



**MITIGATION PLAN FOR EXPANSION AND SAFETY IMPROVEMENTS TO THE MUSTANG
BEACH AIRPORT IN PORT ARANSAS**

SWG-2013-00189

Nueces County, Texas

I) Project Description

The City of Port Aransas is proposing to construct new safety and operational improvements at the Mustang Beach Airport in Port Aransas, Nueces County, Texas. The project will include construction of a taxiway turnaround at the end of Runway 12, extension of the partial parallel taxiway and Runway 30 towards State Highway (SH) 361, extension of the runway safety area (RSA), relocation of a drainage ditch, and construction of a new apron located north of the extended runway (**Enclosure A, Sheets 1 – 12**).

The proposed turn-around apron on the northwest end of the runway will extend approximately 237 feet southeast of the Runway 12 end (width), and measure approximately 285 feet long. The low-elevated areas will be raised to meet the current elevation of the existing runway. An 18-inch reinforced concrete pipe (RCP) will be installed within the taxiway turnaround apron to promote drainage in the southwest direction similar to existing. The proposed taxiway extension will consist of extending the current partial parallel taxiway southeast towards SH 361 approximately 682 feet and widening by 186 feet. The paved area will measure approximately 682 feet long and 35 feet wide. Runway 30 will also be extended approximately 682 feet long, parallel to the proposed taxiway, and will measure approximately 70 feet wide. The proposed RSA will extend approximately 240 feet southeast of the end of the proposed runway extension towards SH 361. The proposed taxiway, runway, and RSA will be raised to meet the current elevation of existing features. The RSA and the center portion of the extended taxiway will consist of natural vegetation and will not be paved. Two 24-inch RCPs will be installed at each of two locations within the runway to promote drainage in the northeast direction to tie into the proposed drainage ditch, similar to existing.

The existing drainage ditch is identified as a stormwater outfall, Outfall Ditch No. 9, and is located southeast of Runway 30. In order to accommodate the proposed extension of the runway and RSA, the ditch will be relocated northeast of the proposed runway extension. The relocated ditch will measure approximately 12 feet wide at the bottom and 1,200 feet long, with 1V:4H side slopes, and an anticipated water depth of approximately 3 feet. The ditch will be lined by a 3 foot wide berm with varying height on the northeastern side. Flow of the proposed ditch will be in the northwest direction, the same as existing. The proposed RCPs from the taxiway will drain into the relocated ditch and, within the ditch, the RCPs will include concrete headwalls and concrete riprap to reduce erosion around the RCPs. The proposed apron will be constructed northeast of the relocated ditch. An 80 foot long box culvert will be installed within the relocated ditch in order to allow aircraft access to the proposed apron. The taxiway to the apron will measure approximately 173 feet long and 70 feet wide, and the constructed apron will measure approximately 323 feet long and 331 feet wide.

The paved areas (taxiway turnaround, partial parallel taxiway, runway extension, and new apron) will consist of base material to raise elevations, approximately 7 inches of aggregate base course, and 2 inches of asphalt pavement. Additional safety improvements will include installing Medium Intensity

Runway Lights (MIRLs) on the extended runway, installing holding position signs, applying reflective pavement markings, and installing temporary and permanent erosion and sedimentation controls. Construction will be conducted in phases in order to access proposed construction areas from existing paved areas to minimize temporary impacts to jurisdictional waters and wetlands. In addition, the proposed construction staging area will be located in uplands near the intersection of Piper Blvd and SH 361.

The proposed runway extension; partial parallel taxiway and RSA expansion; construction of a new taxiway turnaround; construction of a new apron; and relocation of the drainage ditch would permanently impact a total of approximately 2.11 acres of jurisdictional waters of the U.S., including wetlands.

Approximately 1.1 acres of palustrine emergent wetland, 0.1 acres of emergent wetland/tidal flat, 0.6 acre of mangrove, 0.03 acres of estuarine open water, and 0.28 acre of a freshwater ditch will be permanently impacted as a result of the proposed safety improvement project, totaling approximately 2.11 acres of permanent impacts. **Table 1** provides a summary of proposed impacts.

