



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

# **Appendix H**

## **National Historic Preservation Act Compliance**

**for**

**Coastal Texas Protection and Restoration Study**

**October 2020**

**PROGRAMMATIC AGREEMENT  
REGARDING COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC  
PRESERVATION ACT FOR  
THE COASTAL TEXAS PROTECTION AND RESTORATION PROJECT  
IN  
CHAMBERS, GALVESTON, HARRIS, BRAZORIA, MATAGORDA, CALHOUN, SAN  
PATRICIO, NUECES, KENEDY, WILLACY, AND CAMERON COUNTIES, TEXAS  
  
AMONG  
THE U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT  
AND  
THE TEXAS STATE HISTORIC PRESERVATION OFFICER**

WHEREAS, the U.S. Army Corps of Engineers, Galveston District (USACE) has determined that new construction, improvements to existing facilities, and maintenance of existing facilities of the Coastal Texas Ecosystem Protection and Restoration Project (hereinafter, “undertaking”) may have an effect on historic properties eligible for inclusion in the National Register of Historic Places (NRHP) (hereinafter, “historic properties”) pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) (NHPA), as amended, and its implementing regulations (36 CFR 800); and

WHEREAS, the Coastal Texas Ecosystem Protection and Restoration Project Study was authorized by the Water Resources and Development Act of 2007, in accordance with Section 4091, Public Law (P.L.) 110-114 requesting the Secretary of the Army to develop a comprehensive plan to determine the feasibility of carrying out projects for flood damage reduction, hurricane and storm damage reduction, and ecosystem restoration in the coastal areas of the State of Texas; and

WHEREAS, the USACE will partner with a non-federal sponsor or sponsors (NFS) for the development and construction of this undertaking, and who will provide the necessary lands, easements, relocations, and rights-of-way; and

WHEREAS, the size of the project area and the number of alternatives being studied for proposed channel improvements make it necessary to defer final identification and evaluation of historic properties until authorization of proposed improvements is obtained; and

WHEREAS, the construction of this undertaking may occur on land, including tideland, submerged land, and the bed of the sea within the jurisdiction of the State of Texas and require compliance with the Antiquities Code of Texas (Texas Natural Resources Code, Title 9, Chapter 191) and the Texas Administrative Code, Title 13, Part 2; and

WHEREAS, the Area of Potential Effect (APE) includes the footprint of all areas of direct impacts and a 500-foot buffer for indirect impacts to standing structures or buildings, as a result

of new construction, improvements to existing facilities, and maintenance of existing facilities;  
and

WHEREAS, this Programmatic Agreement (PA) is being executed to describe the process the USACE and the NFS will utilize to inventory and evaluate historic properties, and assess and resolve adverse effects prior to construction and maintenance; and

WHEREAS, the USACE, and the Texas State Historic Preservation Officer (SHPO) have agreed that it is advisable to execute this PA for the purposes stated above in accordance with 36 CFR 800.6 and 36 CFR 800.14(b)(1)(ii); and

WHEREAS, the USACE will invite the NFS to participate as signatories to this agreement, once the sponsors have been identified; and

WHEREAS, the USACE will invite the Advisory Council on Historic Preservation (Council) to participate; and

WHEREAS, in accordance with 36 C.F.R. § 800.14(b), the USACE will notify the Alabama-Coushatta Tribe of Texas, the Alabama-Quassarte Tribal Town, the Comanche Indian Tribe, the Coushatta Tribe of Louisiana, the Mescalero Apache Tribe, Kiowa Indian Tribe of Oklahoma, the Tonkawa Tribe of Indians of Oklahoma, and the Wichita and Affiliated Tribes of the development and execution of this PA.

NOW, THEREFORE, the USACE and the SHPO agree that the proposed undertaking shall be implemented and administered in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties and to satisfy the USACE's Section 106 responsibilities for all individual aspects of the undertaking.

## **STIPULATIONS**

### **I. Identification, Evaluation, Effect Determination, and Resolution**

- A. **Scope of Undertaking.** This PA shall be applicable to all new construction, improvements, and maintenance activities related to the proposed Coastal Texas Ecosystem Protection and Restoration Project. The APE shall be established by the USACE in consultation with the SHPO and Tribal Nations and shall include all areas to be directly or indirectly affected by new construction, construction staging and access areas, new or extensions of existing storm or flood risk management features, ecosystem restoration features, ecological mitigation features, and project maintenance activities.
- B. **Qualifications and Standards.** The USACE shall ensure that all work conducted in conjunction with this PA is performed in a manner consistent with the Secretary of Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716-44740; September 23, 1983), as amended, or the Secretary of the Interior's "Standards for the Treatment of Historic Properties" (36 CFR 68), as appropriate. Additionally, for all Texas state public land, the USACE will ensure that all work is

conducted in accordance with the Antiquities Code of Texas (Texas Natural Resources Code, Title 9, Chapter 191) and the Texas Administrative Code, Title 13, Part 2.

- C. Definitions. The definitions set forth in 36 CFR 800.16 are incorporated herein by reference and apply throughout this PA.
- D. Identification of Historic Properties. Prior to the initiation of construction, the USACE shall make a reasonable and good faith effort to identify historic properties located within the APE. These steps may include, but are not limited to, background research, consultation, oral history interviews, sample field investigations, and field survey. The USACE will consult with the SHPO to identify individuals or organizations to invite as consulting parties. If additional consulting parties are identified, the USACE shall provide them copies of documentation specified in 36 CFR 800.11(e), subject to confidentiality provisions of 36 CFR 800.11(c). The level of effort for these activities shall be determined in consultation with the SHPO, Tribal Nations that attach religious and cultural significance to the APE, and any consulting parties.

The USACE shall provide the results of survey or site testing investigations in a draft report(s) to the SHPO, Tribal Nations, and any consulting parties for review and comment. Comments received by the USACE from the SHPO, Tribal Nations, or consulting parties shall be addressed in subsequent draft report(s), which shall be provided to all consulting parties for review. If comments on the draft report(s) by the SHPO, Tribal Nations, and any consulting parties are not received by the USACE within thirty (30) days of receipt, the reports and their recommendations shall be considered adequate and the reports may be finalized. The USACE shall provide a final report(s) of all investigations to the SHPO, Tribal Nations, and any consulting parties. If no historic properties are identified in the APE, the USACE shall document this finding pursuant to 36 CFR 800.11(d), provide this documentation to the SHPO, Tribal Nations, and any consulting parties.

- E. Evaluation of National Register of Historic Places and State Archeological Landmark Eligibility. If cultural resources are identified within the APE, the USACE shall determine their eligibility for inclusion in the NRHP in accordance with the process described in 36 CFR 800.4(c) and criteria established in 36 CFR 60. Additionally, the USACE shall make recommendations regarding the eligibility of cultural resources to be designated as State Archeological Landmarks (SAL) in accordance with Texas Natural Resources Code, Title 9, Chapter 191, Section 191.092 (b). All draft reports of NRHP/SAL site testing or other NRHP/SAL investigations shall be submitted to the SHPO, Tribal Nations, and any consulting parties for review and comment. Comments received by the USACE from the SHPO, Tribal Nations, or any consulting parties shall be addressed in subsequent draft report(s), which shall be provided to all consulting parties for review. If comments on the draft report(s) by the SHPO, Tribal Nations, and any consulting parties are not received by the USACE within thirty (30) days of receipt, the reports and their recommendations shall be considered adequate and the reports may be finalized. Determinations of eligibility for inclusion in the NRHP or designation as a SAL shall be conducted in consultation with the SHPO, Tribal Nations, and any



consulting parties. Should the USACE, SHPO, and Tribal Nations agree that a cultural resource is or is not eligible, then such consensus shall be deemed conclusive for the purpose of this PA. Should the USACE, SHPO, and Tribal Nations not agree regarding the eligibility of a cultural resources, the USACE shall obtain a determination of eligibility from the Keeper of the National Register pursuant to 36 CFR 63. For cultural resources found not eligible for inclusion in the NRHP or designation as a SAL, no further protection or consideration of the site will be afforded for compliance purposes.

F. Assessment of Adverse Effects.

1. No Historic Properties Affected. The USACE shall make a reasonable and good faith effort to evaluate the effect of each undertaking on historic properties in the APE. The USACE may conclude that no historic properties are affected by an undertaking if no historic properties are present in the APE, or the undertaking will have no effect as defined in 36 CFR 800.16(i). This finding shall be documented in compliance with 36 CFR 800.11(d) and the documentation shall be provided to the SHPO, Tribal Nations, and any consulting parties for concurrence and retained by the USACE for at least seven (7) years. The USACE shall provide information on the finding to the public upon request, consistent with the confidentiality requirements or 36 CFR 800.11(c).
2. Finding of No Adverse Effect. The USACE, in consultation with the SHPO and Tribal Nations, shall apply the criteria of adverse effect to historic properties within the APE in accordance with 36 CFR 800.5. The USACE may propose a finding of no adverse effect if the undertaking's effects do not meet the criteria of 36 CFR 800.5(a)(1) or the undertaking is modified to avoid adverse effects in accordance with 36 CFR 68. The USACE shall provide to the SHPO and Tribal Nations documentation of this finding meeting the requirements of 36 CFR 800.11(e). The SHPO and Tribal Nations shall have 30 days in which to review the findings and provide a written response to the USACE. The USACE may proceed upon receipt of written concurrence from the SHPO and Tribal Nations. Failure of the SHPO and Tribal Nations to respond with 30 calendar days of receipt of the finding shall be considered agreement with the finding. The USACE shall maintain a record of the finding and provide information on the finding to the public upon request, consistent with the confidentiality requirements of 36 CFR 800.11(c).
3. Resolution of Adverse Effect. If the USACE determines that the undertaking will have an adverse effect on historic properties as measured by criteria in 36 CFR 800.5(a)(1), the USACE shall consult with the SHPO and Tribal Nations to resolve adverse effects in accordance with 36 CFR 800.6.
  - a) For historic properties that the USACE and the SHPO agree will be adversely affected, the USACE shall:
    - (1) Afford the public an opportunity to express their views on resolving adverse effects in a manner appropriate to the magnitude of the project and its likely effects on historic properties.

- (2) Consult with the SHPO, Tribal Nations, and any consulting parties to seek ways to avoid, minimize or mitigate adverse effects.
  - (3) Prepare a historic property plan (Plan) which describes mitigation measures the USACE proposes to resolve the undertaking's adverse effects and provide this Plan for review and comment to all consulting parties. All parties have 30 days in which to provide a written response to the USACE.
- b) If the USACE, SHPO, and Tribal Nations fail to agree on how adverse effects will be resolved, the USACE shall request that the Council join the consultation and provide the Council and all consulting parties with documentation pursuant to 36 CFR 800.11(g).
  - c) If the Council agrees to join the consultation, the USACE shall proceed in accordance with 36 CFR 800.9.
  - d) If, after consulting to resolve adverse effects, the Council, the USACE, the SHPO, or Tribal Nations determines that further consultation will not be productive, then any party may terminate consultation in accordance with the notification requirements and processes prescribed in 36 CFR 800.7.

## **II. Post Review Changes and Discoveries**

- A. Changes in the Undertaking. If the USACE determines that it will not conduct the undertaking as originally coordinated, the USACE shall reopen consultation pursuant to Stipulation I. D-F.
- B. Unanticipated Discoveries or Effects. Pursuant to 36 CFR 800.13(b)(3), if cultural resources are discovered or unanticipated effects on historic properties are found after construction on an undertaking has commenced, the USACE shall stop construction in the affected area and notify the SHPO and Tribal Nations within 48 hours of the discovery. The notification shall include the USACE assessment of the affected properties, a determination of eligibility for inclusion in the NRHP or designation as an SAL, and, if the property is determined to be eligible or if eligibility cannot be determined, recommendations for additional actions. The USACE may assume SHPO and Tribal Nations concurrence in its eligibility assessment unless otherwise notified by the SHPO and Tribal Nations within 48 hours of notification. If, in consultation with the SHPO and Tribal Nations, additional actions are recommended, the USACE shall develop a treatment plan to evaluate eligibility and/or resolve any adverse effects. The USACE shall submit the draft treatment plan to the SHPO and Tribal Nations for review and concurrence. USACE shall provide the SHPO and Tribal Nations a report documenting all decisions and any actions taken, the results of any investigations, and final determinations when they are completed.

### **III. Curation and Disposition of Recovered Materials, Records, and Reports**

- A. Curation. The USACE shall ensure that all archeological materials and associated records owned by the State of Texas or any non-federal sponsor, which result from identification, evaluation, and treatment efforts conducted under this PA, are accessioned into a curation facility in accordance with the standards of 36 CFR 79, the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191), the Texas Administrative Code 13 TAC §29.5, and the Council of Texas Archeologists Guidelines and Standards for Curation, except as specified in Stipulation IV for human remains. The curation of items owned by the State of Texas or any non-federal sponsor shall be maintained in perpetuity by the non-federal sponsor. Archeological items and materials from privately owned lands shall be returned to their owners upon completion of analyses required for Section 106 compliance under this PA.
- B. Reports. The USACE shall provide copies of final technical reports of investigations and mitigation to the SHPO, Tribal Nations, and consulting parties, as well as additional copies for public distribution. All consulting parties shall withhold site location information or other data that may be of a confidential or sensitive nature pursuant to 36 CFR 800.11(c).

### **IV. Treatment of Native American Human Remains**

- A. Prior Consultation. If the USACE's investigations, conducted pursuant to Stipulation I of this PA, indicate a high likelihood that Native American Indian human remains may be encountered, the USACE shall develop a treatment plan for these remains in consultation with the SHPO and Tribes. The USACE shall ensure that Tribes indicating an interest in the undertaking are afforded a reasonable opportunity to identify concerns, provide advice on identification and evaluation, and participation in the resolution of adverse effects in compliance with the terms of this PA.
- B. Inadvertent Discovery. Immediately upon the inadvertent discovery of human remains during historic properties investigations or construction activities conducted pursuant to this PA, the USACE shall ensure that all ground disturbing activities cease in the vicinity of the human remains and any associated grave goods and that the site is secured from further disturbance or vandalism. The USACE shall be responsible for immediately notifying local law enforcement officials, and within 48 hours of the discovery, shall initiate consultation with the SHPO and Tribal Nations to develop a plan for resolving the adverse effects.

Additionally, the USACE shall follow the procedures outlined in Chapter 711 of the Texas Health and Safety Code requiring the following notifications when human remains are discovered: A person who discovers an unknown or abandoned cemetery (defined as one or more interments) shall file notice of the discovery of the cemetery with the county clerk of the county in which the cemetery is located and concurrently mail notice to the landowner on record in the county appraisal district not later than the 10th day after the date of the discovery. The notice must contain a legal description of the land on which

the unknown or abandoned cemetery was found and describe the approximate location of the cemetery and the evidence of the cemetery that was discovered. An unverified cemetery is defined as a location having some evidence of interment, but in which the presence of one or more graves has not been verified by a person described in Section 711.0105 or by the Texas Historical Commission. A person who discovers an unverified cemetery shall file notice and evidence of the discovery with the Texas Historical Commission on a form provided by the Texas Historical Commission, and shall concurrently provide a copy of the notice to the landowner on record in the county appraisal district on whose land the unverified cemetery is located.

- C. Dispute Resolution. If, during consultation conducted under paragraphs A and B of Stipulation IV, all consulting parties cannot agree upon a consensus plan for resolving adverse effects, the matter shall be referred to the Council for resolution in accordance with the procedures outlines in 36 CFR 800.9.

## **V. PA Amendments, Disputes and Termination**

- A. Amendments. Any party to the PA may propose to the other parties that it be amended, whereupon the parties will consult in accordance with 36 CFR 800.6(c)(7) to consider such an amendment.
- B. Disputes. Disputes regarding the completion of the terms of this agreement shall be resolved by the signatories. If the signatories cannot agree regarding a dispute, any one of the signatories may request the participation of the Council in resolving the dispute in accordance with the procedures outlined in 36 CFR 800.9. The USACE shall forward to the Council and all consulting parties within fifteen (15) days of such a request all documentation relevant to the dispute, including the USACE's proposed resolution of the dispute. The Council will respond to the request within thirty (30) days of receiving all documentation. The USACE will take any recommendations or comments from the Council into account in resolving the dispute. In the event that the Council fails to respond to the request within thirty (30) days of receiving all documentation, the USACE may assume the Council's concurrence with its proposed resolution and proceed with resolving the dispute.
- C. Termination of PA. Any party to this PA may terminate it by providing a sixty (60) day notice to the other parties, provided that the parties will consult during the period prior to the termination to seek agreement on amendments or other actions that will avoid termination. In the event of termination of this PA the USACE shall comply with the provisions of 36 CFR 800, Subpart B.

## **VI. Term of this Agreement**

- A. This PA remains in force for a period of ten (10) years from the date of its execution by all signatories, unless terminated pursuant to Stipulation V(C) Sixty (60) days prior to the conclusion of the ten (10) year period, the USACE shall notify all parties in writing of the

end of the ten year period to determine if they have any objections to extending the term of this PA. If there are no objections received prior to expiration, the PA will continue to remain in force for a new ten (10) year period.

Execution of this PA and implementation of its terms evidences that the USACE has afforded the Council an opportunity to comment on the undertaking and its effects on historic properties, and that the USACE has taken into account those effects and fulfilled Section 106 responsibilities regarding the undertaking.

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**Colonel Timothy R. Vail, District Engineer**

**Date**

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**Mark Wolfe, Texas State Historic Preservation Officer**

**Date**

**The Coastal Texas Protection and Restoration Project,  
Rio Grande to the Sabine Rivers, Texas**

**Cultural Resources and Project Summary  
For the Programmatic Agreement**

**U.S. Army Corps of Engineers  
Galveston District**

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**Study Purpose**

The US Army Corps of Engineers (USACE) has prepared an Integrated Feasibility Report and Environmental Impact Statement (IFR-EIS) (USACE, 2020) for the Coastal Texas Protection and Restoration Project that presents the results of a feasibility study to recommend to Congress coastal storm risk management (CSRM) and ecosystem restoration (ER) alternatives on the Texas coast between the Rio Grande and Sabine Rivers, Texas. The study addresses the feasibility of alternatives that would reduce the risk of storm damage to industries and businesses critical to the Nation’s economy and protect the health and safety of Texas coastal communities. Additionally, the study examines alternatives to intended to address critical coastal ecosystems in need of restoration, including wetlands, seagrass beds, sea turtle nesting habitat, piping plover critical habitat, bird island rookeries, and numerous Federal and State wildlife refuges. The study is authorized under Section 4091, Water Resources Development Act (WRDA) of 2007, Public Law 110-114, which states:

*Sec. 4091. Coastal Texas Ecosystem Protection and Restoration, Texas.*

- (a) In General.—The Secretary shall develop a comprehensive plan to determine the feasibility of carrying out projects for flood damage reduction, hurricane and storm damage reduction, and ecosystem restoration in the coastal areas of the State of Texas.*
- (b) Scope.—The comprehensive plan shall provide for the protection, conservation, and restoration of wetlands, barrier islands, shorelines, and related lands and features that protect critical resources, habitat, and infrastructure from the impacts of coastal storms, hurricanes, erosion, and subsidence.*
- (c) Definition.—For purposes of this section, the term “coastal areas in the State of Texas” means the coastal areas of the State of Texas from the Sabine River on the east to the Rio Grande River on the west and includes tidal waters, barrier islands, marshes, coastal wetlands, rivers and streams, and adjacent areas.*

The study fits into the overall concept of the authorization to conduct an integrated and coordinated approach for reducing coastal storm flood risk through structural measures, including levees, floodwalls, surge gates, and breakwaters, and nonstructural measures, including habitat restoration and shoreline erosion control structures, that take advantage of natural features like barrier islands and storm surge storage in wetlands. The Texas General Land Office is participating as a non-Federal sponsor. This document has been prepared to provide background information supporting coordination of a draft Cultural Resources Programmatic Agreement. Information is presented on the proposed project, the area of potential effects (APE), cultural resources in the study area, investigations that have been conducted to identify historic properties, and potential project effects on these properties.

### **Existing Conditions within the Study Area**

The human landscape was examined over a broad study area encompassing over 18,000 square miles of the Texas Gulf Coast across 18 counties. For the purposes of this study, the coast was divided into four regions, the Upper Texas Coast, the North Central Texas Coast, the South Central Coast, and the Lower Texas Coast. Over 5,200 cultural resources have been documented along the Texas Coast within this study area. These resources include prehistoric and historic archeological sites, historic buildings and structures, historic and archeological districts, and cemeteries. Properties listed on the National Register of Historic Places (NRHP) include 506 properties, of which 14 are National Historic Landmarks (NHL).

**Table 1. Cultural Resources in the Study Area**

<b>Region Name</b>	<b>Sites</b>	<b>NRHP Properties</b>	<b>NRHP Districts</b>	<b>Cemeteries</b>
Upper Texas Coast	2097	311	34	418
North Central Texas Coast	577	117	1	121
South Central Texas Coast	950	17	4	79
Lower Texas Coast	390	16	6	94
<b>Totals</b>	<b>4014</b>	<b>461</b>	<b>45</b>	<b>712</b>

#### *Upper Texas Coast*

This region comprises the upper Texas coast (Orange, Jefferson, Chambers, Harris, Galveston, and Brazoria Counties) and has been occupied by humans since the Paleoindian period dating to around 11,500 BP. There are over 2,000 prehistoric and historic archeological sites within the region. The region is characterized by dense woodlands in the east that transition to coastal prairies in the west and extensive bay and estuarine systems along the coast. The region is primarily drained by the Sabine River, the Trinity River, the San Jacinto River, Buffalo Bayou, and the Brazos River. Sediments in the region

are generally fluvial sandy and silty clays overlying Pleistocene aged clay. Prehistoric sites are commonly found within these upper sediments along streams and rivers and along the shorelines of the bays and gulf coast, close to prime areas for resource exploitation. These sites include campsites, dense shell middens, and cemeteries, which contain projectile points, stone, bone, and shell tools, aquatic and terrestrial faunal remains, hearth features, ceramics, and in some cases human remains and associated funerary objects. Historic aged resources in the region consist of farmsteads and ranches, houses, buildings, bridges, tunnels, oil industry structures, cemeteries, lighthouses, shipwrecks, and the ruins of these buildings and structures. Although historic resources can occur anywhere, these sites tend to be concentrated in small towns and urban areas, along roads, and within current and historic navigation paths. Shipwrecks may also occur in numerous locales due to the dynamic nature of the sea floor and bay bottoms and the lack of navigation improvements until the latter part of the 19<sup>th</sup> century. These dynamic conditions can result in shifting shoals and reefs that endanger ships as well as bury their wrecks as shorelines and bars migrate through time.

There are several NHLs, including the San Jacinto Battlefield, the Battleship Texas, the Tall Ship Elissa and the Spindletop Oil Field, as well as NHL Districts, such as the Galveston Strand Historic District and the Galveston East End Historic District. There are 345 National Register Properties and 418 cemeteries within the region. Many of these historic properties are located in urban areas and are primarily historic houses, commercial and government buildings, and structures represented by the Navy Park Historic District, Houston Heights, Galveston Central Business District, Durazno Plantation, Varner-Hogg Plantation, Fort Travis, Washburn Tunnel and others. Other National Register sites and districts located throughout the area include the Apollo Mission Control Center, the Space Environment Simulation Laboratory, the Saturn V Launch Vehicle, the Point Bolivar and Sabine Pass Lighthouses, the Beaumont Commercial District, the Jefferson Historic District, the Port Arthur-Orange Bridge, the W. H. Stark House, the Old Wallisville Townsite, Fort Anahuac, and the Chambers and Jefferson County Courthouses. The majority of these cultural resources are vulnerable to damage or destruction from hurricane storm surge.

#### *North Central Texas Coast – Matagorda Bay*

Human habitation along the north central coast in the vicinity of Matagorda Bay (Matagorda, Jackson, Victoria, and Calhoun Counties) has only been identified in the region as early as 7,500 BP. This region is similar to the upper Texas Coast with broad coastal estuarine systems and bays and coastal prairies further inland, but lacks the dense woodlands of eastern Texas. The Colorado, Lavaca, San Antonio, and Guadalupe rivers are the major drainages in the region. Sediments in the region consist of fluvial deposits



and delta formations overlying Pleistocene aged clay. There are 577 recorded prehistoric and historic archeological sites in the region, which are similar in nature and location to sites along the upper Texas Coast; however prehistoric sites are primarily located adjacent to brackish estuarine systems. Shell midden sites are especially common in the region along the shorelines and upland areas adjacent to rivers and bays and on the barrier islands. The central Texas Coast is more rural than the upper Texas Coast and while historic sites are located in small urban centers, farmsteads, ranches, and plantations can occur across the region. Shipwrecks are also common in the region and are subject to the same formation processes as the upper coast.

