United States Department of the Interior

NATIONAL PARK SERVICE
Padre Island National Seashore
P. O. Box 181300
Corpus Christi, Texas 78480-1300

IN REPLY REFER TO:

N16

July 16, 2002

Mary Orms, Endangered Species Coordinator
U.S. Fish and Wildlife Service - Ecological Services
Texas A&M University-Corpus Christi
6300 Ocean Drive
Campus Box 338
Corpus Christi, Texas 78412

Re: Re-submittal of the Biological Assessment Concurrence Request for Lemon/Lemon Seed Unit Wells Proposed at Padre Island National Seashore

Dear Ms. Orms,

Thank you for your letter of June 15, 2002 with comments on the Lemon/Lemon Seed Unit Wells No. 1-1000S and 1-1008S Biological Assessment. We appreciate your general comments on the diligence of the National Park Service and U.S. Geological Survey staff in addressing threatened and endangered species concerns expressed in the Service's letter of May 15, 2002.

With regard to specific comments in the letter that your office sent yesterday, we have addressed each one of the 27 items and the finalized Biological Assessment reflects those suggestions.

As you know, timeliness as well as thoroughness is important in meeting our statutory obligations under the Endangered Species Act. We appreciate your prompt review of the finalized BA that is enclosed. If you remain in agreement with our finding of "not likely to adversely affect," we look forward to receiving your letter of concurrence.

Sincerely,

For Jock F. Whitworth,
Superintendent

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**PADRE ISLAND NATIONAL SEASHORE**
**NATIONAL PARK SERVICE**
**SECTION 7, BIOLOGICAL ASSESSMENT**

__X__ **INFORMAL**

_____ **FORMAL**

1. **REGIONAL AREA:** Intermountain Region, National Park Service

2. **PARK:** Padre Island National Seashore **REF:** PAIS-02-002

3. **LOCATION**: Southwest Cluster, Kenedy County, Texas

4. **ACTION PLANNED:** Approval of a Plan of Operations by BNP Petroleum Corporation (BNP) for the proposed Lemon/Lemon Seed Unit Wells No. 1-1000S and No. 1-1008S.

5. **PURPOSE AND NEED:**
Padre Island National Seashore was established by Congress on September 28, 1962 (16 U.S.C. §459d, *et seq.*), "In order to save and preserve, for purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped..."

At the time of the park's establishment, surface ownership was held by the State of Texas or by private landowners. In 1973, the surface estate owned by the State of Texas was conveyed to the U.S. Government, while those surface rights held by private landowners were acquired by the federal government through condemnation. All subsurface mineral interests underlying the park were retained by private owners. Those underlying the submerged lands under the Laguna Madre and Gulf of Mexico were retained by the State of Texas and are administered by the Texas General Land Office. Thus, the federal government does not own any of the subsurface oil and gas rights in the park. However, Congress directed in the park's enabling act that nonfederal oil and gas development be regulated.

Also, pursuant to its authority at 16 U.S.C. §3 and several other park enabling statutes, the NPS promulgated regulations at 36 CFR Part 9, Subpart B ("9B Regulations') to provide a systemwide regulatory scheme governing the exercise of nonfederal oil and gas rights. The purposes of the regulations are to "insure that activities undertaken pursuant to [nonfederal oil and gas rights] are conducted in a manner consistent with the purposes for which the National Park System and each unit thereof were created, to prevent or minimize damage to the environment and other resource values, and to insure to the extent feasible that all units of the National Park System are left unimpaired for the enjoyment of future generations."



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The 9B regulations fall within the broad scope of authority granted to the NPS from Congress under the NPS Organic Act - authority that includes the power to regulate conduct that occurs on or off federal land, which may affect federal lands. The regulations are designed to control conduct associated with private mineral rights on federal land to avoid or minimize harm to park resources and values. Thus, the United States need not own the mineral interest beneath Padre Island National Seashore to regulate rights associated with that interest that may affect the federally owned surface.

Based on 9B regulations and the park's enabling legislation, nonfederal oil and gas operations can only be conducted in accordance with an approved plan of operations. A plan of operations outlines the process, precautions, and regulatory requirements that will be utilized or adhered to by a specific oil and gas operator and must be approved through the National Environmental Policy Act process.

Padre Island National Seashore is therefore considering the submittal of a Plan of Operations by BNP Petroleum Corporation (BNP) for the proposed Lemon/Lemon Seed Unit Wells No. 1-1000S and No. 1-1008S. The proposed location of this operation is 12.5 miles south of the end of Park Road 22, and approximately 900 feet inland from the Gulf of Mexico within Padre Island National Seashore (Figure 1). This operation will involve the development of an access road, construction of a well pad, establishment of a water well, establishment of two gas wells, and the creation of a production facility with its associated flow line if one or both wells are productive.

## 6. PROJECT TEAM AND CONSULTANTS:

The following individuals assisted in the preparation of the Biological Assessment.

| | |
|---|---|
| Jock F. Whitworth | Superintendent, Padre Island National Seashore (NS), TX |
| Dr. Peter Dratch | Endangered Species Specialist, NPS Biological Resources Management Division, CO |
| Dr. Loyal Mehrhoff | National Endangered Species Coordinator, NPS Biological Resource Management Division, CO |
| Ken McMullen | Chief, Resources Management Division, Padre Island NS, TX |
| Arlene Wimer | Environmental Protection Specialist, Padre Island NS, TX |
| Darrell Echols | Resources Management Specialist, Padre Island NS, TX |
| Dr. Donna Shaver | Station Leader, Padre Island Field Research Station, U.S. Geological Survey, TX |
| Karen Swallow | Endangered Species Coordinator, U.S. Fish and Wildlife Service, LA |
| Jody Mays | Biological Technician, Padre Island NS, TX |
| Kathryn Morris | Biological Technician, Padre Island NS, TX |
| John Eckrote | Biological Technician, Padre Island NS, TX |
| Brianna Young | Biological Technician, Padre Island NS, TX |
| Dimitra Guerrero | Biological Technician, Padre Island NS, TX |
| James Wearden | Biological Technician, Padre Island NS, TX |



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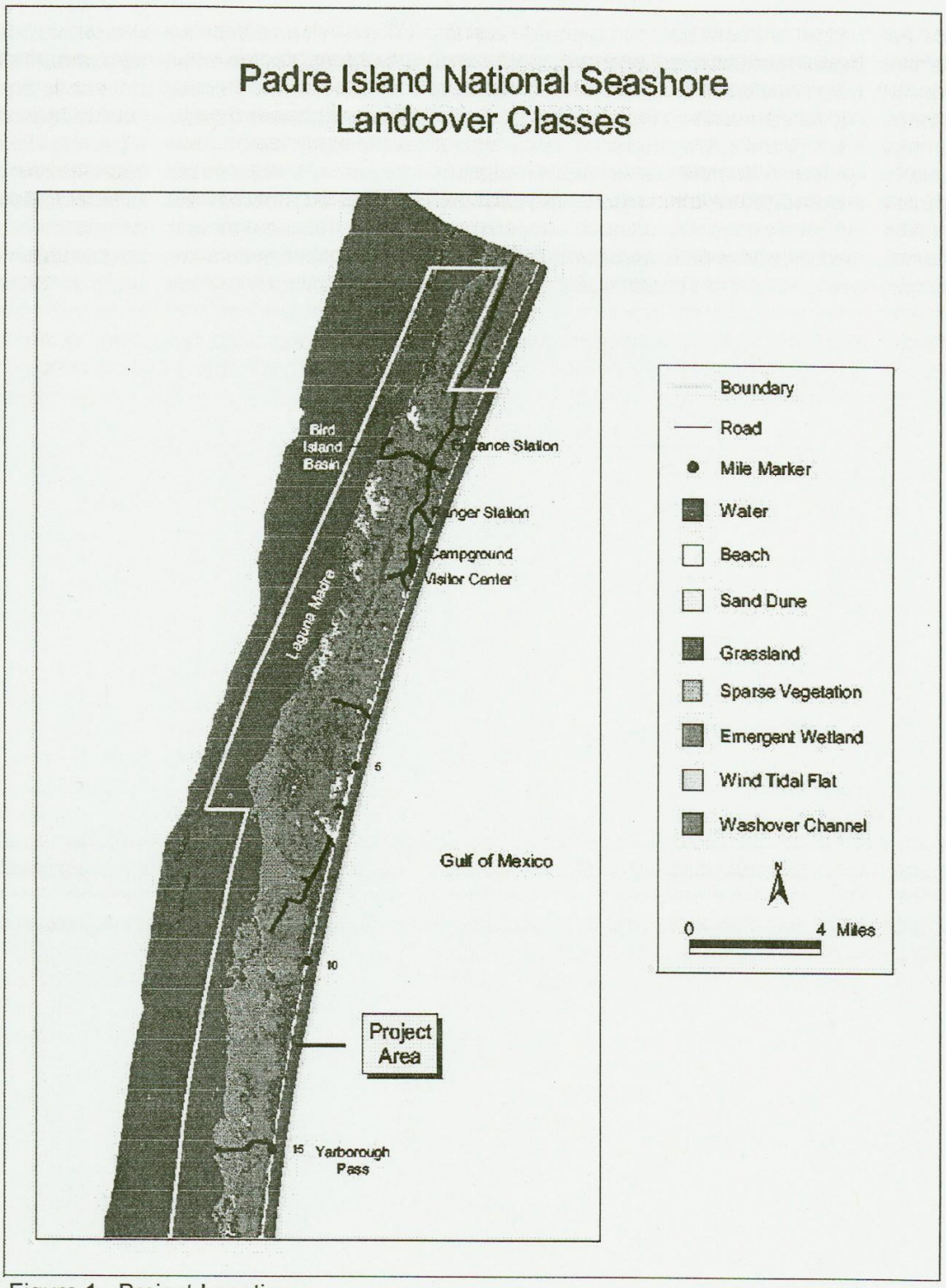



Figure 1. Project Location.



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## 7. PROJECT OBJECTIVE:

The project's objective is to approve BNP Petroleum Corporation's Plan of Operations for the proposed Lemon/Lemon Seed Unit Wells No. 1-1000S and No. 1-1008S while ensuring the park's values and purposes, natural and cultural resources, and visitor experience are protected.

## 8. DESCRIPTION OF THE PROPOSED ACTION:

**Proposed Action**

BNP Petroleum Corporation proposes to drill two natural gas wells within Padre Island National Seashore.

Location of the Well: The surface location of well No. 1-000S is located 150,320 feet from the north line and 1082.1 feet from the east line (Boyles Meander Line) of the Juan Jose and Nicolas Balli Survey, Abstract-10, Kenedy County, Texas. The No. 1-1008S location is approximately fifty feet south of Well No. 1-10002 at 150,372 feet from the north line and 1094.7 feet from the east line of the referenced survey. This drill site is approximately 12.5 miles south of the end of Park Road 22 and approximately 19.5 miles east-southeast of Rivera Beach, across Baffin Bay and the Laguna Madre (Figure 1 above).

The global positioning system (GPS) measurements based on Texas State Plane Coordinate System of 1927, Texas South Zone, for the surface and bottom-hole locations (Figure 3) of the two proposed well of the Lemon/Lemon Seed Unit are:

Lemon/Lemon Seed Unit No. 1-1000S

| | |
|---|---|
| Surface location: | X = 2,370,294.68 E Y = 573,000.58 N |
| Bottom-hole location: | X = 2,378,765.40 E Y = 571,625.86 N |

| | |
|---|---|
| True Vertical Depth (TD) | 15,000 feet |
| Measured Vertical Depth (MVD) | 19,000 feet |
| Surface Offset Distance | 8,579 feet |

Lemon/Lemon Seed Unit No. 1-1008S

| | |
|---|---|
| Surface location: | X = 2,370,273.32 E Y = 572,955.37N |
| Bottom-hole location | X = 2,372,210.02 E Y = 569,791.88 N |

| | |
|---|---|
| True Vertical Depth (TD) | 9,200 feet |
| Measured Vertical Depth (MVD) | 10,500 feet |
| Surface Offset Distance | 3,709 feet |

Access: All vehicles used during construction, drilling, and production operations would enter the park via Park Road 22 and then proceed approximately 12.5 miles along the Gulf Beach to the proposed access road through the dunes. The well site would be located approximately 900 feet west of the Gulf beach. The proposed roadway would result in the filling and leveling of 790 linear feet (21,800 square feet). Of the 790 linear feet, approximately 640 linear feet (12,800 square feet) are hummocky uplands and approximately 150 linear feet (9000 square feet) are barrier foredunes. Conventional



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road and foundation construction techniques would be used to construct the access road. The dune pass would be oriented southeast to north-west and built at an elevation high enough to prevent "water funneling" through the dunes during extremely high tides, but low enough to allow for long industrial sized vehicles to travel without complications.

Surface Location and Wellpad: BNP's proposed drill site was selected because it would avoid adverse impacts to wetlands, tidal flats, dunes, and other sensitive resource areas. Conventional foundation construction techniques would be used to construct the 136,603-square foot (3.14 acres) polygon shaped drill site. An additional 22,500 square feet (0.5 acres) would be added to the pad area for extra storage. One bulldozer and one maintainer would be used first to level the roadbed and drilling pad. After leveling, a lease crew would cover the pad with a 20 mm thick polyethylene protective liner. Eight to ten dump trucks would be used to place caliche on the road and pad. The caliche would be spread with a bulldozer and leveled with a maintainer. A compactor and a water truck would be used to compact the caliche and water the road and pad. A 3-foot high berm would be constructed around the perimeter of the pad area for containment. Caliche berms would also be constructed around the diesel tanks for containment.

All equipment, machinery, and living quarters would be placed within the 159,103 square foot pad area. This pad would be utilized for both wells, and may also be used for additional drilling in the future. Should the well be productive, all production equipment would be placed within the pad area. If a production facility were constructed, the remaining pad area would be reduced to a rectangle with the approximate dimensions of 340 feet x 210 feet x 320 feet x 210 feet, or 69,300 square feet. In the previously developed 89,803 square-foot area, the ground would be reclaimed to original condition.

This isolated area remains virtually untainted by artificial light sources. Drilling the well, however, requires work around-the-clock. Therefore, artificial lighting must be brought in to facilitate work during the night in a safe work environment. BNP would strive to maintain a balance between human safety, preservation of the park's night sky, and reduction of impacts to wildlife. To the extent possible, artificial lighting would be directionally focused on the work site, and light bulbs would be recessed inside concave shields to avoid unnecessary glare.