Table 1. Summary of Jurisdictional Impacts

Resource Type	Existing (Acres)	Permanent Fill Impacts (Ac)
Palustrine emergent wetland	4	1.1
Estuarine emergent wetland/Tidal flat	2	0.1
Estuarine emergent scrub-shrub (mangrove) wetland	23	0.6
Estuarine open water	12	0.03
Manmade freshwater ditch	0.28	0.28
TOTAL (Jurisdictional Habitats)	41.28	2.11

II) Avoidance and Minimization

The proposed project has been designed in order to avoid and minimize impacts to jurisdictional waters, including wetlands, to the extent practicable. Of the 41.28 acres of delineated waters of the U.S. within the project area, 2.11 acres would be permanently impacted from the proposed project. Impacts were reduced from a previous design (Alternative 1) by modifying the design and locating the proposed apron in uplands north of the extended runway. Alternative 1 included impacts to 6.22 acres of jurisdictional waters. A permit application for Alternative 1 was previously submitted to the USACE in December 2014. Alternative 1 was eliminated from further consideration, due to the prohibitive cost of mitigation associated with this alternative's impacts to tidal marsh wetlands. The subsequent re-design reduces impacts by 4.11 acres. Of the 2.11 acres of unavoidable impacts to jurisdictional waters, including wetlands resulting from the proposed project, the City intends to provide permittee-responsible mitigation as compensation.

III) Mitigation Goals and Objectives

As compensatory mitigation for impacts from the proposed project, the City of Port Aransas proposes the following goals and objectives. The goal of the proposed mitigation plan is to provide for the replacement and improvement of the chemical, physical, and biological functions of the waters of the U.S. that will be lost or degraded due to the proposed project. The mitigation plan includes four mitigation objectives: 1) ditch relocation, 2) flats and estuarine emergent wetland creation, 3) mangrove (estuarine wetland) enhancement, and 4) freshwater (palustrine) emergent wetland creation (**Enclosure B**). The ditch relocation will be conducted on-site. The freshwater emergent wetland, estuarine emergent wetland/tidal flat mitigation, and mangrove enhancement will be located at a separate off-site location. Mitigation efforts are described in further detail below.

IV) Site Selection Information

1) *Ditch Relocation*

The existing manmade ditch (Storm Water Outfall Ditch No. 9) will be replaced by relocating the ditch north of the proposed runway extension via excavation of a new ditch. The selection of the on-site mitigation for the ditch relocation is based on the need to replace flow conveyance at the site adjacent to the proposed project. The proposed relocation design is in-kind, the bed and bank will be similar to the existing ditch in shape, and the relocated ditch is anticipated to revegetate naturally with similar vegetation as the existing ditch. Therefore, it is anticipated that the relocated ditch will result in a ditch of similar condition following the project stabilization and revegetation. This will result in functional replacement of the impacted ditch and minimal change to the overall conditions based on the existing condition of the impacted ditch, which has been degraded in the past. No additional compensatory mitigation is proposed for impacts to the manmade ditch.

2) *Freshwater (Palustrine Emergent) Wetland Creation*

The freshwater (palustrine emergent) wetland mitigation effort will occur off-site. The off-site location was selected based on the following criteria: location on Mustang Island, adequate size to compensate for impacts, and ecological suitable habitat to compensate for freshwater (palustrine) emergent wetland. Mustang Island is a narrow barrier island that separates the Gulf of Mexico from Corpus Christi Bay within Nueces County, Texas. The island is comprised of primarily estuarine and marine habitats, with minimal freshwater sites. The off-site selected freshwater wetland site is located approximately 0.75 miles northeast of the airport and adjacent to an existing drainage feature west of Pleasant Valley Dr. The off-site location is ecologically preferable because it provides more compatibility with adjacent land uses and likelihood of success compared to an on-site location, which has limited practicability.

3) *Flats and Estuarine Emergent Wetland Creation*

The flats and estuarine emergent wetland mitigation site was selected based on the following criteria: location within the Nueces-Rio Grande basin and on Mustang Island, adequate size to

compensate for impacts, accessibility to the site, and suitable habitat to compensate for tidal flat and estuarine emergent wetland. The off-site selected flats and estuarine emergent wetland site is located adjacent to the existing freshwater mitigation site near Pleasant Valley Dr. The off-site location is ecologically preferable because it provides more compatibility with adjacent land uses and likelihood of success compared to an on-site location, which has limited practicability.