There are 118 historic properties recorded within the region and one these includes the South Bridge Street Historic District in Victoria, Texas. The vast majority of the historic properties are also within the city of Victoria including the City of Victoria Pumping Plant, the Old Brownson School, Trinity Lutheran Church, and others. Outside of Victoria, historic properties include the Matagorda Island Lighthouse in Port O'Connor, the Texana Presbyterian Church in Edna, and the Hotel Blessing in Blessing.

#### *South Central Texas Coast – Corpus Christi Bay*

The south central Texas Coast around Corpus Christi and Baffin Bays (Refugio, Aransas, San Patricio, Nueces, and Kleberg Counties) is very similar environmentally and culturally to the north central coast. There are 950 archeological sites recorded within the region. The primary drainages for this region include the Aransas and Nueces Rivers as well as Petronilla and Chiltipin Creeks. Prehistoric sites in the region are concentrated on the shorelines of Copano, Corpus Christi, and Baffin Bays, as well as along the rivers and streams that drain into these bays. Numerous sites have also been identified on the barrier islands. Both prehistoric and historic archeological sites are similar to those in the upper and north central coast, but, similar to the north central coast, show an increase in the number of shell middens.

There are 21 historic properties listed in the region with many of these located in Corpus Christi and Rockport. Some notable properties include the Ragland Mercantile Company Building, the Nueces and Refugio County Courthouses, the Tarpon Inn, Fulton Mansion, and the Henrietta King High School. Historic districts include the Aransas Pass Light Station, the Broadway Bluff Improvement, and the James McGloin Homestead. Two NHLs include the USS Lexington in Corpus Christi and the King Ranch. The King Ranch is a NHL District that covers over two-thirds of Kleberg County.

### *Lower Texas Coast – Padre Island*

The lower Texas coast (Kenedy, Willacy, and Cameron Counties) exhibits some evidence of human habitation as early as 11,500 BP. This region is primarily drained to the south by the Rio Grande and is characterized by a broad aeolian sand sheet in the north, the Rio Grande delta in the south and a small portion of coastal prairie dividing the two. There are 390 archeological sites recorded in the region, primarily along the shores of the Laguna Madre, and on the barrier islands. Archeological investigations in the region have not been sufficient to clearly identify regional chronology or settlement patterns. However, the archeological record suggests that groups in these areas utilized the inland areas along the Rio Grande and the coastal areas either based on seasonal or territorial constraints. As such, prehistoric sites can be expected within fluvial terraces along streams and rivers and in upland terraces along the shorelines of the bays. Furthermore, the widespread deposition of aeolian clays has established stable clay dunes or lomas, which have a high probability for archeological sites, but are also at high risk from erosion from wind and water.

There are 22 historic properties listed within the region. Almost all of these properties are located in Brownsville or along the Rio Grande including the Cameron County Courthouse, Southern Pacific Railroad Passenger Depot, the Charles Stillman House, the Immaculate Conception Church, and La Nueva Libertad. Outside of Brownsville, properties include the Point Isabel Lighthouse in Port Isabel, the Brazos Santiago Depot at Boca Chica, and the Old Lyford High School in Lyford. There are six historic districts in the region and five of these are NHLs. These NHLs include Fort Brown, Palo Alto Battlefield, Palmito Ranch Battlefield, and Resaca de la Palma Battlefield, which are associated with the Mexican War and the Civil War. The King Ranch NHL is also located in the region and occupies a large portion of Kenedy and Willacy Counties.

### *Regional Cultural Resources Considerations*

There are over 5,200 cultural resources recorded within the study area. Many of these resources have national and regional significance and are either listed on or are eligible for inclusion in the NRHP. Additionally, almost all cultural resources within the four regions are at risk from hurricane storm damage to varying degrees. Those resources at highest risk are archeological sites along coastal and bay shorelines where storm surge wave action and flooding can cause severe erosion, historic buildings and structures that can be destabilized or destroyed by wave action and flooding, and submerged resources, such as shipwrecks, which can be exposed and dispersed by shifting sea floor and bay bottom during violent storm events. Indirectly, cultural resources whose owners lack sufficient money or resources to rehabilitate damaged properties could be lost entirely.

Structural and non-structural alternatives for reducing storm risk also pose a threat to cultural resources in the study area as these can involve both direct and indirect impacts. Direct impacts could include damage to surface and subsurface resources from levee or wall construction and associated borrow areas, erosion from redirected storm waters into archeologically or historically sensitive areas, dredging for beach and dune nourishment, and impacts from landscape modification of ecosystem restoration features. Indirect impacts could include visual impacts from obstructions such as levees and walls, increased unregulated construction/renovation in newly protected areas, and noise impacts from increased traffic in protected areas and along evacuation routes.

The USACE conducted a preliminary assessment of the cultural resources within a broad regional study area over 18,000 square miles of the Texas Coast using a desktop review of the databases maintained by the Texas Historical Commission and the Texas Archeological Research Laboratory for terrestrial and marine cultural resources as well as the shipwreck and obstruction databases of the National Oceanic and Atmospheric Administration and the Bureau of Ocean Engineering Management. This search was then narrowed to an area within 1,000 feet of each CSRSM measure and within the direct footprint of each ER measure, and is considered the project area for the cultural resources discussion below. This assessment identified 250 previously recorded cultural resources including 75 archeological sites, 10 cemeteries, and approximately 140 possible submerged archeological resources. There are also 20 recorded National Register properties within the project area, including 16 individual properties and four districts.

### **Recommended Plan**

The Coastal Texas Protection and Restoration Project consists of the construction of six CSRSM features and eight ER measures, as well ecological mitigation features. The recommended plan includes these CSRSM features with both structural and non-structural elements: Houston Ship Channel Navigation Gate and Tie-in Structures, Dune and Berm, Galveston Ring Barrier, Gates at Clear Creek and Dickinson Bayou, West Galveston Bay Non-Structural, and South Padre Island Beach Fill. The recommended plan also includes eight ER measures and 13 ecological mitigation areas. All elevations given for all of the features are relative to NAVD88.

#### *Coastal Storm Risk Management*

- Houston Ship Channel Navigation Gate and Tie-in Structures. This feature spans the Houston Ship Channel at Bolivar Roads and includes two 650-foot wide deep draft navigation sector gates and tie-in structures that connect the gates to Galveston Island and the Bolivar Peninsula

(Appendix A, Sheet A-1). The sector gates will be set into constructed islands that will be approximately 16 acres in size. A new channel will be dredged north of the existing channel to pass through the northern gate and three new anchorage basins will be located adjacent to the channel. The tie-in structures will include sluice gates and 34 environmental lift gates, as well smaller navigation gates. The completed structure will have an elevation of 17 to 21 feet and include both temporary and permanent easements.

- Dune and Berm.** The dune and berm feature includes the construction of a dune field and a berm on the Bolivar Peninsula and the western portion of Galveston Island. The feature will extend approximately 24 miles from High Island to the Galveston North Jetty on the Bolivar Peninsula (Appendix A, Sheet A-2) and approximately 18 miles from 102<sup>nd</sup> Street to San Luis Pass on Galveston Island (Appendix A, Sheet A-3). The dune field will consist of a 185 foot wide field with landward dunes with an elevation of 14 feet and gulfward dunes with an elevation of 12 feet. A berm and beach fill will extend another 200 feet toward the Gulf of Mexico (Figure 1). This feature will also include the construction of beach access points and include temporary and permanent easements. The sediment to construct the dune and berm features will be dredged from undetermined locations within an approximately 565 square mile area, 23 to 30 mile offshore in the Gulf of Mexico (Appendix A, Sheet A-4).

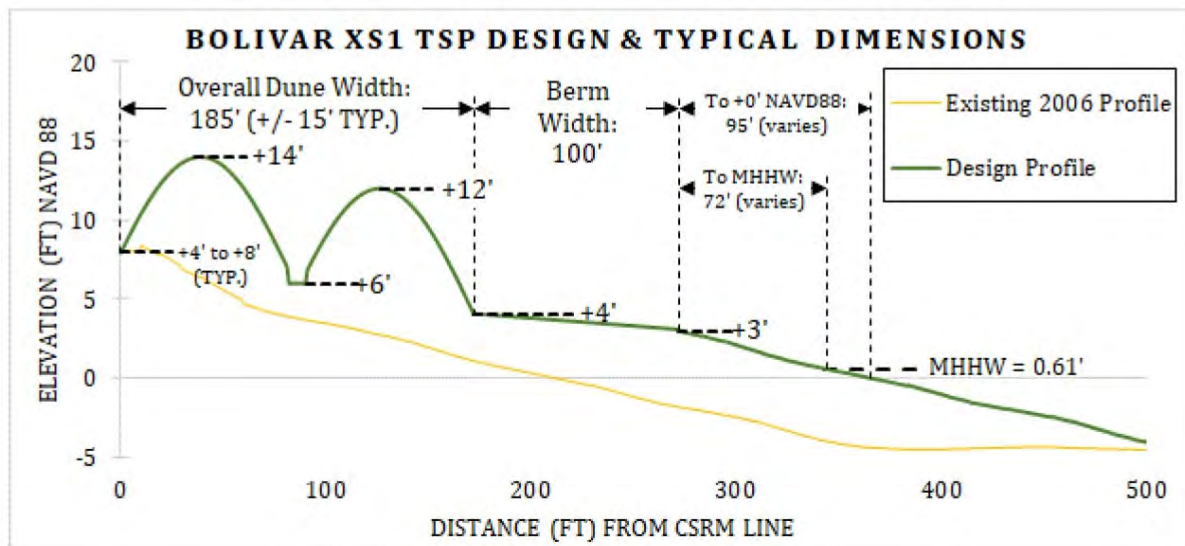


Figure 1. Conceptual cross section of the dune and berm feature.

- Galveston Ring Barrier. The Galveston Ring Barrier feature consists of a combination of flood wall and gates at an elevation of 17 feet surrounding the City of Galveston (Appendix A, Sheet A-5). The barrier will extend east from the Galveston Island Causeway primarily within existing railroad right-of-way on the north side of the island before entering the Port of Galveston near 46<sup>th</sup> Street. The barrier will extend through the port adjacent to the navigation channel up to the ferry landing. At the ferry landing, the barrier turns south southeast following an existing levee along ferry road until reaching the Galveston Seawall. The barrier will follow the seawall (Appendix A, Sheet A-6) and parts of FM 3005 until turning northwest just east of Seven Mile Road. Continuing northwest, the barrier will cross overland between Sweetwater Lake and Sydnor Bayou to Offatts Bayou. At Offatts Bayou, the barrier will turn northeast into West Bay until terminating back at the causeway. Given the variable elevation of the island, the barrier is anticipated to be between 2 and 14 feet above ground, depending on the location.

In addition to the flood wall barrier, flood gates will be constructed at road crossings, a sector gate will be constructed across the mouth of Offatts Bayou to allow navigation, and six pump stations will be constructed. Breakwaters will be constructed east of the causeway and west of the Galveston Navigation Channel in southwest Galveston Bay. The USACE is also proposing non-structural measures, which may include improving drainage, raising buildings, or property buyouts, for areas on Galveston Island outside of the barrier. These areas are primarily the areas along Harborside Drive, north of the barrier, and the entire portion of Galveston Island west of the barrier.

- Gates at Clear Creek and Dickinson. This feature includes the construction of sector gates at mouths of Clear Creek (Appendix A, Sheet A-7) and Dickinson Bayou (Appendix A, Sheet A-8) along State Highway 146. The gate structures will also include adjacent barrier walls, and all will be built to an elevation of 17 feet. In addition to the structures, the areas upstream and downstream of the gates at Clear Creek will need to be dredged. Both locations will also include pump stations.
- West Galveston Bay Non-structural. Non-structural measures, which may include improving drainage, raising buildings, or property buyouts, are proposed for a broad area that extends from Morgan's Point to San Leon, between State Highway 146 and Galveston Bay (Appendix A, Sheet A-9).

- South Padre Island Beach Fill. This feature is a dune and berm feature that will be constructed on South Padre Island. The feature will extend north along the shore for approximately 6 miles from the north jetty of the Brownsville Ship Channel (Appendix A, Sheet A-10). The dune field will consist of approximately 15-foot wide dunes built to an elevation of 10 feet. A berm and beach fill will extend another approximately 80 feet toward the Gulf of Mexico. This feature will also include the construction of beach access points and include temporary and permanent easements.

### *Ecosystem Restoration*

- B-2. This feature is located on Follet's Island and includes approximately 10 miles (1,114 acres) of beach and dune restoration. Restoration and continuing nourishment would occur on the Gulf of Mexico side of the island (Appendix B, Sheet 2).
- G-28. This feature includes approximately 326 acres of island restoration along the Gulf Intracoastal Waterway (GIWW) and West Galveston Bay shore as well as approximately 664 acres of estuarine marsh restoration. New oyster reef will also be constructed over approximately 18 acres in West Galveston Bay. Finally, 36 miles of breakwater will be installed along unprotected segments of the GIWW and as a buffer for developed areas (Appendix B, Sheets 3 to 7).
- B-12. This feature is located along the GIWW from West Galveston Bay to approximately 15 miles west of the city of Freeport. The feature will include 551 acres of estuarine marsh restoration and continuing nourishment and 3,708 linear feet of oyster reef creation. Additionally, 43.2 miles of breakwaters will be constructed along the western side of West Galveston Bay, Cowtrap Lake, and along selected segments of the GIWW in Brazoria County (Appendix B, Sheets 8 and 9).
- M-8. This feature is located along the shoreline of East Matagorda Bay between Matagorda and Bay City, Texas. The feature includes approximately 240 acres of marsh restoration with continuing marsh nourishment along portions of the GIWW and approximately 93 acres (3.5 miles) of island restoration in front of the Big Boggy National Wildlife Refuge. The island restoration will also include 31,355 linear feet of oyster reef creation on the bay side of the island. Finally, the feature will include 8.9 miles of breakwater construction along unprotected segments of the GIWW (Appendix B, Sheets 10 to 12).

- CA-5. This feature is located on a peninsula that extends between Lavaca, Matagorda, and Keller Bays and includes approximately 3.8 miles of breakwater construction along the Matagorda Bay side of the peninsula. Oyster reef will be constructed over 12,213 linear feet along the Lavaca Bay side of the peninsula (Appendix B, Sheet 13).
- CA-6. This feature is located in west Matagorda Bay from Indianola south to Port O'Connor, Texas. The feature includes 531 acres of estuarine marsh restoration and nourishment within the Powderhorn Lake estuary and Boggy Bayou and along the west Matagorda Bay shoreline. Additionally, five miles of breakwaters will be constructed along the shorelines fronting portions of Indianola, the Powderhorn Lake estuary, and Texas Parks and Wildlife Department's Powderhorn Ranch State park and Wildlife Management Area (Appendix B, Sheets 14 and 15).
- SP-1. This feature is located in Redfish Bay near Corpus Christi, Texas. The feature includes 391.4 acres of island restoration for Dagger, Ransom, and Stedman Islands and 7.4 miles of breakwater construction along the restored islands and along unprotected segments of the GIWW. Additionally, 7,392 linear feet of oyster reef will be created between the breakwaters and the restored islands (Appendix B, Sheets 16 to 18).
- W-3. This feature is located along the Port Mansfield Channel on North Padre Island. The feature will include 27.8 acres of bird island restoration with an associated 0.7 miles of breakwater construction around the island. Also, the North Padre Island gulfward beach will be nourished for 9.5 miles north of the northern Port Mansfield Channel Jetty. Source material for the beach nourishment will come from dedicated dredging of the Port Mansfield Channel. The dredging will also restore the hydrologic connection between the channel and Brazos Santiago Pass across approximately 113,000 acres of the Laguna Madre (Appendix B, Sheets 19 and 20).

### *Ecological Mitigation*

Ecological mitigation will occur across Galveston and West Galveston Bays and includes construction of new oyster reefs, palustrine wetlands, and estuarine wetlands (Appendix A, Sheet A-11). Oyster reef construction will be located around the Alligator Point Rookery, Evia Island, and in Dickinson Bay. Palustrine wetlands will be constructed on Galveston Island in three locations bounded by Pabst Road and Grand Avenue on the east and west and by Stewart Road and FM 3005 on the north and south. Estuarine

wetlands will be constructed in seven locations: Dickinson Bayou, Seabrook, and Greens Lake on the mainland, and Sievers Cove and three locations within Horseshoe Lake on the Bolivar Peninsula.

### **Cultural Resources and Area of Potential Effects**

The activities associated with the proposed undertaking include all new construction, improvements, and maintenance activities related to the proposed Coastal Texas Protection and Restoration Project. The APE includes the footprint of all areas in the recommended plan that will be directly impacted and all areas within 500 feet of the footprint that will be indirectly impacted. Direct impacts will include the new construction of structures, construction of staging and access areas, dredge areas, ecosystem restoration features, construction of ecological features, marsh nourishment, and project maintenance. Indirect impacts include primarily the visual impacts of elevated structures that have a potential to affect historic buildings, structures, or landscapes. The APE will also include activities that may be added during Preconstruction Engineering and Design (PED).

More than 250 cultural resource investigations have been performed within 1,000 feet of the APE. These investigations include terrestrial archeological investigations, architectural and structural investigations, and investigations related to submerged resources. As stated previously, 250 previously recorded cultural resources including 75 archeological sites, 10 cemeteries, and approximately 140 possible submerged archeological resources have been identified within 1,000 feet of the project area. There are also 20 recorded National Register properties within the project area, including two National Historic Landmarks, 14 individual properties and four districts. The resources are listed by feature in the following tables (Tables 2 to 4).



**Table 2. Archeological Resources by feature.**

Houston Ship Channel Navigation Gate and Tie-in Structures	41GV119, 41GV151, 41GV165, 41GV178
Dune and Berm	41GV73, 41GV74
Galveston Ring Barrier	41GV5, 41GV48, 41GV66, 41GV69, 41GV70, 41GV71, 41GV95, 41GV112, 41GV119, 41GV133, 41GV140, 41GV148, 41GV162, 41GV163, 41GV164, 41GV167, 41GV169, 41GV170, 41GV174, 41GV175, 41GV176
Gates at Clear Creek and Dickinson	41GV18, 41GV20, 41GV75, 41GV83, 41GV84, 41GV85, 41GV86, 41HR91
West Galveston Bay Non-structural	41GV2, 41GV18, 41GV87, 41GV141, 41HR74, 41HR91, 41HR418, 41HR420, 41HR421, 41HR422, 41HR831, 41HR832
South Padre Island Beach Fill	None
Ecosystem Restoration	41BO79, 41BO85, 41BO86, 41BO135, 41BO170, 41BO176, 41BO199, 41BO205, 41CH354, 41CH355, 41CH360, 41CH362, 41CH363, 41CL14, 41CL40, 41CL41, 41CL53, 41CL54, 41GV1, 41GV6, 41GV128, 41GV172, 41KN11, 41MG82, 41MG111, 41NU210, 41NU290, 41SP64, 41SP62, 41WY23
Ecological Mitigation	41GV93

**Table 3. National Register of Historic Places Properties by feature.**

Houston Ship Channel Navigation Gate and Tie-in Structures	USS <i>Stewart</i> , USS <i>Cavalla</i> , Fort Travis
Dune and Berm	None
Galveston Ring Barrier	The Strand Historic District (NHL), <i>Elissa</i> (NHL), Denver Court Historic District, Galveston Seawall, Silk Stocking Residential Historic District, Galvez Hotel, Ashbel Smith Building, Marschner Building, Truehart-Alliance Building, Falstaff Brewery, Galveston Causeway, House at 2528 Post Office Street
Gates at Clear Creek and Dickinson	None
West Galveston Bay Non-structural	Walker House, Sylvan Beach Pavilion, S. Ross Sterling House, Morgan's Point Historic District
South Padre Island Beach Fill	None
Ecosystem Restoration	La Salle Monument
Ecological Mitigation	None

**Table 4. Cemeteries by feature.**

Houston Ship Channel Navigation Gate and Tie-in Structures	None
Dune and Berm	None
Galveston Ring Barrier	Rosewood Cemetery, Lakeview Cemetery
Gates at Clear Creek and Dickinson	None
West Galveston Bay Non-structural	Beasley Cemetery, Cedarhurst Cemetery, La Porte Cemetery, Morgan's Point Cemetery, San Leon Cemetery, Seureau-Kellett Cemetery, Twilight Cemetery
South Padre Island Beach Fill	None
Ecosystem Restoration	Ducroz Cemetery (41BO170)
Ecological Mitigation	None

### **Recommendations**

There is a potential for the recommended plan to impact historic properties. The CSR features proposed for this project involve the construction of structures that have a potential to directly and indirectly affect historic properties in both terrestrial and submerged environments. Ecosystem Restoration features will also include structural changes that have a potential to directly affect historic properties. The entire project area is considered to have a high probability for terrestrial and submerged cultural resources to occur. The USACE recommends an intensive cultural resources survey for all proposed project areas to include marine and terrestrial archeological investigations and a historic building and structure survey to determine the presence or absence of historic properties within the APE. These investigations will be conducted prior to construction during the USACE PED phase. The scope of these investigations will be determined in concert with the Texas State Historic Preservation Officer and Native American Tribes and in accordance with the Programmatic Agreement for this project.


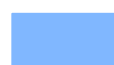

# **Appendix A – Figures for CSRМ and Ecological Mitigation Features**

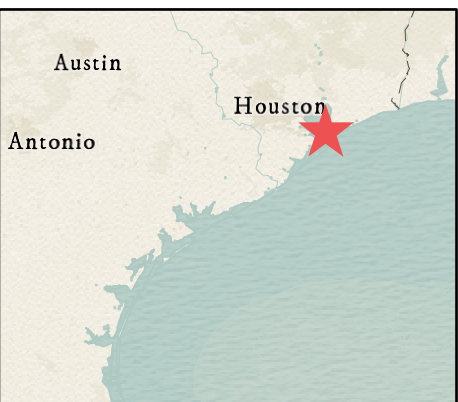
Coastal Texas Protection and Restoration Project  
Programmatic Agreement and Project Summary

April 2020

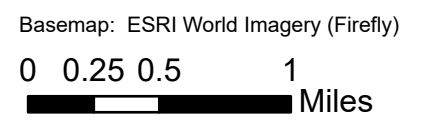
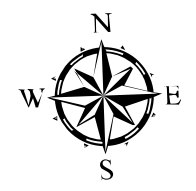


# Houston Ship Channel Navigation Gate and Tie-In Structures

-  Levee
-  Combi Wall
-  Anchorage Areas
-  Navigation Gate
-  New Channel Lines
-  Portion of Existing Channel Lines
-  New Channel
-  Boat Ramp and Parking
-  Scour Protection
-  Permanent Footprint
-  Temporary Work Area Footprint



## Coastal Texas Protection and Restoration Feasibility Study
















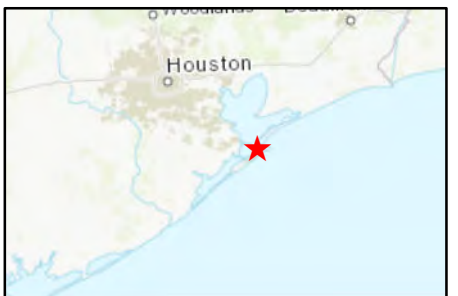
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DATUM: NAD 1983  
 PROJECTION: STATE PLANE  
 ZONE: TX-SC 4204



NOTE: Vehicle and Pedestrian access locations are reflective of current beach access plans and may be subject to change.

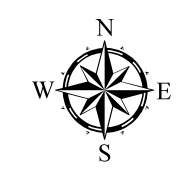
-  Private Access
-  Proposed Outfalls
-  Existing Outfalls
-  CBRS Unit Area
-  Proposed Ditch
-  Breakwater/Reef Ball
-  Pedestrian Public Access
-  Vehicle Public Access
-  Temporary Staging Area
-  New Beach - 250ft
-  Dune Field - 185ft
-  Temporary Work Easement - 20ft
-  Permanent Easement - 10ft



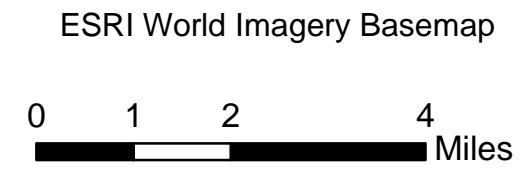
# Coastal Texas Protection and Restoration Feasibility Study

## Beach and Dune System

### Bolivar Peninsula
















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Draft Date: 23April2020

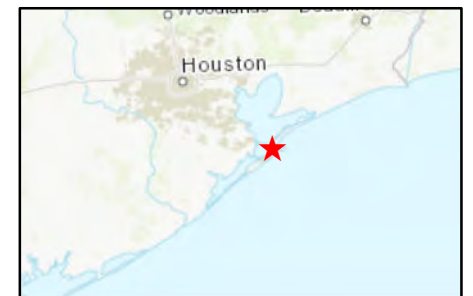


NOTE: Vehicle and Pedestrian access locations are reflective of current beach access plans and may be subject to change.