Use of Water for Drilling: BNP proposes to drill a temporary water well on the wellpad to deliver the approximately 1,302,000 gallons of water needed to drill the wells. BNP would provide a means for metering water volume at Padre Island National Seashore's request. The water well would be drilled into the Goliad formation, between 1,400 feet and 1,700 feet. Providing this well has sufficient volume, BNP would not have to purchase water from the park. If a water supply well is maintained at the location, BNP would adjust the surface casing setting depth for Well #1008S as a precautionary well control measure to minimize the risk of communication developing to the water supply well. Instead of setting the surface casing at 1750 feet, the operator would set surface casing at approximately 2200 feet, thereby providing nearly 500 feet of vertical separation between the casing shoe and the total depth of the water supply well.



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The potential for a successful drilling of a water source well at the location has yet to be determined. Previously, Sun Oil plugged their Dunn-McCampbell #1A well to a water source well with perforations in the Goliad sand from 1,530 feet to 1,560 feet. No information regarding fresh water production rates has been found. The Laguna Madre well #1 near Yarborough Pass was also used as a water source well according to Texas Natural Resource Conservation Commission (TNRCC), but no information regarding its production is available. Drilling a water source well at the Dunn-Murdock No. 1 location at Yarbrough Pass was successful. A similar well will be attempted at the Lemon/Lemon Seed location. If a water source well cannot be made, two options are available to obtain the needed water: pump water or fill water trucks from the Dunn-Murdock #1 location to the Lemon/Lemon Seed location; or, obtain water from the fire hydrant at the south end of Park Road 22. A check valve and water meter would be installed at the hydrant. Padre Island National Seashore would be paid for the water at the end of the drilling operation. The water would be hauled by transport to the location. At 1,300 barrels per load, this would require approximately 155 loads of water hauled during the course of drilling Well No.1-1000S and approximately 85 loads while drilling Well No.1-1008S.

BNP plans to file an application with the Railroad Commission of Texas (TRRC) for a minor permit for annular disposal of drilling mud for both Well No.1-1000S and No. 1-1008S using the annulus of Well No.1-1000S. Should the TRRC deny the application, or if injection were prevented for some mechanical reason (i.e., excessive injection pressure, failure of casing integrity, etc.), BNP would be required to haul the excess liquids by transport out of the park to an approved disposal site. The estimated volumes of liquids are 9,000 barrels for Well No. 1-1000S and 3,000 barrels for Well No.1-1008S. At an average of 100 barrels per load due to weight restrictions, this equals 120 loads hauled from the site while drilling the two wells.

Production Facility: Should BNP's proposed well prove to be productive, the production facilities would be placed on the existing wellpad. The pad size would be reduced to 340 ft. x 320 ft. x 210 ft., approximately half the original size. By placing the production facility on the same pad as the well, no additional impacts to previously undisturbed habitats would occur. Production could continue for up to twenty years.

Pipeline: There are two pipelines in the area of proposed operations (Figure 4). Duke Energy owns a currently inactive ten (10) inch pipeline approximately 2,400 feet west of the proposed wellsite. AEP (formerly Enron/HPL) operates and maintains an active twelve (12) inch pipeline that lies approximately 3,300 feet west of the proposed wellsite. The pipelines extend north and south on the island for several miles from the location. BNP plans to tie into either of these existing pipelines. The construction of BNP's proposed flowline route would briefly affect approximately 3280 linear feet for the Duke pipeline, or 4300 feet for the AEP pipeline of hummocky uplands. Before the tie-in point for the AEP pipeline, the route crosses an emergent wetland. Utilizing the 50-foot construction corridor, 2,765 square feet (0.0636 acres) of emergent wetland would be impacted. The NPS stipulation of a 25-foot construction corridor in wetlands reduces the impacts to 1,382.5 square feet (0.032 acres).



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The new line, ranging from a minimum of three (3) to a maximum of (10) inches, is contingent on the production rates obtained during the testing phase of the well. A ditch of approximately 24 inches wide and 42 inches deep would be dug from the wellpad to the tie-in point. The procedure used to tie-in the pipeline is a "hot tap". This method allows pipelines that are in service to be connected without the contents being released. A 15-foot by 15-foot (225 square foot) excavation will be required to make the tie-in. Any ground water that seeps into the excavation would be pumped out using PVC well points and diaphragm pumps. The liquids would be diverted and filtered through a silt screen and hay bales before being released onto the surrounding area. Any contaminated liquids or soils would be removed and hauled to a State-approved disposal site.

Reclamation Plan: As soon as possible after completion of approved operations but no later than six (6) months thereafter unless a longer period of time is authorized by the Regional Director, BNP would initiate reclamation. [36 CFR 9.39(a) (2)]. Reclamation would follow both the drilling and production phases of operations. After drilling the wells, and if the wells are placed in production, the wellpad size would be reduced for the production phase, as described above under "Production Facility."

At the completion of production operations, the wells would be plugged, and all above ground structures, equipment, and other man-made debris resulting form operations would be removed; and any contaminating substances would be removed or neutralized. [36 CFR 9.39 (a)(2)]. The pad and road areas would be re-contoured as near as possible to the original contour. The re-contoured ground would be fertilized at 40 pounds per acre of 40/30/0 fertilizer, the area ripped to 18 inches, and mulched with native hay containing seeds from the previously existing vegetation. During annual monitoring efforts, undesirable species would be controlled either by herbicide application or hand/tool removal, as approved by the NPS. Restored areas would be monitored annually until 70 percent coverage of targeted species is achieved. An annual report would be submitted to the park documenting restoration activities and results. Monitoring would cease after 70 percent of the original vegetative coverage of two target species, seacoast bluestem (*Schizachyrium scoparium* var. *littoralis*) and gulfdune paspalum (*Paspalum monostachyum*), was achieved or after the site had been approved by the park Superintendent.

**Action Area Defined** (paved access road and beach access)
The action area for the proposed project begins at the park's Northern boundary and extends southward to the project area located at the 12.5-mile mark. Vehicles and equipment associated with this project will utilize Park Road 22, the southern end of the Visitor Center's parking lot, and 12.5 miles of Gulf Beach.

**Project Area Defined** (dune access road, well pad, pipeline, associated facilities)
The project area for this operation is located approximately 12.5 miles south of the end of Park Road 22 and 900 feet inland from the Gulf of Mexico (Figure 1 above). All vehicles used during construction, drilling, and production operations will enter the park via Park Road 22 and then proceed south down the beach to the project location. The proposed project includes the Gulf beach for access and grassland and wetland habitats



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for construction of an access road, drill pad, and flow line. The area in the vicinity of the proposed work is comprised of a diverse group of habitats.

The proposed operation will involve the development of an access road, construction of a well pad, establishment of a water well, establishment of two gas wells, and the creation of a production facility with its associated flow line if one or both wells are productive (Figure 2).

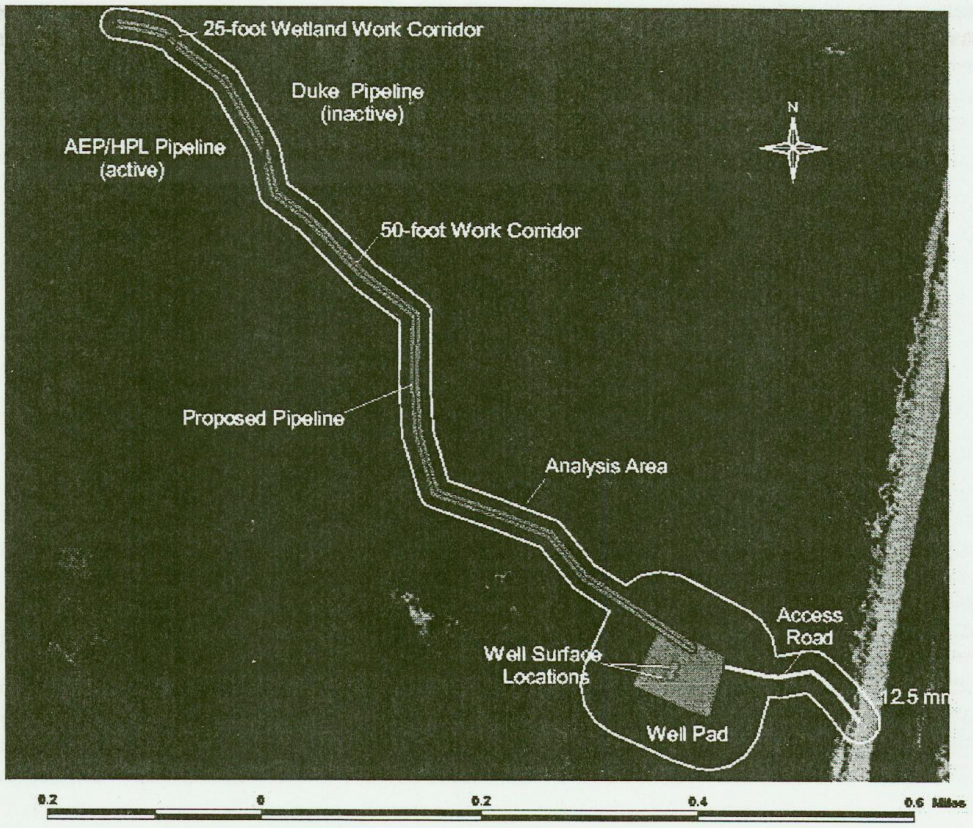



Figure 2. Project area.

Access Road

The proposed road, which is 790 linear ft. in length, will require an opening in the foredune ridge to allow access to the drilling location (Photo 1). The roadway will result in the filling and leveling of 21,800 sq. ft. (.5 ac.) of park habitat, which includes approximately 12,800 sq. ft. (.3 ac.) of hummocky uplands and approximately 9,000 sq. ft. (.2 ac.) of foredunes.



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Drill Pad

The proposed drill site was selected because it would avoid most impacts to wetlands, tidal flats, dunes, and other sensitive resource areas. This location offers the opportunity for the operator to drill multiple targets from a single location, thus reducing ground impacts resulting from the construction of multiple pads and access routes (Figure 3). This is an isolated area with no previous disturbance.

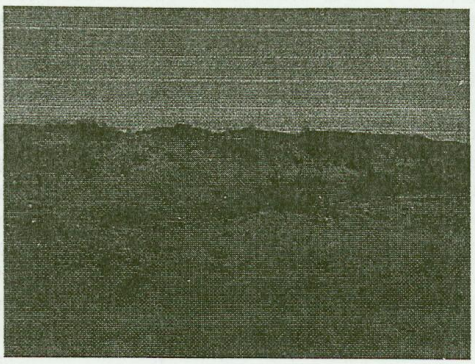


Photo 1. Proposed dune access.

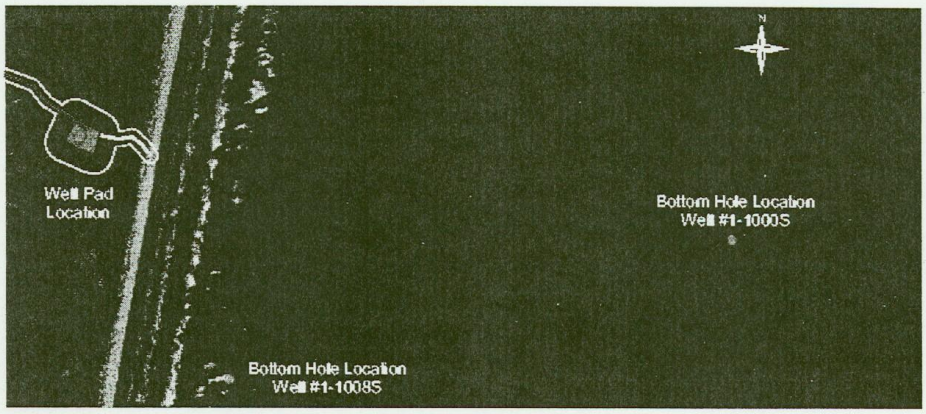



Figure 3. Proposed bottom hole locations for wells.

Production Facility and Associated Flow Line

The wetland area (0.03 acres) that would be temporarily impacted by the flow line construction is classified as palustrine emergent seasonally flooded (PEMC), and is located in a draw between two hummocks. This wetland is not identified on the US Fish and Wildlife Service's National Wetland Inventory map (NWI). The NWI map shows PEMC wetlands on either side of the proposed pipeline and in reality, the PEMC wetlands are joined (Figure 4).



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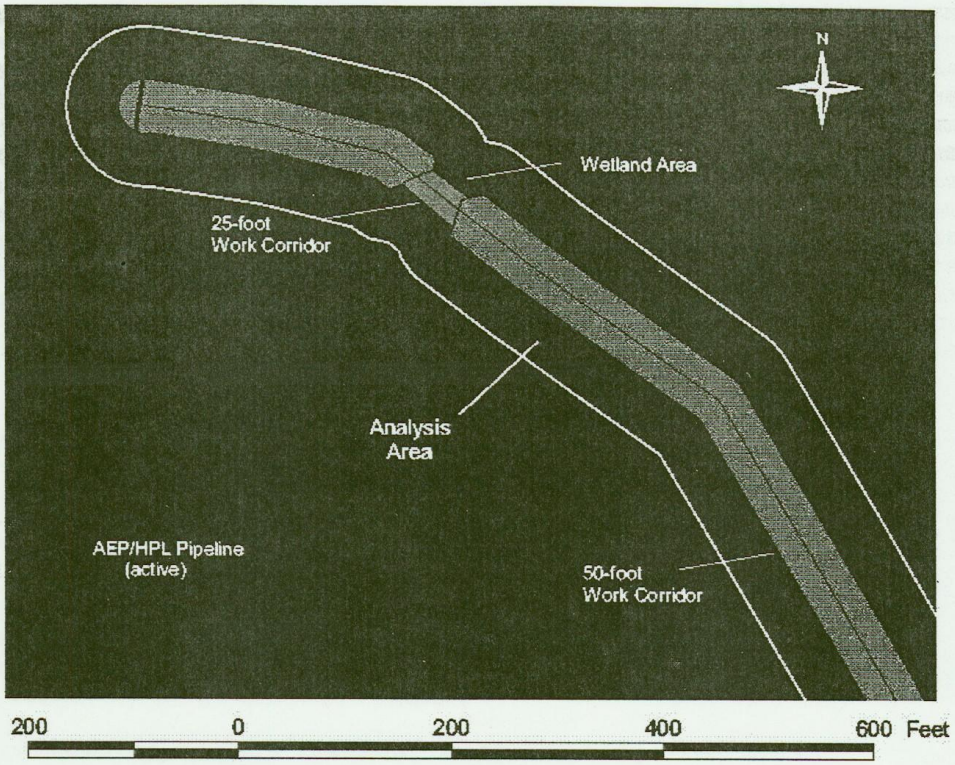



Figure 4. Wetland area associated with the flow line.

