6.2 Dune and Vegetation Restoration Projects

The following projects are proposed to restore dune and vegetation impacts resulting from the Spill. There are currently $73,305 in restoration funds available for Dune and Vegetation Restoration projects. An additional $328,956 in interest has accrued on the principal sum, which can be proportioned between restoration types as necessary.

6.2.1 Alternative 14: Bollard & Cable Fencing for Dune Protection at Corpus Christi Pass

This project would install approximately 3,700 linear feet of bollards and cable as needed on both sides of the Corpus Christi Pass South Road within the footprint of the existing road and/or shoulder. This road is already heavily impacted from continued use and the installation of bollard and cable would not extend into the surrounding dune habitat. This action would ensure that vehicles traveling down the access road are prevented from driving through the adjacent habitat to access the shoreline and would prevent further resource damage and allow currently impacted areas to restore naturally. The bollards are anticipated to be 4 in. to 8 in. diameter posts spaced 20 ft. to 25 ft. apart connected by 1/2 in. to 3/4 in. thick galvanized wire cable. Approximately 150 to 185 bollards and 3,700 ft. of cable would be installed in total. This project would only be implemented if the "Road Repair at Corpus Christi Pass" Project is selected as a preferred alternative. If the project requires a coastal lease from the Texas General Land Office, the location of the bollards may be modified to the lease specifications.

This project would protect and allow the recovery of the dune habitat which is currently impacted by visitor use. This project also would provide secondary benefits to recreational use of MISP by improving public access to the park's resources. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly.

BOLLARD AND CABLE FENCING FOR DUNE PROTECTION AT CORPUS CHRISTI PASS

TEXAS PARKS & WILDLIFE

Map produced by TPWD IT-GIS Team May 2018
No claims are made to the accuracy of the data or to the suitability of the data to a particular use.
Projection: NAD 1983 Texas Centric Mapping System Albers
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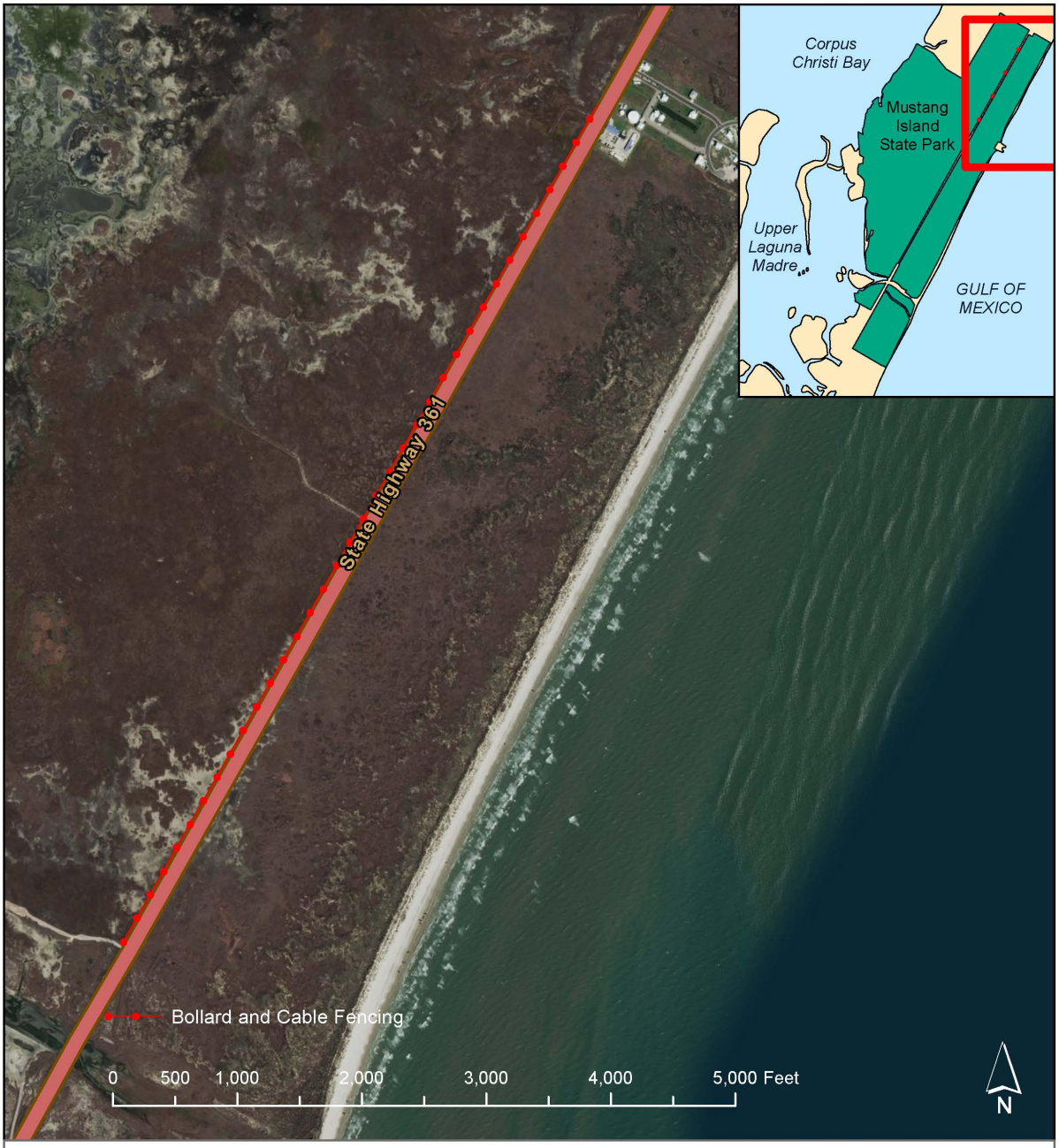
6.2.2 Alternative 15: Bollard and Cable Fencing for Dune Protection on Hwy 361