4) *Mangrove (Estuarine Wetland) Enhancement*

The mangrove (estuarine wetland) mitigation site was selected based on the following criteria: location within the Nueces-Rio Grande basin and on Mustang Island, adequate size to compensate for impacts, accessibility to the site, and suitable habitat to compensate for mangrove (estuarine wetland) mitigation. In order to provide mangrove (estuarine wetland) mitigation with greater likelihood of long-term success, a site adjacent to the proposed mitigation site for estuarine wetland was selected. The selected site is located immediately north of the proposed estuarine wetland site near Pleasant Valley Dr. The off-site location is ecologically preferable because it provides more compatibility with adjacent land uses and likelihood of success compared to an on-site location, which has limited practicability.

V) **Site Protection Instrument**

Estuarine, Mangrove, Flats and Freshwater Wetland Creation and Enhancement

The selected site is located approximately 0.75 miles northeast of the proposed project near Pleasant Valley Dr. The flats and estuarine, mangrove, and freshwater wetland mitigation sites are located within the Port Aransas Nature Preserve. The preserve was developed through City of Port Aransas bond funding that was allocated in 2004. The majority of the land within the preserve is owned by the Texas General Land Office (TXGLO), with the exception of approximately 250 acres of private land that was acquired through grant programs. The proposed mitigation site is located on TXGLO owned property. An agreement between the City of Port Aransas and TXGLO would be required to define monitoring and maintenance of the mitigation area into the future. The mitigation site will be protected from residential, commercial, or industrial development through a permanent conservation easement, deed restriction, or other comparable legal instrument. The City of Port Aransas will provide a copy of the legal instrument to the USACE for review and approval.

VI) **Baseline Information**

1) *Ditch Relocation*

The site of the proposed ditch relocation is approximately 85 feet to the northeast of the existing ditch, therefore site conditions are similar to the existing ditch to be replaced. The relocated ditch would be excavated in uplands near the culvert at SH 361. The site transitions to an estuarine emergent wetland and tidal flat to the west. This area consists of unvegetated tidal flats and marsh vegetation. Approximately 60% of the area is unvegetated tidal flat areas interspersed with vegetation throughout the central portion. Dominant species within the vegetated areas include shoregrass (*Distichlis littoralis*), glasswort (*Salicornia ambigua*), and Carolina wolfberry (*Lycium carolinianum*).



2) Freshwater (Palustrine Emergent) Wetland Creation

The off-site freshwater (palustrine emergent) wetland creation mitigation site is approximately 1.1 acre of coastal upland scrub-shrub habitat located approximately 0.75 miles northeast of the proposed project. The site is adjacent to tidally influenced water to the north and bounded by a small housing development to the west, low-density urban development along SH 361 to the east, and similar undeveloped habitat to the south.

3) Flats and Estuarine Emergent Wetland Creation

The flats and estuarine emergent wetland mitigation site is an area of scrub shrub uplands located south of a tidally influenced water that extends along an existing drainage to Corpus Christi Bay. Based on aerial imagery, the area is currently comprised of disturbed coastal prairie and scrub-shrub upland habitat. The flats and estuarine emergent mitigation site totals approximately 0.1 acre of estuarine creation area. The excavation of these low lying adjacent uplands would create small flats and estuarine wetland habitat.

4) Mangrove (Estuarine Wetland) Enhancement

The mangrove (estuarine wetland) mitigation site would occur within a 1.2 acre tidally influenced water that extends along an existing drainage to Corpus Christi Bay. A wetland delineation and an oyster and seagrass survey of the proposed mangrove (estuarine wetland) mitigation site that is tidally influenced have not been conducted at the time of the mitigation plan. A wetland delineation and oyster and seagrass survey will be submitted under a separate cover.

VII) Number of Credits to be Provided

1) Ditch Relocation

The relocated ditch would be excavated in uplands approximately 85 feet to the northeast of the existing ditch, therefore site conditions are similar to the existing ditch to be replaced. The mitigation ratio for the ditch is 1:1 and would provide 0.28 acres of on-site, in-kind mitigation credit.