**9. ALTERNATIVE LOCATIONS AND DISCUSSION:**

During the scoping process for this project, alternative locations and methods were considered for siting the proposed well pad, access road, production facilities, and flow line in consultation with the USFWS, BNP, park staff, Regional Support Office, and Washington Support Office for technical guidance. For the reasons described below, these alternatives were not subjected to further analysis:

Northern Alternative: A surface location approximately 1,500 ft. north of the proposed Lemon/Lemon Seed location was considered. The access road to this location would be approximately 1,800 linear feet and as wide as 22 feet due to the steepness of the dune system and requirements for slope stabilization and re-vegetation. This road would impact 1,010 linear ft. more of dunes and grasslands than the presently proposed access road. This alternative location would allow only one gas formation to be targeted because of the drilling angle, and would ultimately require additional well pad locations



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and associated access roads to be constructed in another area to hit the presently proposed targets.

Based on the greater impacts to park wildlife habitat and dune system, the increased need for more access routes through the dunes, the increased economic costs from construction, well pad development, access, and the likelihood of missing targeted multiple gas formations, and the decrease in benefits to Padre Island NS resources of this action, this Northern alternative was dismissed.

Southern Alternative: Another surface location approximately 3,000 ft. south of the proposed Lemon/Lemon Seed location was considered. During the field visit to the site, it was felt that the impacts associated with this location would be similar to the other alternative locations, but would have a greater impact on the dune system than either the Northern alternative or the proposed Lemon/Lemon seed location. The dunes in this location were formed in two separate rows and extended a greater distance back from the shoreline. Reclamation and stabilization of this site would have been more difficult. The length of the access road associated with this alternative would be longer, with a width of at least 22 feet to allow for slope stabilization and restoration efforts in the dunes. The well pad would be similar in size to the Lemon/Lemon seed proposal, but with greater overall wildlife habitat removal and impacts. While visually assessing a tentative flowline route from the pad to one the existing pipelines, it was evident that wetland avoidance would be very difficult. Based on the visual assessment, additional impacts to dunes and vegetation, and the fact that another well pad would have to be used to reach the second target, this site was dropped from consideration.

Gulf of Mexico Alternative: An offshore location in the Gulf of Mexico was also considered as a possible location to access the targeted gas reserves. A well location in the Gulf of Mexico within two miles of the park would increase the risk of a spill event, increase the potential for litter-related environmental impacts, negatively impact the viewshed, and increase the cost of drilling and operating the well. This location would also reduce options for drilling to multiple targets, as it would be against the fault angle, and therefore prohibit the drilling to multiple bottom-hole locations from a single offshore location. To reach multiple bottom-hole locations, a jack-up rig would need to be re-positioned for each location during the drilling phase. In the event that gas production occurred at each location, multiple production platforms would be constructed and thereby pose long-term visual impacts and increase the potential for gas byproducts, such as condensate spilling into the Gulf and affecting beach visitors and wildlife.

Lastly, the targeted bottom-hole locations occur within a 2-mile setback from the shoreline established by the National Park Service and the Texas General Land Office. Oil or gas exploratory wells and production operations, targeting reserves within two miles of the shoreline, are to be drilled from outside of two miles between September 15 to March 15 (PAIS, 2000, pg. 4-56) to minimize visual impacts to visitors, and secondarily to protect sea turtles. Additionally, there is a three-mile setback from March 15 to September 15 during the height of the visitor season and secondarily during the sea turtle nesting season. If this cannot be accomplished, park policy is to place wells



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behind the dunes and drill directionally to reduce visual impacts to the greater majority of visitors. This alternative proposal does not comply with this policy.

Based on the increased risk of a spill event, long-term visual impacts to park visitors recreating the Gulf beach, a greater potential for accidental spill events, the estimated increase in costs associated with the drilling of multiple offshore well locations to reach all targeted bottom-hole locations, and the non-compliance with park policy (NPS-FEIS, 2000) the Gulf of Mexico alternative was dismissed.

Alternative Flow Line Location: An alternative flow line route approximately three miles south of the presently proposed location was examined. This route was proposed because it is an existing pipeline facility located at Yarborough Pass, which is operated by Duke Energy. The Duke Energy pipeline is not in operation and is in non-compliance because there are portions of the pipeline that are exposed aboveground thereby violating state regulations. The pipeline cannot be used to transport product within Padre Island National Seashore until Duke Energy brings the pipeline into compliance with its Plan of Operations. To do this, approximately 784,080 sq. ft. (18 ac.) of uplands and 10,890 sq. ft. (0.25 ac.) of wetlands would need to be disturbed to rebury the exposed portions of the pipeline. In addition, to tie it into the Lemon or Lemon Seed flow lines, another 215,000 sq. ft. (4.9 ac.) of uplands and 1,383 sq. ft. (.032 ac.) of wetlands would be impacted by the proposed flow line.

Based on the increased impact to park upland and wetland habitats, associated access and maintenance requirements, and the issue of non-compliance of Duke Energy's pipeline, this alternative was dismissed.

Alternative Well Access: An alternate access route for accessing the presently proposed Lemon/Lemon seed well location was suggested by BNP. This route involved the establishment of a new access road behind the dunes, originating at the end of pavement of Park Road 22 and extending 12.5 miles south to the proposed well locations. This route would entail six and one-half (6.5) miles of new road from Park Road 22, connecting to an existing unpaved route at the Pan Am Road for approximately three (3) miles, then construct new road for the next two and one-half (2.5) miles to the proposed well site. The last part of the road construction would follow the proposed flow line route, and be placed adjacent to the line. Expected impacts to large acreages of uplands, backdune habitat, wetlands, bird habitat, cultural resources, and the potential to impact Piping plover foraging areas make this alternative unattractive. In addition, to meet the executive order outlining no net loss of wetlands, impacts to wetland habitats would require replacement mitigation, at the current NPS policy rate of 2:1 or as much as 5:1. So, due to the potential loss of wetland habitat, costs to construct such a road, and the potential for misuse by unauthorized recreational vehicle use, this idea was rejected early in the process.

Therefore, based on the substantial impacts to park wetland habitats, the lack of suitable mitigation sites within the park, and the potential impact to Piping Plovers and other



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protected species, impacts to cultural resources, and the potential misuse by recreational vehicles, this alternative was dismissed.

Alternative Seasonal Closure:
A seasonal closure for the protection of sea turtle species and their habitat, and for protected shorebirds was considered. This closure would occur between March 15 to September 30, affecting all oil and gas activity. A closure of this type would require all oil and gas operations to be conducted outside of the sea turtle nesting and hatchling emergence season, allowing drilling to occur only during the months of October thru February. There are also concerns with closures related to hurricane season, the winter occurrence of the threatened Piping Plover and endangered Brown Pelican, and seasonally occurring above average high tides.

The beach is also considered a roadway by the Texas Open Beaches Act, which allows unrestricted public vehicle access to the Gulf of Mexico. Restricting access by oil and gas operators and heavy equipment to five months of the year may not be supportable since the mineral leases require "reasonable access." Since 500,000 visitors use the beaches each year, closing down beach use to a selected small number of oil and gas operators (making less than 20 round trips of traffic per day) seems too restrictive for the potential resource impacts. This restriction may not allow the lessee to exercise their rights to drill multiple wells from within the park. It may also require that the drilling rig(s) to be demobilized and moved repeatedly up and down the beach, or to have more than one rig operating at a time. Impacts associated with the repeated mobilization of the drilling rig and associated equipment would increase impacts to visitors, other non-sea turtle species of concern, vegetation habitats, and increase the operating costs to the contractor. Such a closure would result in a concentration of impacts over a shorter amount of time, and may not allow for natural recovery of the beach and associated access routes between operations.

Some benefits may occur to shoreline species that utilize the beach to nest, forage, or loaf during the closure. The public would not be subjected to the type of traffic volume during high visitation periods, and the chances of crushing or impacting nesting sea turtles, their nests, or any hatchlings left on the beach would be somewhat reduced. There would still be potential impacts from public use and recreation of the beach during this seasonal closure. Even though there are added benefits to sea turtles and summer visitors, the potential for greater impacts due to heavier concentration of oil and gas activities created by the seasonal window outweighed the potential benefits.

Based on the greater concentration of impacts in the short-term, the increased risk to equipment and personnel, the health and safety issues related to hurricanes, the potential impact to Piping Plovers and other protected and non-protected species of shorebirds, and the expected increase in economic costs associated with more frequent or repeated mobilization of the drilling rig and associated equipment, this alternative was dismissed.



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## 10. DESCRIPTION OF THE AFFECTED ENVIRONMENT:

General Park Description

Padre Island National Seashore is located on a largely undeveloped barrier island in southern Texas, on the Gulf of Mexico. The National Seashore consists of approximately 130,000 acres of land and water, is approximately 70 miles in length, and varies from one-half to three miles in width. The seashore is bordered on the east by the Gulf of Mexico and is separated from the Texas mainland, to the west, by the Laguna Madre, a shallow, hypersaline body of water. Padre Island National Seashore is the longest stretch of undeveloped barrier island in the world, providing primitive beach recreation, wildlife viewing, and scenic solitude.

The barrier island is a dynamic system subject to many geologic forces and climatic events. The barrier island was formed, and is continually being reshaped, by the actions of wind, gulf currents, and waves. The seashore's landscape changes from broad, white, fine-sand beaches on the Gulf side, to ridges of fore-island sand dunes, to grassy interior upland flats dotted with smaller dunes, and ephemeral ponds and freshwater wetlands. The western portion of the Seashore is defined by the Laguna Madre and the back-island dunes and wind tidal flats that merge with the waters of the Laguna Madre. There are also two natural and 20 man-made spoil islands in the Laguna that lie within the National Seashore.

The park encompasses thousands of acres of wetlands that are important habitat for numerous aquatic species. Approximately 60 percent (78,000 ac.) of the area between the gulf dune line and the Laguna Madre is comprised of a rich variety of wetlands, including estuarine emergent wetlands, freshwater ponds, wind tidal algal flats, Laguna Madre intertidal zone, lagoonal seagrass beds, and marshes. The remaining 40 percent (55,000 ac.) includes Gulf of Mexico waters to the two-fathom line, Gulf beach, coastal prairie grassland, and sparsely vegetated dunes.

The park provides habitat and protection for a variety of animal and plant species. Over 345 species of birds utilize the park, including Neotropical migrants, grassland birds, colonial waterbirds, and other species (Chaney *et. al* 1995a, 1995b, 1998, McCraken and Clark, 1990, Blacklock 1997). Fifty-three mammal species have been documented, including marine and terrestrial mammals (Baccus and Horton 1979, Goetze *et. al.* 1997, Negrete *et. al.* 1999, Rabalais, 1975). Fifty-seven species of aquatic and terrestrial reptiles and 150 species of freshwater and marine fish are known to utilize the park (PAIS 1971, Shaver 1984, Chaney 1988). Over 456 plant species occur within the park (PAIS 1999, Nelson 1979).

Visitor Use

The northern portion of the National Seashore is where most park development is located. Current park development includes a Visitor Center, Entrance Station, Park Headquarters and Maintenance facilities, Malaquite Campground, and Bird Island Basin.

Visitor use typically begins to increase in May and peaks in August, with the fewest visitors in December. Annual park visitation in 2000 was 754,045. There are no recent



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figures tracking use on park beaches, but information from Ditton and Gramann's (1987) publication, "A survey of Down-Island Visitors and Their Use Patterns at Padre Island National Seashore," indicated the following patterns:

1. Over one-half of visitors interviewed reported traveling no farther down-island than four miles past the end of the paved road (Park Road 22).
2. Seventy percent of beach users utilize the first 5 miles of south beach (denoted by "4-wheel drive only" sign) for their visit.
3. Almost 18 percent travel south of Little Shell Beach, even though individual destinations south of Little Shell Beach do not display high visitation.
4. Visitation patterns are similar in July, August, and September.
5. More fishermen use areas south of Yarborough Pass (15 mile Marker) than beach users.

Extrapolating visitation figures from Ditton and Gramann's 1987 study, given little or no change in visitor use patterns, the park estimates approximately 527,800 people recreate on the Gulf shoreline of South Beach each year. Of these users, only 18 percent, or 95,000 visitors, venture farther south than Little Shell Beach. Little Shell Beach begins around Mile Marker 6 and extends south to Mile Marker 9, approximately.

These beach areas can be divided up into two-wheel drive accessible, four-wheel drive only recommended, and "closed" beach (no vehicle use). The Lemon/Lemon Seed project area encompasses the first 12.5 miles of "South" beach, beginning at the end of the paved section of Park road 22 and terminating just north of Yarborough Pass at the 12.5-mile mark. Most camping and a large portion of beach day use occur on the first five miles of "South" beach. South of the five-mile marker, at the four-wheel drive only sign, the number of visitors heading south towards Mansfield Channel decreases considerably.

Statistics show that about 25 percent of annual visitors utilize Bird Island Basin to camp and provide access to the Laguna Madre for their recreational opportunities. Some of these visitors will also use the Gulf for day use activities. The Gulf shoreline is used for recreational opportunities like surf fishing, swimming, shell collection, sunbathing, camping, and vehicle access to more remote areas of the beach (60+ miles). Padre Island NS estimates that up to 50 percent of beach users arrive in two-wheel drive vehicles and concentrate their use on the Gulf shoreline at "North beach," the Malaquite Visitor Center (using "closed" beach), and the first five miles of "South beach." Eighteen percent (95,000) take the opportunity to access remote beach areas south of the five-mile marker, like Yarborough Pass and the Port Mansfield Channel, that are accessible (recommended) only to four-wheel drive vehicles.

Use of the backcountry, behind the dune line and across the island to the Laguna Madre, are of more limited interest in part because of the lack of access, and Padre Island NS regulations and restrictions regarding the use of the dunes and wind tidal mud flats, etc., found in the center of the island.



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Impacts on the visitor from the BNP project are expected to be from viewing the increased truck traffic, and being subjected to the noise generated by the larger trucks used for hauling drilling and production equipment, etc. to and from the site. In order to provide an idea of the level of truck traffic expected during this project, Table 1 lists the weekly number of oil and gas vehicles that were involved in a drilling operation located at Yarborough Pass. This operation spanned four months and averaged approximately 13 total trucks each day, which included four escorted large trucks and nine pickup trucks.