This project would repair and/or replace approximately 7,731 linear feet of existing bollards and cable along the west side of Hwy. 361 (Park Rd. 22) on the bay side of the park within the existing footprint of the road and/or shoulder. This action ensures that vehicles on the highway are prevented from driving through coastal prairie, dunes, and wetlands to access the shoreline. Currently, the cables are badly rusted and the bollards have deteriorated significantly within this section of the road. Park visitors drive over the rusted bollard and cable fencing and are causing impacts to dune systems at the site. This project would replace up to approximately 75 to 200 (20 - 50%) of existing bollards and install new cable as needed. The new bollards are anticipated to be 4 in. to 8 in. diameter posts spaced 20 ft. to 25 ft. apart connected by 1/2 in. - 3/4 in. thick galvanized wire cable. If the project requires a coastal lease from the Texas General Land Office, the location of the bollards may be modified to the lease specifications.

This project would protect and allow the recovery of the dune habitat which is currently impacted by visitor use. This project also would provide secondary benefits to recreational use of MISP by improving public access to the park's resources. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly.



BOLLARD AND CABLE FENCING FOR DUNE PROTECTION ON HIGHWAY 361

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No claims are made to the accuracy of the data or to the suitability of the data to a particular use.
Projection: NAD 1983 Texas Centric Mapping System Albers
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6.2.3 Alternative 16: Bollard and Cable Fencing for Dune Protection at Fish Pass North

This project would repair/replace or install new bollards and cable along the north road of Fish Pass (Fish Pass North). Through this project, approximately 6,450 linear feet of bollards and cable would be repaired and/or replaced as needed on the north side of the north Fish Pass Access road on the bay side of the park within the existing footprint of the road and/or shoulder. This section of bollard and cable is severely deteriorated and no longer effectively controls vehicular traffic from entering dune systems. This project would ensure that vehicles traveling down the access road are prevented from driving through coastal prairie habitat and wetlands to access the shoreline. This project would replace up to approximately 260 to 320 bollards and install new cable as needed. The bollards are anticipated to be 4 in. to 8 in. diameter posts with 20 ft. to 25 ft. spacing and 1/2 in. to 3/4 in. thick galvanized wire cable. If the project requires a coastal lease from the Texas General Land Office, the location of the bollards may be modified to the lease specifications.

This project would protect and allow the recovery of the dune habitat which is currently impacted by visitor use. This project also would provide secondary benefits to recreational use of MISP by improving public access to the park's resources. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly.