2) Freshwater (Palustrine Emergent) Wetland Creation

The freshwater (palustrine emergent) wetland would be mitigated at a 1:1 ratio and would provide 1.1 acre of in-kind mitigation credit by creation at an off-site location.

3) Estuarine Emergent Wetland and Tidal Flat Creation

The estuarine emergent wetland and tidal flat would be mitigated at a 1:1 ratio and would provide 0.1 acre of in-kind mitigation credit by creation at an off-site location.

4) Mangrove (Estuarine Wetland) Enhancement



The mangrove (estuarine wetland) enhancement would be mitigated at a 2:1 ratio and would provide 1.2 acre of in-kind mitigation credit at an off-site location.

As described above and summarized in **Table 2**, the proposed mitigation will provide sufficient compensation (i.e., mitigation credit) to offset unavoidable impacts to aquatic resources resulting from the proposed project.

Table 2. Summary of Wetland Mitigation Credits to be Provided

Resource Type	Project Impacts (Acres)	Mitigation Ratio (Mitigation: Impacted)	Total Compensatory Mitigation (Acres)
Freshwater (Palustrine emergent) wetland*	1.1	1:1	1.1
Estuarine emergent wetland/Tidal flat*	0.1	1:1	0.1
Mangrove (Estuarine emergent scrub-shrub) Wetland *	0.6	2:1	1.2
Estuarine open water**	0.03	0	0
Manmade ditch	0.28	1:1	0.28
TOTAL	2.11		2.68

*It is anticipated the created wetlands will naturally re-vegetate

** It is anticipated that minor impacts to estuarine open water will be offset by a surplus of credits from other resource types

VIII) Mitigation Work Plan

1) Ditch Relocation

The site of the proposed ditch relocation is approximately 85 feet to the northeast of the existing ditch, therefore site conditions are similar to the existing ditch to be replaced. The relocated ditch would be excavated in uplands, and would continue to provide a hydrologic connection between the culvert at SH 361 to the existing outlet into the estuarine emergent wetland and tidal flat of Corpus Christi Bay. The relocated ditch will measure approximately 12 feet wide at the bottom and 1,200 feet long, with 1V:4H side slopes, and an anticipated water depth of approximately 3 feet. The ditch will be lined by a 3 foot wide berm with varying height on the northeastern side. Flow of the proposed ditch will be in the northwest direction, the same as existing. Currently, this area consists of unvegetated tidal flats and marsh vegetation. Approximately 60% of the area is unvegetated tidal flat areas interspersed throughout the central portion. Dominant species within the vegetated areas include shoregrass (*Distichlis littoralis*), glasswort (*Salicornia ambigua*), and Carolina wolfberry (*Lycium carolinianum*). Upon completion of work, disturbed areas would be allowed to re-vegetate from the existing seed bank.

2) *Freshwater (Palustrine Emergent) Wetland Creation*

The mitigation site for freshwater (palustrine emergent) wetland would be excavated in uplands at the proposed off-site location. A berm would be constructed between freshwater (palustrine emergent) and estuarine emergent wetland mitigation sites to prevent saltwater incursion into the freshwater (palustrine emergent) mitigation site. Stockpiled topsoil from the impacted palustrine emergent wetland at the proposed project would be used to spread in the 1.1 acre palustrine emergent wetland creation area in order to re-vegetate the mitigation site with a natural seed bank from the harvested wetland topsoil.

3) *Estuarine Emergent Wetland and Tidal Flat Creation*

The estuarine emergent wetland mitigation site would be excavated in uplands adjacent to existing estuarine wetlands and tidally influenced marsh. The proposed 0.1 acre estuarine emergent wetland mitigation site would expand on the adjacent, existing wetlands and create a gradual transition from the tidal waters of Corpus Christi Bay. A berm would be constructed on the southern boundary of the estuarine emergent wetland mitigation site to provide a barrier to saltwater flow into the freshwater (palustrine emergent) mitigation area described above. Based the expansive existing estuarine emergent wetland that will be directly adjacent to this mitigation site, it is expected to re-vegetate naturally from succession of the existing seed bank.

4) *Mangrove (Estuarine Wetland) Enhancement*

Mangroves would be planted along the bay side of the estuarine emergent wetland mitigation site in 1.2 acres of an existing tidally influenced water. The enhancement of this existing habitat by the planting of additional mangrove would improve aquatic resource functions by expanding an adjacent area with a limited amount of existing mangroves that are currently within the tidal zone of Corpus Christi Bay.