Table 1. Weekly Number of Oil and Gas Vehicles Driving On the Gulf Beach to Access the Dunn-Murdock Well Located at Yarborough Pass.

| Week Of | Weekly Truck Total | Pickup Trucks | Escorted Large Trucks |
|---|---|---|---|
| Feb. 3 – 9 | 12 | 10 | 2 |
| Feb. 10 – 16 | 12 | 12 | 0 |
| Feb. 16 – 23 | 11 | 10 | 1 |
| Feb. 24 – Mar. 2 | 85 | 57 | 28 |
| Mar. 3 – 9 | 56 | 33 | 23 |
| Mar. 10 – 16 | 16 | 15 | 1 |
| Mar. 17 – 23 | 193 | 103 | 90 |
| Mar. 24 – 30 | 166 | 126 | 40 |
| Mar. 31 – April | 149 | 89 | 60 |
| April 7 – 13 | 128 | 81 | 47 |
| April 14 – 20 | 149 | 94 | 55 |
| April 21 – 27 | 122 | 76 | 46 |
| April 28 – May 4 | 93 | 72 | 21 |
| May 5 – 11 | 81 | 54 | 27 |
| May 12 – 18 | 74 | 57 | 17 |
| May 19 – 25 | 69 | 52 | 17 |
| May 26 – June 1 | 79 | 49 | 30 |
| **Total 117 days** | **1,495** | **990** | **505** |

## 11. VEGETATION CLASSIFICATIONS:

The park contains a variety of vegetation classifications including emergent wetland, sparsely vegetated uplands, wind tidal flats, open water, and grasslands. Table 2 summarizes the landcover classification types at Padre Island National Seashore (Laine and Ramsey, 1998).



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Table 2. Vegetation Classes For Padre Island National Seashore.

| Land Classification Type | Acres | % Park |
|---|---|---|
| Inland Waters (ephemeral and permanent freshwater ponds) | 2,342 | 1.8% |
| Laguna Madre | 30,503 | 23.4% |
| Gulf of Mexico | 12,775 | 9.8% |
| Wind-Tidal Flats | 28,287 | 21.7% |
| Sparse Vegetation | 6,000 | 4.6% |
| Emergent Vegetation | 19,273 | 14.8% |
| Grassland | 13,427 | 10.3% |
| Beach/Sand | 3,259 | 2.5% |
| Urban (park development) | 391 | 0.3% |
| Dunes (foredunes and back island dunes) | 6,127 | 4.7% |
| Unconsolidated Shore | 6,518 | 5.0% |
| Washover Channels | 1,192 | 0.9% |
| Rookery Islands | 261 | 0.2% |
| **Total** | 130,355 | 100.00% |



Photo 2. Foredune vegetation.

Higher elevations near the Gulf beach are made up of two rows of foredunes adjacent to the Gulf Beach and high dune fields with scattered upland swales. The two rows of foredunes are typically dominated by silver-leaf croton (*Croton punctatus*), beach morninglory (*Ipomoea pes-caprae*), camphorweed (*Heterotheca subaxillaris*), prairie clover (*Dalea sp.*), western ragweed (*Ambrosia psilostachya*), and sea oats (*Uniola paniculata*) (Photo 2). The high dune fields are generally dominated by camphorweed, Prairie clover, sea oats, seacoast bluestem (*Schizachyrium scoparium*), western ragweed (*Ambrosia psilostachya*), and some tropic croton (*Croton glandulosus* var. *lindheimeri*).

The majority of the work area is comprised of hummock uplands. Hummocky uplands are typically dominated by gulfdune paspalum (*Paspalum monostachyum*), and seacoast bluestem (Photo 3). Slim-leaf rosette grass (*Dichanthelium linearifolium*) tends to dominate the lower areas. The transitional areas are typically dominated by marsh hay cordgrass (*Spartina patens*),

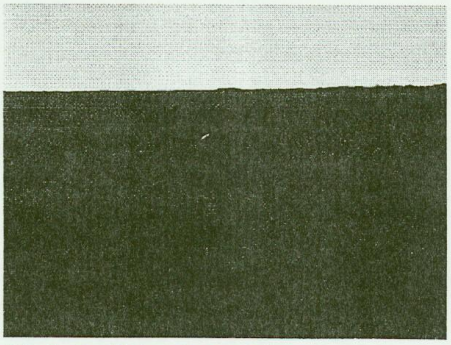


Photo 3. Upland vegetation.



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bulrush *(Schoenoplectus americanus)*, and Gulf dune paspalum (*Paspalum monostachyum*), with sea ox-eye daisy (*Borrichia frutescens*), narrowleaf sumpweed *(Iva angustifolia)*, bushy bluestem *(Andropogon glomeratus)*, Carolina sea lavender (*Limonium carolinianum*), largeleaf pennywort *(Hydrocotyle bonariensis*, frog fruit (*Phyla nodiflora*), and slim-leaf rosette grass (*Dichanthelium linearifolium*).

## 12. THREATENED AND ENDANGERED SPECIES WITHIN PADRE ISLAND NATIONAL SEASHORE

Padre Island NS has no designated critical habitat within the park's boundary for any federally listed species. An existing U.S. Fish and Wildlife Recovery Action Plan for the Kemp's Ridley sea turtle assigns the task of patrolling for nesting sea turtles to the park. Of the 42 listed federal and four state protected species not federally listed that potentially occur at Padre Island National Seashore, 27 species have actually been documented at Padre Island National Seashore (USFWS, January 8, 2002 list of federally protected species and the Texas Parks and Wildlife Department's website (TPWD, http://tpwd.state.tx.us/nature/endang/)). The documented species are listed in Table 3. The remaining 15 species have either not been documented within the park and therefore will not likely to be affected by the proposed project. Table 3 also includes four state-protected species which are denoted with an asterisk and that have been documented in the park and will be addressed within this document.

Table 3. State and Federally Protected Species Occurring or likely to Occur at Padre Island National Seashore. (T – Threatened, E – Endangered, SOC – Species of Concern, and S/A – Similar in Appearance)

| SPECIES | FEDERAL | STATE |
|---|---|---|
| | | |
| **Reptiles and Amphibians** | | |
| American Alligator (*Alligator mississippiensis)* | T (S/A) | |
| Texas Horned Lizard (*Phrynosoma cornutum*) | SOC | T |
| Texas Indigo Snake (*Drymarchon corais erebennus)* * | | T |
| | | |
| **Turtles** | | |
| Kemp's Ridley Sea Turtle *(Lepidochelys kempii)* | E | E |
| Loggerhead Sea Turtle (*Caretta caretta)* | T | T |
| Green Sea Turtle (*Chelonia mydas)* | T | T |
| Atlantic Hawksbill Sea Turtle (*Eretmochelys imbricata*) | E | E |
| Leatherback Sea Turtle (*Dermochelys coriacea*) | E | E |
| | | |
| **Birds** | | |
| Eastern Brown Pelican (*Pelecanus occidentalis*) | E | E |
| Reddish Egret (*Egretta rufescens*) | SOC | T |
| White-faced Ibis (*Plegadis chihi*) | SOC | T |
| Wood Stork (*Mycteria americana*) * | | T |
| Interior Least Tern (*Sterna antillarum*) | E | E |



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| SPECIES | FEDERAL | STATE |
|---|---|---|
| Sooty Tern (*Sterna fuscata*) | T | |
| Black Tern *(Chlidonias niger)* | SOC | |
| Piping Plover (*Charadrius melodous*) | T | T |
| Bald Eagle (lower 48 states) (*Haliaeetus leucocephalus*) | T | T |
| Northern Aplomado Falcon (*Falco femoralis septentrionalis*) | E | E |
| Ferruginous Hawk *(Buteo regalis)* | SOC | |
| Swallow-tailed Kite (*Elanoides forficatus*) * | | T |
| White-tailed Hawk (*Buteo albicaudatus*) * | | T |
| Peregrine Falcon (*Falco peregrinus*) | Delisted | E |
| Cerulean Warbler *(Dendroica cerulea)* | SOC | |
| Black-capped Vireo (*Vireo atricapillus*) | E | E |
| Tropical Parula (*Parula pitiayumi*) | SOC | T |
| Loggerhead Shrike *(Lanius ludovicianus)* | SOC | |
| | | |
| **Plants** | | |
| Roughseed Sea-purslane *(Sesuvium trianthemoides)* | SOC | |
| | | |

**Reptiles and Amphibians**

**American Alligator**

***Biology and Ecology:***

The American alligator (*Alligator mississippiensis)* has been declared recovered and was removed from the federal endangered species list in 1987. However, this species continues to be federally listed as threatened due to its similarity of appearance to the American crocodile (USFWS, http://ecos.fws.gov/servlet/SpeciesProfile?spcode=C000).

The American alligator is considered Nearctic since it is found from the Virginia-North Carolina border southward to the Rio Grande River in southern Texas.

Alligators are usually found in freshwater such as ponds, slow-moving rivers, swamps, marshes, and lakes. They can tolerate salt water but only for brief periods because they do not have salt glands. Female alligators generally remain in a small area while males occupy areas greater than two square miles. Both males and females extend their home ranges during the courting and breeding season (Schechter, http://animaldiversity.ummz.umich.edu/accounts/alligator/a._mississippiensis).

Alligators hunt primarily in the water and consume fish, turtles, snakes, and small mammals as adults and insects, snails, and small fish when they are young (smaller than six feet).

The American alligator does not migrate but will undergo periods of dormancy when the weather becomes cold. They may excavate a cave in a waterway leaving a portion of it



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above water during this time. These tunnels are often as long as 65 feet and provide protection during extreme hot or cold weather. However, in areas where water level fluctuates, alligators dig themselves into hollows, which fill with water.

The breeding season for the American alligator occurs between April and August. Alligators hatch in early August living in small groups. Juvenile alligators are defended aggressively by the mother for the first few years of life. Sexual maturity is reached during the sixth year.

Only one American alligator has been documented in the park since 1991. This individual is known to reside in an area west of the Visitor Center that includes one of the park's three permanent freshwater ponds, the constructed wetlands associated with the parks water treatment facility, and the large ephemeral pond located in the center of the park. All sightings of this individual have occurred within two miles of this area and based on the sighting locations, it is likely that this animal is a male.

For the past several years, the home range for this individual has been concentrated at the constructed wetlands associated with the parks water treatment facility developed in 2001, and the large ephemeral pond located in the center of the park. This area is approximately one square mile in size. Both of these areas provide adequate habitat for foraging and resting provided enough freshwater and prey are available. Currently, the constructed wetlands are 40 percent full.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The habitat where this individual resides is located within the action area of this project. Vehicles traveling on Park Road 22 to access the Gulf beach pass along the eastern edge of where this reptile ranges. The northern portion of the project area is located within ½ mile while the southern portion of the project area is located approximately 12 miles from this individual's current range. Because of the unlikelihood of this individual traveling outside of its current range, and that American alligators do not prefer saltwater, it is not likely that this project will directly or indirectly affect this species.

***Conservation Measures:***
Heavy equipment and trucks traveling along Park Road 22 will need to access the project area located on the Gulf beach. All proposed project vehicles are required to adhere to the posted speed limit of 45 mph on this section of Park Road 22. However, all vehicles traveling to and from the project area are required to stop at the BNP dispatch office located at the southern end of the Visitor Center's parking lot. To gain access to this area, a small entrance and access road has to be traveled by these vehicles requiring the vehicles to slow to less than 10 mph. This reduction in speed and re-direction of project traffic diverts the larger trucks from the area of the alligator. The diversion should positively affect this species.



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***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the American alligator in either the project or action areas.

**Texas Horned Lizard**

***Biology and Ecology:***
The Texas horned lizard (*Phrynosoma cornutum*) is considered a species of concern at the federal level and listed as threatened by the state.

The distribution of the Texas Horned Lizard ranges from Kansas down to Louisiana through Texas, Arizona, and into northern Mexico (Bockstanz, http://www.zo.utexas.edu/research/txherps/lizards/phrynosoma.cornutum.html). In Texas, it was originally seen throughout the state, but numbers dropped dramatically in the fifties and sixties due to the pet trade, habitat loss, and introduction of the exotic fire ant. As of 1998, Texas horned lizards are only seen in the western third of the state.

The Texas horned lizard is generally found in deserts, temperate grasslands, prairies, and scrubland (Todd, http://animaldiversity.ummz.umich.edu/accounts/phrynosoma/p._cornutum$narrative.html). These lizards utilize sandy, open areas with little vegetation often inhabiting abandoned animal burrows. It may simply cover itself with loose sand. Texas horned lizards are found in close proximity to the harvester ant (*Pogonomyrmex* spp) mounds, which are its main source of prey, but it will also forage on grasshoppers, beetles, and isopods. In order to obtain enough energy, adult Texas Horned Lizards must forage from several colonies of Harvester ants. The Texas Horned Lizards' daily activities are planned around the times of highest ant activity.

The Texas horned lizard does not migrate but will hibernate from late summer to late spring. Therefore, it is only seen on warm days in late spring and summer. Breeding begins once they emerge from hibernation beginning in late April and continuing into July. The age of reproductive maturity is not known, however they are full-grown adults at three years of age.

Texas horned lizards have been found on Padre Island north of the park, but have not been documented in the park. A herpetological survey is currently underway to document species occurrence and presence within the park. Information from this inventory will be used to develop management actions, increase park knowledge of those species documented, and help to formulate future protection measures.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The portion of the project area that may pose an effect on this species includes the access road, pad location and flow line construction. These activities will take place in



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habitat that could be preferred by this species. However, since this species has not been documented within the park, and current literature suggests that it occurs only in the western third of the state (Bockstanz, http://www.zo.utexas.edu/research/txherps/lizards/phrynosoma.cornutum.html), it is not likely that this project will directly or indirectly affects this species.

***Conservation Measures:***
Construction activities associated with the development of this project will take place in habitat that could be preferred by this species. If during the construction phase of this project, a Texas horned lizard is observed, construction activities will cease and park personnel will be notified. Based on a field review of the location, project operations may need to be rescheduled or altered to minimize or eliminate impacts to this species. In addition, park personnel will conduct inspections before the construction phase of this project and will be onsite periodically to ensure compliance with these stipulations.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Texas horned lizard in either the project or action areas.

**Texas Indigo Snake**

***Biology and Ecology:***
The Texas indigo snake (*Drymarchon corais erebennus*) is not federally listed, but is state listed as threatened.