-  Private Access
-  Proposed Outfalls
-  Existing Outfalls
-  CBRS Unit Area
-  Proposed Ditch
-  Breakwater/Reef Ball
-  Pedestrian Public Access
-  Vehicle Public Access
-  Temporary Staging Area
-  New Beach - 250ft
-  Dune Field - 185ft
-  Temporary Work Easement - 20ft
-  Permanent Easement - 10ft



Sheet A-3



# Coastal Texas Protection and Restoration Feasibility Study

## Beach and Dune System

### Galveston Island



DATUM: NAD 1983  
PROJECTION: STATE PLANE  
ZONE: TX-SC 4204

ESRI World Imagery Basemap

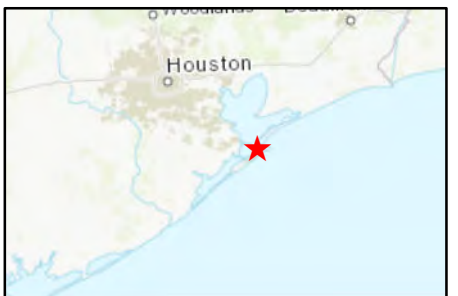
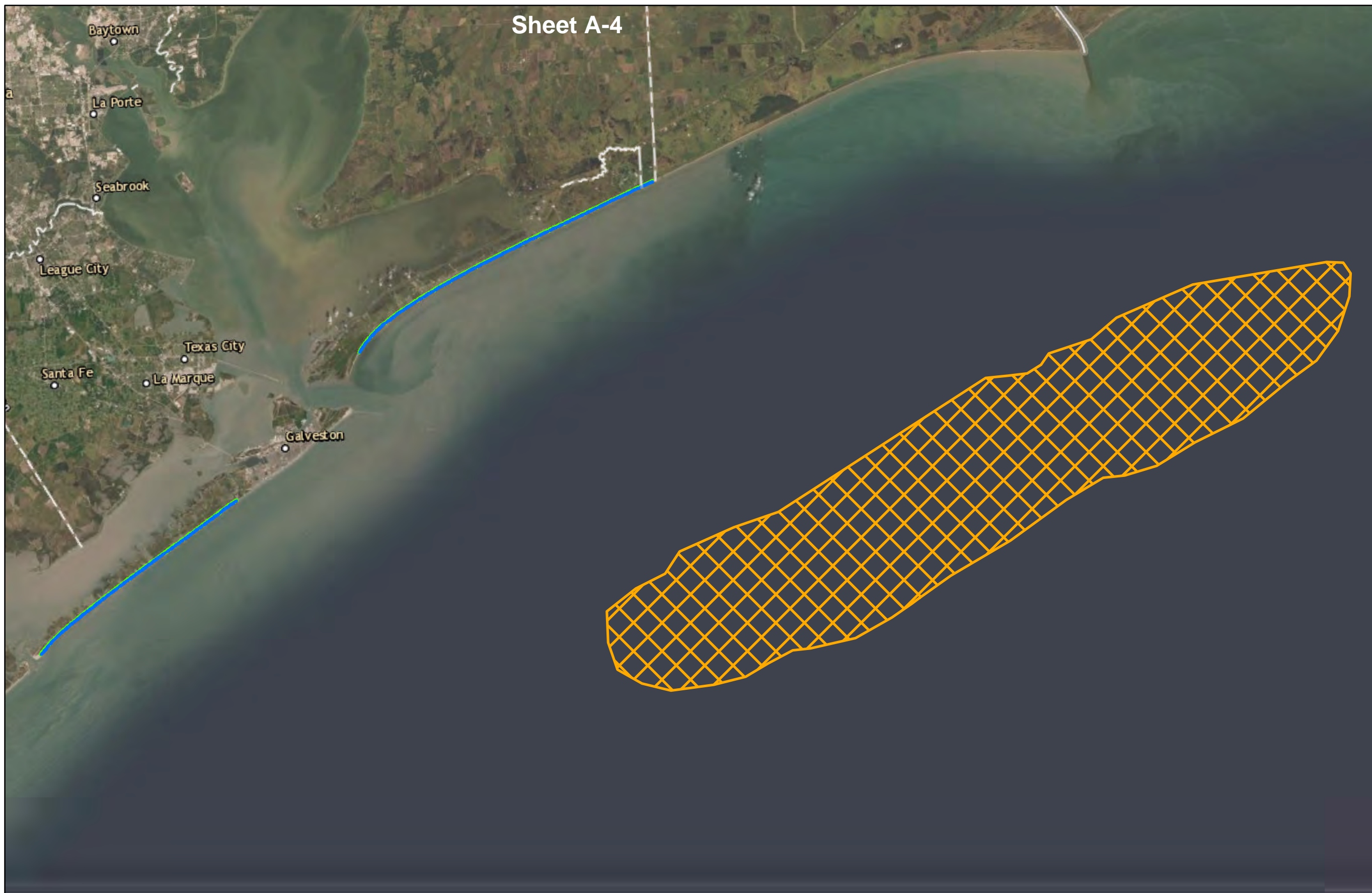


Draft Date: 23April2020



NOTE: Vehicle and Pedestrian access locations are reflective of current beach access plans and may be subject to change.


-  Sediment Source
-  Private Access
-  Proposed Outfalls
-  Existing Outfalls
-  CBRS Unit Area
-  Proposed Ditch
-  Breakwater/Reef Ball
-  Pedestrian Public Access
-  Vehicle Public Access
-  Temporary Staging Area
-  New Beach - 250ft
-  Dune Field - 185ft
-  Temporary Work Easement - 20ft
-  Permanent Easement - 10ft




# Coastal Texas Protection and Restoration Feasibility Study

## Beach and Dune System

### Bolivar and Galveston Island

  
 DATUM: NAD 1983  
 PROJECTION: STATE PLANE  
 ZONE: TX-SC 4204

ESRI World Imagery Basemap  
  
 Draft Date: 23April2020

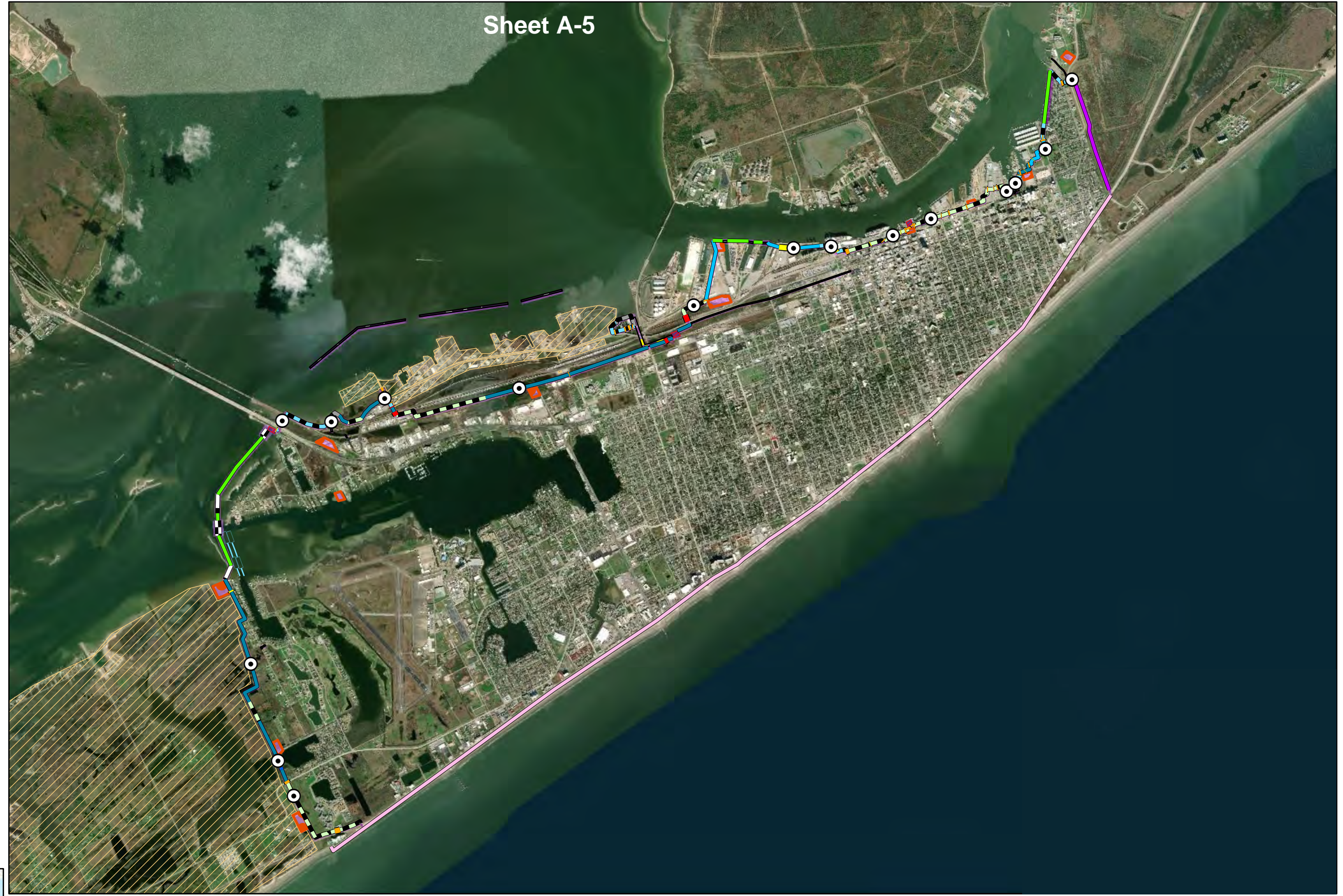


# Coastal Texas Protection and Restoration Feasibility Study

## City of Galveston Ring Barrier

Sheet A-5

- Drainage Structure
  - Access Gate
  - Rail Closure
  - Road Closure
  - Combi Wall
  - Circulation Gate
  - Navigation Gate
  - Channel Realignment
  - Existing Levee
  - Seawall
  - Floodwall
- Approximate "Stick Up" Height**
- 0 - 2 ft
  - 2 - 4 ft
  - 4 - 6 ft
  - 6 - 8 ft
  - 8 - 10 ft
  - 10 - 12 ft
  - 12 - 14 ft



**US Army Corps of Engineers**  
Galveston District

TEXAS GENERAL LAND OFFICE  
ESTABLISHED 1836

	Breakwater		Temporary Staging Area		Pump Station
	Drainage Impact Mitigation		Nonstructural Measures		
	Elevated Roadway		Permanent Easement		0 0.25 0.5 1 Miles
	Cofferdam		Temporary Work Easement		Draft Date: 23Jan2020







Base Imagery: ESRI Basemaps

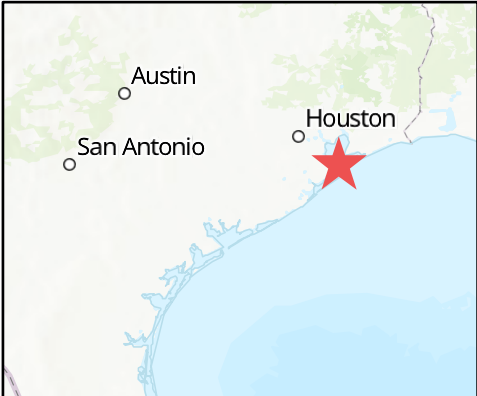
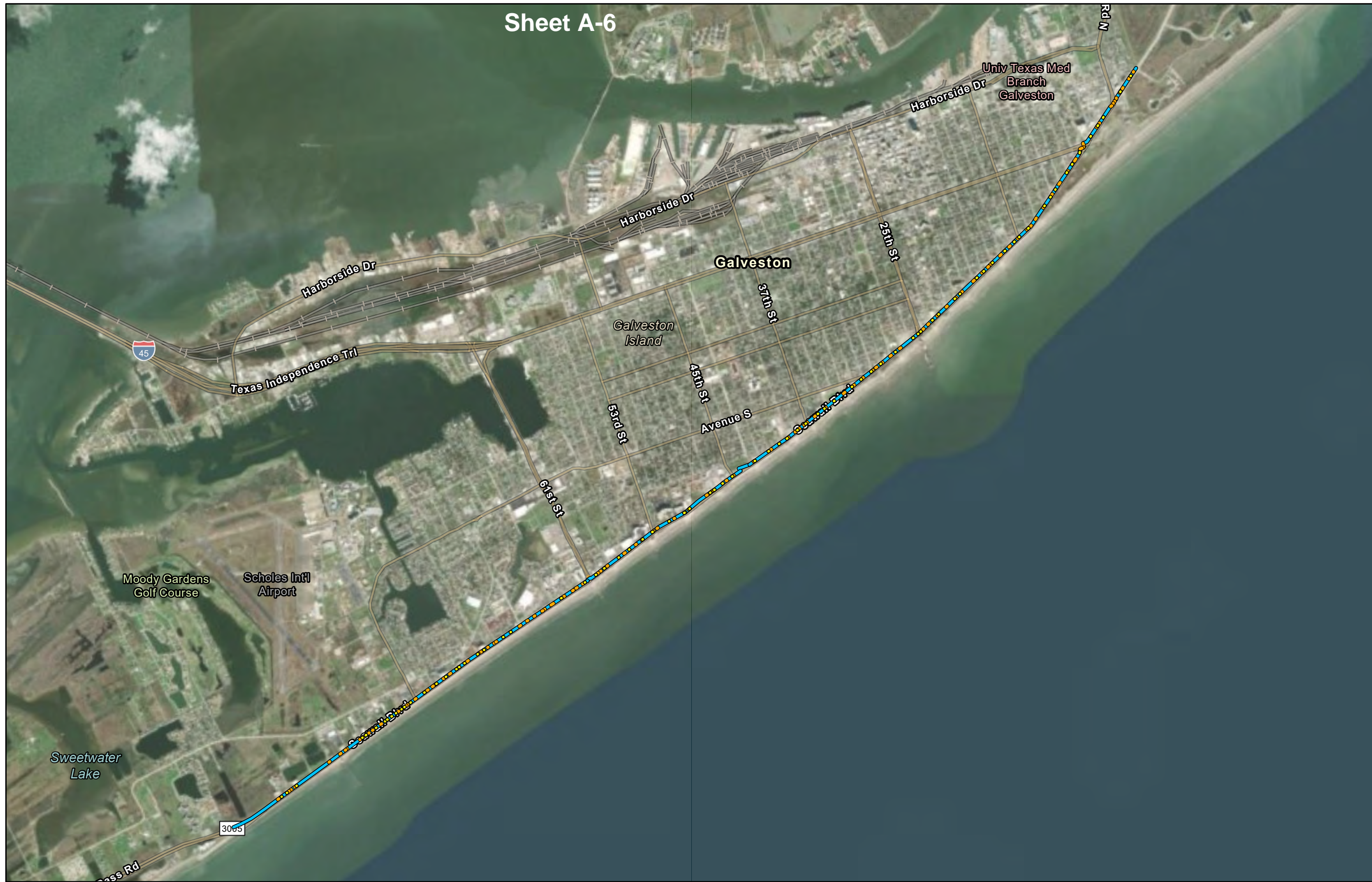
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PROJECTION: STATE PLANE  
ZONE: TX-SC 4204



# Seawall Improvements

Sheet A-6

-  Seawall Overtopping Reduction Feature
-  Pedestrian Access
-  Road Closure
-  Elevated Roadway
-  Temporary Footprint
-  Permanent Footprint



## Coastal Texas Protection and Restoration Feasibility Study

  
 DATUM: NAD 1983  
 PROJECTION: STATE PLANE  
 ZONE: TX-SC 4204











ESRI World Imagery Basemap  
 0 0.25 0.5 1 Miles

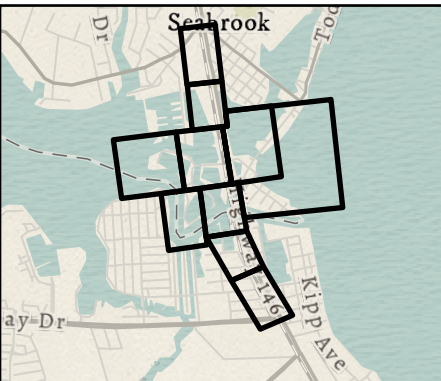
Date: 2 February 2020

Page Number: 2



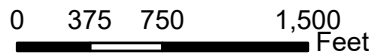
# Clear Creek Gate and Pump Station

-  Bulkhead
-  Floodwall
-  Shoreline Stabilization
-  Circulation Gates
-  Navigation Gate
-  Pump Station
-  Scour Protection
-  Dredge Area
-  Permanent Footprint
-  Temporary Work Footprint



## Coastal Texas Protection and Restoration Feasibility Study



  
 DATUM: NAD 1983  
 PROJECTION: STATE PLANE  
 ZONE: TX-SC 4204

Basemap: 2018 NAIP  
  
 0 375 750 1,500 Feet

Date: 20 February 2020  
 Page Number: 1



# Dickinson Gate and Pump Station

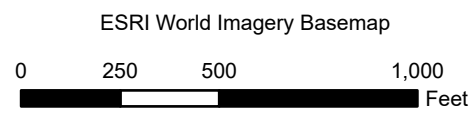
-  Gate and Pump Station
-  Permanent Footprint

Permanent Footprint includes structure space, dredging area, and permanent maintenance right-of-way.



## Coastal Texas Protection and Restoration Feasibility Study

  
 DATUM: NAD 1983  
 PROJECTION: STATE PLANE  
 ZONE: TX-SC 4204

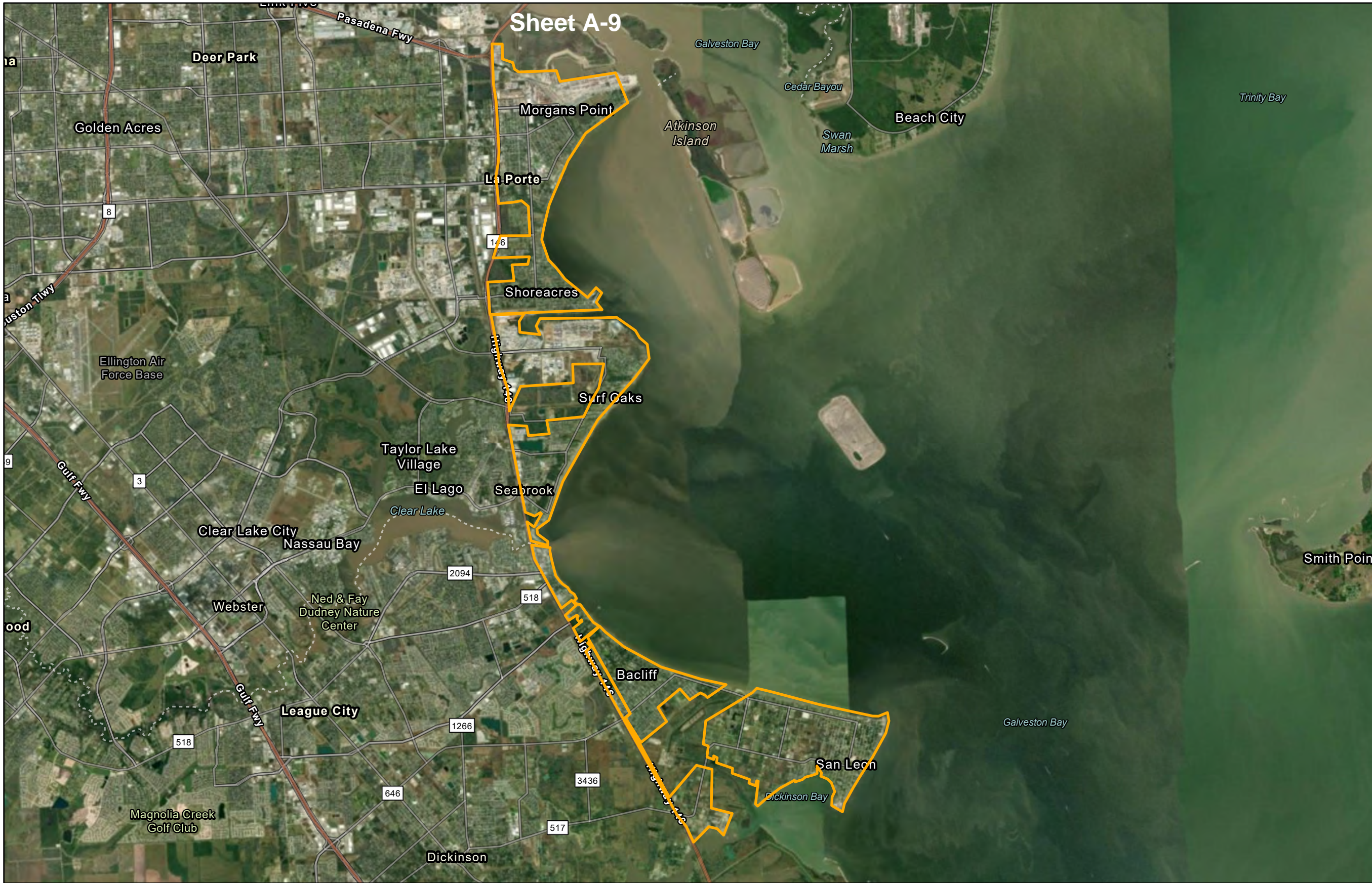


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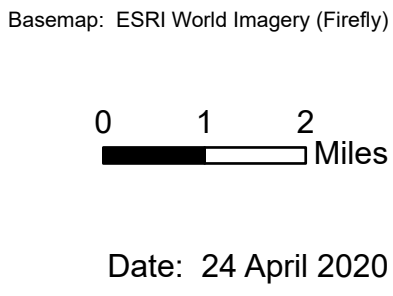


# West Galveston Bay Nonstructural Improvements

 Nonstructural  
Improvements



## Coastal Texas Protection and Restoration Feasibility Study




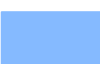

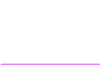


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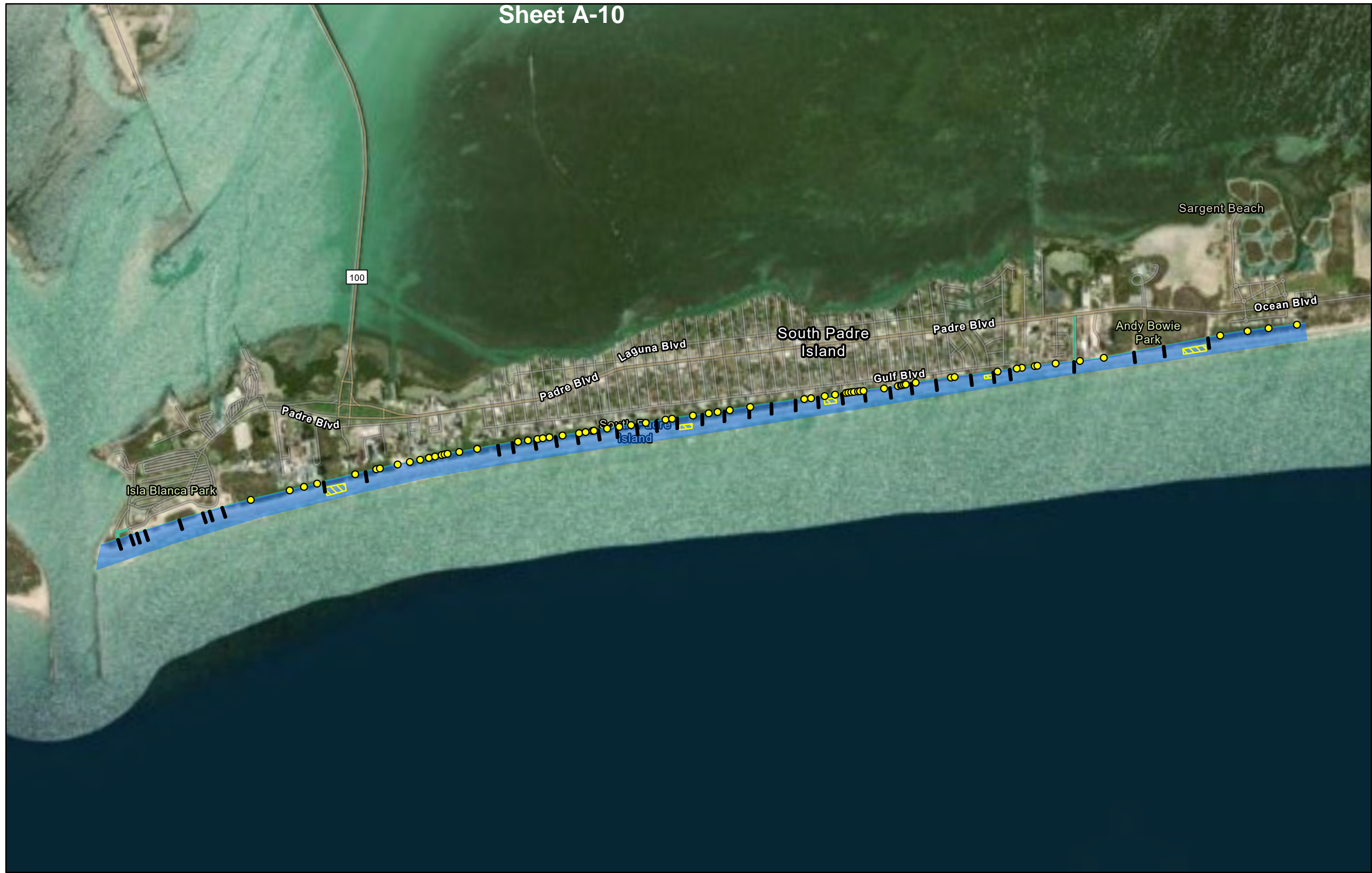


# South Padre Island Beach and Dune Nourishment

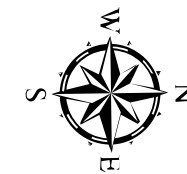
Sheet A-10

-  Private Beach Access
-  Public Beach Access
-  Temporary Staging Area
-  Beach and Dune Field\*
-  Temporary Work / Access Easement
-  Permanent Easement

\* Beach and Dune field width subject to change.