IX) Maintenance Plan

The City of Port Aransas will be responsible for maintaining the mitigation sites to remain in compliance with this mitigation plan. Five years of project monitoring is required or other actions are required by the USACE for the site to meet target success criteria. Once the USACE has determined that success criteria have been met, maintenance of the wetland mitigation site will be the responsibility of the permittee. Maintenance of the wetland mitigation site will also include removing trash and non-natural debris.

X) Ecological Performance Standards

1) *Wetland Creation and Enhancement*

Success of the wetland mitigation efforts will be evaluated using the following standards:



Year 1 – Vegetative percent cover of target wetland vegetation in mitigation areas shall be equal to or greater than 25% after one complete growing season or one year after construction, whichever is longer.

Year 2 – Vegetative percent cover of target wetland vegetation in mitigation areas shall be equal to or greater than 50% after two complete growing seasons or two years after construction, whichever is longer.

Year 3 – Vegetative percent cover of target wetland vegetation in mitigation areas shall be equal to or greater than 70% three growing seasons after construction or 3 years after construction, whichever is longer. Total aerial coverage of invasive cattails (*Typha* sp.) may not exceed 5 percent. If the site meets target success criteria after Year 3, USACE may determine that no additional monitoring is required.

Year 4 – Vegetative percent cover of target wetland vegetation in mitigation areas shall remain equal to or greater than 70% four growing seasons after construction or 4 years after construction, whichever is longer. Total aerial coverage of invasive cattails (*Typha* sp.) may not exceed 5 percent. If the site meets target success criteria after Year 4, USACE may determine that no additional monitoring is required.

Year 5 – Vegetative percent cover of target wetland vegetation in restored areas shall remain equal to or greater than 70% five growing seasons after construction or 5 years after construction, whichever is longer. Total aerial coverage of invasive cattails (*Typha* sp.) may not exceed 5 percent.

Target wetland vegetation within the estuarine emergent wetland may include, but is not limited to, saltwort (*Batis maritima*), glasswort (*Salicornia bigelovii*), key grass (*Distichlis littoralis*), salt grass (*Distichlis spicata*), and sea purslane (*Sesuvium portulacastrum*). Target wetland vegetation within the freshwater (palustrine emergent) wetland may include, but is not limited to, sea-oxeye daisy, saltwort, salt grass, and bulrush (*Schoenoplectus tabernaemontani*). Target vegetation within the mangrove wetland may include black mangrove (*Avicennia germinans*) and smooth cordgrass (*Spartina alterniflora*).

A wetland delineation has not been completed for the proposed off-site freshwater, flats and estuarine wetland, and mangrove mitigation sites. Thus it is unknown if significant invasive species coverage is present at these proposed sites at this time. Monitoring of the wetland mitigation sites will be performed in accordance with USACE Regulatory Guidance Letter 08-03 and if an invasive species becomes a dominant species within the mitigation site this will be indicated in the annual monitoring report.

XI) Monitoring Requirements

All Wetland Creation and Enhancement

Annual monitoring will be conducted to document site performance in the context of the Ecological Performance Standards described above. Monitoring and reporting will be conducted annually for a period of five years in accordance with USACE Regulatory Guidance Letter 08-03. Annual



monitoring reports will include a description of monitoring methodology, results, and photographic documentation of site conditions.

XII) Long-Term Management Plan

The wetland mitigation sites are within Texas General Land Office property, which are managed by the state. The sites and the surrounding property will be managed in accordance with the conservation goals of the Port Aransas Nature Preserve, and deed requirements.

XIII) Adaptive Management Plan

If results of the monitoring indicate that mitigation is not successful, the City of Port Aransas will coordinate with USACE to discuss an appropriate course of action. Example remedies may include, but are not limited to planting efforts, alternative sites, or other adaptive management remedies.