ALTERNATIVE 16:
BOLLARD AND CABLE FENCING FOR DUNE PROTECTION AT FISH PASS NORTH

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No claims are made to the accuracy of the data or to the suitability of the data to a particular use.
Projection: NAD 1983 Texas Centric Mapping System Albers
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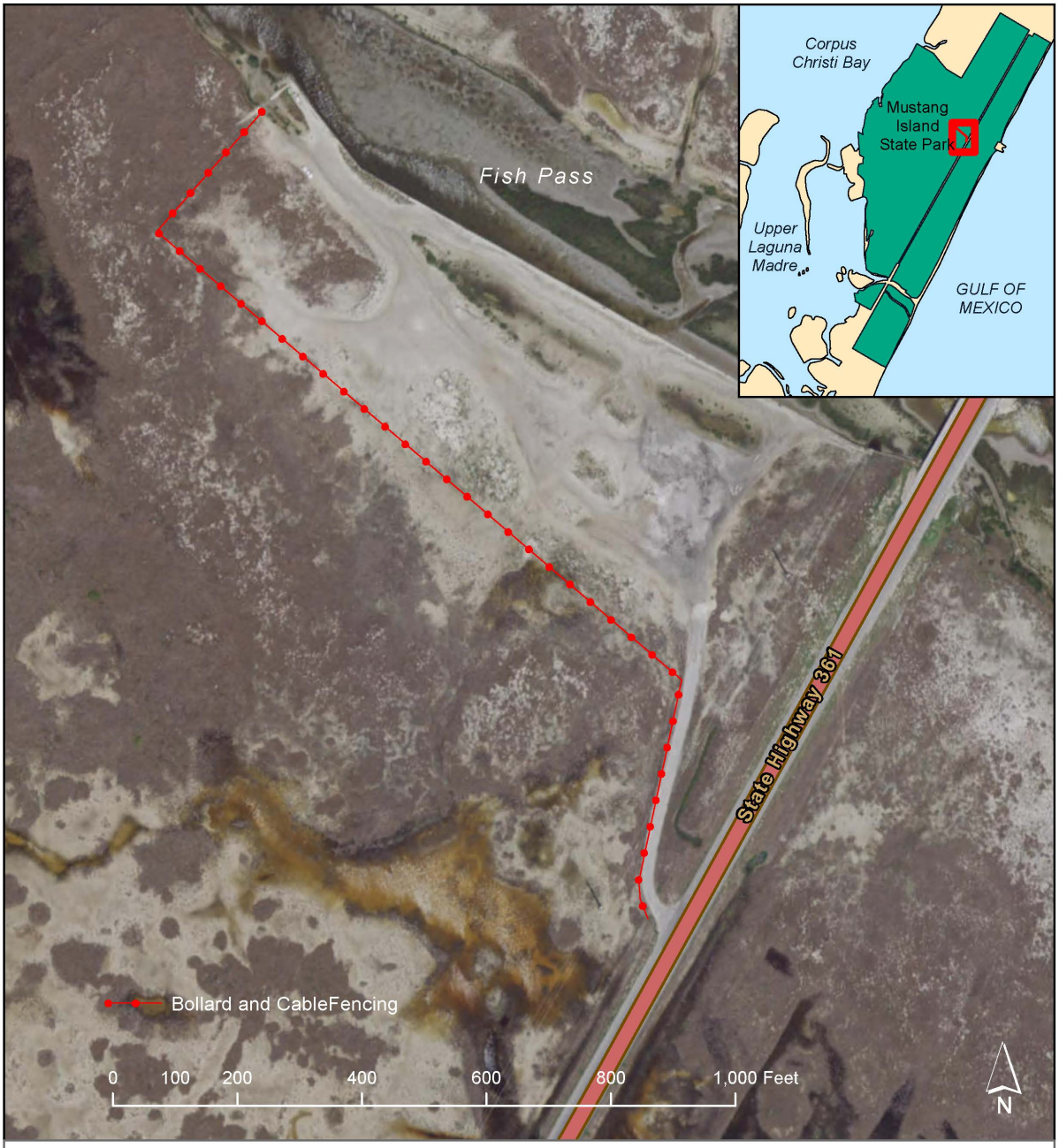
6.2.4 Alternative 17: Bollard and Cable Fencing for Dune Protection at Fish Pass South

This project would repair/replace or install new bollards and cable along the south side of Fish Pass (Fish Pass South). It would also install new bollard and cable surrounding the parking area along south side of Fish Pass within the existing footprint of the road and/or shoulder. This 1,750-ft stretch of bollard and cable would more clearly define the frequently-used parking area. It would prevent park visitors from driving over the dunes and would allow the dune systems to restore naturally where they have already been impacted. This project would install between approximately 70 and 350 new bollards around the parking area and install new cable if needed. The bollards are anticipated to be 4 in. to 8 in. diameter posts spaced 5 ft. to 25 ft. apart connected by 1/2 in. to 3/4 in. thick galvanized wire cable. If the project requires a coastal lease from the Texas General Land Office, the location of the bollards may be modified to the lease specifications.