## Coastal Texas Protection and Restoration Feasibility Study



DATUM: NAD 1983  
PROJECTION: STATE PLANE  
ZONE: TX-S 4205

Basemap: ESRI World Imagery and 2018 NAIP

0 50 100 200 Feet

Date: 10 February 2020

Page Number: 2



# Mitigation

 Oyster Reef

Pages 2 - 4

Alligator Point Rookery  
Dickinson Bayou Oysters  
Evia Island

 Palustrine  
Wetland

Page 5

Marquette Tract 3  
Marquette Tract 4  
Marquette Tract 5

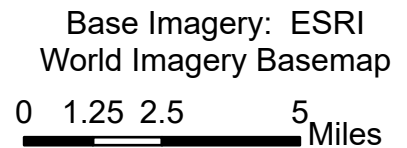
 Estuarine  
Wetland

Pages 6 - 12

Dickinson Bayou  
Greens Lake  
Sievers Cove  
Seabrook  
Horseshoe Lake 1  
Horseshoe Lake 2  
Horseshoe Lake 3



## Coastal Texas Protection and Restoration Feasibility Study



Date: 9April2020



# **Appendix B – Ecosystem Restoration Conceptual Drawings**

Coastal Texas Protection and Restoration Project  
Programmatic Agreement and Project Summary

April 2020

# COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

## ECOSYSTEM RESTORATION CONCEPTUAL DRAWINGS

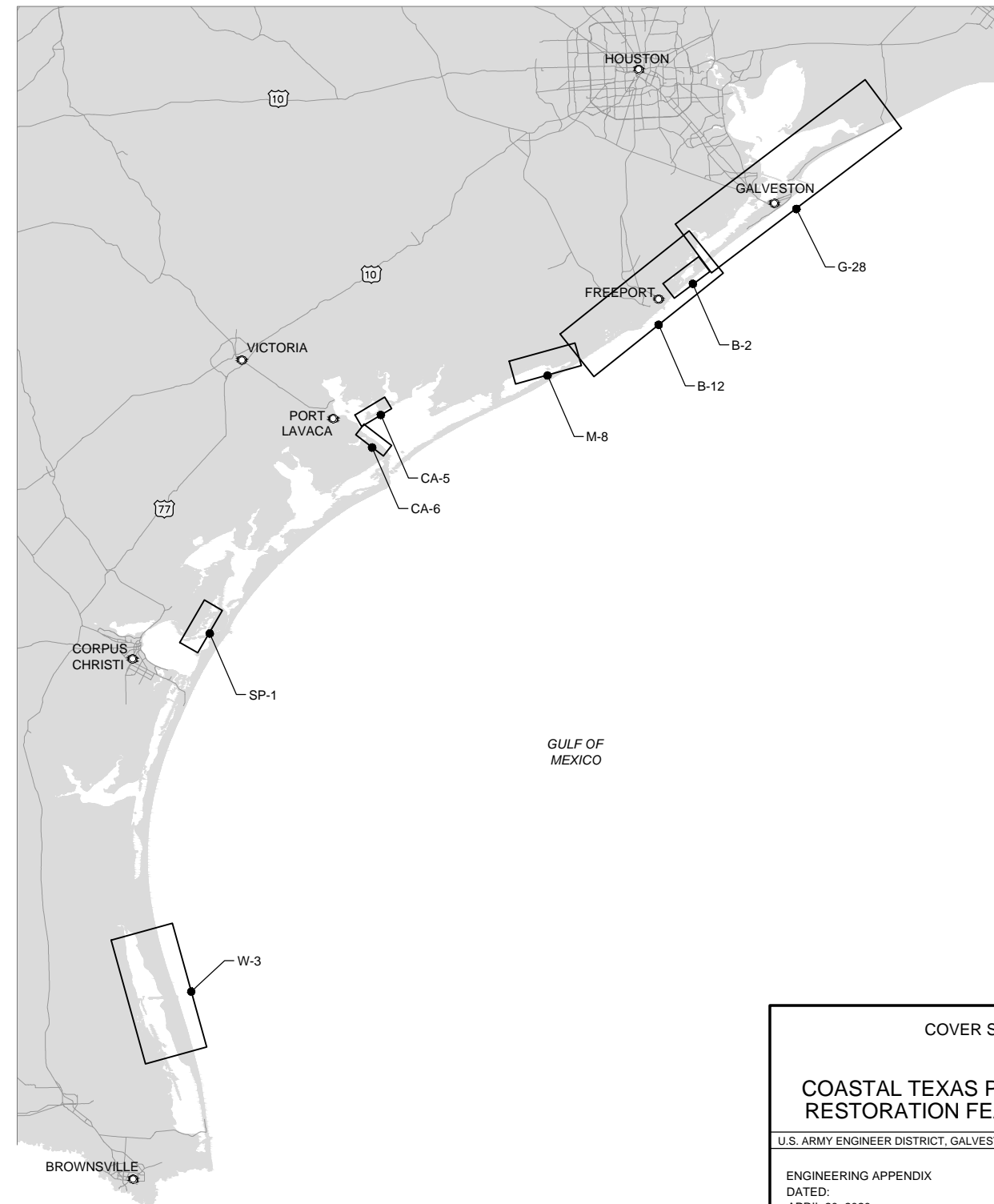


VICINITY MAP

(NOT TO SCALE)

### SHEET INDEX

SHEET NO.	TITLE
1	COVER SHEET
2	B-2: FOLLETS ISLAND GULF BEACH & DUNE RESTORATION
3	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
4	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
5	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
6	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)
7	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)
8	G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)
9	B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION
10	B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION
11	M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
12	M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
13	M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
14	CA-5: KELLER BAY RESTORATION
15	CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION
16	CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION
17	SP-1: REDFISH BAY PROTECTION & ENHANCEMENT
18	SP-1: REDFISH BAY PROTECTION & ENHANCEMENT
19	W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION
20	W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION



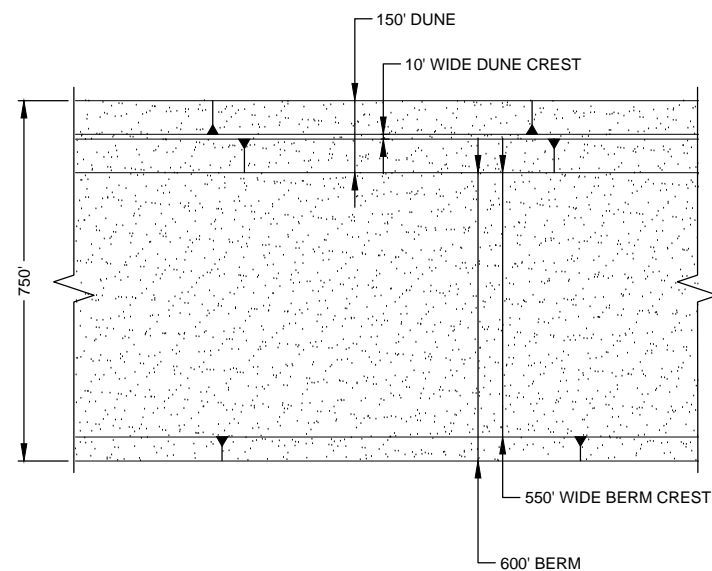
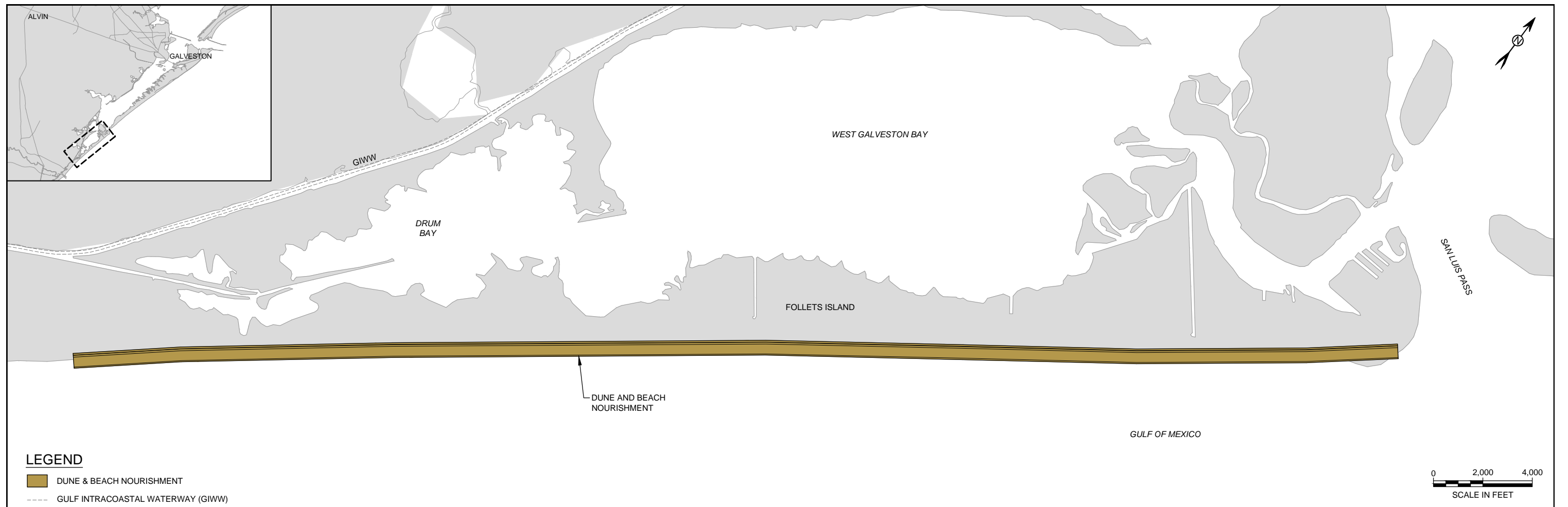
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### COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

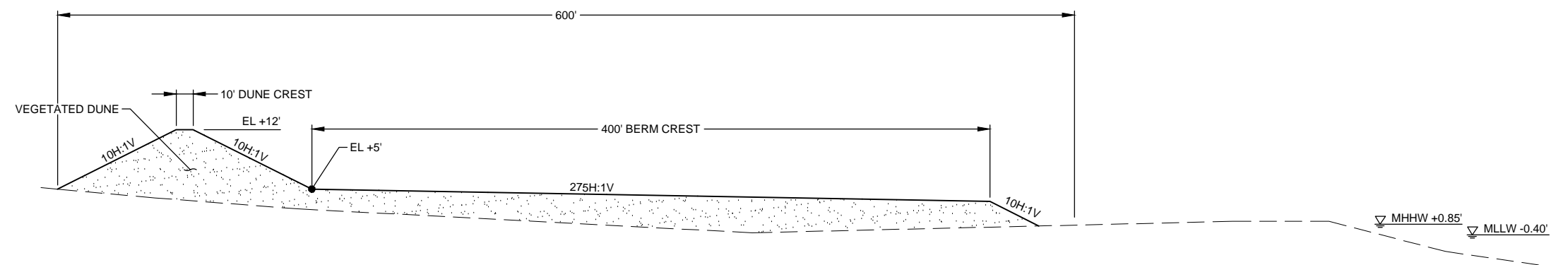
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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MOTT MACDONALD

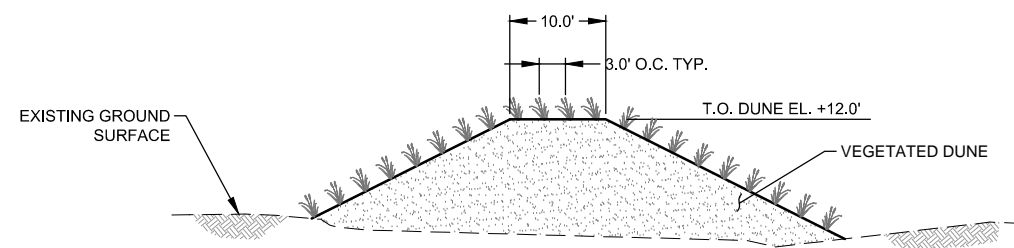




**B-2 - DUNE & BEACH NOURISHMENT**  
SITE PLAN DETAIL



**B-2 - DUNE & BEACH NOURISHMENT**  
TYPICAL SECTION



**TYPICAL VEGETATION SECTION**  
NOT TO SCALE

**NOTES:**

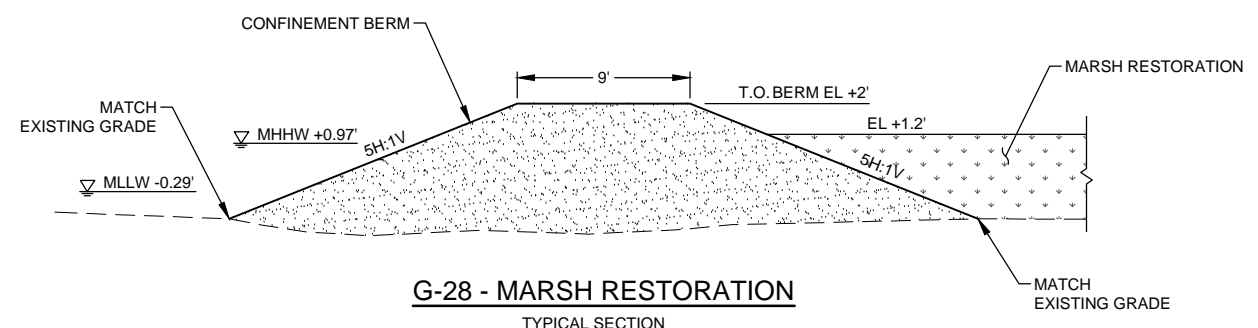
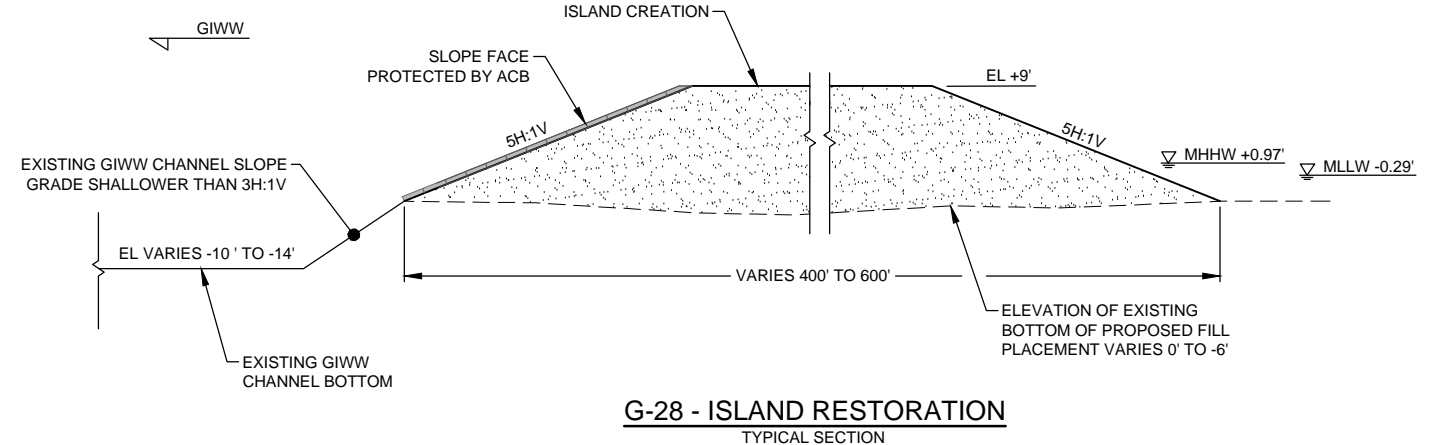
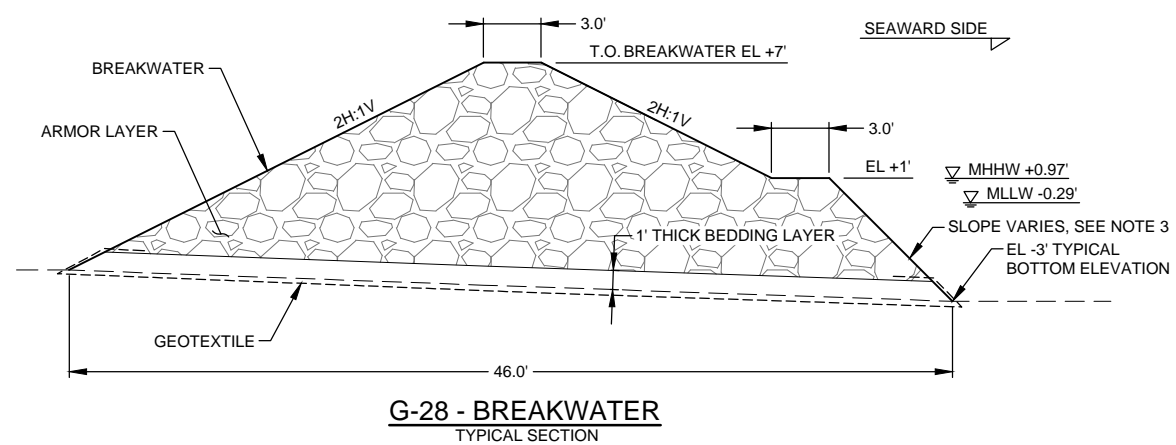
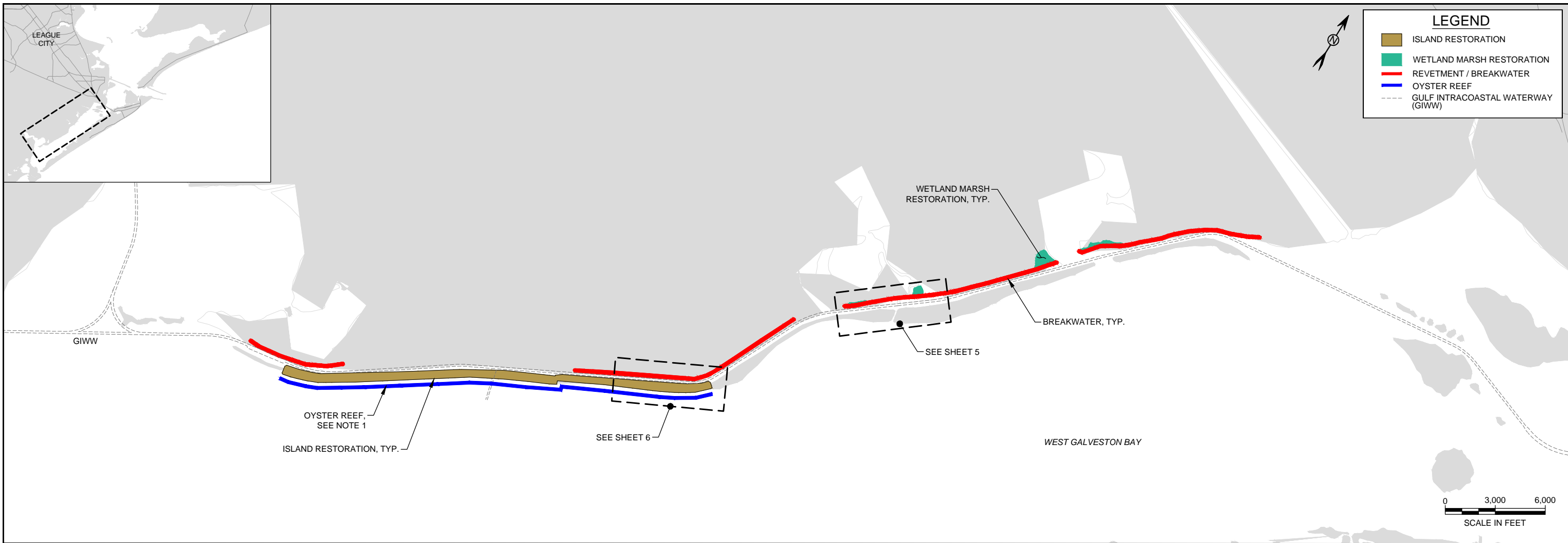
1. ALL ELEVATIONS IN FEET NAVD88.
2. DATUMS FROM NOAA GAGE 8771972, SAN LUIS PASS, TX.