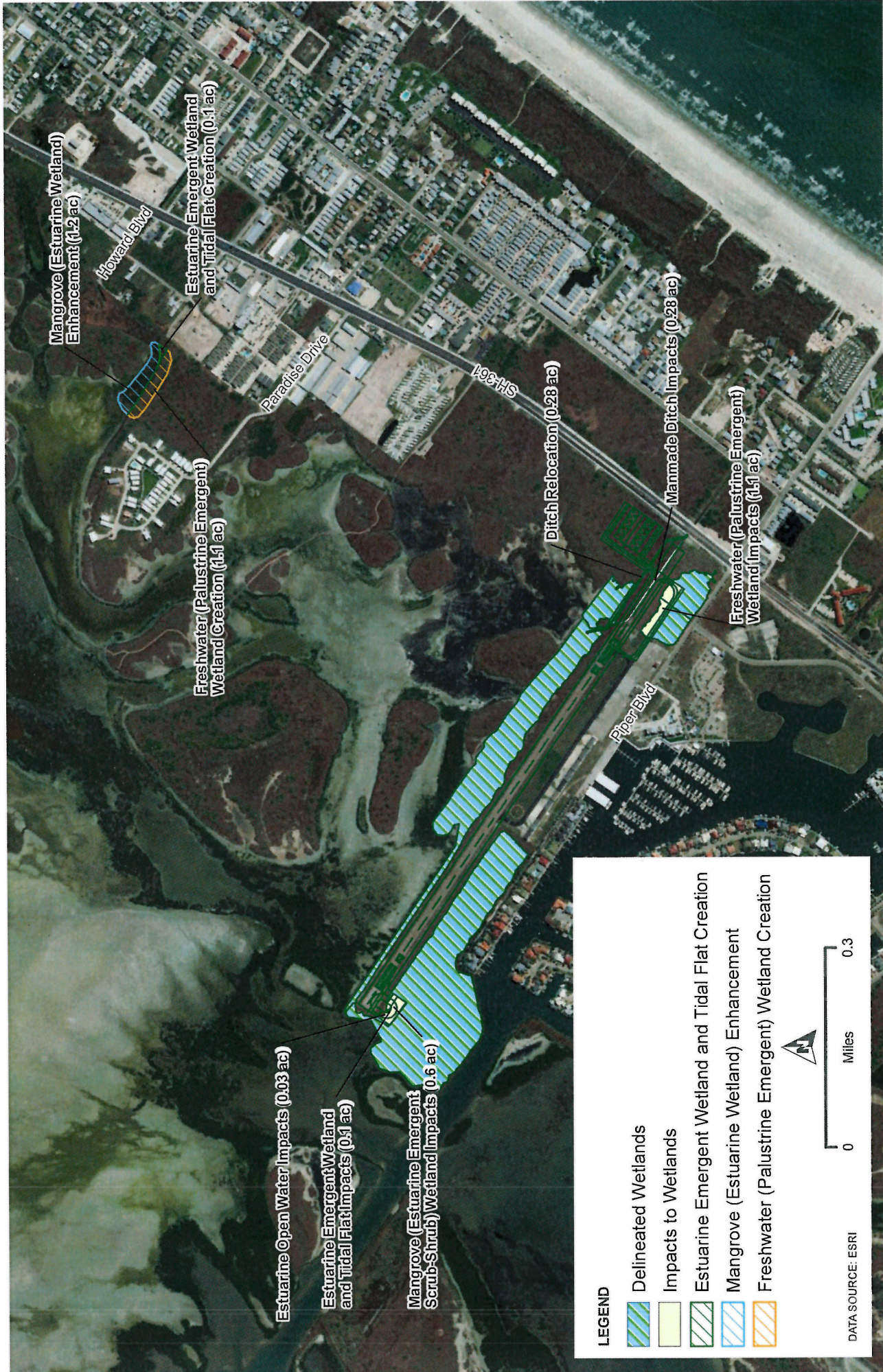
XIV) Financial Assurances

The City of Port Aransas is an established municipality which has demonstrated financial capability and reliability with adequate financial means to expend funds on the required mitigation as described herein.



ENCLOSURE B.