This project would protect and allow the recovery of the dune habitat which is currently impacted by visitor use. This project also would provide secondary benefits to recreational use of MISP by improving public access to the park's resources. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly.



BOLLARD AND CABLE FENCING FOR DUNE PROTECTION AT FISH PASS SOUTH

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Map produced by TPWD IT-GIS Team May 2018
No claims are made to the accuracy of the data or to the suitability of the data to a particular use.
Projection: NAD 1983 Texas Centric Mapping System Albers
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6.2.5 Alternative 18: Bollard and Cable Fencing for Dune Protection at Fish Pass End

This project would add new bollard and cable along a stretch of the north side of Fish Pass Road to prevent park visitors from driving around the tip of the north road through the tidal flats and marshes, accessing recently added acreage to the park called the "Facey Tract." Currently, park visitors regularly drive to the end of Fish Pass Road North, around the end of the road, through sensitive tidal flats and marshes, accessing and impacting protected lands, the Facey Tract. This project would add approximately 250 linear feet of new bollards and cable at the end of the north Fish Pass Access road on the bay side of the park. This project would install between 10 and 50 bollards and install new cable. This action ensures that vehicles traveling down the access road are prevented from driving around the end of the bollards and cable through the tidal flats to access shoreline further to the north. The bollards are anticipated to be 4 in. to 8 in. diameter posts spaced 5 ft. to 25 ft. apart connected by 1/2 in. to 3/4 in. thick galvanized wire cable. If the project requires a coastal lease from the Texas General Land Office, the location of the bollards may be modified to the lease specifications.

This project would restore dune habitat which is currently impacted by visitor use. This project also would provide secondary benefits to recreational use of MISP by improving public access to the park's resources. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly.

