FINAL REPORT

Dune Restoration Phase II South Padre Island

#24-022-007-E016

This report was funded, in part, by a Texas Coastal Management Program grant approved by the Texas Land Commissioner, providing financial assistance under the Coastal Zone Management Act of 1972, as amended, awarded by the National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management, pursuant to NOAA Award No. NA23NOS4190249. The views expressed herein are those of the author(s) and do not necessarily reflect the views of NOAA, the U.S. Department of Commerce, or any of their subagencies.

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DUNE RESTORATION PHASE II SOUTH PADRE ISLAND

Project Overview

The Dune Restoration project was brought forward to address the need for safer public access from coastal hazards along the Gulf Coast. The Texas General Land Office Coastal Management Program awarded and partnered with the City of South Padre Island to restore a mile of dunes along the City's shoreline from Beach Access #10, Riviera Circle, to Beach Access #19, Aurora Circle, with maintenance and re-establishment of the Phase I mile as needed.

Sand fencing was placed to catch wind-driven sediment, and native dune vegetation was planted to stabilize the foredune line. Indigenous vegetation utilized during the project was all sourced directly from South Padre Island and included sea oats, bitter panicum, railroad vine, and sea purslane. Educational signage was installed throughout the project area, along with volumetric posts, to track the progress of sand accumulation. Drone mapping was completed regularly throughout the project, with two LiDAR flights being flown by the contractor in July and December 2024 to further show the project's success.

Task 01: Advertise and Award Contract for Design/Build

The City solicited a Request for Proposals (RFP) for dune restoration services in July and August 2023. The advertisements for the RFP packet were released to the public via the Port Isabel/South Padre Island Press and ran for two consecutive weeks. Three viable bids were received and opened on 17 August 2023 at 2:00 pm. The bids were reviewed by a scoring committee and then taken before the City's Shoreline Task Force on 22 August 2023, during which they provided a recommendation for the City Council. On 6 September 2023, the City Council awarded the project to Coastal Transplants, Inc. A contract was executed between the City of South Padre Island and Coastal Transplants on 6 November 2023.

Task 02: Design and Permitting

Coastal Transplants worked with City staff on the project design and permitting for the dune restoration in October 2023. The sand fencing placement and orientation on the beach were determined based on the General Land Office's guidelines in the Dune Protection Manual. Fencing was placed 10 feet apart and at a 45-degree angle facing the predominant wind direction. Native dune vegetation was then planted behind the fencing. An example of the project layout is shown in **Figure 1**.

Figure 1. Project layout showing fencing orientation with native dune vegetation planting behind the sand fencing.

Location of volumetric posts were also selected throughout the project area. Five beach accesses throughout the two miles were chosen including Beach Access #13 (Moonlight Circle), Beach Access #16 (Neptune Circle), Beach Access #18 (Aquarius Circle), Beach Access #21 (Good Hope Circle), and Beach Access #24 (Sapphire Circle). **Figure 2** shows the post locations and the overall project area.

Several meetings occurred between City staff and Coastal Transplants to ensure effective and practical placement all materials. A beach and dune permit application was submitted to the GLO's beach/dune team by City staff with all accompanying backup documents. The GLO comment letter was received on 28 November 2023 with a permit issued immediately after.