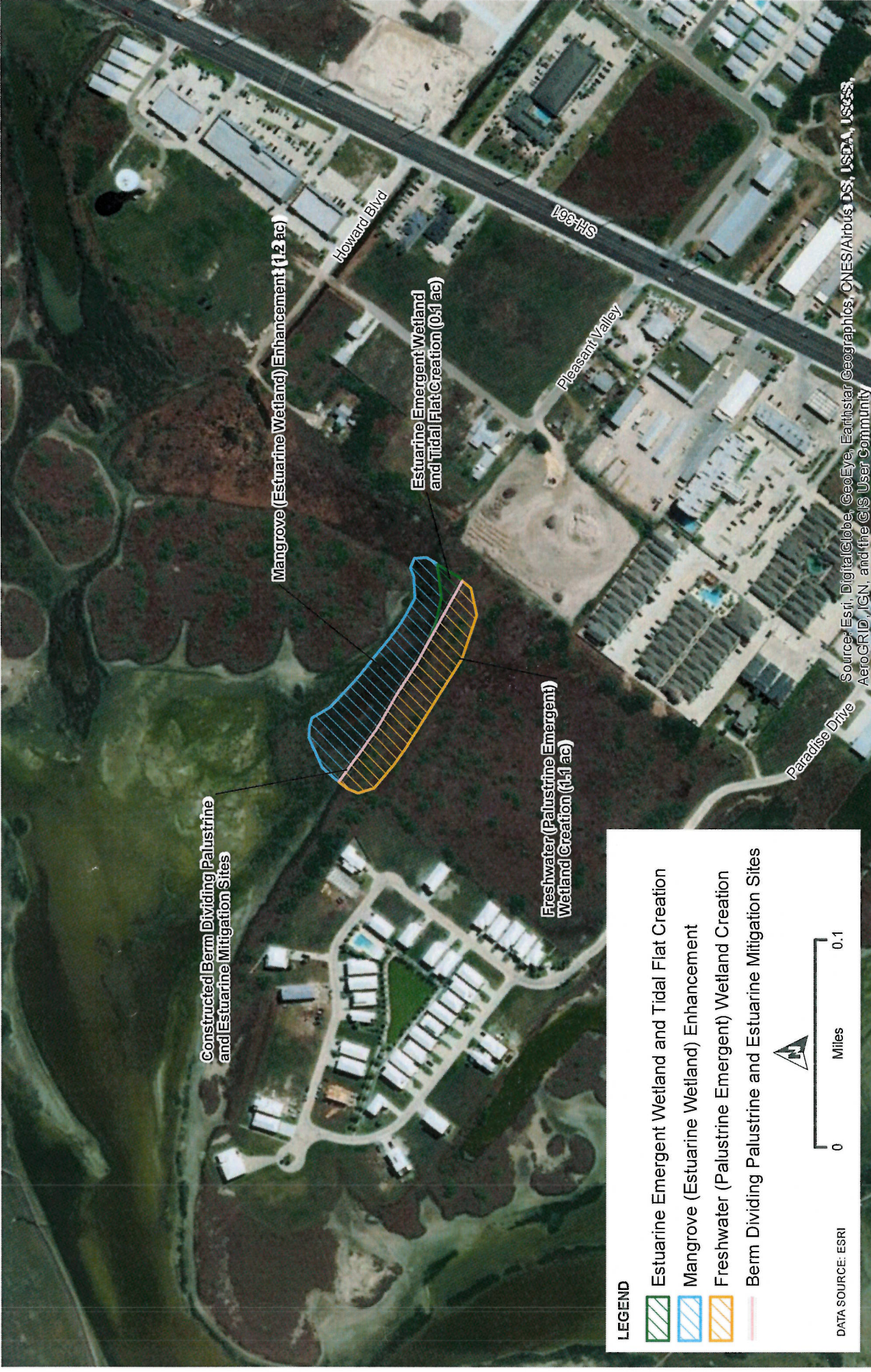
MITIGATION SITE FIGURE



MUSTANG BEACH AIRPORT SAFETY IMPROVEMENTS PROJECT
PORT ARANSAS, TEXAS
FIGURE 1
PROPOSED WETLAND MITIGATION SITES
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CONCEPTUAL FOR PERMITTING, NOT FOR CONSTRUCTION





MUSTANG BEACH AIRPORT SAFETY IMPROVEMENTS PROJECT
PORT ARANSAS, TEXAS
FIGURE 2
PROPOSED WETLAND MITIGATION SITES
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CONCEPTUAL FOR PERMITTING. NOT FOR CONSTRUCTION