BOLLARD AND CABLE FENCING FOR DUNE PROTECTION AT FISH PASS END

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Projection: NAD 1983 Texas Centric Mapping System Albers
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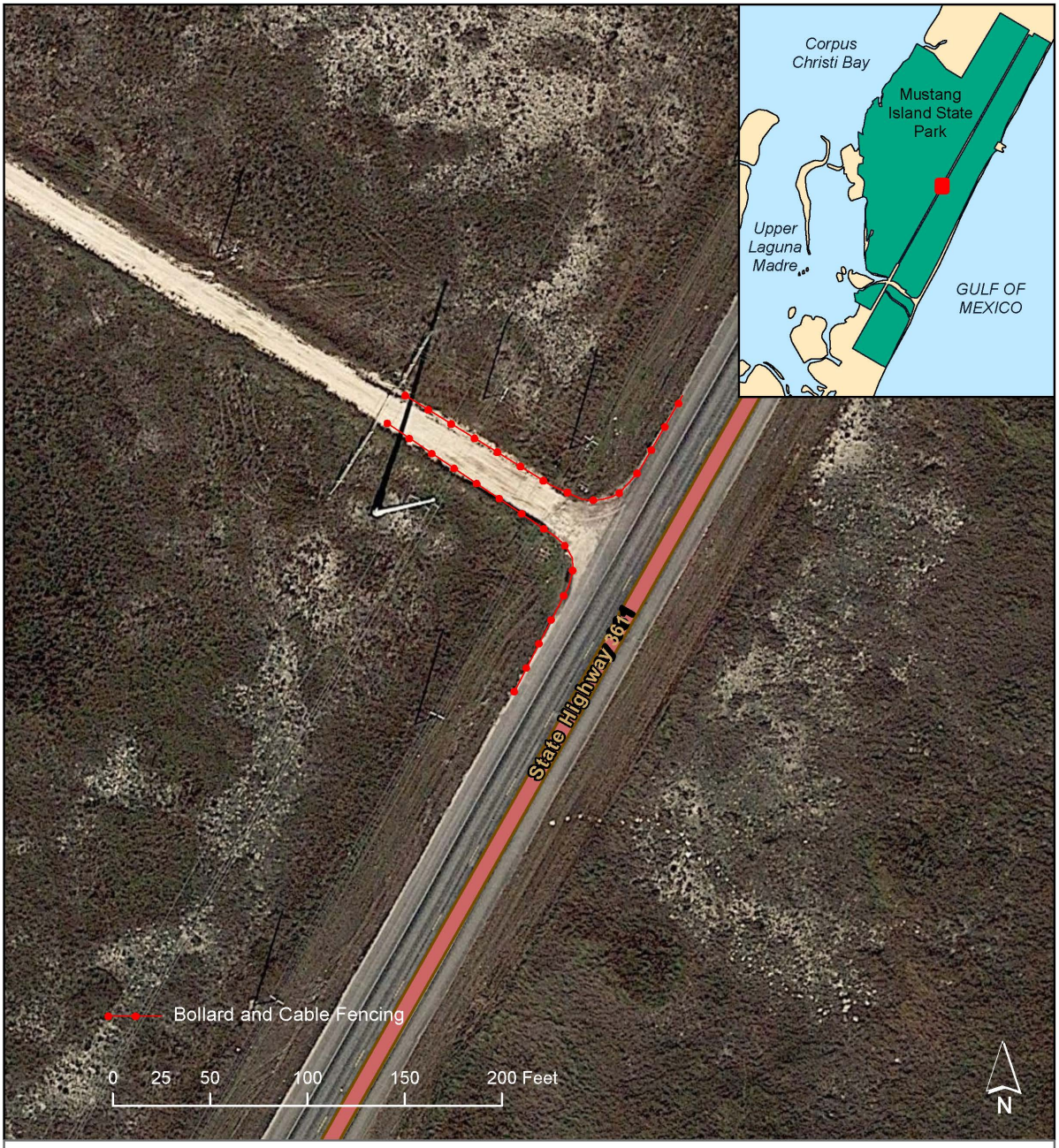
6.2.6 Alternative 19: Bollard and Cable Fencing for Dune Protection at Oil and Gas Road

This project would install 200 ft. of new bollard and cable along both sides of an oil and gas well/pipeline access road on the bay side of the park within the existing footprint of the road and/or shoulder. This action ensures that vehicles entering the access road are prevented from driving through adjacent coastal prairie habitat and wetlands to access the bay-front shoreline. Approximately 8 to 10 bollards would be installed. The bollards are anticipated to be 4 in. to 8 in. diameter posts spaced 20 ft. to 25 ft. apart connected by 1/2 in. to 3/4 in. thick galvanized wire cable.

This project would protect and allow the recovery of the dune habitat which is currently impacted. This project also would provide secondary benefits to recreational use of MISP by improving the conditions of popular points of public access to the park's resources. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly.



BOLLARD AND CABLE FENCING FOR DUNE PROTECTION AT OIL AND GAS ROAD

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Map produced by TPWD IT-GIS Team May 2018
No claims are made to the accuracy of the data or to the suitability of the data to a particular use.
Projection: NAD 1983 Texas Centric Mapping System Albers
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6.2.7 Alternative 20: Removal and Restoration of Corpus Christi Pass Road and Well Pad

This project would completely remove approximately 4,000 linear feet of existing caliche along Corpus Christi Pass Road North and the connected Well Pad in order to allow sensitive dune habitats to recover naturally. The old caliche road on the north side of Corpus Christi Pass was built through sand dunes, coastal prairie and tidal flats in the 1960s to provide access to an oil and gas drilling site. The road is now used by visitors to access the shoreline in this area. Access is unmanaged and vehicles often get stuck in low spots after rain or during high tides, creating holes that other vehicles later drive around, constantly increasing the impact on surrounding sensitive habitats which include emergent marsh, tidal flat (much of which is piping plover critical habitat), freshwater wetlands, coastal prairie, and documented cultural resource sites. Four-wheel-drive vehicles also leave the road to drive through tidal flats and over sand dunes, further destroying habitat and wildlife. The area is often the site of illegal activity and is strewn with trash and construction debris. Road improvement costs are prohibitive, as is the cost of maintaining and managing the existing caliche road. Removal of the caliche road would allow the now-impacted dune habitats to regrow and recover. The removed caliche would either be repurposed within the park for road maintenance or recycled.