B2: FOLLET'S ISLAND GULF BEACH & DUNE RESTORATION

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

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- NOTES:**
- OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
  - ALL ELEVATIONS IN FEET NAVD88.
  - DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX

G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

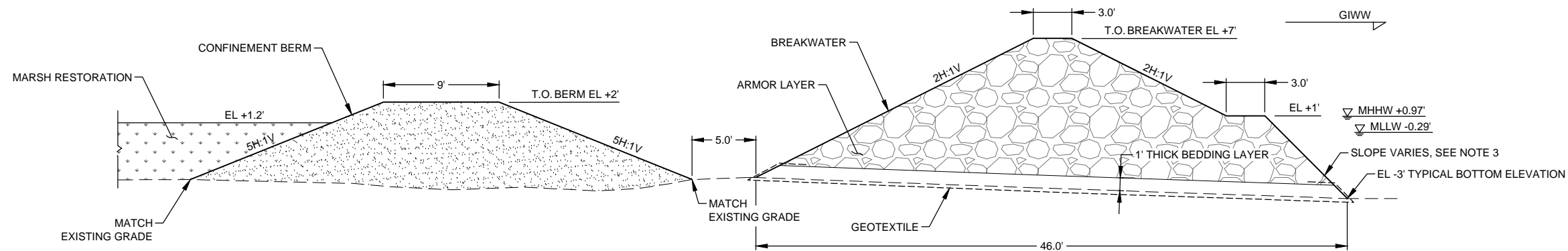
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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DATED:  
APRIL 20, 2020  
MOTT MACDONALD





LEGEND	
<span style="color: green;">■</span>	WETLAND MARSH RESTORATION
<span style="color: red;">■</span>	REVETMENT / BREAKWATER
---	GULF INTRACOASTAL WATERWAY (GIWW)



**G-28: COMBINED BREAKWATER & MARSH RESTORATION SECTION**  
TYPICAL SECTION

**NOTES:**

1. ALL ELEVATIONS IN FEET NAVD88.
2. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX.

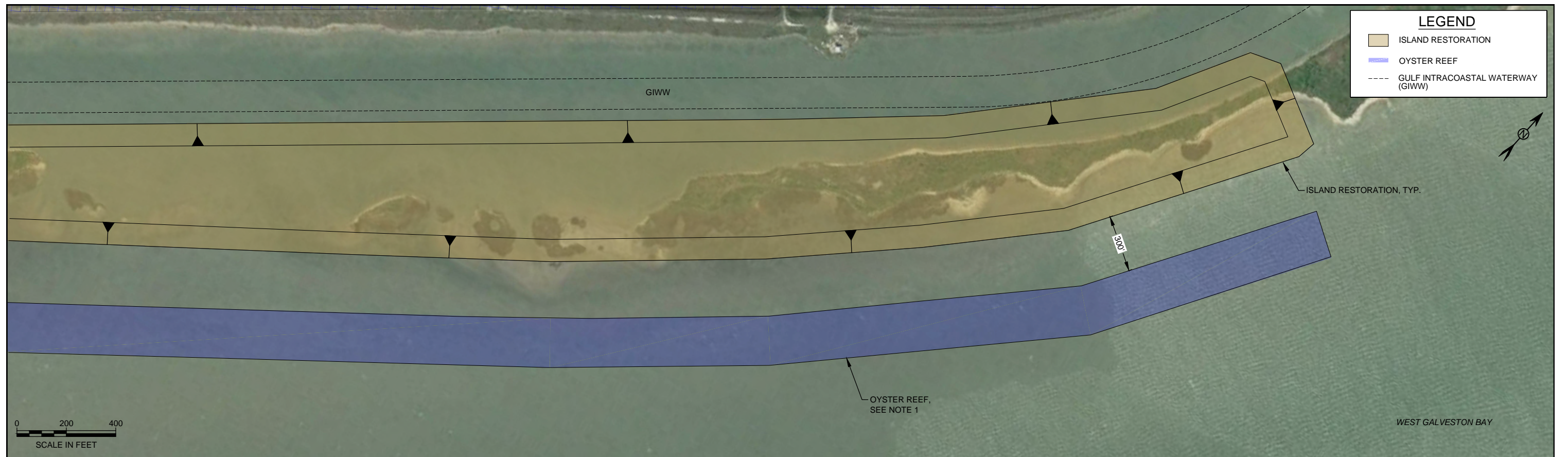
G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (WEST)

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

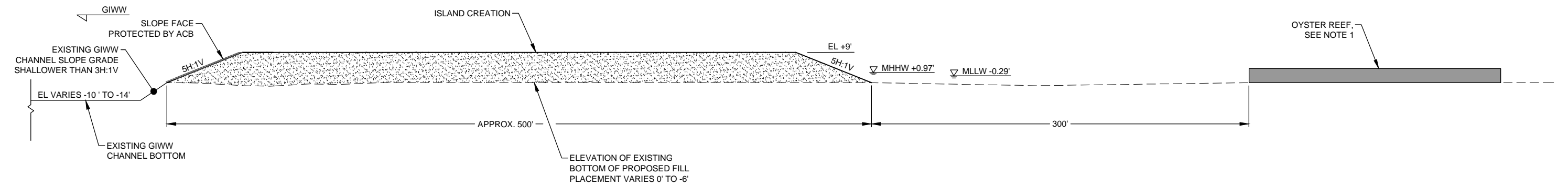
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MOTT MACDONALD





0 200 400  
SCALE IN FEET



G-28: COMBINED ISLAND RESTORATION AND  
OYSTER CULCH SECTION  
TYPICAL SECTION

**NOTES:**

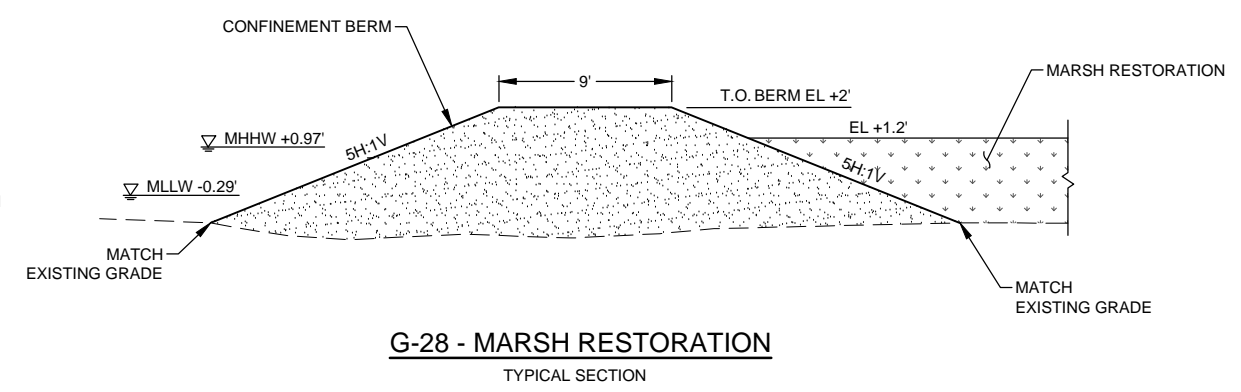
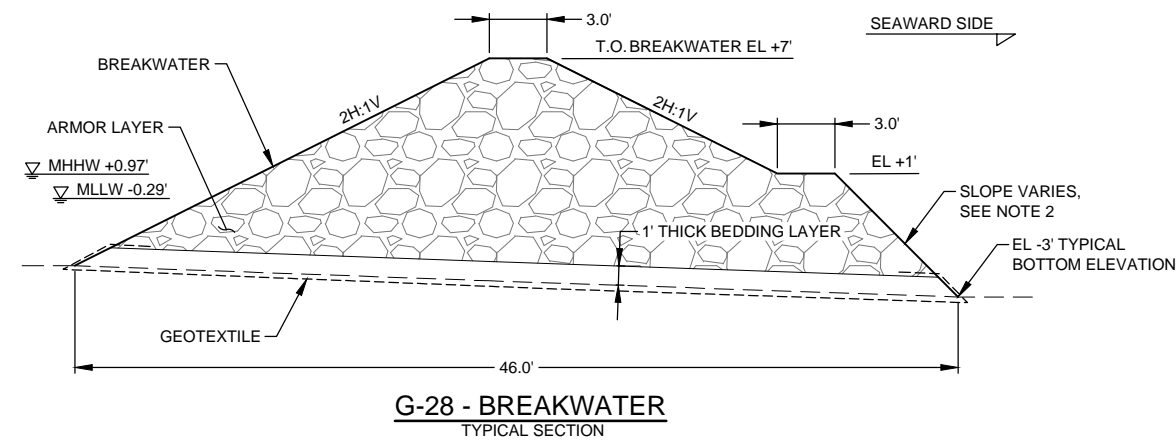
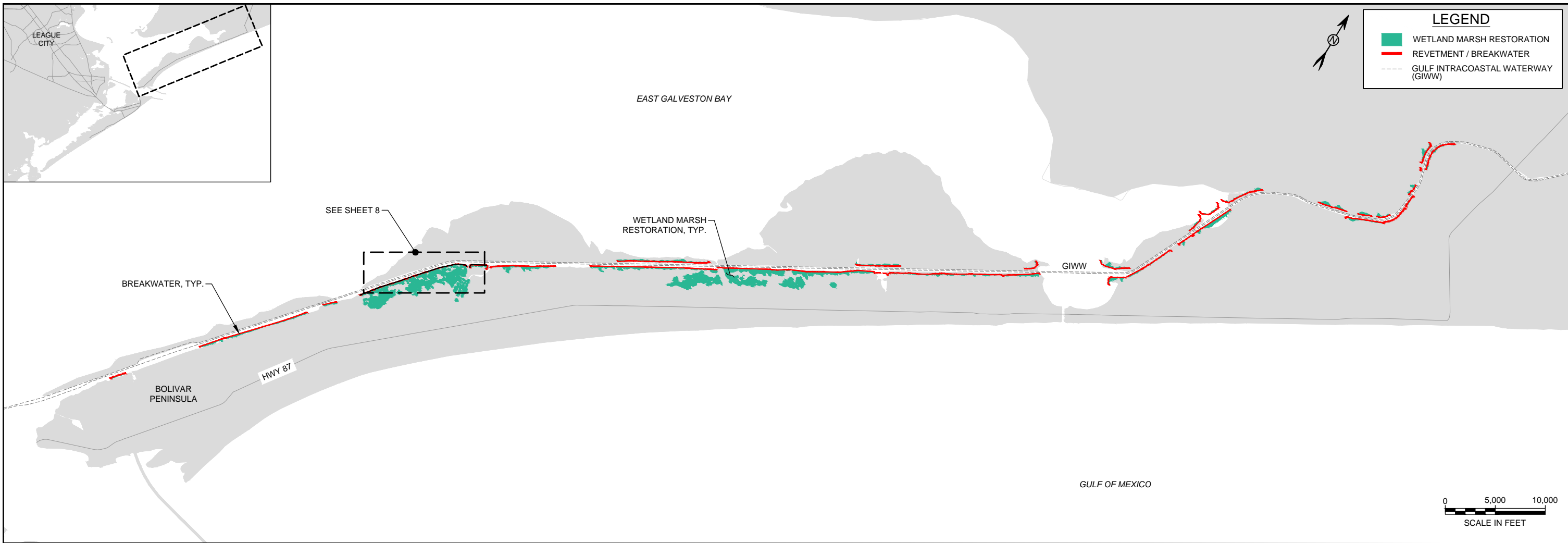
1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.

G-28: BOLIVAR PENINSULA & WEST BAY GIWW  
SHORELINE & ISLAND PROTECTION (WEST)

**COASTAL TEXAS PROTECTION AND  
RESTORATION FEASIBILITY STUDY**

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MOTT MACDONALD



- NOTES:**
1. ALL ELEVATIONS IN FEET NAVD88.
  2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
  3. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX.

G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

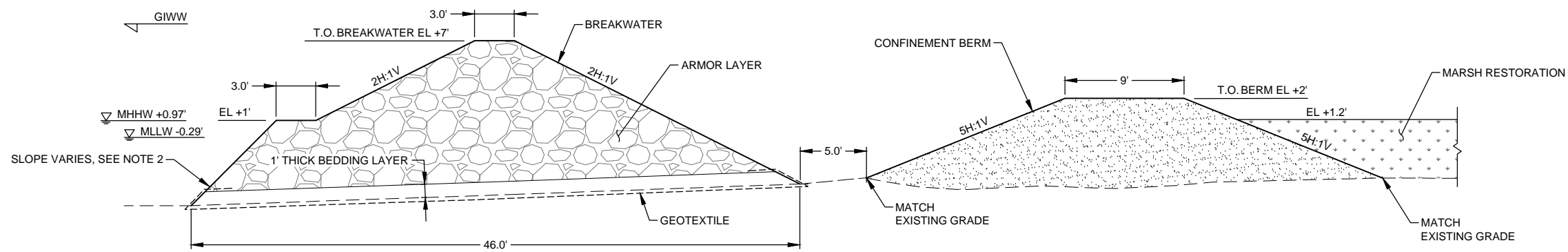
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**LEGEND**

- WETLAND MARSH RESTORATION
- REVETMENT / BREAKWATER
- GULF INTRACOASTAL WATERWAY (GIWW)



**G-28: COMBINED BREAKWATER & MARSH RESTORATION**  
 TYPICAL SECTION

**NOTES:**

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8771486 GALVESTON RAILROAD BRIDGE, TX.

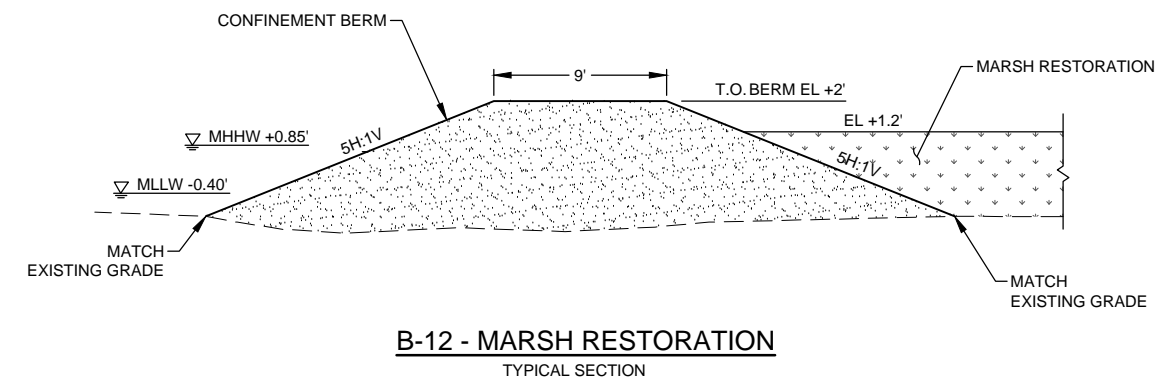
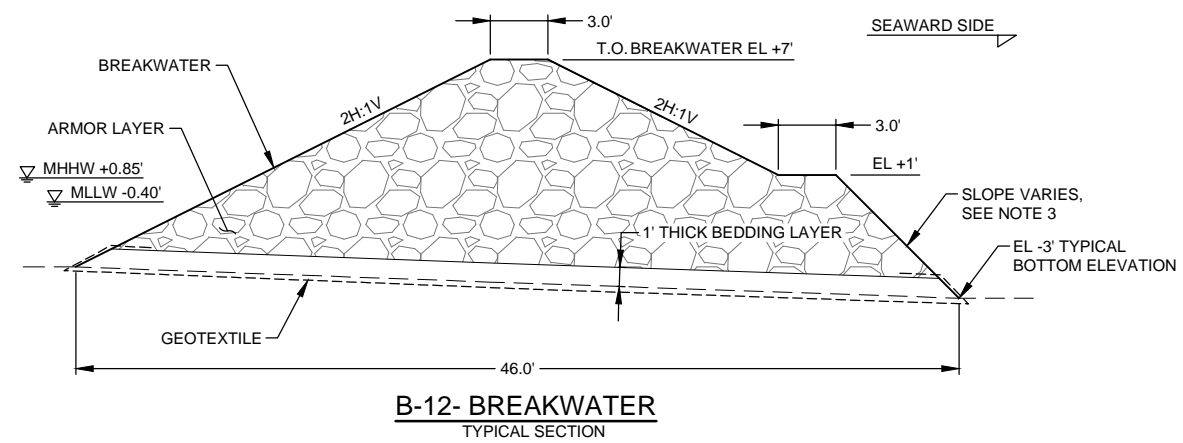
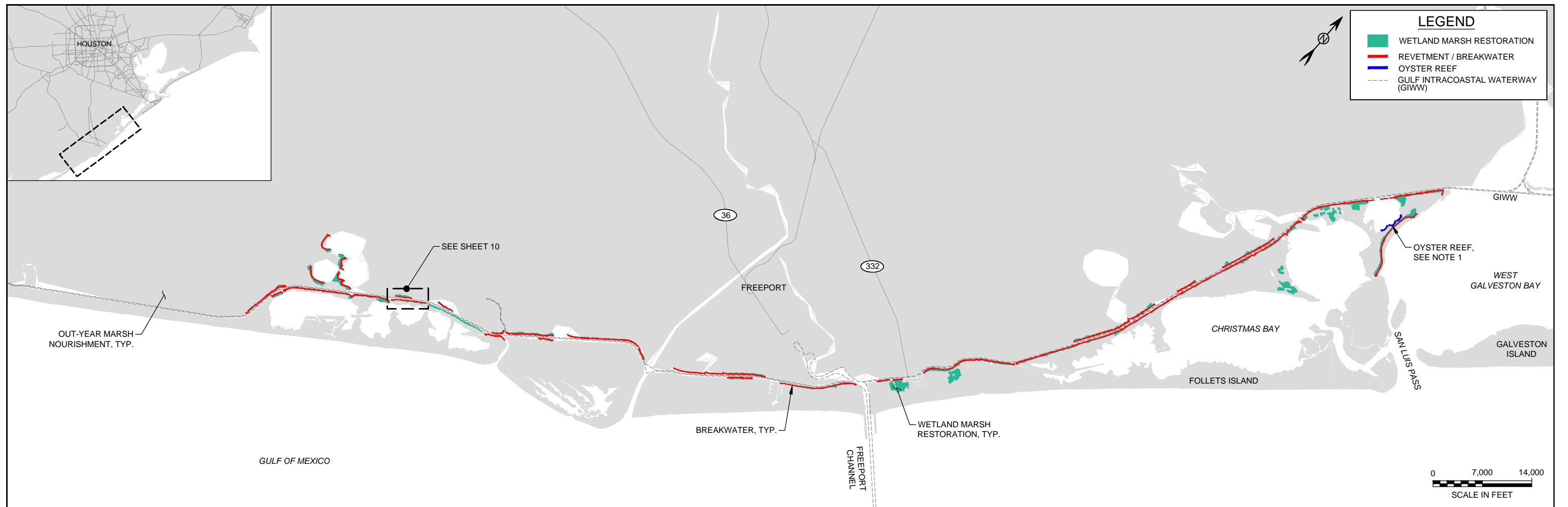
G-28: BOLIVAR PENINSULA & WEST BAY GIWW SHORELINE & ISLAND PROTECTION (EAST)

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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**NOTES:**

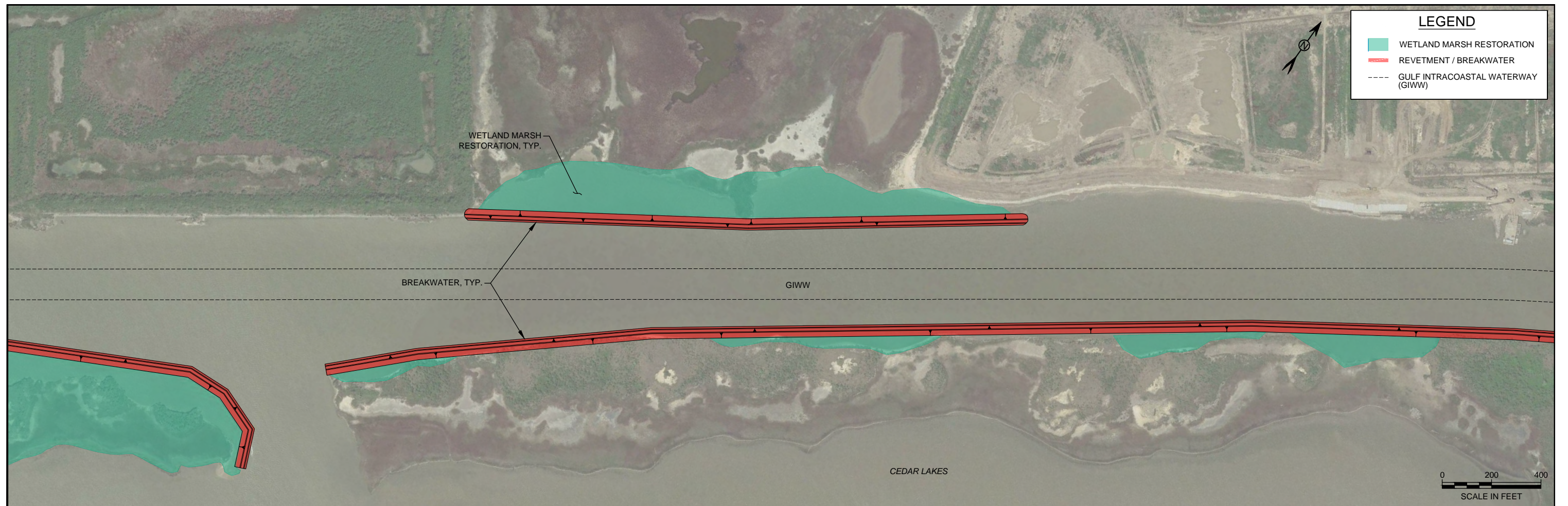
- OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
- ALL ELEVATIONS IN FEET NAVD88.
- VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
- DATUMS FROM NOAA GAGE 8771972, SAN LUIS PASS, TX.

B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

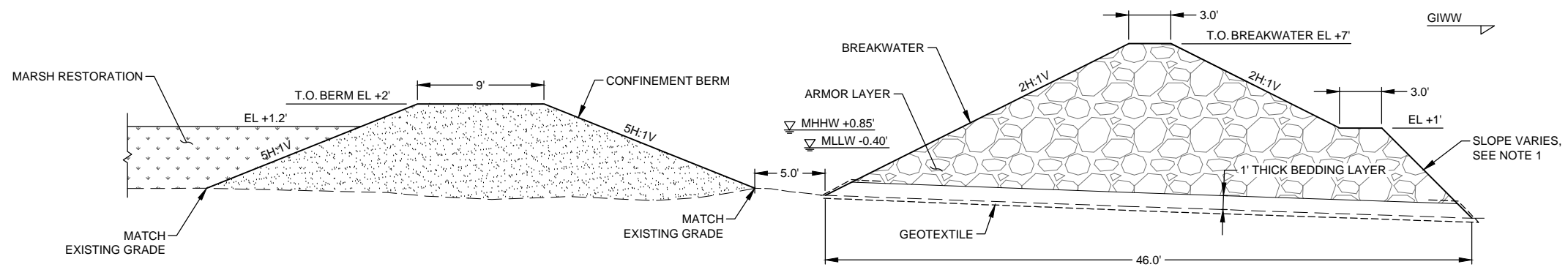
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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MOTT MACDONALD



**LEGEND**

- WETLAND MARSH RESTORATION
- REVETMENT / BREAKWATER
- GULF INTRACOASTAL WATERWAY (GIWW)



**D** B-12: COMBINED BREAKWATER & MARSH RESTORATION  
TYPICAL SECTION

**NOTES:**

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8771972, SAN LUIS PASS, TX.

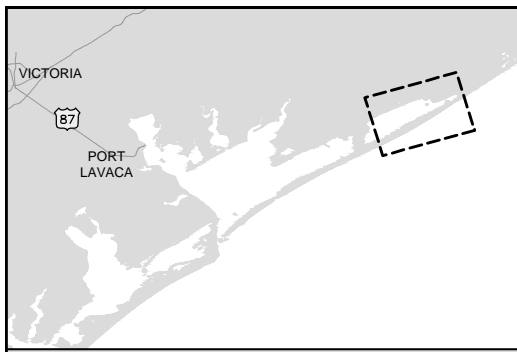
B-12: BASTROP BAY, OYSTER LAKE, WEST BAY, & GIWW SHORELINE PROTECTION

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

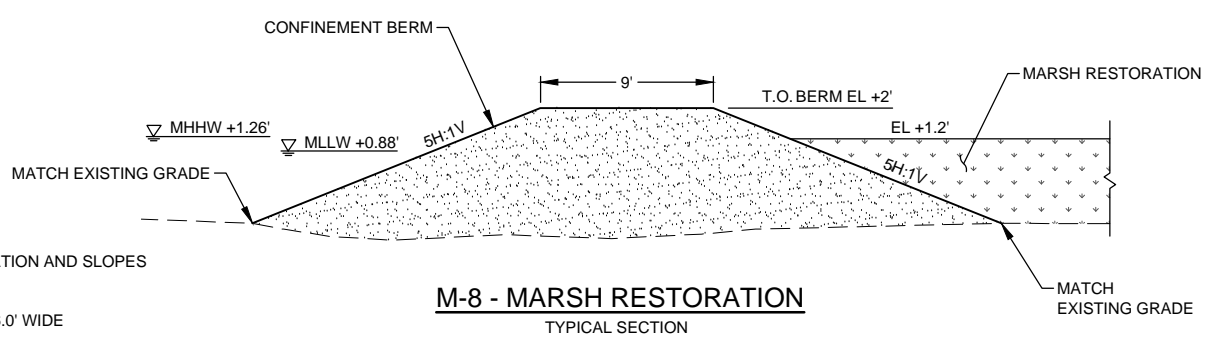
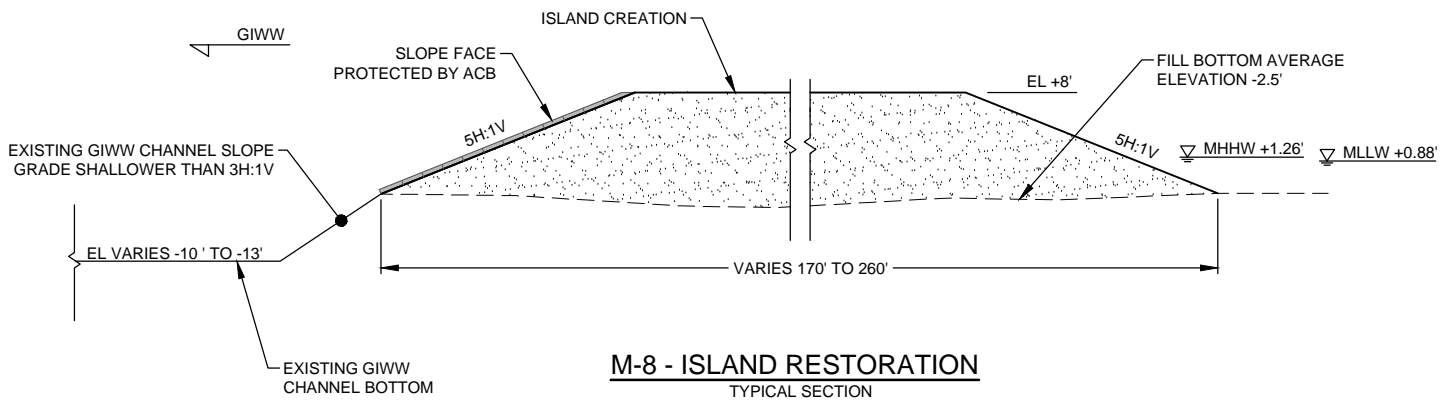
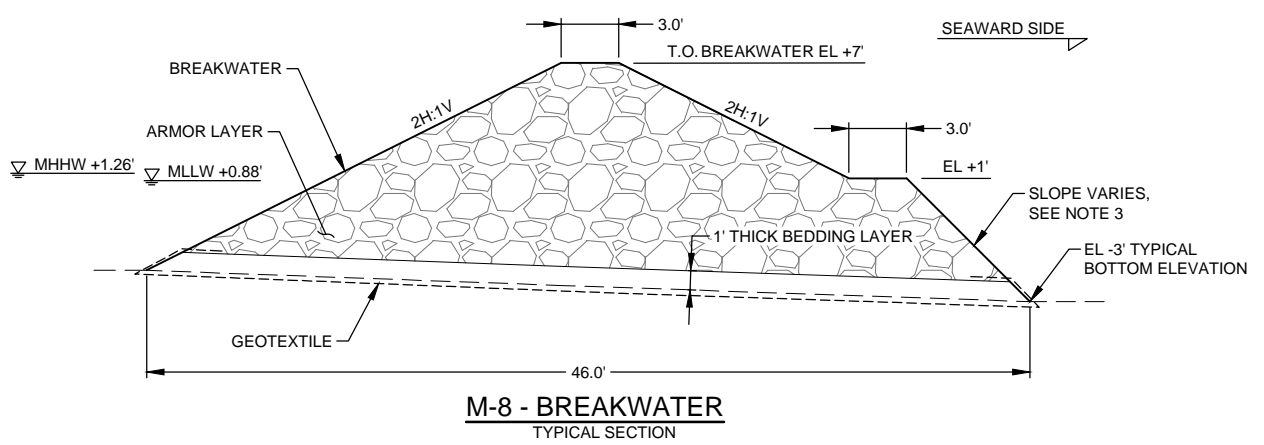
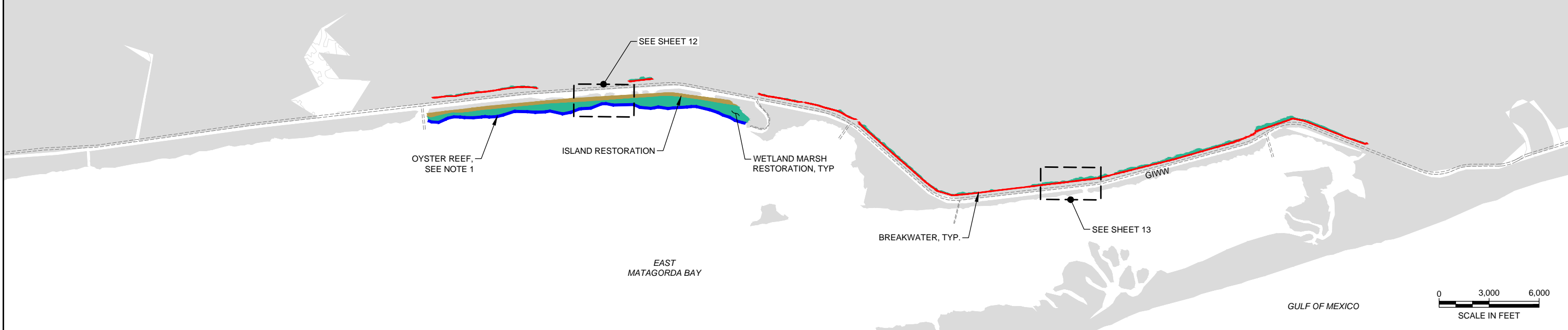
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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MOTT MACDONALD