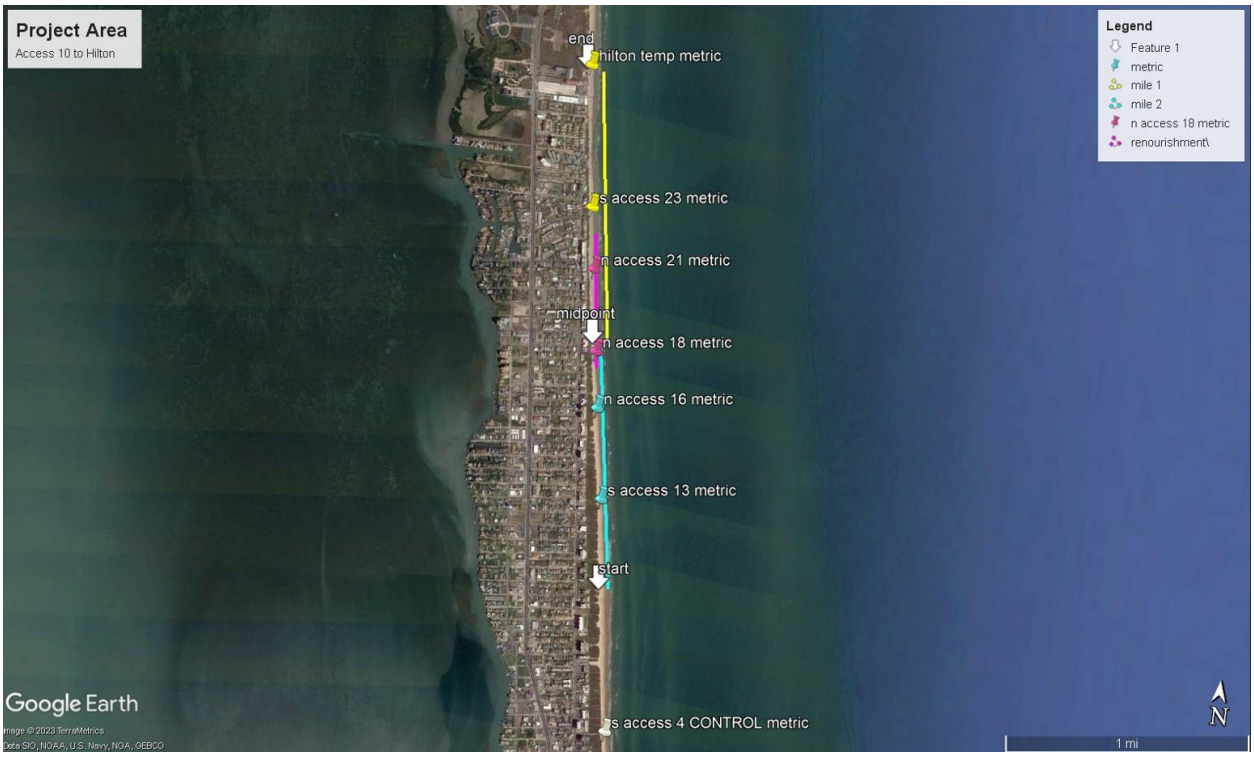

Figure 2. Project area and volumetric post locations.

Task 03: Sand Fence and Sign Installation

Sand fencing installation and vegetation plantings began in December 2023 after the Special Award Conditions were lifted by NOAA with substantial completion of the fencing placement and plantings occurring in February 2024. In April 2024, preliminary educational signs were drafted and sent to the GLO for their review and approval. Permanent CMP signage and the educational signage was placed throughout the project area in May 2024. Two larger educational signs had been in the design phase for installation within the project area; however there continued to be production issues and delays. This resulted in the decision to pull this installation from the project at this time.

Throughout the project, sand was aggressively trapped and can be seen through photos as well as through the volumetric data sheet, attached as **Appendix A**. In **Figure 3**, the post located at Beach Access #18 shows that two feet of sand had accumulated from project implementation until January 2025.

Figure 3. Beach Access #18 volumetric post.

Task 04: Project Monitoring and Reporting

Project monitoring occurred at least monthly with on the ground visual inspections and with City staff performing drone mapping when weather was favorable. Coastal Transplants flew LiDAR in July and December 2024 to further track the project's success.

The City's beach had experienced multiple storm impacts from the 2024 Atlantic hurricane season, which required staff and Coastal Transplants to monitor the project closely during those months. Tropical Storm Alberto created high tides and wave action in June 2024, causing significant erosion and requiring the removal of damaged sand fencing shortly after that. Hurricane Beryl passed through the Gulf of Mexico in July 2024, where the Island experienced high tides again. Finally in September 2024, Hurricane Francine had caused impacts to the beach from high tides. Fencing and planting areas were assessed by staff and Coastal Transplants following each event.

Replanting took place in August, September, October, and November 2024 where sand accumulation had inundated the plants. A dune planting event also took place in September 2024 with a special education class from Point Isabel School District. Photos of the completed project can be found in **Appendix B** which also show the project's growth and sand accumulation.

Project Closeout

The City continues to be excited to set the precedent for long-term dune restoration along the Texas coast. This project has proven to be successful with proper restoration implementation methods while also maintaining public access along the City's shoreline. Planting native dune vegetation sourced directly from the Island has helped the project meet its goals and combat erosion from storm surges and high tides alongside the placement of sand fencing.

The City thanks the CMP team and Coastal Transplants for their work alongside the City throughout the entire project from reporting to ensuring the safety of the Texas coastline. We greatly appreciate your dedication and work towards Texas beaches and look forward to continue working together in the future.

Kristina Boburka, Shoreline Director

APPENDIX A
VOLUMETRIC POST REPORT

Dune Restoration Volume Metrics

Control (Beach) (pulled out multiple times, unsure of accuracy)

Date	Color	Foot Mark	Inch Hash	Change	
12.06.2023	Red Line	0	0	0	
01.06.2024	Red Line	0	0	0	
02.06.2024	Brown Post	0	0	0	
03.07.2024	Brown Post	0	0	0	
05.03.2024	Brown Post	0	0	0	
06.07.2024	Brown Post	0	0	0	
07.01.2024	Brown Post	0	0	0	
08.06.2024	Brown Post	0	0	0	
09.06.2024	Brown Post	0	0	0	
09.13.2024	Yellow	First	2		Post-Hurricane Francine

Method:

Use of cylinder post with 1 foot and 1 inch hash marks to follow the accumulation of sand month at differing way points.