This species ranges from southern Texas southward along the Gulf coast into Veracruz and Hidalgo, Mexico generally inhabiting burrows in moist riparian breaks in the thorn brush woodlands and coastal mesquite savannah. It may also be seen in grassy plains or on coastal sandhill habitats (University of Texas, Http://www.zo.utexas.edu/research/txherps/snakes/drymarchon.corais.html)

Unlike many other snakes, indigo snakes are primarily diurnal predators. The Texas indigo snake feeds on frogs, turtles, small mammals, birds, and other snake species. This species mates between November and February and lays eggs between April and May. Indigo snakes also spend the first two years of life in seclusion (CCWild, Http://ccwild.cbi.tamucc.edu/naturalhistory/texas_indigo_snake/tisacc.htm

Padre Island National Seashore has grassy plains and coastal sandhill habitats that may be suitable for this species. Only one known specimen has been documented in the park. This specimen was collected from the park in the mid-1980's by Texas A&M University-Kingsville but has not been documented since.

A herpetological survey is currently underway to document species occurrence and presence within the park. Information from this inventory will be used to develop management actions, increase park knowledge of those species documented, and help to formulate future protection measures.



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***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
Within the project area, vibrations and noise from drilling machinery and construction vehicles may prompt indigo snakes that are present to leave the area temporarily, especially when initial construction begins. If individuals are displaced while foraging, they will likely acclimate and return to the area once routine noise levels are established. However, if disturbance occurs during the first two years of life, Texas indigo snakes may be impacted (displaced) since they spend this time in seclusion.

***Conservation Measures:***
This project is expected to be completed before mating season and well before spring when eggs will be laid. However, construction activities associated with the development of this project will take place in habitat that could be preferred by this species. If during the construction phase of this project, a Texas indigo snake is observed, construction activities will cease and park personnel will be notified. Based on information gathered at the location, project operations may need to be rescheduled or altered to minimize or eliminate impacts to this species. In addition, park personnel will conduct site inspections before and during the construction phase of this project and will be onsite periodically to ensure compliance with these stipulations.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Texas indigo snake in either the project or action areas.

**Kemp's ridley sea turtle**

***Biology and Ecology:***
The Kemp's ridley sea turtle (*Lepidochelys kempii)* is federally listed as an endangered species. It is the smallest of the sea turtles and adults reach maturity at about 10-15 years of age. Kemp's ridley turtles nest mostly during the daytime, often in groups called "arribadas". An individual Kemp's ridley may nest as many as three times a season (USFWS and NMFS, 1992), with an average of 2.5 clutches per season. Clutch size averages around 100 eggs. Hatchlings emerge after about 50 days of incubation and hatchling emergence occurs during the night and day. Kemp's ridleys are found in the Gulf of Mexico and Atlantic Ocean and some adjoining estuarine areas. Nesting occurs primarily in the vicinity of Rancho Nuevo, Tamaulipas, Mexico. Each year, some nests are also found at scattered locations between the Texas coast and Veracruz, Mexico. Very rarely, Kemp's ridleys nest at other locations in the U.S. outside of Texas and more Kemp's ridley nests are consistently found in south Texas, including at Padre Island NS, than at any other location in the U.S.

At the national seashore, some Kemp's ridley turtles nest every year and many are found stranded (washed ashore, alive or dead) (Shaver, 1997, 1998a, 1998b, 1999a, 1999b;



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Shaver and Caillouet, 1998). Additionally, Kemp's ridley turtles sometimes inhabit nearshore Gulf of Mexico waters at Padre Island NS for foraging or migration

Historic nesting frequency of this sea turtle on the south Texas coast is poorly known and only six Kemp's ridley turtles were documented there prior to 1979 (Shaver and Caillouet, 1998). A total of 100 Kemp's ridley nests have been documented along the Texas coast between 1979 and 2001. Kemp's ridley is a native nester at Padre Island NS (Hildebrand, 1963, 1981, 1983; Shaver, 1998a; Shaver and Caillouet, 1998). Since 1978, an international, experimental project involving the National Park Service at Padre Island National Seashore, USFWS, NMFS/NOAA, etc., has been on-going to establish a secondary nesting colony of Kemp's ridley turtles at Padre Island NS. Eggs were collected in Mexico, transported to Padre Island NS, and placed into an incubation facility there. Hatchlings were released on the beach, allowed to enter the surf and were recaptured. They were then shipped to the National Marine Fisheries Service Laboratory in Galveston, Texas for 9-11 months of rearing in captivity (head-starting) and the yearling turtles were subsequently released into the Gulf of Mexico. It was hoped that these procedures would cause the turtles to be imprinted to Padre Island NS and return there to nest when they were sexually mature. Since 1996, some turtles from this project have been documented returning to south Texas and Padre Island NS to lay eggs (Shaver, 1997, 1998a, 1999a, 1999b; Shaver and Caillouet, 1998).

In 1986, an NPS and USFWS program was initiated to detect, monitor, and protect sea turtle nests at Padre Island NS. With the reorganization of research activities within the Department of Interior, the Biological Research Discipline of the U.S. Geological Survey (USGS) has had a direct role in the sea turtle program since 1996. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. Patrollers (NPS and USGS staff members and volunteers) use ATVs to search the park and adjacent state beaches to the north of the park for sea turtle tracks and nesting Kemp's ridley turtles each day, from April through mid –July. From 1979-2001, 45 Kemp's ridley nests were confirmed at in the park, but additional nests were likely missed, especially when patrols were not conducted or were less comprehensive. The 45 Kemp's ridley nests were distributed along the entire Gulf beachfront length of Padre Island NS.

The date of the nesting season varies slightly each year. In Mexico, Kemp's ridley nests have been recorded as early as March and as late as August. The 45 nests documented at Padre Island NS from 1979-2001 were found during the months of April, May, and June, the months that beach surveys were conducted most intensively. Nesting may also occur at the national seashore during other months, but this has not been confirmed. A dead Kemp's ridley turtle containing eggs was found washed ashore at the national seashore during July, and Kemp's ridley tracks have been documented in July as well.



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***Critical Habitat:***
No critical habitat has been designated for this species. There is an existing Recovery Plan for the Kemp's ridley that defines specific tasks that have been assigned to the park to aid in the recovery efforts of this species.

***Potential Effects of Proposed Project:***
There may be times when eggs, nesting turtles, hatchlings, and stranded turtles could be **directly** vulnerable to activities within the project action area.

Operation of all vehicles (including oil and gas heavy equipment) on the beach can crush nesting turtles, stranded turtles, hatchlings, and some eggs, producing an immediate, lethal impact (Mann, 1977; NMFS and USSFWS, 1991a, 1991b, 1992-1993; Ernest et al., 1998). Vehicles could also remove sea turtle tracks, making it impossible for the USGS and NPS to find a nest for investigation and protection.

Turtle hatchlings and smaller stranded sea turtles could become trapped in the ruts for short or long periods of time causing them to weaken, invert, or succumb due to predation, disorientation, crushing, or dehydration (Hosier et al., 1981; Fletemeyer, 1996; Ernest et al., 1998). According to Dr. Donna Shaver, sea turtle expert and Station Leader of the USGS Padre Island Field Research Station, the depth and slope of the ruts will influence the amount of impact (personal observation). Deeper and more steeply sloped ruts will cause the greatest impact. Hosier et al. (1981) found that 10-15 cm deep tracks may serve as a significant impediment to loggerhead hatchlings. The smaller the turtle the more that it will be impacted by rut size. Vehicles can also compact the sand, making it more difficult or impossible for nesting turtles to excavate a nest cavity leading to increased false crawls and nests with shallow egg chambers (Fletemeyer, 1996). Compaction could also make it more difficult for hatchlings to emerge from an undetected nest. Data on the level of compaction from beach driving necessary to inhibit or prevent nesting, or inhibit or prevent hatchling emergence is not available.

Operation of vehicles on the beach can cause **indirect** impacts to the sand that can adversely affect nesting and incubation habitat (Mann, 1977; NMFS and USFWS, 1991a, 1991b, 1992-1993; Ernest et al., 1998). Project vehicles can produce deeper ruts in the sand, which could affect movements of nesting females and hatchlings, however conservation measures will reduce this potential.

To reduce direct impacts that can occur from rutting, ruts will be back filled. However, since backfilling ruts and leveling of the beach surface may cause indirect and direct impacts (including compaction of sand, covering or removal of sea turtle tracks, and crushing of nests and turtles), existing methods used to fill ruts will be reviewed and monitored on a periodic basis by the NPS, USGS, and USFWS. There is no data to show that sand in these back filled areas is compacted enough to inhibit nesting. To further ensure that nesting sea turtle, hatchlings, tracks, and nests are protected during backfilling, a trained monitor will survey the area before backfilling taking place.



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Vibrations and noise caused by moving vehicles on the beach could frighten nesting turtles, causing them to abandon their nesting attempt (false crawl) (NMFS and USFWS 1991a, 1991b, 1992; Ernest et al., 1998). Vibrations could also harm incubating eggs. It is difficult to assess these areas as scientific data is lacking for the Kemps' ridley related to traffic vibrations or noise. From observations of traffic and wildlife interactions, there is no question that seeing the vehicle at the waters edge would cause the sea turtle to move back into the water. One would expect this type of reaction of wildlife to man's presence (on foot or in a vehicle). The effect of vibrations from people or from vehicles on the beach during a nesting event does not show a strong negative correlation to date. Vibrations could affect sea turtles either during nest site selection after exiting the water or once the eggs are laid. Vibrations could cause sea turtles to abandon a nesting attempt resulting in a false crawl and causing a sea turtle to re-enter the water and nest in another location. Once a sea turtle digs a nest cavity and begins laying her eggs, vibrations would not cause a sea turtle to abandon its nesting attempt since the turtle enters into a temporary trance where she is oblivious to outside vibrations. People driving on the beach often spot nesting sea turtles and can often approach them without disturbing the nesting activity, once she is laying the eggs. Through monitoring efforts during nesting season, all eggs are retrieved from each nest that is located and the eggs transported to an incubation facility. Therefore, vibrations from vehicles or people would not affect these eggs but could affect eggs that are not located and consequently excavated.

Vehicle lights can also cause direct and indirect impacts on nesting turtles leading to false crawls and can disorient hatchlings so that they crawl in the wrong direction rather than enter the sea, thereby becoming directly vulnerable to crushing, predation, and dehydration (NMFS and USFWS 1991a, 1991b; Fletemeyer, 1996). Since oil and gas nighttime transportation of heavy equipment is not permitted during the sea turtle nesting season, this light issue is confined to four-wheel drive trucks associated with the BNP program, and 2-wheel and 4-wheel drive vehicles used by the public. It is understood that there are over 500,000 trips down the action area of the beach each year by park visitors, many of which operate at night. Nesting Kemp's ridley turtles will most likely not be affected, as they are primarily daytime nesters.

So this leaves those species of sea turtle that nest primarily at night (green, loggerhead and hawksbill) likely to be the most affected by night driving and associated lighting. Based on documented nesting, the total number of these three species of sea turtle nesting at Padre Island NS, within the action area of the project, would be less than three over a 15-year span. The risk of loss to nesting turtles of these species is therefore very small. This would also apply to those hatchlings that emerge at night or early in the morning from the few in situ nests possibly missed by the daily patrols conducted by the NPS and USGS staff and volunteers.

Lights from the operations behind the dunes could indirectly cause false crawls and disorientation, if the lights are visible from the beach. Conservation measures implemented within the park reduce this potential to an unlikely occurrence.



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***Conservation Measures:***
This project potentially may impact threatened and endangered sea turtles that occur at PAIS in the action area, but mitigation measures (Table 4, page 41) and monitoring of the action will be implemented to reduce the potential impact on these species, and help to ensure that the project is not likely to adversely affect these species.

Currently the USGS and NPS remove all sea turtle eggs that are located from the beach and transfer them to the incubation facility at Padre Island NS. Hatching success is elevated substantially for eggs that are transferred to this facility rather than left on the beach in-situ. The USGS and NPS also protect nesting turtles while they are on the beach and remove stranded turtles for rehabilitation or study. However, some nests missed by the patrol and monitoring effort may go undetected and unprotected from predation, insect infestation, tidal inundation, and crushing. Additionally, some nesting and stranded turtles are not immediately found and protected by the NPS and USGS.

To reduce the direct impacts that could occur from crushing/covering nests or turtles, all vehicle operators will attend a training class held by the NPS/USGS. An NPS or USGS patroller will conduct a morning patrol before large vehicles traversing the beach and BNP will be notified when to allow large vehicles to drive along the beach. Monitors or observers will travel in front of large vehicles and vehicles moving equipment, and drive at a reduced speed (10 to 15 mph maximum) to look for and help ensure that sea turtles, nests, and their tracks are protected. Observers will use ATVs during the sea turtle nesting and hatchling emergence season (April 1 through October 15) since it is much easier to see faint Kemp's ridley and other sea turtle tracks from ATVs. Vehicles will travel above the wet portion of the beach thereby reducing the chance of crushing stranded sea turtles. In addition, Padre Island NS would prefer to begin the project outside the sea turtle nesting season, which would reduce the potential to encounter nesting Kemp's ridley and other sea turtles or their tracks.

Vehicles will travel in caravans when possible, and truck numbers will be limited by implementing existing measures to decrease the amount of time that vehicles are traversing the beach during the sea turtle nesting season. Existing measures will include greater storage space at the pad for storing drilling by-products, which will aid in the scheduling of disposal trucks, and the use of larger trucks, which will reduce the number of trucks and consequently the number of trips along the beach. This will further reduce the potential for affecting nesting turtles or hatchlings through vibrations and noise. As a beneficial effect to sea turtles, observers and vehicle operators from this project will provide additional observation and reporting opportunities and assist with NPS and USGS efforts to detect, investigate, monitor and protect nesting sea turtles, their nests, hatchlings, and stranded turtles.

Mitigation measures of night sky protection, use of directional and shielded lighting on the drilling rigs, prohibition of lighting on production facilities within the required setback of 500 feet from the dunes and other light-sensitive areas, and the night driving restrictions placed on operators of heavy equipment and trucks on the beach is thought to be adequate to prevent this impact, given current scientific data.



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***Conclusion:***
There has been vehicle traffic, both from visitors and heavy equipment operators, on the Gulf of Mexico shoreline for over twenty years with no documented case of a crushing of a nesting sea turtle within the park. The risk to a sea turtle in the action area of this project is reduced when looking at past nesting activity. The average number of nests per year over a five-year span between 1996 and 2001, for the first 15 miles of south beach, is approximately three. In 2002, one of the highest nesting activity years since the beginning of the program (1986), there were six nests found within the action area. Current nesting activity does not seem to indicate compaction from vehicles, either by the public or from the operator, is causing a negative affect.