LEGEND	
	ISLAND RESTORATION
	WETLAND MARSH RESTORATION
	REVETMENT / BREAKWATER
	OYSTER REEF
	GULF INTRACOASTAL WATERWAY (GIWW)



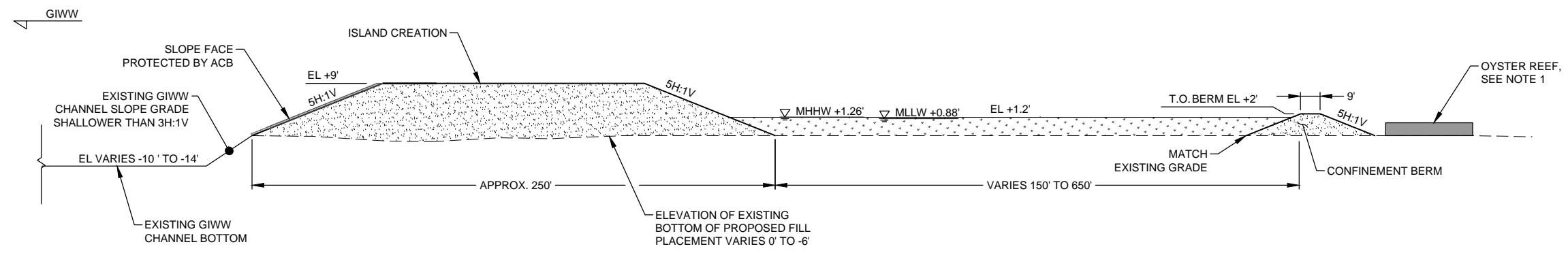
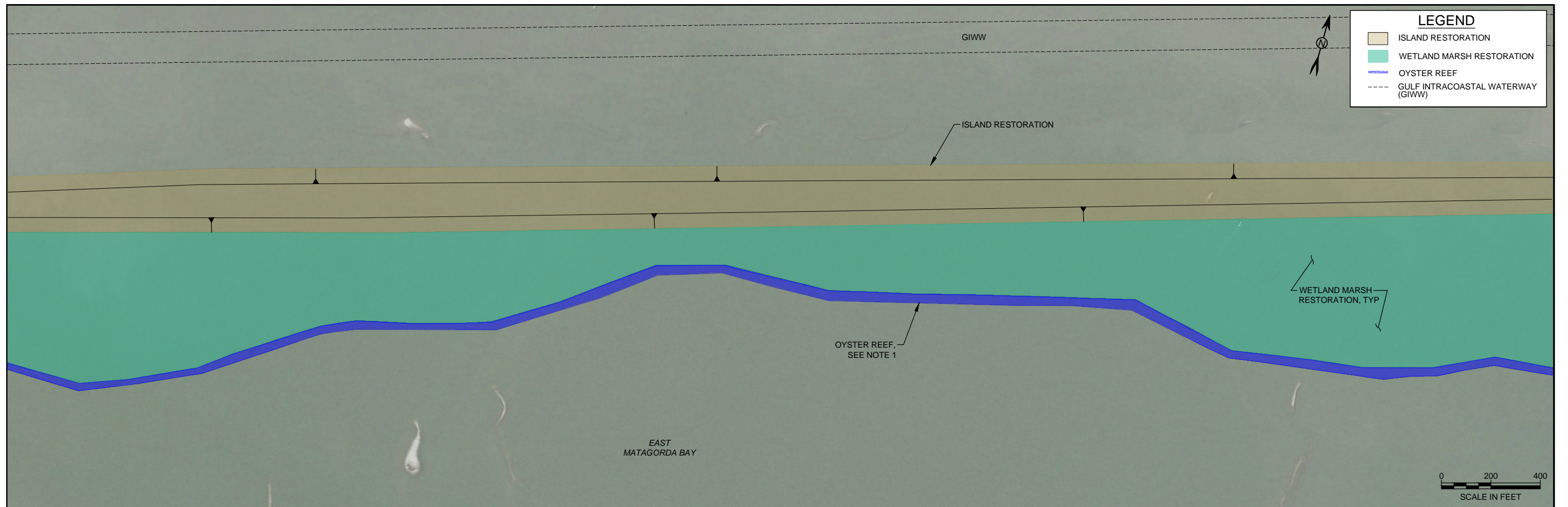
- NOTES:**
- OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
  - ALL ELEVATIONS IN FEET NAVD88.
  - VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
  - DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

M-8: EAST MATAGORDA BAY SHORELINE PROTECTION

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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 DATED:  
 APRIL 20, 2020  
 MOTT MACDONALD



**M-28: COMBINED ISLAND RESTORATION, MARSH RESTORATION, AND OYSTER CULTCH SECTION**  
 TYPICAL SECTION

**NOTES:**

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

M-8: EAST MATAGORDA BAY SHORELINE PROTECTION

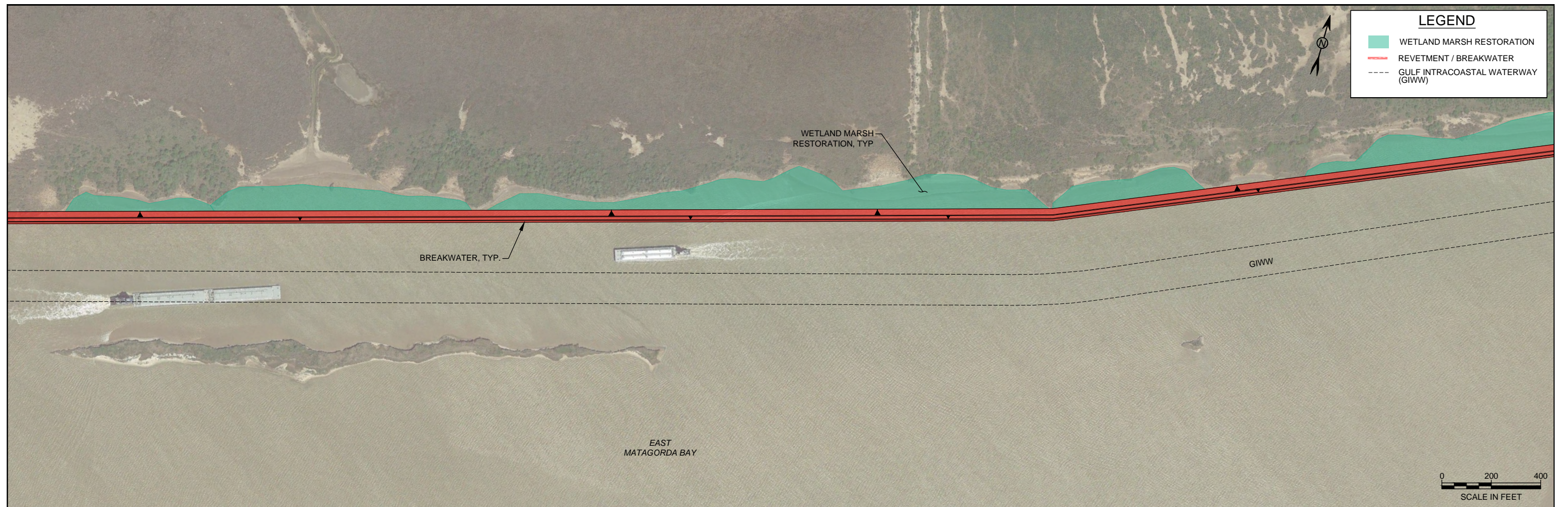
**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

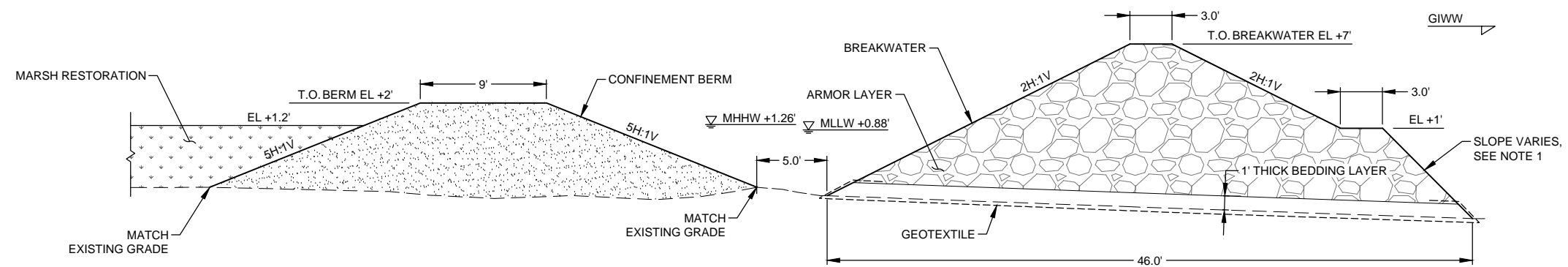
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DATED:  
APRIL 20, 2020  
MOTT MACDONALD





LEGEND	
<span style="color: green;">■</span>	WETLAND MARSH RESTORATION
<span style="color: red;">—</span>	REVTMENT / BREAKWATER
- - -	GULF INTRACOASTAL WATERWAY (GIWW)



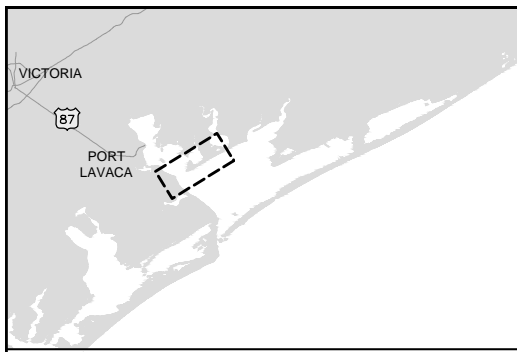
**F** M-28: COMBINED BREAKWATER & MARSH RESTORATION  
TYPICAL SECTION

**NOTES:**

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

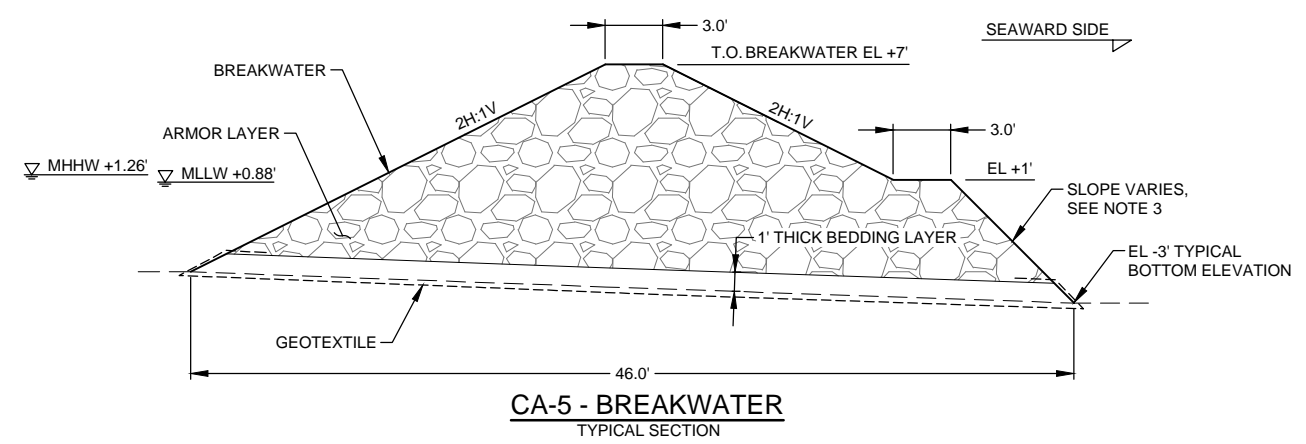
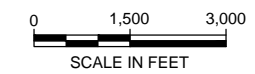
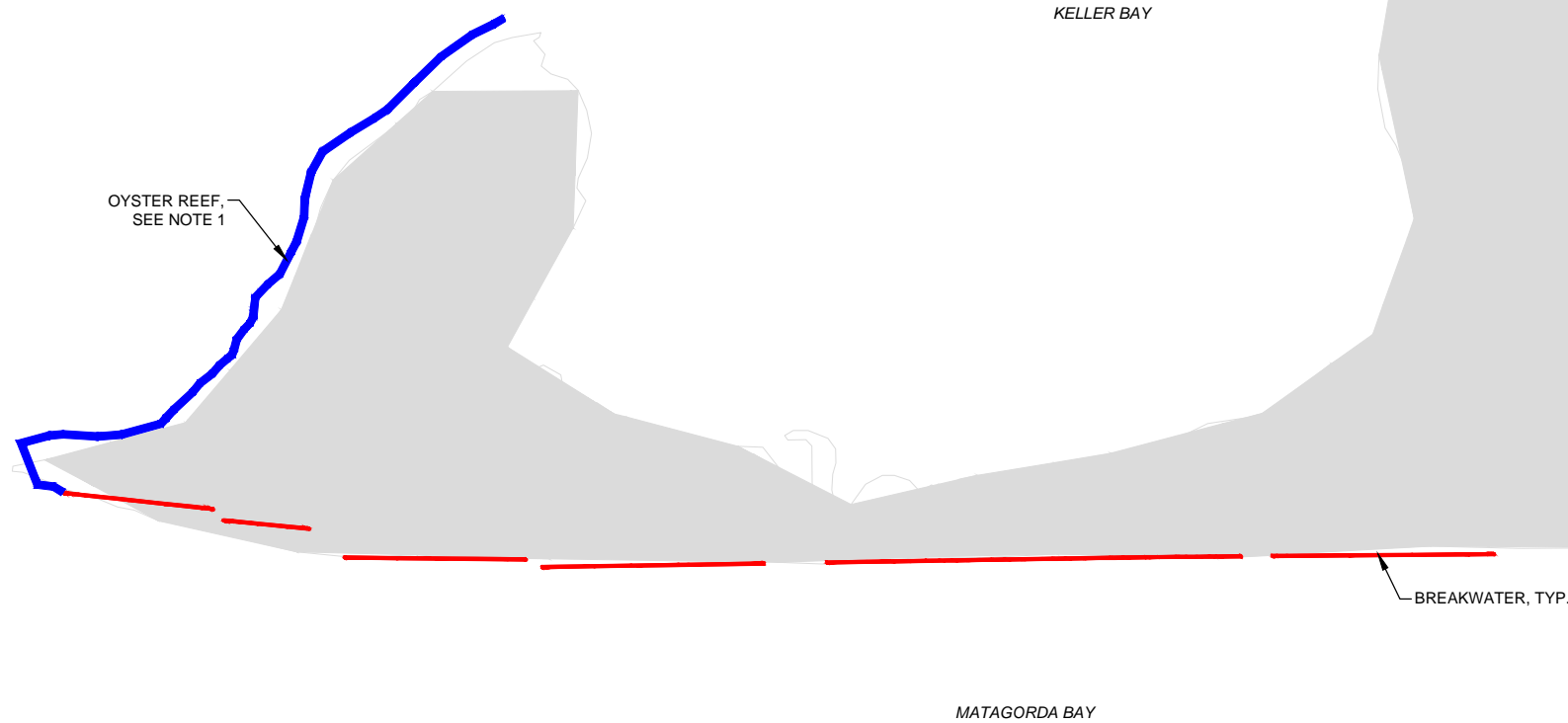
M-8: EAST MATAGORDA BAY SHORELINE PROTECTION
<b>COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY</b>
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS
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**LEGEND**

- REVETMENT / BREAKWATER
- OYSTER REEF
- - - GULF INTRACOASTAL WATERWAY (GIWW)



**NOTES:**

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

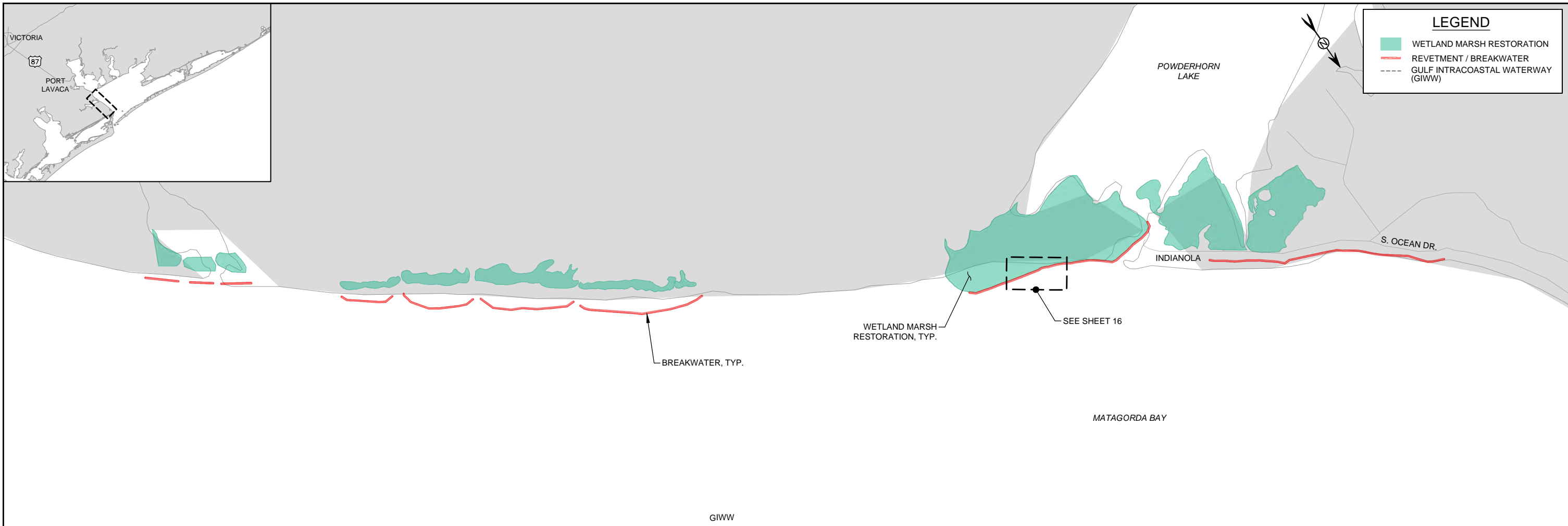
CA-5: KELLER BAY RESTORATION

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

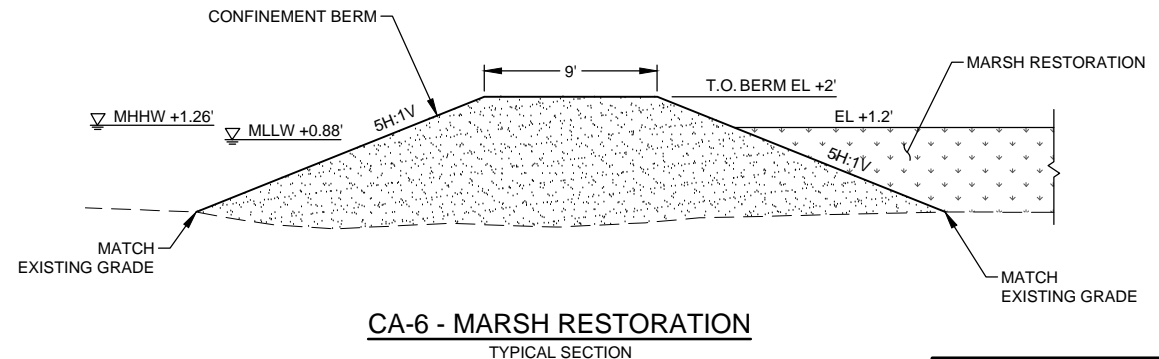
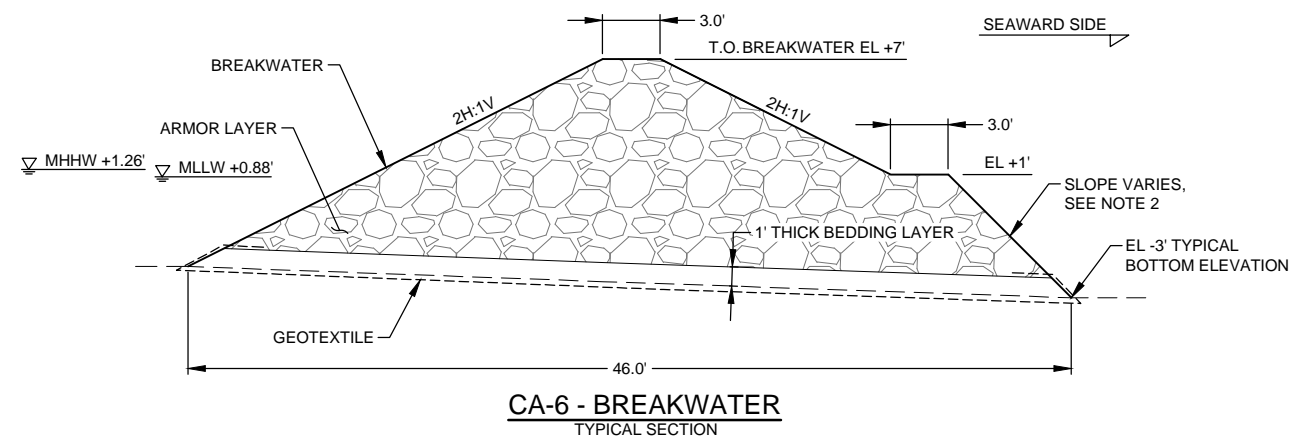
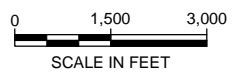
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**LEGEND**

- WETLAND MARSH RESTORATION
- REVETMENT / BREAKWATER
- GULF INTRACOASTAL WATERWAY (GIWW)



- NOTES:**
1. ALL ELEVATIONS IN FEET NAVD88.
  2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
  3. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX

CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

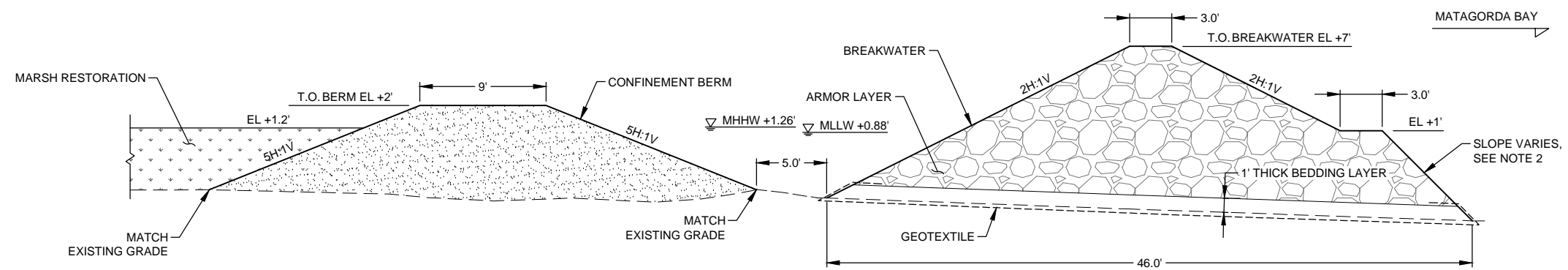
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**LEGEND**

- WETLAND MARSH RESTORATION
- REVETMENT / BREAKWATER



**G** CA-6: COMBINED BREAKWATER & MARSH RESTORATION  
TYPICAL SECTION

CA-6: POWDERHORN SHORELINE PROTECTION & WETLAND RESTORATION

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

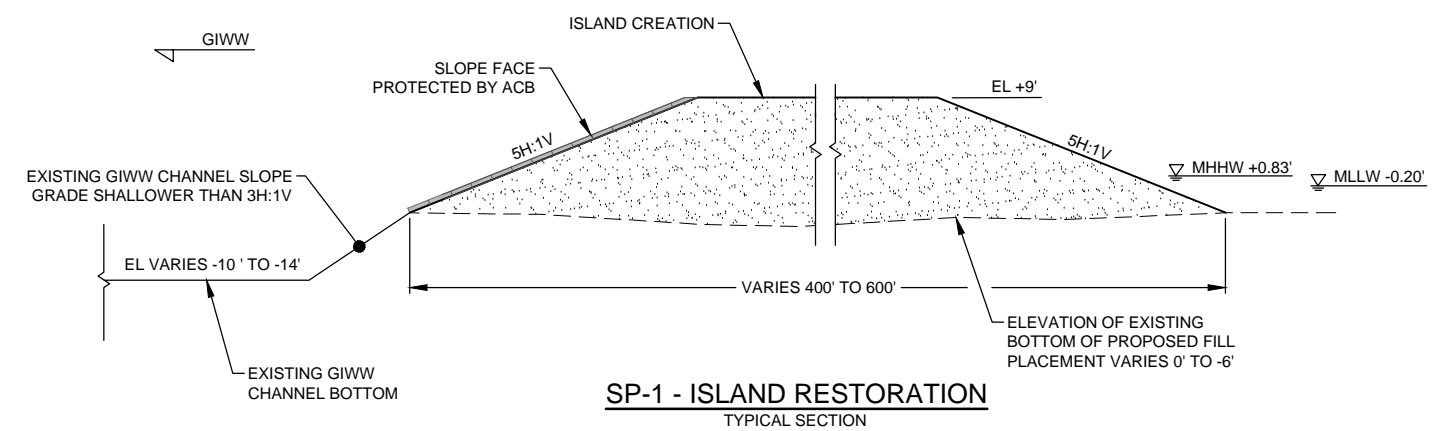
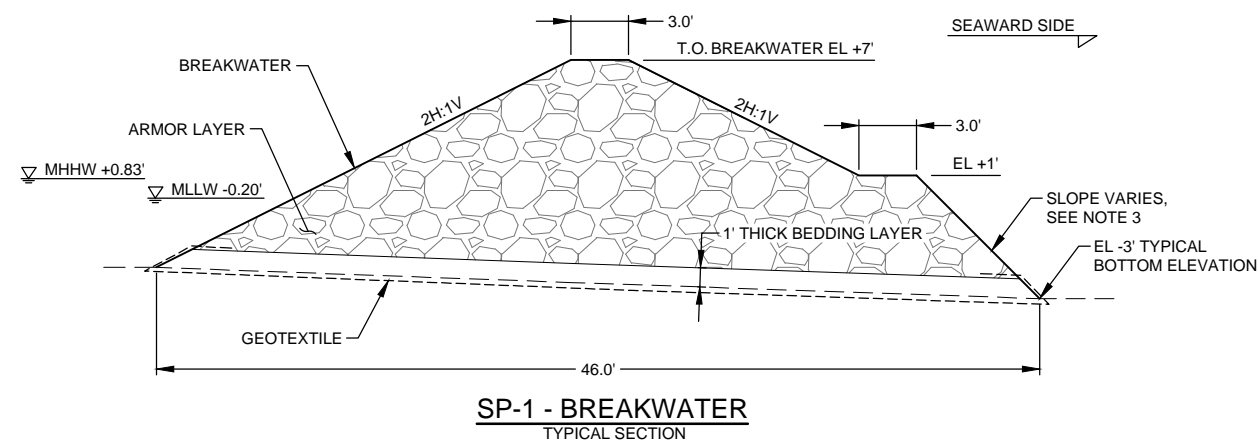
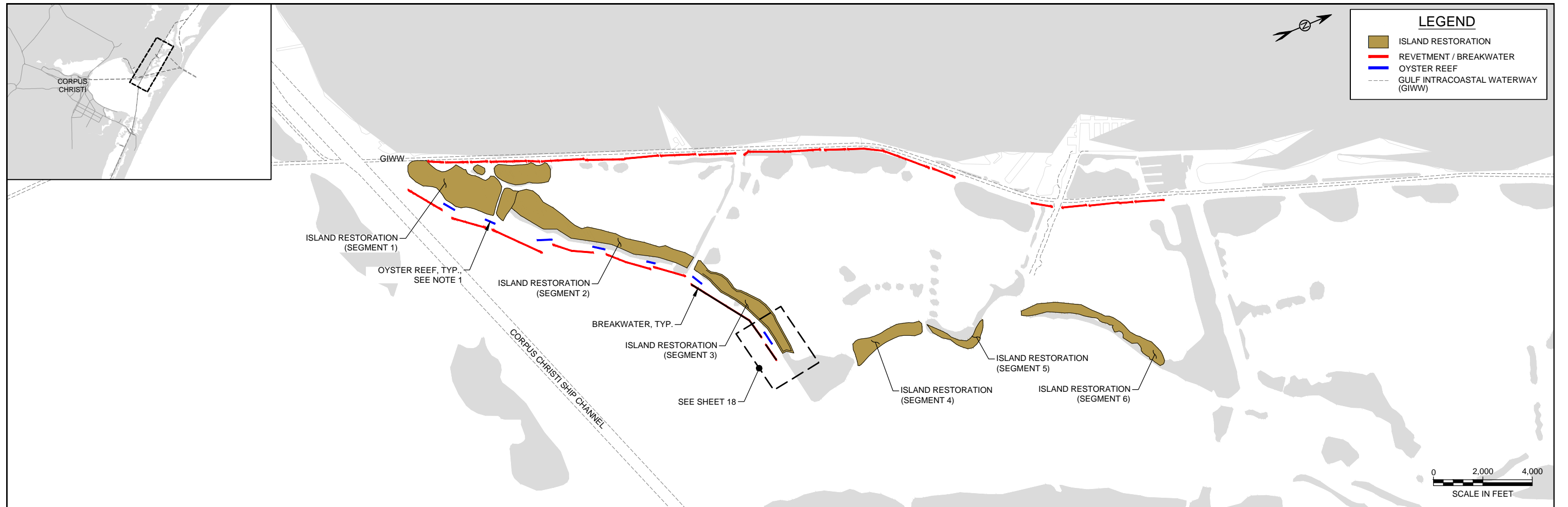
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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MOTT MACDONALD

**NOTES:**

1. ALL ELEVATIONS IN FEET NAVD88.
2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
3. DATUMS FROM NOAA GAGE 8773037 SEADRIFT, TX





**NOTES:**

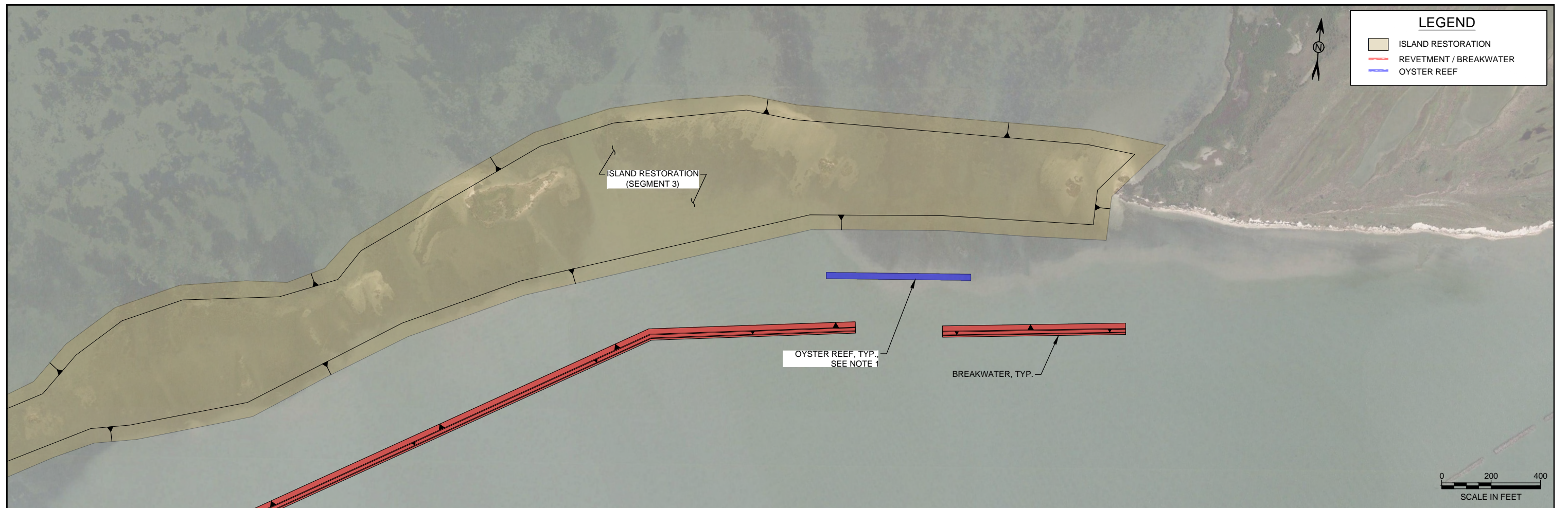
- OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
- ALL ELEVATIONS IN FEET NAVD88.
- VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
- DATUMS FROM NOAA GAGE 8775237, PORT ARANSAS TX

SP-1: REDFISH BAY PROTECTION & ENHANCEMENT

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

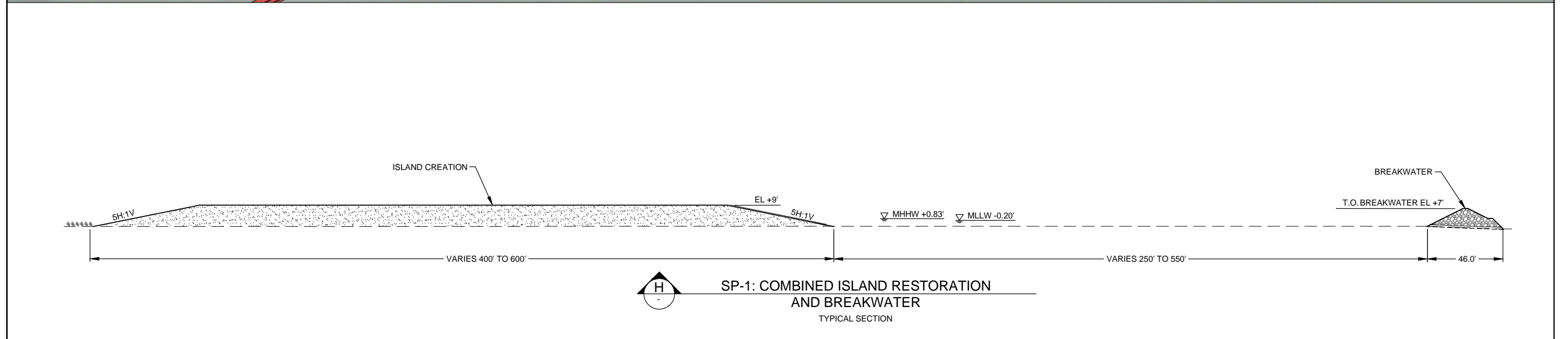
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**LEGEND**

- ISLAND RESTORATION
- REVETMENT / BREAKWATER
- OYSTER REEF



**NOTES:**

1. OYSTER CULCH TO BE PLACED WITHIN OYSTER REEF TEMPLATE. FINAL ELEVATION AND SLOPES OF OYSTER CULCH PLACEMENT TO BE DETERMINED DURING FINAL DESIGN.
2. ALL ELEVATIONS IN FEET NAVD88.
3. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
4. DATUMS FROM NOAA GAGE 8775237, PORT ARANSAS TX

SP-1: REDFISH BAY PROTECTION & ENHANCEMENT

**COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY**

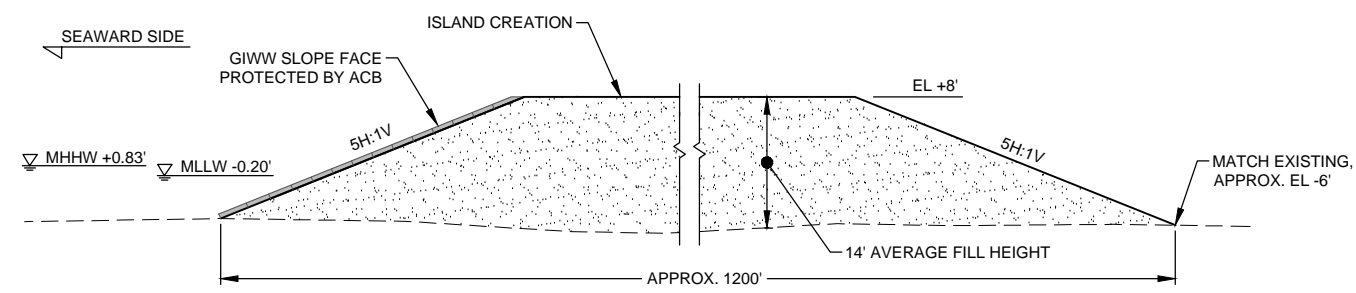
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U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

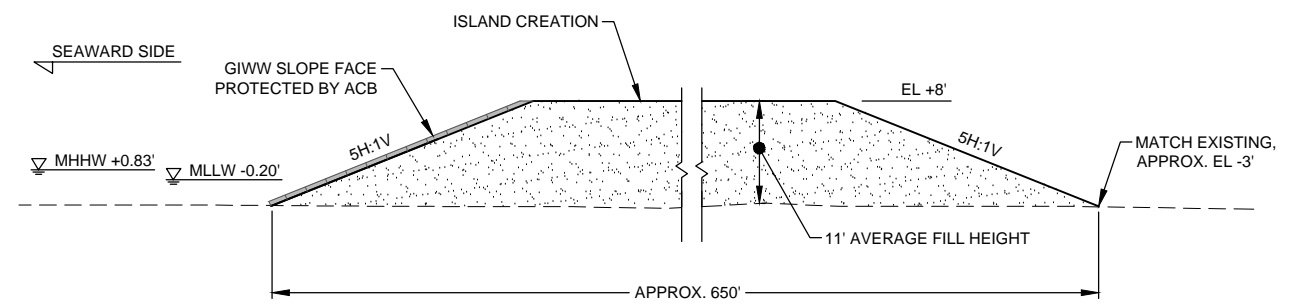
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ENGINEERING APPENDIX  
DATED:  
APRIL 20, 2020  
MOTT MACDONALD

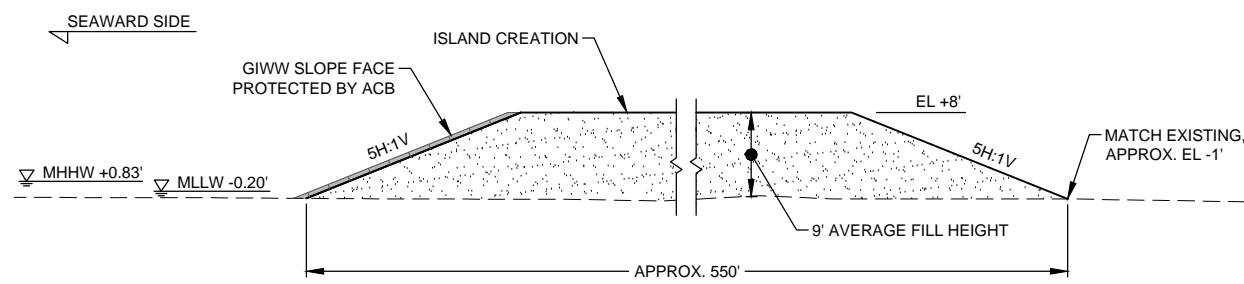




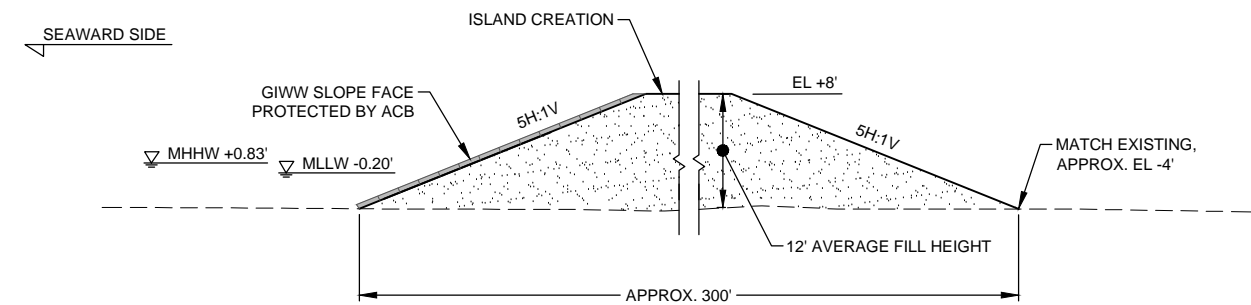
**SP-1 - ISLAND RESTORATION (SEGMENT 1)**  
TYPICAL SECTION



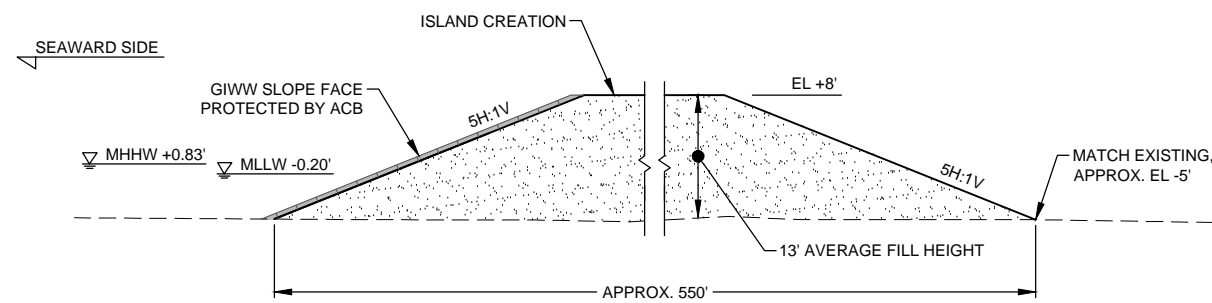
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TYPICAL SECTION



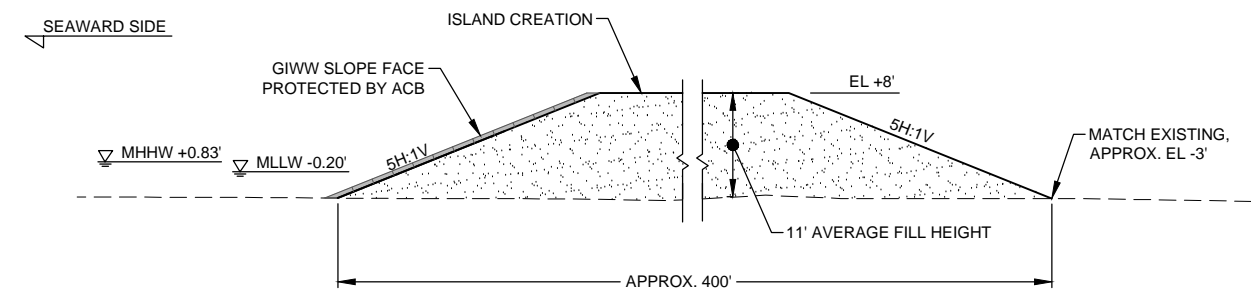
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TYPICAL SECTION



**SP-1 - ISLAND RESTORATION (SEGMENT 5)**  
TYPICAL SECTION



**SP-1 - ISLAND RESTORATION (SEGMENT 3)**  
TYPICAL SECTION

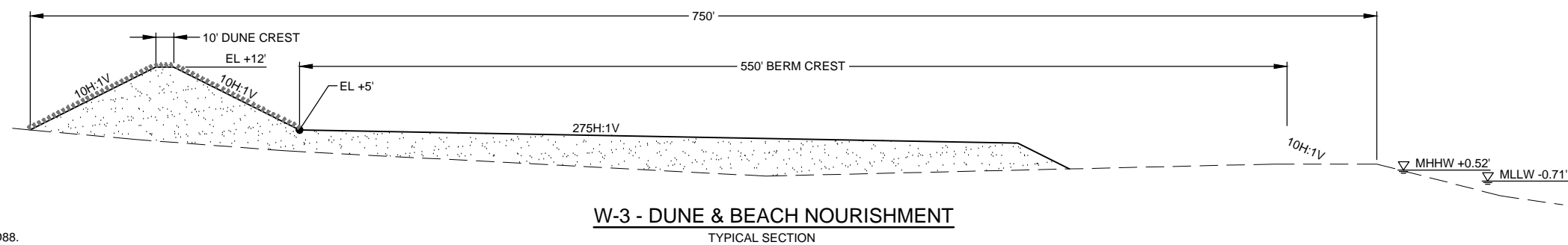
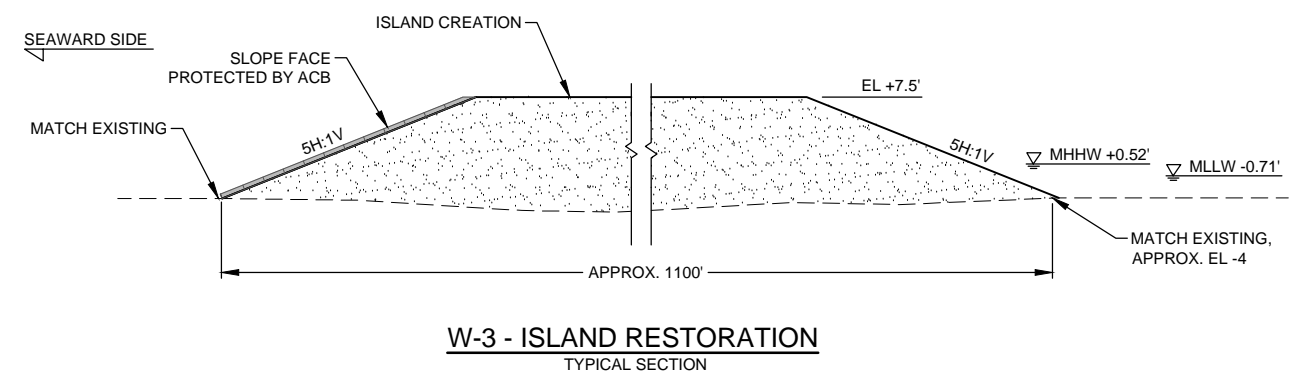
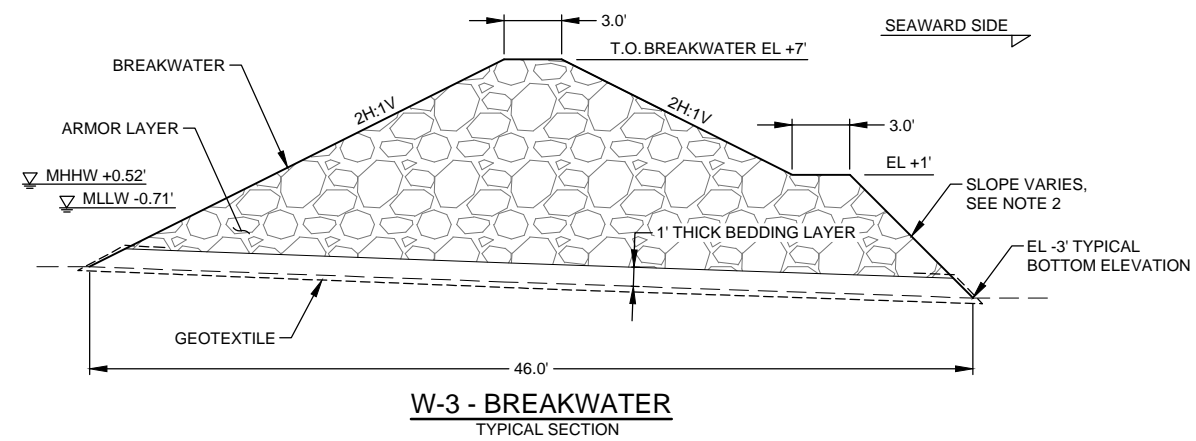
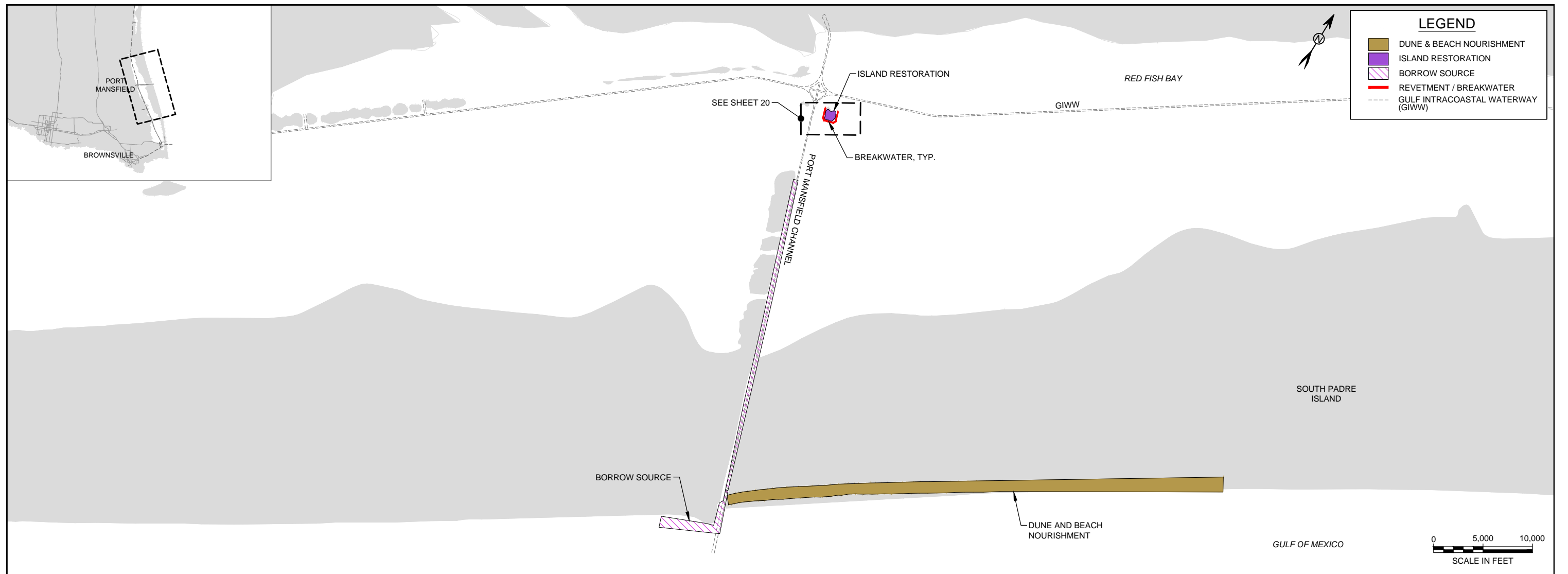


