion areas.

Compliance: All of the ER measures work toward mitigating the impacts caused by erosion and seek to reduce erosion over the long-term. For the Tier 1 measures, erosion control features and BMPs would be put into place to comply with the Chapter 33, Subchapter H standards and procedures.

§501.28 Policies for Development within Coastal Barrier Resource System Units and Otherwise Protected Areas on Coastal Barriers

- (a) Development of new infrastructure or major repair of existing infrastructure within or supporting development within Coastal Barrier Resource System Units and Otherwise Protected Areas designated on maps dated October 24, 1990, as those maps may be modified, revised, or corrected, under the Coastal Barrier Resources Act, 16 United States Code Annotated, §3503(a), shall comply with the policies in this section.
- (1) Development of publicly funded infrastructure shall be authorized only if it is essential for public health, safety, and welfare, enhances public use, or is required by law.
 - (2) Infrastructure shall be located at sites at which reasonably foreseeable future expansion will not require development in critical areas, critical dunes, Gulf beaches, and washover areas within Coastal Barrier Resource System Units or Otherwise Protected Areas.
 - (3) Infrastructure shall be located at sites that to the greatest extent practicable avoid and otherwise minimize the potential for adverse effects on critical areas, critical dunes, Gulf beaches, and washover areas within Coastal Barrier Resource System Units or Otherwise Protected Areas from:
 - (A) construction and maintenance of roads, bridges, and causeways; and
 - (B) direct release to coastal waters, critical areas, critical dunes, Gulf beaches, and washover areas within Coastal Barrier Resource System Units or Otherwise Protected Areas of oil, hazardous substances, or stormwater runoff.
 - (4) Where practicable, infrastructure shall be located in existing rights-of-way or previously disturbed areas to avoid or minimize adverse effects within Coastal Barrier Resource System Units or Otherwise Protected Areas.
 - (5) Development of infrastructure shall occur at sites and times selected to have the least adverse effects practicable within Coastal Barrier Resource System Units or Otherwise Protected Areas on critical areas, critical dunes, Gulf beaches, and washover areas and on spawning or nesting areas or seasonal migrations of commercial, recreational, threatened, or endangered terrestrial or aquatic wildlife.

Compliance: Coordination with USFWS is ongoing to confirm the compliance of the recommended plan with the Coastal Barrier Resources Act.

(b) TCEQ rules and approvals for the creation of special districts and for infrastructure projects funded by issuance of bonds by water, sanitary sewer, and wastewater drainage districts under Texas Water Code, Chapters 49, 50, and 59; water control and improvement districts under Texas Water Code, Chapter 50; municipal utility districts under Texas Water Code, Chapter 54; regional plan implementation agencies under Texas Water Code, Chapter 54; special utility districts under Texas Water Code, Chapter 65; stormwater control districts under Texas Water Code, Chapter 66; and all other general and special law districts subject to and within the jurisdiction of the TCEQ, shall comply with the policies in this section. TxDOT rules and approvals under Texas Transportation Code Chapter 201, et seq., governing planning, design, construction, and maintenance of transportation projects, shall comply with the policies in this section.

Compliance: The project does not involve creation of special district or construction of infrastructure projects.

§501.29 Policies for Development in State Parks, Wildlife Management Areas or Preserves

Development by a person other than the Parks and Wildlife Department that requires the use or taking of any public land in such areas shall comply with the Texas Parks and Wildlife Code, Chapter 26 Protection of Public Parks and Recreational Lands.

Compliance: Two of the actionable measures (B-12 and G-28) would occur within or adjacent to Wildlife Management Areas (WMA) and State Parks. WMA/State Park staff have been involved in the planning and development process and support all proposed actions. Restoration efforts are in line with the purpose, goals, and management plans of the WMA. The non-federal sponsor would be responsible for securing easements and/or rights to restored lands prior to implementation.

§501.32 Policies for Emission of Air Pollutants

TCEQ rules under Texas Health and Safety Code, Chapter 382, governing emissions of air pollutants, shall comply with regulations at Code of Federal Regulations, Title 40, adopted pursuant to the Clean Air Act, 42 United States Code Annotated, §§7401, et seq, to protect and enhance air quality in the coastal area so as to protect CNRAs and promote the public health, safety, and welfare.

Compliance: Actionable measures of the recommended plan would be fully compliant with the Clean Air Act as documented in the EIS in Chapter 5. For the Tier One measures, initial emissions estimates show that *de minimus* would be exceeded in all years of construction at the Storm Surge Barrier System action area and would require additional coordination with TCEQ to seek General Conformity Statement. This would be coordinated once the Tier Two assessments are completed for the actions. At that time, it is expected that the actions would be fully compliant with the CAA, but mitigation may be required.

§501.34 Policies for Levee and Flood Control Projects

(a) Drainage, reclamation, channelization, levee construction or modification, or flood- or floodwater-control infrastructure projects shall be designed, constructed, and maintained to avoid the impoundment and draining of coastal wetlands to the greatest extent practicable. If impoundment or draining of coastal wetlands cannot be avoided, adverse effects to the wetlands shall be mitigated in accordance with the sequencing requirements in §501.23 of this title.

Compliance: This policy does not apply to the actionable measures or B-2 as none of the features involve construction of levees or flood-control structures. The Galveston Bay Storm Surge Barrier System includes construction of a ring barrier, which is essentially a levee, and storm surge barrier gates which would control floodwaters. The ring barrier may be fill in coastal wetlands along the alignment and may indirectly affect hydrologic connections resulting a loss of coastal wetlands. As well, changes in the tidal prism, tidal amplitude, and salinity as a result of surge gate constrictions and interactions with Gulf of Mexico and Galveston Bay waters are expected to indirectly impact coastal wetlands. For each of these features, all losses of wetlands would be fully mitigated to result in no net loss of wetlands. During future assessments, designs would be further refined to limit and better understand the extent of impacts to coastal wetlands and other CNRAs.

(b) TCEQ rules and approvals for the levee construction, modification, drainage, reclamation, channelization, or flood- or floodwater-control projects, pursuant to Texas Water Code §16.236, shall comply with the policies in this section.

Compliance: This policy is directed toward TCEQ. In preparing this determination, the USACE affirms that the project is in compliance with the policies of this section and the Coastal Management Program.

CONCLUSION

The project complies with the Texas Coastal Management Program and will be conducted in a manner consistent with all rules and regulations of the program.