During 2002, over 35 Kemp's ridley nests have been documented in the United States with 22 of these occurring within Padre Island National Seashore, which has taken place with approximately 500,000 visitors coming to the park. Looking at nesting data collected over the past 20 years for the action area, and given that most nests are found and removed from the beach by USGS and NPS staff, the potential impact of vibrations to eggs and crushing of nests would appear to be minimal. The chance that hatchlings could be killed by vehicle use at night along the stretch of beach within the action area of the project is minimal.

Therefore, given the moderate potential to negatively impact this species in the action area (there are possibilities to directly impact this species), and the reduced possibility for impacts in the proposed project area, the overall conclusion for this Biological Assessment is that the proposed project, with mitigation and conservation measures implemented, is not likely to adversely affect the Kemp's ridley sea turtle.

**Loggerhead sea turtle**

***Biology and Ecology:***
The loggerhead sea turtle (*Caretta caretta)* is federally listed as a threatened species. It occurs in temperate and tropical waters of both hemispheres. The species inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian oceans. Historic nesting frequency on the Texas coast is poorly known. Hildebrand (1981) suggested that nesting likely occurred within the last 300 years, but the earliest loggerhead nest that he was able to confirm for the Texas coast was found in 1977.

Adult loggerhead turtles reach maturity in 25 to 30 years. Loggerheads are nocturnal nesters, although some daytime nesting occurs. They nest from one to seven times within a nesting season (average of approximately 4.1 clutches); clutch size averages 100-125 eggs along the southeastern U.S. coast (NMFS and USFWS, 1991b). Hatchling emergence typically occurs at night. In the Gulf of Mexico, there are distinct nesting populations on the coast of the Florida panhandle and the Yucatan Peninsula. Scattered nests can be found occasionally along other areas of the U.S. Gulf coast including the Chandeleur Islands, Louisiana in the north and to the U.S./Mexico border in the south.



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At Padre Island NS, loggerhead turtles sometimes inhabit nearshore Gulf of Mexico waters for foraging or migration. Additionally, a few occasionally nest at the national seashore and many more are found stranded there (Shaver, 1998b, 1999b).

As mentioned above in the Kemp's ridley section, an NPS and USFWS program was initiated in 1986 to detect, monitor, and protect Kemp's ridley nests at Padre Island NS. With the reorganization of research activities within the Department of Interior, the Biological Research Discipline of the U.S. Geological Survey (USGS) has had a direct role in the sea turtle program since 1996. This on-going program has expanded to include not only the USGS, but also the other four species of sea turtles that occur along the Texas coast. Detection for the following four species of sea turtles involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, in park contractors, and the public. Patrollers (USGS and NPS staff members and volunteers) use ATVs to search Padre Island NS ands the adjacent northern area of State beach for sea turtle tracks and nesting turtles. Each day, from April through mid-July, they repeatedly patrol the entire Gulf beachfront of the national seashore during daylight hours. The patrol season and procedures are designed primarily to detect nesting by Kemp's ridley turtles, but the other sea turtle nests have also been documented as a part of the patrols and reports from the public.

From 1979-2001, 19 loggerhead nests were documented at Padre Island NS (at various locations scattered along the coast of the national seashore), but additional nests were likely missed, especially when patrols are reduced and less comprehensive after the mid-July Kemp's ridley patrol season ends. Loggerhead nests were found on North Padre Island from mid-May through early August, although nesting has been documented in the southeastern U.S. from late-April through early September.

Daily runs to the Port Mansfield Channel and back are made from mid-July through August to look for signs of nesting activity, but these patrols are subject to funding and staff availability.

***Critical Habitat:***
No critical habitat has been designated for this species at this park. There is no specific Recovery Plan task assigned to Padre Island National Seashore for this or the remaining three species of sea turtles occurring at the park, however park and USGS staff and volunteers conduct, support and assist in the daily patrols for this species to protect, document, and monitor nesting occurrence.

***Potential Effects of Proposed Project:***
There is the small chance that this sea turtle can be directly impacted by vehicle use on the beach, including crushing of stranded and nesting turtles, hatchlings, and undiscovered nests. Impacts that are more indirect like noise, vibration to nests or hatchlings, and vehicle and project area lighting can cause similar changes in behavior and therefore affect the species. Please see impacts associated with the Kemp's ridley (above) for broader discussion of related project impacts.



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***Conservation Measures:***
The National Park Service is required by statutes and policy to employ measures to protect, assess, and monitor species occurrence and richness within the park boundary. This obligation is conducted through law enforcement presence and action, management of all endangered species and their habitat found within park boundaries, and development of land use and management practices that promote the continued existence of the plants and animals until removal from the Threatened and Endangered species list. We also attempt to assist State and other Federal agencies in their responsibilities to protect those species found on lands adjacent to park property. We do this through visitor education and public awareness messages and involvement in adjacent land management issues that may affect park resources.

The conservation efforts related to this sea turtle, and the following three species of sea turtle, are conducted to promote and enhance their recovery. Please consider the measures employed for use in the Kemp's ridley sea turtle effort as measures used to assist this and other species of sea turtles.

***Conclusion:***
Given the minimal potential to negatively impact this species in the action area (there are few possibilities to directly impact this species), and even less possibility in the proposed project area, the overall conclusion for this Biological Assessment is that the proposed project, with mitigation and conservation measures implemented, is not likely to adversely affect the loggerhead sea turtle.

**Green sea turtle**

***Biology and Ecology:***
The green sea turtle (*Chelonia mydas)* is federally listed as threatened in all of its range except the waters of Florida and the Pacific coast of Mexico, where it is endangered. It is circumglobal in tropical and sub-tropical waters. A green turtle fishery, operating almost exclusively within inshore waters (bays, estuaries, passes), began in Texas in the mid-1800's. By the early 1900's, the catch declined to such an extent that the turtle fishing and processing industry collapsed (Hildebrand, 1981). Although historic nesting by green turtles on the Texas coast is suspected, the first confirmed nest was not documented there until 1987 (Shaver, 2000).

Adult green turtles reach maturity at 30 to 50 years of age. Female green turtles nest at night. From one to seven clutches are deposited within a breeding season (the average number is usually two to three clutches) (NMFS and USFWS, 1991a). Average clutch size is usually 110-115 eggs. Hatchling emergence occurs at night. In this region, nesting sites include southern Florida and scattered locations in Mexico, although nesting occasionally occurs in south Texas.

At Padre Island NS, juvenile green sea turtles inhabit waters of the nearshore Gulf of Mexico, the Laguna Madre, and the Mansfield Channel. Additionally, a few green turtles



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occasionally nest within the national seashore and many are found stranded there each year (Shaver, 1989, 1998b, 2000)

As mentioned above, this species is monitored for nesting activity during the late summer as funding and staff is available. From 1979-2001, seven green turtle nests were documented at the park, all in roughly the southern half of the park (Shaver, 1989, 2000). However, additional nests were likely missed especially when patrols were not conducted or were less comprehensive. The seven green turtle nests were found during June and July, although nesting occurs from May through September in this region.

***Critical Habitat:***
No critical habitat has been designated for this species at this park. Please see loggerhead section above for more information.

***Potential Effects of Proposed Project:***
There is the very small chance that this sea turtle can be directly impacted by vehicle use on the beach, including crushing of stranded and nesting turtles and hatchlings and undiscovered nests. Impacts that are more indirect like noise, vibration to nests or hatchlings, and vehicle and project area lighting can cause similar changes in behavior, and therefore affect the species. Please see impacts associated with the Kemp's ridley (above) for broader discussion of related project impacts.

***Conservation Measures:***
The National Park Service is required by statutes and policy to employ measures to protect, assess, and monitor species occurrence and richness within the park boundary. This obligation is conducted through law enforcement presence and action, management of all endangered species and their habitat found within park boundaries, and development of land use and management practices that promote the continued existence of the plants and animals until removal from the Threatened and Endangered species list. We also attempt to assist State and other Federal agencies in their responsibilities to protect those species found on lands adjacent to park property. We do this through visitor education and public awareness messages and involvement in adjacent land management issues that may affect park resources.

The conservation efforts related to this sea turtle, and the following species of sea turtle, are conducted to promote and enhance their recovery. Please consider the measures employed for use in the Kemp's ridley sea turtle effort as measures used to assist this and other species of sea turtle, as they are conducted concurrently with the same monies, diligence and staff time. Please see measures employed for use on the Kemp's ridley sea turtle as measures applicable to this species.

***Conclusion:***
Given the small potential to negatively impact this species in the action area (there are few possibilities to directly impact this species), and even less possibility in the proposed project area, the overall conclusion for this Biological Assessment is that the proposed



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project, with mitigation and conservation measures implemented, is not likely to adversely affect the green sea turtle.

**Atlantic Hawksbill sea turtle**

***Biology and Ecology:***

The hawksbill (*Eretmochelys imbricata)* is federally listed as endangered. It occurs in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans. Young hawksbills occur with some regularity in Texas waters, since northern currents carry them from nesting beaches in Mexico (Hildebrand, 1981). Historic nesting by this species on the Texas coast is unknown.

Female hawksbill turtles nest mostly during the night, but rare daytime nesting is known. They nest an average of 4.5 times per season (up to 12 clutches); clutch size averages approximately 140 eggs (NMFS and USFWS, 1993). Hatchling emergence occurs at night. Hawksbills nest on scattered islands and beaches between 25 degrees North and South latitude including beaches in southeastern Florida and the states of Campeche and Yucatan in Mexico. Nesting does not regularly occur on the Texas coast.

At Padre Island NS, young hawksbills occasionally inhabit waters of the nearshore Gulf of Mexico and Mansfield Channel. Additionally, many are found stranded in the park each year, but nesting very rarely occurs here (Shaver, 1998b, 1999b).

As mentioned above, this species is monitored for nesting activity during the late summer (Mid-July thru August) as funding and staff is available. Only one hawksbill nest has been recorded on the Texas coast (Shaver, 1999b), although it is possible that additional nests were missed, especially when patrols were not conducted or were less comprehensive. The single confirmed nest was located at the southern end of the national seashore in June 1998. The nesting season for hawksbills varies geographically and may extend from April through October in the Caribbean and Gulf coast of Mexico.

***Critical Habitat:***

No critical habitat has been designated for this species for this park. Please see loggerhead section above for more information.

***Potential Effects of Proposed Project:***

There is the remote chance that this sea turtle can be directly impacted by vehicle use on the beach, including crushing of stranded and nesting turtles and hatchlings and undiscovered nests. Impacts that are more indirect like noise, vibration to nests or hatchlings, and vehicle and project area lighting can cause similar changes in behavior and therefore affect the species. Please see impacts associated with the Kemp's ridley (above) for broader discussion of related project impacts.

***Conservation Measures:***

Please see those measures employed for use on the loggerhead sea turtle as those measures also apply to this species.



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***Conclusion:***
Given the remote potential to negatively impact this species in the action area (there are few possibilities to directly impact this species), and even less possibility in the proposed project area, the overall conclusion for this Biological Assessment is that the proposed project, with mitigation and conservation measures implemented, is not likely to adversely affect the Atlantic hawksbill sea turtle.

**Leatherback sea turtle**

***Biology and Ecology:***
The leatherback sea turtle (*Dermochelys coriacea)* is federally listed as an endangered species. It ranges throughout the tropical waters of the Atlantic, Pacific, and Indian oceans, but has also been recorded from the North Atlantic, North Pacific, South Atlantic, and South Pacific. The leatherback is the largest and most pelagic sea turtle species and is normally found in the deeper waters of the Gulf of Mexico where it may undertake extensive migrations.

Nesting occurs primarily at night and diurnal nesting occurs only occasionally. They nest five to seven times per year, with an average clutch size of 110-116 eggs (NMFS and USFWS, 1992). Hatchling emergence typically occurs at night. Leatherback nesting grounds are distributed circumglobally. Leatherbacks infrequently strand at Padre Island NS (Shaver, 1998b).

Hildebrand (1963, 1981) reported leatherback nesting at Little Shell on Padre Island NS, including one documented nesting in 1928 and at least one observed nesting in the mid 1930's. No leatherback nests have been confirmed on the Texas coast since that time.

As mentioned above, this species is monitored for nesting activity during the late summer as funding and staff is available. No leatherback nests have been recorded within the park during recent years, although it is possible that a few were missed, especially when patrols were not conducted or were less comprehensive. In the U.S. and Caribbean, nesting begins in February and continues through July.

***Critical Habitat:***
No critical habitat has been designated for this species at this park.

***Potential Effects of Proposed Project:***
There is an unlikely chance that this sea turtle can be directly impacted by vehicle use on the beach, including crushing of stranded turtles and more indirect impacts like noise, vibration issues and effects on nesting attempts, and vehicle and project area lighting. Some changes in behavior can be expected from human interaction with this species, but actual occurrence in the park is rare. Please see impacts associated with the Kemp's ridley (above) for broader discussion of related project impacts.



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***Conservation Measures:***
Please see those measures employed for use on the loggerhead sea turtle, as those measures also apply to this species.

***Conclusion:***
Given the very remote potential to negatively impact this species in the action area (there are few possibilities to directly impact this species), and even less possibility in the proposed project area, the overall conclusion for this Biological Assessment is that the proposed project, with mitigation and conservation measures implemented, is not likely to adversely affect the leatherback sea turtle.

**Birds**

**Eastern Brown Pelican**

***Biology and Ecology:***
Eastern Brown Pelicans *(Pelecanus occidentalis)* are federally and state listed as endangered. At one time, this bird's population fell to less than 100 birds between 1967 and 1974 (TPWD, http://tpwd.state.tx.us/nature/endang/birds/bpelican.htm). It is a coastal inhabitant whose range includes the southern United States and northern South America - from North Carolina to Venezuela and Trinidad in the Atlantic and from British Columbia to Chile on the Pacific coast.

This species is found along salt bays, beaches, and oceans. It is generally found near shallow waters adjacent to the coast, especially on sheltered bays. Occasionally Brown Pelicans are seen well out to sea. Brown Pelicans feed almost entirely on fish including menhaden, smelt, and anchovies but can occasionally feed on crustaceans.

Brown pelicans nest in colonies on isolated islands where they are safe from predators. These islands may be either bare and rocky or covered with small mangroves, shrubs, or other trees. Stray individuals may appear on freshwater lakes inland. Nests may be a simple scrape, a heap of debris with a depression on the top, or a large stick nest located in a tree. Breeding season generally begins in early March and lasting until August. After the breeding season, flocks move north along both Atlantic and Pacific coasts. These birds return southward to warmer waters by winter. Small numbers of immatures regularly wander inland in summer, especially in the Southwest (Peterson Multimedia Guides, http://www.petersononline.com/birds/month/brpe/index.html).