This project would restore dune habitat which is currently impacted by visitor vehicle use. The Trustees anticipate that this project has a high likelihood of success and can be implemented cost-effectively and quickly. In addition, this project is scalable – portions of this project may be completed incrementally, in stages—depending on the funding available.

REMOVAL AND RESTORATION OF CORPUS CHRISTI PASS ROAD AND WELL PAD

TEXAS PARKS & WILDLIFE

Map produced by TPWD IT-GIS Team May 2018
No claims are made to the accuracy of the data or to the suitability of the data to a particular use.
Projection: NAD 1983 Texas Centric Mapping System Albers
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6.3 No-Action Alternative

Restoration of the injured resources under the no-action alternative would occur only through natural processes and existing or future programs that are unrelated to this Draft Amendment. The no-action alternative would not increase the rate of restoration of the injured natural resources and services beyond what will result from natural processes and existing or future programs.

Losses were suffered during the period of recovery from this Spill and technically-feasible, cost-effective alternatives exist to compensate for these losses. The Trustees anticipate that implementation of the no-action alternative would cause additional injuries in allowing the park's resources to continue to degrade.

7 Proposed Preferred Alternatives

Based on the analysis in the above section, the Trustees propose to implement the alternatives identified as preferred in Table 2.

Table 2: Restoration Alternatives and Estimated Costs

Restoration Category	Replacement Projects	Funding Tier	Estimated Cost	Preferred/Not Preferred
Lost and Diminished Recreational Use of State Parks	Alternative 1: Dune Walkover at the Primary Dune Restoration Site	Tier 1	$490,163	Preferred
	Alternative 2: Boardwalk and Pavilion at Fish Pass	Tier 1	$174,669	Preferred
	Alternative 3: Kayak Launch, Restroom, and Parking Improvements at Fish Pass	Tier 1	$174,642	Preferred
	Alternative 4: Security Improvements at Corpus Christi Pass and Fish Pass South	Tier 1	$39,250	Preferred
	Alternative 5: Security Improvements at Fish Pass North	Tier 2	$19,750	Preferred
	Alternative 6: Interpretive Sign at South Jetty of Fish Pass	Tier 2	$4,500	Preferred
	Alternative 7: Road Repair at Corpus Christi Pass	Tier 1	$4,584	Preferred
	Alternative 8: Bollard and Cable Fencing for Pedestrian Safety at Day Use Area	Tier 1	$21,450	Preferred
	Alternative 9: Equipment Rental at Mustang Island State Park	Tier 2	$9,000	Preferred
	Alternative 10: Trail/Boardwalk System from Corpus Christi Pass Road Parking Area to South Access Point	N/A	$763,123	Not Preferred

	Alternative 11: Trail/Boardwalk System from South Access Point to Kate's Hole	N/A	$487,574	Not Preferred
	Alternative 12: Extension of Trail/Boardwalk System from Kate's Hole to North Access Point	N/A	$889,692	Not Preferred
	Alternative 13: Interpretive Pavilion and Marsh Boardwalk (Proposed in 2003 Final RP/EA)	N/A	$132,000	Not Preferred
Dune and Vegetation Restoration	Alternative 14: Bollard & Cable Fencing for Dune Protection at Corpus Christi Pass	Tier 1	$44,770	Preferred
	Alternative 15: Bollard and Cable Fencing for Dune Protection on Hwy 361	Tier 1	$76,537	Preferred
	Alternative 16: Bollard and Cable Fencing for Dune Protection at Fish Pass North	Tier 2	$63,855	Preferred
	Alternative 17: Bollard and Cable Fencing for Dune Protection at Fish Pass South	Tier 2	$17,325	Preferred
	Alternative 18: Bollard and Cable Fencing for Dune Protection at Fish Pass End	Tier 1	$5,500	Preferred
	Alternative 19: Bollard and Cable Fencing for Dune Protection at Oil and Gas Road	Tier 1	$23,087	Preferred
	Alternative 20: Removal and Restoration of Corpus Christi Pass Road and Well Pad	Tier 2	Scalable[1]	Preferred
All	No-Action Alternative	N/A	$0	Not Preferred

The Trustees' proposed preferred projects restore the same types of resources and services as were impacted by the Spill and would do so in a cost-effective manner with a high likelihood of success. The Trustees have implemented projects similar to those listed Table 2. In comparison, the preferred alternatives in Table 2 are technically feasible, cost-effective, meet the Trustees' goals, are likely to succeed, and benefit more than one natural resource. An OPA evaluation of each of the alternatives is described in Chapter 6, above, and is summarized as a table in Appendix B and discussed further in this chapter.