Color Guide	Height/Order
Red Line	None
Yellow	First Foot
Blue	Second Foot
TYellow	Third Foot
Pink	Fourth Foot

Moonlight

Date	Color	Foot Mark	Inch Hash	Change	
12.06.2023	Red Line	0	0	0	
01.06.2024	Red Line	0	0	0	
02.06.2024	Red Line	0	0	0	
03.06.2024	Red Line	0	0	0	
05.03.2024	Red Line	0	0	0	
06.07.2024	Yellow Line	First	3	3	
07.01.2024	Yellow Line	First	8	5	
08.06.2024	Yellow Line	First	9	1	
09.06.2024	Yellow	First	10	1	
09.13.2024	Blue	Second	3	5	Post-Hurricane Francine
10.01.2024	Blue	Second	1	-2	
11.08.2024	Blue	Second	10	9	
12.04.2024	Blue	Second	5	-5	
01.09.2025	Blue	Second	0	-5	
02.06.2025	Blue	Second	4	4	

Neptune

Date	Color	Foot Mark	Inch Hash	Change	
12.06.2023	Red Line	0	0	0	
01.06.2024	Red Line	0	0	0	
02.06.2024	Yellow	First	1	1	
03.06.2024	Yellow	First	1	0	
05.03.2024	Blue	Second	8	19	
06.07.2024	Blue	Second	8	0	
07.01.2024	Blue	Second	2	-6	
08.06.2024	Yellow	First	11.5	-2.5	
09.06.2024	Blue	Second	2	2.5	
09.13.2024	Blue	Second	5	3	Post-Hurricane Francine
10.01.2024	Blue	Second	4.5	-0.5	
11.08.2024	Blue	Second	3	-1.5	
12.04.2024	Blue	Second	7	4	
01.09.2025	Blue	Second	10	3	
02.06.2025	Blue	Second	10	0	

Aquarius

Date	Color	Foot Mark	Inch Hash	Change	
12.06.2023	Red Line	0	0	0	
01.06.2024	Yellow	First	4	4	
02.06.2024	Yellow	First	5	1	
03.06.2024	Yellow	First	8	3	
05.03.2024	Yellow	First	9	1	
06.07.2024	Yellow	First	7	-2	
07.01.2024	Blue	Second	3	8	
08.06.2024	Blue	Second	2	-1	
09.06.2024	Blue	Second	3	1	
09.13.2024	Blue	Second	3	0	Post-Hurricane Francine
10.01.2024	Blue	Second	3	0	
11.08.2024	Blue	Second	4	1	
12.04.2024	Blue	Second	11	7	
01.09.2025	Second Yellow	Third	1	2	
02.06.2025	Second Yellow	Third	3	2	

Good Hope

Date	Color	Foot Mark	Inch Hash	Change	
12.06.2023	Red Line	0	0	0	
01.06.2024	Yellow	First	1	1	
02.06.2024	Yellow	First	1	0	
03.07.2024	Yellow	First	1	0	
05.03.2024	Yellow	First	1	0	
06.07.2024	Yellow	First	3	2	
07.01.2024	Yellow	First	11	8	
08.06.2024	Yellow	First	11	0	
09.06.2024	Yellow	First	11	0	
09.13.2024	Yellow	First	7.5	-3.5	Post-Hurricane Francine
10.01.2024	Yellow	First	8.5	1	
11.08.2024	Yellow	First	9	0.5	
12.04.2024	Yellow	First	10	1	
01.09.2025	Yellow	First	3.5	-6.5	*Umbrella vendor equipment surrounded post which may have caused the reduction in sand accumulation directly within the post vicinity*
02.06.2025	Yellow	First	11	7.5	

Weather Dates:

Date of Impact	Storm Name	Days of Impact	Storm Level	Major Threats
06.19.2024	Alberto	4	Tropical Storm	High tides
07.06 - 07.08	Beryl		Cat 1	
09.09 - 09.14	Francine		Cat 2	High tides

Sapphire

Date	Color	Foot Mark	Inch Hash	Change	
12.06.2023	Red Line	0	0	0	
01.06.2024	Red Line	0	0	0	
02.06.2024	Red Line	0	0	0	
03.07.2024	Red Line	0	0	0	
05.03.2024	Yellow	First	1	1	
06.07.2024	Yellow	First	2	1	
07.01.2024	Yellow	First	2	0	
08.06.2024	Yellow	First	2.5	0.5	
09.06.2024	Yellow	First	5	2.5	
09.13.2024	Yellow	First	10	5	
10.01.2024	Yellow	First	9	-1	
11.08.2024	Blue	Second	4	7	
12.04.2024	Blue	Second	2	-2	
01.09.2025	Blue	Second	0	-2	
02.06.2025	Blue	Second	1	1	

Alt. Hilton

Date	Color	Foot Mark	Inch Hash	Change
12.06.2023	Red Line	0	0	0
01.06.2024	Red Line	0	0	0
02.06.2024	Red Line	0	0	0
03.06.2024	Yellow	First	1	1
05.03.2024	Yellow	First	1	1
06.07.2024	Yellow	First	2	1
07.01.2024				

Post pulled out after storm in September

APPENDIX B

FINAL PROJECT PHOTOS

City of South Padre Island | Shoreline Department
321 Padre Boulevard South Padre Island, TX 78597
956-761-3837

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