Eastern Brown Pelicans occur in the park year-round along both the Gulf and Laguna Madre sides of Padre Island. Individuals utilize the park for resting and foraging, and are typically found in the nearshore and washover habitats. Some individuals migrate south during the winter months and return during the breeding season. Brown Pelicans forage along the Gulf beach shoreline searching for fish near the surface of the water.

In 1993, Dr. Allan Chaney recorded 356 Brown Pelicans over 64 miles of beach between Yarborough Pass and Port Mansfield Channel during a 1992-1993 shorebird survey. Twelve individuals were observed on the Laguna Madre shoreline while the remaining 344 individuals were observed in the washover channels located south of the 33 mile-



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marker. Forty-four individuals were observed between the park's north boundary and the 12.5-mile mark (Chaney *et. al.*, 1993a). In 1995, 553 birds were surveyed along the Gulf beach between the park's northern boundary and Yarborough Pass (Chaney *et. al.*, 1995b). In comparison, only one Brown Pelican was documented along the Laguna Madre shoreline between Yarborough Pass and the park's northern boundary (Chaney *et. al.*, 1995a). It is evident that Brown Pelicans prefer the Gulf beach shoreline instead of the Laguna Madre shoreline.

Brown Pelicans are generally found along the Gulf beach tide line in the morning hours and along the Laguna Madre shoreline and washover channels located in the southern portion of the park in the afternoons. When observed in the washover channels, Brown Pelicans were generally associated with Double Crested Cormorants, gulls, and terns. Brown Pelicans are not observed in other habitats within the park.

Based on nearly thirty years of park colonial waterbird census data, Brown Pelicans have not been documented nesting within the park (TCWD, http://texascoastalprogram.fws.gov/Texas_Colonial_Waterbird_Census_2002.xls). However, they do nest on an island located in Corpus Christi Bay, which is located approximately 20 miles from the park.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action area includes 12.5 miles of Gulf beach habitat that is preferred by the Eastern Brown Pelican. However, the project area does not include any habitat utilized by this species.

Direct effects of the proposed project are associated with the vehicular traffic necessary for construction, drilling, and production activities and will occur only within the action area.

Heavy equipment and trucks will be traveling along the Gulf beach shoreline to access the drill site located behind the dunes at the 12.5-mile mark. This vehicular traffic will displace Brown Pelicans causing them to take flight and either fly along the shoreline to another suitable location or fly offshore. This displacement will be temporary since shorebirds disturbed by park visitors are generally seen landing a short distance away and continuing to perform their pre-disturbance behavior.

No indirect effects of the proposed project are thought to occur.

***Conservation Measures:***
Vehicular traffic associated with the proposed project is directed to drive above the tide line. This area of the beach is generally farther away from the shorebirds that are found on the Gulf beach including Brown Pelicans. Additionally, vehicles associated with this project are grouped together prior to entering the beach and limited to no more than 15



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mph despite a maximum posted speed limit of 25 mph. This should limit the amount of disturbance by limiting the disturbance to fewer instances. For example, instead of five trucks spaced a mile apart and therefore displacing an individual bird five times, the five trucks are grouped together so the individual is displaced only once.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Eastern Brown Pelican in either the project or action areas.

**Reddish Egret**

***Biology and Ecology:***
The Reddish Egret (*Egretta rufescens*) is considered a species of concern at the federal level and listed as threatened by the state.

Reddish Egrets range from the coast areas of Florida and the Gulf States, east and west coasts of Mexico, and the Greater Antilles. The wintering range for Reddish Egrets extends into the Lesser Antilles and coastal Venezuela (Rappole and Blacklock, 1994).

Reddish Egrets forage singly in shallow, saltwater habitats including lagoons, saltpans, and tidal pools. The primary food source for Reddish Egrets includes fish and marine invertebrates. Reddish egrets nest in colonies in isolated habitats, including islands, that are covered with dense, low woody vegetation such as common ragweed *(Ambrosia artemisiifolia)*, mesquite (*Prosopis glandulosa*), and sea ox-eye daisy (*Borrichia frutescens*). Nests are built at an elevation slightly higher than ground level. Breeding in Texas generally begins in early spring and extends into late summer.

Reddish Egrets are year round residents at Padre Island National Seashore and are typically found in and around the shallow waters of the Laguna Madre, the flooded wind tidal flats, and washover channels between the park's northern boundary southward to the Port Mansfield Channel (Chaney *et. al.*, 1993b and 1995a). During a 1994-1995 survey, four Reddish Egrets were documented on the Gulf beach shoreline between Yarborough Pass and the park's northern boundary compared to 1,200 found along the Laguna Madre shoreline for the same area (Chaney *et. al.*, 1995a). Additionally, 43 Reddish Egrets were documented on the Gulf beach between Yarborough Pass and the Port Mansfield Channel compared to 1,760 found along the Laguna Madre shoreline for the same area in 1993 (Chaney *et. al.*, 1993a). Both of these studies show that the Reddish Egret prefers the Laguna Madre habitat to the Gulf beach. The largest numbers of Reddish Egrets have been documented during the summer and winter months. During 1994-1995, 81.5% of Reddish Egrets surveyed occurred along the Laguna Madre between the 10-mile mark and 15- mile mark (Yarborough Pass).

During the month of May, a colonial waterbird census is conducted for all rookery islands in the Laguna Madre. This effort is a partnership with the U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, Padre Island National Seashore, and local



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researchers and birding experts. The colonial waterbird census began in 1973 and has documented nesting levels and changes annually since then.

Breeding generally begins in early spring and can extend into August. Since 1973, Reddish Egrets have been documented nesting yearly in large colonies on several of the park's isolated manmade and natural islands. During the 2001 colonial waterbird census, 50 pairs of nesting Reddish Egrets were documented on a manmade spoil island located approximately two miles south of the park's northern boundary (TCWD, http://texascoastalprogram.fws.gov/Texas_Colonial_Waterbird_Census_2002.xls).

Wintering populations may increase as birds migrate to and from the park.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action area for this project includes 12.5 miles of Gulf beach habitat, which is not preferred by Reddish Egrets. The project area does not include any habitat utilized by the Reddish Egret, which occurs predominately along the Laguna Madre shoreline where the proposed project does not occur.

Direct effects of the proposed project are associated with the vehicular traffic necessary for construction, drilling, and production activities and will occur only within the action area.

Heavy equipment and trucks will be traveling along the Gulf beach shoreline to access the drill site located behind the dunes at the 12.5-mile mark. This vehicular traffic will displace Reddish Egrets causing them to take flight and either fly along the shoreline to another suitable location or fly offshore. This displacement will be temporary since shorebirds disturbed by park visitors are generally seen landing a short distance away and continuing to perform their pre-disturbance behavior.

Therefore, due to Reddish Egrets preferring the Laguna Madre habitat and few numbers being present on the Gulf beach, the potential effect of disturbance from construction, drilling, and production activities to Reddish Egrets is negligible.

No indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Vehicular traffic associated with the proposed project is directed to drive above the tide line. This area of the beach is generally farther away from the shorebirds that are found on the Gulf beach including Reddish Egrets. Additionally, vehicles associated with this project are grouped together prior to entering the beach and limited to no more than 15 mph despite a maximum posted speed limit of 25 mph. This should limit the amount of disturbance by limiting the disturbance to fewer instances. For example, instead of five



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trucks spaced a mile apart and therefore displacing an individual bird five times, the five trucks are grouped together so the individual is displaced only once.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Reddish Egret in either the project or action areas.

**White-faced Ibis**

***Biology and Ecology:***
The White-faced Ibis (*Plegadis chihi*) is considered a species of concern at the federal level and listed as threatened by the state.

The range for the White-faced Ibis extends from the western U.S. southward along the Pacific coast to El Salvador, eastward into north and south-central South America, and northward into south Texas (Rappole and Blacklock, 1994).

They are common migrants along coastal plains during late spring and early summer and late summer and early fall. In Texas, these birds are summer residents, breeding on isolated manmade and natural islands along the coast from Galveston to the lower Laguna Madre. This species is uncommon or rare in Texas during the winter.

Their general habitat includes bays, marshes, lakes, and ponds. They feed in freshwater marshes, where they eat insects, worms, and crustaceans (Terres, 1991).

The breeding season for the White-faced Ibis is March through July. The White-Face Ibis is considered a colonial nester whose breeding range extends from the western U.S., through south Texas, and into Mexico and Central and South America (Rappole and Blacklock 1994). According to Sibley, these animals nest and roost in trees with other wading birds such as herons and egrets or they may erect nests in bulrushes or reeds (Terres 1991).

The White-faced Ibis is a migratory species occurring at Padre Island National Seashore during the spring and early summer months. This species has been documented nesting on several isolated manmade and natural islands within the Laguna Madre portion of the park. The White-faced Ibis has nested at Padre Island National Seashore since 1973, but have not nested here since 2000 when only two nests were documented (TCWD, http://texascoastalprogram.fws.gov/Texas_Colonial_Waterbird_Census_2002.xls). The nesting sites within the park are located approximately 15 miles north of the project area and 2 miles from the action area for this proposed project.

This species has not been documented foraging in the park since its foraging habitat is freshwater marshes, which are not found within the park. In addition, based on four annual surveys (Chaney *et. al.*, 1993a, 1993b, 1995a, 1995b) this species has not been documented resting along the Laguna Madre and Gulf beach shorelines.



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***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does not include nesting, foraging, or resting habitat for the White-faced Ibis. The only park habitat utilized by the White-faced Ibis is located approximately 15 miles from the project area. Therefore, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the White-faced Ibis will occur from this proposed project, no additional conservation measures were developed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the White-faced ibis in either the project or action areas.

**Wood Stork**

***Biology and Ecology:***
The Wood Stork (*Mycteria americana*) is not federally listed, but is state listed as threatened. This species is a year round resident in Florida and the coastal areas of Mexico. The Wood Stork occurs in Texas, Louisiana, Alabama, and Mississippi as it migrates into Mexico, Central and South America, and Argentina. It is known to occasionally occur in Georgia, South Carolina, California, and Arizona.

Wood Storks forage in freshwater and brackish wetlands, narrow tidal creeks, or flooded tidal pools (USFWS, http://endangered.fws.gov/i/b/sab5z.html). They are often found feeding together with herons and egrets. Non-recreational fish, such as mullet, comprise the bulk of their diet, but they are also known to eat frogs, snakes, young alligators, and insects.

The current Wood Stork population is estimated to be 11,000 adults. Wood Storks nest in large colonies from 30 to several thousand pairs. Nesting habitat consists of cypress or mangrove swamps in Florida, Georgia, and South Carolina (Terres, 1991). This species formerly bred in Texas and most of the Southeastern United States. Breeding generally occurs between fall and winter or spring and early summer depending on the climate and location of the nesting site.

The presence of this species in Texas occurs only when the bird migrates between Florida and the breeding grounds in Mexico and Latin America.

The Wood Stork is a common migrant of Padre and Mustang Islands (Blacklock, 1997). This species is common during the summer and fall seasons (USFWS, 1979). Wood Storks arrive in the coastal bend in June and depart in November with the greatest



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density generally seen between July and October. Wood Storks are known to forage in estuaries, secondary bays, and freshwater marshes (Blacklock, 1997).

While Wood Storks historically nested in Texas, they have not been documented nesting at Padre Island National Seashore.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does not include nesting, foraging, or resting habitat for the Wood Stork. Therefore, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the Wood Stork will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Wood Stork.

**Interior Least Tern**

***Biology and Ecology:***
The Interior Least Tern (*Sterna antillarum)* is the smallest member of the tern family (Nebraska Game and Parks Commission, http://www.ngpc.state.ne.us/wildlife/ltern.html). Only colonies located 50 miles from the coast are considered endangered at the federal level. However, all colonies of Least Terns throughout the state are considered endangered at the state level. They are found along the western and eastern coasts of the United States and from southern Maine to the southern tip of Texas.

Their habitat includes mudflats, beaches, and sandbars (Scott, 1983). Least Terns forage on small fish captured in shallow coastal waters. Fall migration begins mid to late July and continues through early September. Wintering habitat for Least Terns exist along the beaches of Central and South America.

Least Terns are colonial nesters that breed throughout the United States on riverbeds, sandbars, and beaches. Both sexes participate in making the shallow nest scrapes. The female will select a suitable scrape. If the first clutch of eggs is lost, least terns will re-nest up to two times with each re-nesting attempt taking place at a new site. Nesting season begins in spring and ends in early August. Migration from breeding areas to winter grounds usually begins in August and is complete by early September (Nebraska Game and Parks Commission, http://www.ngpc.state.ne.us/wildlife/ltern.html).

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Least Terns are present at Padre Island National Seashore seasonally between April and September and utilize the park for foraging, nesting, and migration. During this time, Least Terns are found on both the Gulf beach and Laguna Madre shorelines.

This species utilizes beach habitat from the surf zone to the base of the foredunes, primarily for resting and foraging. Based on surveys in 1993 and 1995, the Least Tern population appears to be stable with 8 birds/mile surveyed (Chaney *et. al.*, 1995b)

Least Terns are colonial nesters that nest on isolated manmade and natural islands in the Laguna Madre. Nesting season generally occurs between April and July and has occurred within the park since 1973 (TCWD, http://texascoastalprogram.fws.gov/Texas_Colonial_Waterbird_Census_2002.xls). In 2002, two pairs of Least Terns nested on a manmade island 17 miles north of the project area. Documentation shows that Least Terns generally prefer the Laguna Madre shoreline during June and July possibly for breeding and the Gulf beach shoreline during April, May, August, and September (Chaney *et. al.*, 1995b). Least Terns have not been documented nesting on the Gulf beach.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The project area does not include any habitat utilized by the Least Tern but the action area includes 12.5 miles of Gulf beach habitat that is preferred by this species for foraging and resting.

Direct effects of the proposed project are associated with the vehicular traffic necessary for construction, drilling, and production activities and will occur only within the action area.

Heavy equipment and trucks will be traveling along the Gulf beach shoreline to access the drill site located behind the dunes at the 12.5 mile-mark. This vehicular traffic will displace Least Terns causing them to take flight and either fly along the shoreline to another suitable location or fly offshore. This displacement will be temporary since shorebirds disturbed by park visitors are generally seen landing a short distance away and continuing to perform their pre-disturbance behavior.

No indirect effects of the proposed project are thought to occur.