The alternatives that were not preferred in this Draft Amendment are discussed below:

- Alternatives 10, 11, and 12 – were not considered to be cost-effective and have the potential to cause collateral injury to surrounding dune and wetland habitat.
- Alternative 13 (originally proposed in the 2003 Final RP/EA) – the large scope and undefined location left variables such as collateral injury, cost-effectiveness, and technical feasibility unknown.

[1] Cost is scalable up to the remainder of restoration funds available. This is not a representative cost estimate for completion of the project.

- No-action alternative – losses were suffered during the period of recovery from this Spill, and technically-feasible, cost-effective alternatives exist to compensate for these losses.

In this Draft Amendment, the Trustees are proposing a tiered funding strategy to account for residual funds – if any remain – after the implementation of "Tier 1" proposed preferred alternatives listed above. Tier 1 is comprised of alternatives scoring the highest in the Trustees' OPA evaluation (i.e., having the lowest numerical scores; refer to Appendix B), while Tier 2 projects are comprised of projects that fall into the category of proposed preferred projects but scored overall slightly lower than those in Tier 1. The total estimated cost of implementing the preferred alternatives in Tier 1 is $1,054,652. Depending on the amount of funds that may remain after implementation of the Tier 1 alternatives, the Trustees may implement one or more, a portion of, or components of the projects listed as Tier 2 in Table 2 above. The Trustees may also use residual funds to enhance projects selected for implementation in Tier 1. Projects within Tier 2 would be implemented according to the highest score within the available funding. Alternatively, residual funds may be put towards (a) enhancing Tier 1 projects that are scalable or (b) compensating for any unfunded administrative costs associated with project planning and implementation. If no funding remains from the initial implementation of Tier 1 projects, Tier 2 projects above will not be implemented.

In this Draft Amendment, the Trustees propose 16 preferred restoration project alternatives with proposed maximum funding of $1,133,202, including administrative costs associated with implementation. The proposed alternatives presented in this Draft Amendment are independent of each other. Each alternative, or its individual components, may be individually selected for implementation in this and/or future restoration plans by the Trustees.

8 Project Monitoring

The objective of the suite of proposed projects discussed in the sections above is to restore and enhance dune vegetation and compensate for lost recreational use in Mustang Island State Park that resulted from the Spill. If selected, each project would include monitoring to ensure project success. Construction activities would be monitored to ensure that project designs are correctly implemented. Monitoring parameters for projects may include: construction verification and percent vegetation cover. The performance of this project would be assessed using both qualitative and quantitative performance criteria related to project designs and objectives. The need for corrective actions would be determined by evaluation of the project over time using specified performance criteria. Details concerning the performance measures and monitoring would be developed during implementation of the projects.

9 Compliance with the National Environmental Policy Act (NEPA)

Actions undertaken by a federal Trustee to restore natural resources or services under OPA are subject to the National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321 *et seq.*) and other federal laws including the Endangered Species Act, Clean Water Act, and Section 106 of the National Historic Preservation Act.

The 2015 *National Park Service NEPA Handbook* describes the level of documentation ((e.g., categorical exclusion) that federal actions such as this Draft Amendment require. The Trustees anticipate the alternatives qualify for categorical exclusions, however, once the restoration alternatives in it undergo public review, comment, and any necessary editing by the Trustees. The appropriate NEPA document(s) will be appended to this Draft Amendment, with any modifications in response to public comment, and the two documents together will be the Final Amendment to the 2003 Final RP/EA.