**SP-1 - ISLAND RESTORATION (SEGMENT 6)**  
TYPICAL SECTION

**NOTES:**

1. ALL ELEVATIONS IN FEET NAVD88.
2. DATUMS FROM NOAA GAGE 8775237, PORT ARANSAS TX

<p>SP-1: REDFISH BAY PROTECTION &amp; ENHANCEMENT</p> <p>COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY</p> <p>U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS</p> <p>ENGINEERING APPENDIX</p> <p>DATED: APRIL 20, 2020</p> <p>MOTT MACDONALD</p>
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**NOTES:**

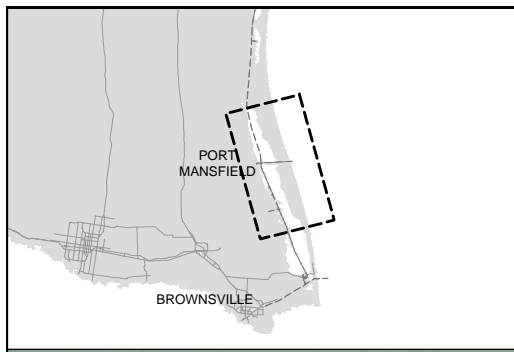
- ALL ELEVATIONS IN FEET NAVD88.
- VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
- DATUMS FROM NOAA GAGE 8779770, PORT ISABEL TX

W-3: PORT MANSFIELD CHANNEL, ISLAND ROOKERY & HYDROLOGIC RESTORATION  
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

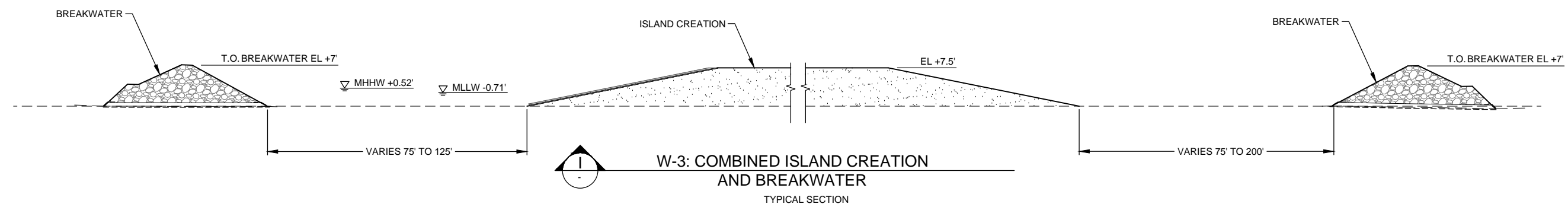
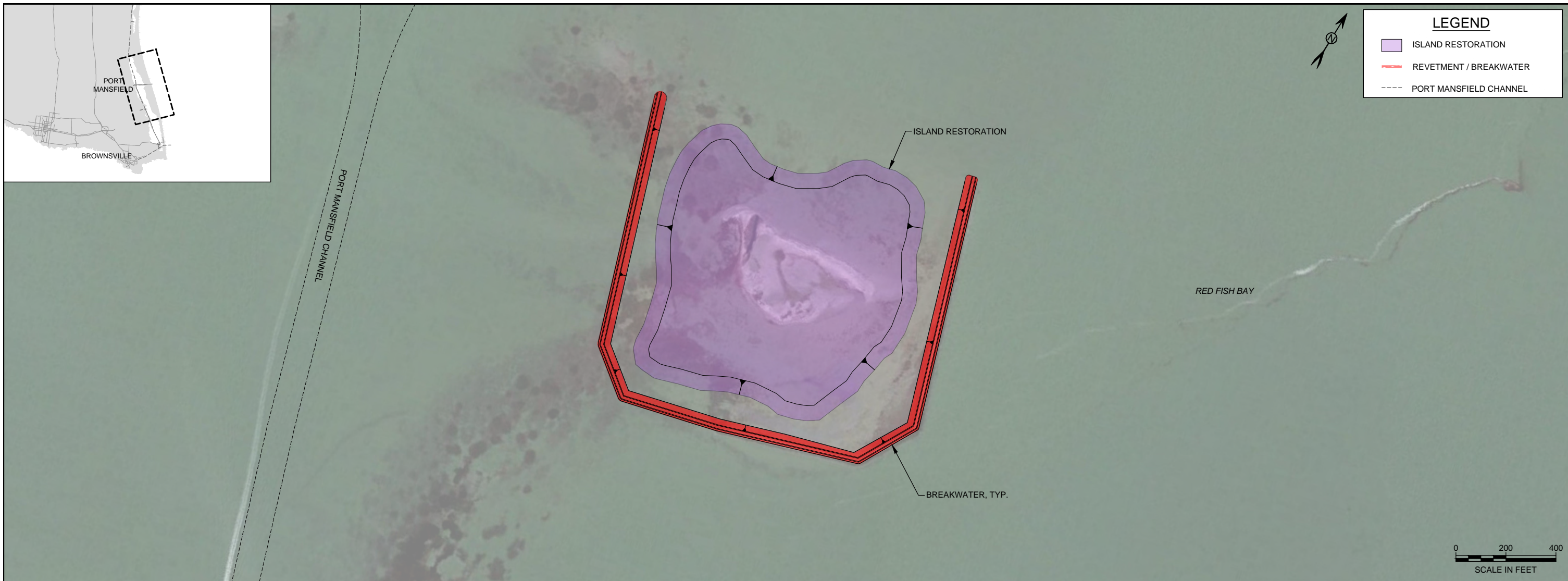
ENGINEERING APPENDIX  
DATED:  
APRIL 20, 2020  
MOTT MACDONALD





**LEGEND**

- ISLAND RESTORATION
- REVETMENT / BREAKWATER
- PORT MANSFIELD CHANNEL



- NOTES:**
1. ALL ELEVATIONS IN FEET NAVD88.
  2. VARY SLOPE OF BREAKWATER TOE SO THAT STONE IS PLACED WITHIN THE 46.0' WIDE BREAKWATER TEMPLATE.
  3. DATUMS FROM NOAA GAGE 8779770, PORT ISABEL TX

W-3: PORT MANSFIELD CHANNEL, ISLAND  
ROOKERY & HYDROLOGIC RESTORATION

**COASTAL TEXAS PROTECTION AND  
RESTORATION FEASIBILITY STUDY**

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U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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ENGINEERING APPENDIX  
DATED:  
APRIL 20, 2020  
MOTT MACDONALD



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

Regional Planning and Environmental Center

October 25, 2018

Mr. Mark Wolfe  
State Historic Preservation Officer  
Texas Historical Commission  
P.O. Box 12276  
Austin, TX 78711-2276

Dear Mr. Wolfe:

Enclosed please find a compact disk of the *Coastal Texas Protection and Restoration Study Draft Integrated Feasibility Report – Environmental Impact Statement (DIFR-EIS)*. The U.S. Army Corps of Engineers (USACE) Galveston District along with the Texas General Land Office (GLO), the non-federal sponsor (NFS), are proposing a Federal action for a Coastal Storm Risk Management (CSRМ) and Ecosystem Restoration (ER) project to enhance the State's ecologic coastal features and reduce the risk of coastal storm damage. This draft report is provided for your review and comment in conformance with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act.

The Tentatively Selected Plan (TSP) includes CSRМ and ER alternatives: The CSRМ alternative proposes structural features that include levees, floodwalls, environmental and navigable surge barrier gates, and breakwaters. The ER alternative proposes nonstructural features that include habitat restoration and shoreline control through marsh, beach/dune, and island restoration. A description of the TSP is provided in the attached Biological Assessment (BA).

The USACE has recommended intensive cultural resources investigations to identify and evaluate any historic properties within proposed areas of direct and indirect impacts. The scope of these investigations will be determined in concert with the Texas State Historic Preservation Officer and Native American Tribes and in accordance with the Draft Programmatic Agreement for this project. The Draft Programmatic Agreement is currently being coordinated with applicable agencies. Once executed, it will be included in future planning and design phases of the project.



(2)

The public comment period closes on January 9, 2019, and we would appreciate receipt of your comments by the end of the comment period. Should you require any additional information during review of the enclosed draft report, please contact Ms. Jennifer Morgan, Biologist, Environmental Compliance Branch, Regional Planning and Environmental Center at [Jennifer.Morgan@usace.army.mil](mailto:Jennifer.Morgan@usace.army.mil) or 409-766-3131.

Sincerely,

Lars N. Zetterstrom, P.E.  
Colonel, U.S. Army  
Commanding

Enclosure

**TEXAS HISTORICAL COMMISSION**  
*real places telling real stories*

February 8, 2019

Lars N. Zetterstrom  
Department of the Army  
Galveston District, Corps of Engineers  
P.O. Box 1229  
Galveston, Texas 77553-1229

Re: Project review under Section 106 of the National Historic Preservation Act of 1966  
*Coastal Texas Protection and Restoration Study Draft Integrated Feasibility Report-  
Environmental Impact Statement*

Dear Colonel Zetterstrom:

Thank you for allowing us to review the proposed project referenced above. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

The review staff, led by Jeff Durst, has completed its review. Portions of the proposed ecosystem restoration project occur in historic waterways and along coastlines that have a high potential to contain buried or submerged cultural resources, recorded archeological sites, and/or undiscovered, buried shoreline shipwrecks. Additionally, bottom-disturbing activities associated with oyster reef creation, island restoration/creation, and dune/beach nourishment (sand source dredging) often require underwater archeological remote-sensing surveys, regardless of where they occur, due to the high impacts these projects introduce. The THC concurs that aspects of the proposed work may have direct effects to buried and submerged cultural resources. In coordination with the USACE, the THC will evaluate project components on a case by case basis regarding the need for archeological investigations. Areas that have already been subject to pedestrian survey or marine archeological remote-sensing surveys may require new investigations due to the age of the data collected.





**Effects on above ground resources.** Regarding the intensive cultural resources investigations as recommended by the USACE, the THC concurs that these surveys need to be conducted in consultation with the THC and Native American Tribes, and any other identified consulting parties. The Area of Potential Effect for these surveys should include not only the direct footprint of the proposed undertaking but also a buffer to assess indirect impacts to historic-age above ground resources. The survey results will need to be reviewed by both the History Programs Division to determine eligibility of all identified resources and the Division of Architecture for an effects determination if any resource is eligible for listing in the National Register of Historic Places. Additionally, a portion of the Galveston Seawall is a State Antiquities Landmark (SAL), therefore any work to that section of the wall will require a SAL permit from the Division of Architecture prior to the start of any work. There are concerns about the four foot height addition therefore the Texas Historical Commission needs to see more detailed maps indicating where those additions are going to be made on the wall. Fort Travis is also a SAL and would require a permit for any alterations to that area. Additional maps indicating exactly where work is being proposed are required.

Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If we may be of further assistance, please call Jeff Durst of our staff at 512/463-8884.**

Sincerely,

A handwritten signature in cursive script, appearing to read "Mark Wolfe".

Mark Wolfe, State Historic Preservation Officer

MW/jjd

## **Campbell, John A CIV USARMY CESWF (USA)**

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**From:** noreply@thc.state.tx.us  
**Sent:** Thursday, June 18, 2020 4:25 PM  
**To:** Campbell, John A CIV USARMY CESWF (USA); reviews@thc.state.tx.us  
**Subject:** [Non-DoD Source] Project Review: 202012708



Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas

**THC Tracking #202012708**

Coastal Texas Protection and Restoration Project  
Gulf Coast  
Galveston, TX

Dear John A. Campbell:

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas.

The review staff led by Jeff Durst, Amy Borgens and Lydia Woods has completed its review and has made the following determinations based on the information submitted for review:

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: Jeff.Durst@thc.texas.gov, amy.borgens@thc.texas.gov, lydia.woods@thc.texas.gov

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit

[Blockedhttp://thc.texas.gov/etrac-system](http://thc.texas.gov/etrac-system).

Sincerely,



For Mark Wolfe, State Historic Preservation Officer  
Executive Director, Texas Historical Commission

**Please do not respond to this email.**





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

July 23, 2020

Mr. Christopher Daniel  
Advisory Council on Historic Preservation  
Office of Federal Agency Programs  
401 F Street NW, Suite 308  
Washington, DC 20001-2637

Dear Mr. Daniel:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

The purpose of the project is to reduce the risk of storm damage to industries and businesses critical to the Nation's economy and to protect the health and safety of Texas coastal communities. Additionally, the project proposes to address critical coastal ecosystems in need of restoration, including wetlands, seagrass beds, sea turtle nesting habitat, piping plover critical habitat, bird island rookeries, and numerous Federal and State wildlife refuges. The proposed project consists of the construction of six coastal storm risk management (CSRM) features and eight ecosystem restoration (ER) measures, as well ecological mitigation features. The recommended plan includes these CSRM features with both structural and non-structural elements: Houston Ship Channel Navigation Gate and Tie-in Structures, Dune and Berm, Galveston Ring Barrier, Gates at Clear Creek and Dickinson Bayou, West Galveston Bay Non-Structural, and South Padre Island Beach Fill. The recommended plan also includes eight ER measures and 13 ecological mitigation areas.

The Area of Potential Effects (APE) includes all areas to be affected by new construction, construction staging and access areas, ecological mitigation features, and project maintenance activities, defined as the footprint of all areas of direct impacts and a 500-foot buffer for indirect impacts to standing structures or buildings. A records search was conducted within a study area that included all areas within 1,000 feet of the proposed project area. The records search revealed that more than 250 previous cultural resources investigations have been conducted within the study area. These investigations resulted in the documentation of 250 previously recorded cultural resources, including 75 archeological sites, 10 cemeteries, and approximately 140 possible submerged archeological resources within the study area. There are also 20

recorded National Register properties within the study area, including two National Historic Landmarks, 14 individual properties and four districts. The previous investigations indicate a high probability for sites to occur within the APE. An inventory of cultural resources within the study area and a detailed description of the recommended plan may be found in the "Cultural Resources and Project Summary" enclosure. The USACE is recommending marine and terrestrial cultural resources investigations be performed once specific construction plans have been finalized and impact areas identified.

In conclusion, we request your office to review and comment on the enclosed draft PA and invite you to participate as a signatory. We have invited the Texas State Historic Preservation Officer, and the non-Federal sponsor of this project, the Texas General Land Office, to be signatories to this PA. The Texas SHPO provided initial comments on the PA, which our office has addressed. The USACE is also consulting with the Alabama-Coushatta Tribe of Texas, the Comanche Indian Tribe, the Coushatta Tribe of Louisiana, the Mescalero Apache Tribe, Kiowa Indian Tribe of Oklahoma, and the Tonkawa Tribe of Indians of Oklahoma to solicit their comments or suggestions in the development and execution of this PA.

Thank you for your cooperation in this review process. If you have any questions or if you need any additional information concerning this project, please contact John A. Campbell, Archeologist, Environmental Branch, Regional Planning and Environmental Center at (409) 766-3878, or [john.a.campbell@usace.army.mil](mailto:john.a.campbell@usace.army.mil).

Sincerely,

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

Enclosure





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

July 23, 2020

Bryant Celestine  
Alabama-Coushatta Tribe of Texas  
Tribal Historic Preservation Officer  
571 State Park Road 56  
Livingston, TX 77351

Dear Mr. Celestine:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

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In conclusion, we invite your office to review and comment on the enclosed draft PA. We have invited the Advisory Council on Historic Preservation, the Texas State Historic Preservation Officer, and the non-Federal sponsor of this project, the Texas General Land Office, to be signatories to this PA.

Thank you for your cooperation in this review process. If you have any questions or if you need any additional information concerning this project, please contact John A. Campbell, Archeologist, Environmental Branch, Regional Planning and Environmental Center at (409) 766-3878, or [john.a.campbell@usace.army.mil](mailto:john.a.campbell@usace.army.mil).

Sincerely,

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

Enclosure





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

July 23, 2020

Martina Minthorn  
Comanche Nation  
Tribal Historic Preservation Officer  
Comanche Nation  
6 SW D Avenue  
Lawton, OK 73502

Dear Ms. Minthorn:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

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Sincerely,

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

Enclosure





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

July 23, 2020

Linda Langley  
Coushatta Tribe of Louisiana  
Tribal Historic Preservation Officer  
PO Box 10  
Elton, LA 70532

Dear Ms. Langley:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

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Sincerely,

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

Enclosure





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

July 23, 2020

Matthew Komalty  
Kiowa Indian Tribe of Oklahoma  
PO Box 369  
Carnegie, OK 73015

Dear Mr. Komalty:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

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In conclusion, we invite your office to review and comment on the enclosed draft PA. We have invited the Advisory Council on Historic Preservation, the Texas State Historic Preservation Officer, and the non-Federal sponsor of this project, the Texas General Land Office, to be signatories to this PA.

Thank you for your cooperation in this review process. If you have any questions or if you need any additional information concerning this project, please contact John A. Campbell, Archeologist, Environmental Branch, Regional Planning and Environmental Center at (409) 766-3878, or [john.a.campbell@usace.army.mil](mailto:john.a.campbell@usace.army.mil).

Sincerely,

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

Enclosure



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

July 23, 2020

Holly Houghton  
Tribal Historic Preservation Officer  
Mescalero Apache Tribe  
P.O. Box 227  
Mescalero, NM 88340

Dear Ms. Houghton:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

The purpose of the project is to reduce the risk of storm damage to industries and businesses critical to the Nation's economy and to protect the health and safety of Texas coastal communities. Additionally, the project proposes to address critical coastal ecosystems in need of restoration, including wetlands, seagrass beds, sea turtle nesting habitat, piping plover critical habitat, bird island rookeries, and numerous Federal and State wildlife refuges. The proposed project consists of the construction of six coastal storm risk management (CSRM) features and eight ecosystem restoration (ER) measures, as well ecological mitigation features. The recommended plan includes these CSRM features with both structural and non-structural elements: Houston Ship Channel Navigation Gate and Tie-in Structures, Dune and Berm, Galveston Ring Barrier, Gates at Clear Creek and Dickinson Bayou, West Galveston Bay Non-Structural, and South Padre Island Beach Fill. The recommended plan also includes eight ER measures and 13 ecological mitigation areas.

The Area of Potential Effects (APE) includes all areas to be affected by new construction, construction staging and access areas, ecological mitigation features, and project maintenance activities, defined as the footprint of all areas of direct impacts and a 500-foot buffer for indirect impacts to standing structures or buildings. A records search was conducted within a study area that included all areas within 1,000 feet of the proposed project area. The records search revealed that more than 250 previous cultural resources investigations have been conducted within the study area. These investigations resulted in the documentation of 250 previously recorded cultural resources, including 75 archeological sites, 10 cemeteries, and approximately 140 possible submerged archeological resources within the study area. There are also 20



recorded National Register properties within the study area, including two National Historic Landmarks, 14 individual properties and four districts. The previous investigations indicate a high probability for sites to occur within the APE. An inventory of cultural resources within the study area and a detailed description of the recommended plan may be found in the "Cultural Resources and Project Summary" enclosure. The USACE is recommending marine and terrestrial cultural resources investigations be performed once specific construction plans have been finalized and impact areas identified.

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Sincerely,

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

Enclosure



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

July 23, 2020

Lauren Norman-Brown  
Tonkawa Tribe of Indians of Oklahoma  
Tribal Historic Preservation Officer  
1 Rush Buffalo Road  
Tonkawa, OK 74653

Dear Ms. Norman-Brown:

The U.S. Army Corps of Engineers (USACE) proposes to initiate a Programmatic Agreement (PA) pursuant to 36CFR800.14 to address potential impacts identified in the Coastal Texas Protection and Restoration Feasibility Report and Environmental Impact Statement. Because effects on historic properties cannot be fully determined prior to approval of the undertaking, we find it necessary to defer identification and evaluation of historic properties. A Draft PA is included as an enclosure for your review.

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Sincerely,

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

Enclosure





August 3, 2020

Mr. John Campbell  
Archeologist, Coastal Section  
USACE Regional Planning & Environmental Center  
U.S. Army Corps of Engineers

Ref: Coastal Texas Protection and Restoration Project  
Chambers, Brazoria, Galveston, Harris, Calhoun, Matagorda, Nueces, San Patricio, Cameron, Kenedy,  
and Willacy Counties, Texas

Dear Mr. Campbell:

The Advisory Council on Historic Preservation (ACHP) has received your notification of adverse effect for the referenced undertaking that was submitted in accordance with Section 800.6(a)(1) of our regulations, "Protection of Historic Properties" (36 CFR Part 800). The background documentation included with your submission does not meet the specifications in Section 800.11(e) of the ACHP's regulations. We, therefore, are unable to determine whether Appendix A of the regulations, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, applies to this undertaking. Accordingly, we request that you submit the following additional information so that we can determine whether our participation in the consultation to resolve adverse effects is warranted.

- Copies or summaries of any views provided by consulting parties, the public, and the Texas State Historic Preservation Officer.
- Copies or summaries of any views or comments provided by any affected Indian tribe.

Upon receipt of the additional information, we will notify you within 15 days of our decision.

If you have any questions, please contact Christopher Daniel at 202-517-0223 or via e-mail at [cdaniel@achp.gov](mailto:cdaniel@achp.gov).

Sincerely,

Artisha Thompson  
Historic Preservation Technician  
Office of Federal Agency Programs