APPENDIX A: Federally-listed threatened and endangered species potentially occurring in the project area (MISP)

	Common Name	Scientific Name	Federal Status	Potentially Present in Restoration Project Area
Birds				
	Interior Least Tern	*Sterna antillarum athalassos*	E	No
	Northern Aplomado Falcon	*Falco femoralis septentrionalis*	E	Yes
	Piping Plover	*Charadrius melodus*	T	Yes
	Red Knot	*Calidris canutus rufa*	T	Yes
	Whooping Crane	*Grus americana*	E	Yes
Mammals				
	Gulf Coast Jaguarondi	*Herpailurus yagouraroundi cacomitli*	E	No
	Ocelot	*Leopardus paradalis*	E	No
	West Indian Manatee	*Trichechus manatus*	E	No
Reptiles				
	Green Sea Turtle	*Chelonia mydas*	T	Yes
	Hawksbill Sea Turtle	*Eretmochelys imbricata*	E	Yes
	Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	E	Yes
	Leatherback Sea Turtle	*Dermochelys coriacea*	E	Yes
	Loggerhead Sea Turtle	*Caretta caretta*	T	Yes
Plants				
	Slender Rush-pea	*Hoffmannseggia tenella*	E	No
	South Texas Ambrosia	*Ambrosia cheiranthifolia*	E	No

APPENDIX B: Project Evaluation Criteria Table

Project Name	Preferred (Y/N)	Technical Feasibility	Meets Trustees' Goals	Compliance with Laws	Public Health and safety	Relationship to injured resources	Avoidance of further injury	Likelihood of success	Benefits multiple resources	Time to benefits	Duration of benefits	Protection of Alternative	Collaboration Opportunities	Cost-efficiency	Total cost	Range of projects	Total Score	Overall Score
Dune Walkover at the Primary Dune Restoration Site	Y	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	**16**	H
Boardwalk and Pavilion at Fish Pass	Y	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	**16**	H
Kayak Launch, Restrooms, and Parking Improvements at Fish Pass	Y	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	**16**	H
Security Improvements at Corpus Christi Pass and Fish Pass South	Y	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	**17**	H
Security Improvements at Fish Pass North*	Y	1	2	1	1	1	1	2	1	1	1	1	1	1	1	2	**18**	H
Interpretive Sign at South Jetty of Fish Pass*	Y	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	**17**	H
Road Repair at Corpus Christi Pass	Y	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	**16**	H
Bollard and Cable Fencing for Pedestrian Safety at Day-Use Area	Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**15**	H
Equipment Rental at Mustang Island State Park*	Y	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	**17**	H
Trail/Boardwalk System from Corpus Christi Pass Road Parking Area to South Access Point	N	2	1	1	1	1	2	1	2	1	1	1	2	3	3	2	**24**	L
Trail/Boardwalk System from South Access Point to Kate's Hole	N	2	1	1	1	1	2	1	2	1	1	1	2	3	3	3	**25**	L
Extension of Trail/Boardwalk System from Kate's Hole to North Access Point	N	2	1	1	1	1	2	1	2	1	1	1	2	3	3	3	**25**	L
Interpretive Pavilion and Marsh Boardwalk	N	2	1	1	1	1	2	1	2	1	1	1	2	2	3	2	**23**	M

Project Name	Preferred (Y/N)	Technical Feasibility	Meets Trustees' Goals	Compliance with Laws	Public Health and safety	Relationship to injured resources	Avoidance of further injury	Likelihood of success	Benefits multiple resources	Time to benefits	Duration of benefits	Protection of Alternative	Collaboration Opportunities	Cost-efficiency	Total cost	Range of projects	Total Score	Overall Score
Bollard and Cable Fencing for Dune Protection at Corpus Christi Pass*	Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**15**	H
Bollard and Cable Fencing for Dune Protection on Hwy. 361	Y	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**16**	H
Bollard and Cable Fencing for Dune Protection at Fish Pass North*	Y	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	**17**	H
Bollard and Cable Fencing for Dune Protection at Fish Pass South*	Y	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	**17**	H
Bollard and Cable Fencing for Dune Protection at Fish Pass End	Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**15**	H
Bollard and Cable Fencing for Dune Protection at Oil and Gas Road	Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**15**	H
Removal and Restoration of Corpus Christi Pass Road and Well Pad*	Y	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	**17**	H
No Action Alternative	N	1	2	1	3	3	3	3	2	3	2	3	3	1	1	3	**34**	L

**Indicates project proposed for Tier 2 funding (see Section 7 for more detail)*

1 = Meets the criteria very well, 2 = Adequately meets the criteria, 3 = Does not meet the criteria

16-20 = Highly recommended project (Tier 1 and Tier 2 preferred alternatives) (H), 21-23 = Moderately recommended project (M), >23 = Low (L); Non-preferred project