***Conservation Measures:***
Vehicular traffic associated with the proposed project is directed to drive above the tide line. This area of the beach is generally farther away from the shorebirds that are found on the Gulf beach including Least Terns. Additionally, vehicles associated with this project are grouped together prior to entering the beach and limited to no more than 15 mph despite a maximum posted speed limit of 25 mph. This should limit the amount of disturbance by limiting the disturbance to fewer instances. For example, instead of five



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trucks spaced a mile apart and therefore displacing an individual bird five times, the five trucks are grouped together so the individual is displaced only once.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Least Terns in either the project or action areas.

**Sooty Tern**

***Biology and Ecology:***
The Sooty Tern (*Sterna fuscata*) is considered a threatened species at the state level.

Sooty Terns are found in tropical and subtropical coasts and islands throughout the world (Rappole and Blacklock, 1994). This species inhabits the offshore waters of the Gulf of Mexico and lower southeast United States coast (Sibley, 2000). This large tern spends nearly all its time in the air over tropical seas but do not perch unless at a nest site.

Sooty Terns feed offshore on small fish that are driven to the surface by predatory fish. They are thought to feed extensively at night. Sooty Terns breed between April and September. A single speckled egg is laid on the ground with no nest prepared. (USFWS, http://www.rl.fws.gov/midway/wildlife/sote.html)

Sooty Terns are rare for Padre Island, but have been documented in the Gulf of Mexico, primary bays, and the Laguna Madre (USFWS, 1979). Sooty Terns are uncommon residents along the central and lower Texas coast between April and August and are rarely observed in March and September (Rappole and Blacklock, 1985 and 1994). If present, this species can be observed flying over marine bays or resting on beaches.

Sooty Terns breed locally between April and July on coastal islands in the Laguna Madre. Between 1985 and 1998, only two nests have been documented within the park. Both of these nests occurred on a manmade rookery island approximately 15 miles north of the project site in the Laguna Madre (TCWD, http://texascoastalprogram.fws.gov/Texas_Colonial_Waterbird_Census_2002.xls).

Sooty Terns forage in the coastal waters of Texas feeding almost exclusively on small fish but have been documented feeding on aquatic invertebrates. Based on surveys conducted in 1993 and 1995, no Sooty Terns were observed (Chaney *et. al.*, 1993a, 1993b, 1995a, and 1995b).

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The project area does not include any habitat utilized by the Sooty Tern and the action area includes 12.5 miles of Gulf beach habitat that could be used by this species for



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foraging and resting. However, due to the rarity of this species occurring at the park, no direct or indirect impact to this species will occur.

***Conservation Measures:***
Because no potential affects to the Sooty Tern will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Sooty Terns.

**Black Tern**

***Biology and Ecology:***
The Black Tern (*Chlidonias niger*) is considered a species of concern at the federal level.

Black Terns inhabit temperate grassland, freshwater lake, freshwater rivers, prairies, lakeshores and marshes with fairly dense cattail or other marsh vegetation and pockets of open water (Null, 1997).

The breeding habitat for Black Terns consists of dead canes of marsh or on floating masses of dead plants. Black Terns breed in north central United States northward into Canada and the Northwest Territories. Sporadic nesting is observed in California, Oregon, and Kansas. Black Terns generally nest in colonies from March to early August.

Wintering habitat is located along the Pacific coast of Mexico, Central and South America and the northern coast of South America. Non-breeding summer habitat consists of marine and coastal areas located along the Gulf of Mexico (Dunn and Agro, 1995).

Black Terns forage on insects such as dragonflies, moths, grasshoppers, and beetles, and freshwater fish when at the breeding grounds. Prey consists of small marine fish including anchovies and silversides, while migrating to and from summer and winter habitat. They are also known to eat crayfish and mollusks.

The Black Tern is a spring and fall migrant and a common summer resident along the Gulf shore of Padre Island National Seashore. No breeding has been documented along the Texas coast (Rappole and Blacklock, 1985)

Black Terns migrate from Padre Island National Seashore to and from their wintering grounds in later summer and early spring respectively. During this time, Black Terns could be found along the Laguna Madre and Gulf beach shorelines throughout the park. In 1994 – 1995, 5,107 Black Terns were documented in the park with three times as many black terns documented along the Laguna Madre than the Gulf beach (Chaney *et. al.*, 1995b). These high totals were found in August during migration, but there were also non-breeding birds counted on the Laguna Madre in July when they were absent on the Gulf Beach (Chaney *et. al.,* 1993a).

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Black Terns forage in the coastal waters of Padre Island National Seashore.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The project area does not include any habitat utilized by the Black Tern. The action area includes 12.5 miles of Gulf beach habitat that may be used by Black Terns for foraging and resting.

Direct effects of the proposed project are associated with the vehicular traffic necessary for construction, drilling, and production activities and will occur only within the action area.

Heavy equipment and trucks will be traveling along the Gulf beach shoreline to access the drill site located behind the dunes at the 12.5 mile-mark. This vehicular traffic will displace Black Terns causing them to take flight and either fly along the shoreline to another suitable location or fly offshore. This displacement will be temporary since shorebirds disturbed by park visitors are generally seen landing a short distance away and continuing to perform their pre-disturbance behavior.

Despite nearly a third of the documented Black Terns occurring within the park, the effects of this project on the Black Tern is minimal given the species reaction to disturbance, the period of time they occur in the park, and the preference for the Laguna Madre habitat.

No indirect effects of the proposed project are thought to occur.

***Conservation Measures:***
Vehicular traffic associated with the proposed project is directed to drive above the tide line. This area of the beach is generally farther away from the shorebirds that are found on the Gulf beach including Black Terns. Additionally, vehicles associated with this project are grouped together prior to entering the beach and limited to no more than 15 mph despite a maximum posted speed limit of 25 mph. This should limit the amount of disturbance by limiting the disturbance to fewer instances. For example, instead of five trucks spaced a mile apart and therefore displacing an individual bird five times, the five trucks are grouped together so the individual is displaced only once.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Black Terns in either the project or action areas.

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## Piping Plover

***Biology and Ecology:***

The Piping Plover (*Charadrius melodus*), one of the least common members of the plover family is considered threatened both federally and by the state of Texas. The population is currently estimated to be approximately 1400 pairs (USFWS, http://pipingplover.gws.gov/overview.html).

The Piping Plover is a migratory shorebird, that breeds from Nova Scotia south to North Carolina and winters along the Gulf Coast from Florida to Mexico, along the Atlantic Coast from Florida to North Carolina, and in the Caribbean. They are found on sandy beaches, lakeshores, dunes, and often well above the water line (Sibley, 2000).

Piping Plovers breed along prairie rivers and on alkali wetlands of the Northern Great Plains, sandy beaches along Great Lakes shorelines, and Atlantic coast beaches. These birds nest in shallow depressions built in the sand with both parents incubating the eggs and exhibiting a monogamous mating system. Breeding generally occurs between March and August with both fledglings and parents leaving the nest by September. It is clear that direct interference of nests by vehicles, humans, and dogs significantly affects breeding success (TPWD, http://tpwd.state.tx.us/nature/ending/birds/piplover.htm). Piping Plovers disturbed during nesting by flooding or other disturbance may abandon the nest and establish an additional nest in the vicinity at a new location (USFWS, http://pipingplover.gws.gov/overview.html).

Piping Plovers forage mostly on benthic invertebrates, insects, and crustaceans found within the inter-tidal areas of ocean beaches, wash over areas, mudflats, sand flats, wrack lines, and shorelines of coastal ponds, lagoons or salt marshes. Piping Plovers have been documented defending feeding territories.

Piping Plovers have been documented throughout the park as a winter resident and fall/spring migrant (Chaney *et. al.*, 1993a, 1993b, 1995a, and 1995b). Piping Plovers are generally found along the Laguna Madre, Gulf beach, and washover channels within the park. Piping Plovers occur at the park 11 months of the year with the exception of February (Chaney *et. al.*, 1993a and 1993b). The highest concentrations of Piping Plovers within the park occur between August and December with September being the month with the highest numbers (Chaney *et. al.*, 1995b).

Padre Island National Seashore protects substantial acreage of wintering habitat for the Piping Plover. The most important area used by Piping Plovers is the broad wind tidal flat located at the north boundary of the park. It is estimated that between 60-65% of all Piping Plovers winter in South Texas (Chaney *et. al.*, 1995a).

In 1992 – 1993, a study documented 602 plovers over the entire 60 miles of south beach with 400 of these being found along the Gulf beach foreshore (Chaney *et. al.*, 1993a). Of the 600 birds observed, 87 Plovers occurred between the zero and twelve-mile mark accounting for nearly 14% of the total number of Plovers counted (Chaney *et. al.*,



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1993a). In 1994 – 1995, 150 plovers were documented between the zero and fifteen-mile mark on the Gulf Beach with the majority of these inhabiting the Gulf beach foreshore (Chaney *et. al.*, 1995b).

No nesting has been documented in south Texas or Padre Island National Seashore.

Piping Plovers have been documented foraging on benthic invertebrates and insect larvae along both the Laguna Madre and Gulf beach inter-tidal areas.

***Critical Habitat:***
No critical habitat has been designated for this species. In 2000, eighty percent of the park was proposed as Piping Plover critical habitat but based on existing NPS regulations, policies, and management measures, no critical habitat was designated.

***Potential Effects of Proposed Project:***
The project area does not include habitat utilized by the Piping Plover. However, the action area includes 12.5 miles of Gulf beach habitat that is used by this species for foraging and resting. No known nesting habitat exists within the action or project areas. Direct effects of the proposed project are associated with the vehicular traffic necessary for construction, drilling, and production activities and will occur only within the action area.

Heavy equipment and trucks will be traveling along the Gulf beach shoreline to access the drill site located behind the dunes at the 12.5-mile mark. This vehicular traffic will displace Piping Plover causing them to take flight and either fly along the shoreline to another suitable location or fly offshore. This displacement will be temporary since shorebirds disturbed by park visitors are generally seen landing a short distance away and continuing to perform their pre-disturbance behavior.

The proposed project is expected to take place between August and December, which is the time of the year when the highest concentrations of Piping Plovers occur at the park. However based on previous studies, the impact is expected to be minimal. This determination is based on

- Approximately 14% of the total Piping Plovers occurring in the park are likely to be in the action area
- When disturbed, the response by Piping Plovers is to take flight and move along the shoreline to a more suitable area,
- More vehicles are driven daily by the public than the maximum number of vehicles that will be permitted for this project,
- That Piping Plovers migrate to and from both sides of the park depending on available habitat and time of day, and
- No impact to Piping Plover nesting is expected.

Indirect effects of the proposed project may include impacts to benthic invertebrate populations that occur within the inter-tidal area of the Gulf beach. Benthic invertebrates are the primary food source for Piping Plovers. Affects may include changes in



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interstitial spaces between sand grains necessary for benthic organisms and crushing caused by compaction of the substrate associated with vehicular traffic.

***Conservation Measures:***
Vehicular traffic associated with the proposed project is directed to drive above the tide line. This area of the beach is generally farther away from the shorebirds that are found on the Gulf beach including Piping Plover and helps reduce impacts to benthic invertebrate populations. Additionally, vehicles associated with this project are grouped together prior to entering the beach and limited to no more than 15 mph despite a maximum posted speed limit of 25 mph. This should limit the amount of disturbance by limiting the disturbance to fewer instances. For example, instead of five trucks spaced a mile apart and therefore displacing an individual bird five times, the five trucks are grouped together so the individual is displaced only once.

Additional conservation measures undertaken by the park include:

- Prohibition on off-road vehicle driving in habitats such as wind tidal flats, which are highly preferred by the species for foraging,
- Conducting inventorying and monitoring of piping plovers through the international shorebird survey, USFWS piping plover survey conducted every five years, and periodic park research projects,
- Submitting funding requests and proposals to allow the park to monitor the plover population within the park and address management concerns,
- Creation of restrictions in timing, placement, and methods of oil and gas development outlined in the park's Oil and Gas Management Plan, and
- Partnering with other state and federal agencies to help ensure that impacts from projects located outside of the park do not impact wind tidal flat habitats that are located within the park.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Piping Plover.

**Bald Eagle**

***Biology and Ecology:***
The Bald Eagle (*Haliaeetus leucocephalus*) is listed as threatened at both the state and federal levels. Bald Eagles declined due to a perception that they and other raptors were marauders that killed chickens, lambs, and other domestic livestock. Consequently, farmers, ranchers, and others killed large numbers of Bald Eagles to protect their livestock (USFWS, http://species.fws.gov/bio_eagl.html).

The Bald Eagle is the only eagle that is unique to North America and ranges over most of the continent, from the northern reaches of Alaska, Canada, and Newfoundland south into northern Mexico (USFWS, http://species.fws.gov/bio_eagl.html). Bald Eagles winter throughout its breeding range.



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Bald Eagles prefer quiet coastal areas, rivers, or lakeshores with tall trees but can also be found around manmade reservoirs (TPWD, http://tpwd.state.tx.us/nature/ending/birds/baldeagl.htm). Bald Eagles forage primarily on fish, but will feed on almost anything they can catch, including ducks, rodents, snakes, and carrion.

Bald Eagles mate for life and build large nests in the tops of large trees near rivers, lakes, marshes, or other wetland areas. Bald Eagles often re-use nests year after year and normally have one clutch each year (USFWS, http://species.fws.gov/bio_eagl.html).

Bald Eagles range from north, northeast, east, southeast, and central portions of Texas. They are not observed in southwest or western Texas (Rappole and Blacklock, 1994). In Texas, Bald Eagles breed primarily in the northern and eastern portions of the state (TPWD, http://tpwd.state.tx.us/nature/ending/birds/baldeagl.htm). They were formerly common, breeding on the islands in Nueces Bay and elsewhere but are now considered a rare resident (Rappole and Blacklock, 1994). Bald Eagles prefer riparian habitat and oak woodlands (USFWS, 1977).

Bald Eagles have been documented in winter months at Padre Island National Seashore (PAIS, 1999) but are considered rare. They are found in greater abundance on the mainland portion of Texas than the island (McCraken and Clark, 1990). Recent documentation has not identified any Bald Eagles within the park (Chaney *et. al.*, 1993a, 1993b, 1995a, and 1995b). Approximately 0.5 acres of oak woodland and no riparian habitat occur within the park.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project do include a limited amount of habitat, oak woodland, which could be utilized by the Bald Eagle. However, no known nesting habitat for the Bald Eagle exists in the park and no sightings of a Bald Eagle have occurred in the past 12 years. Therefore, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the Bald Eagle will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Bald Eagle.



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## Northern Aplomado Falcon

***Biology and Ecology:***

The Northern Aplomado Falcon (*Falco femoralis septentrionalis)* is listed as endangered at both state and federal levels.

This species was extirpated in the United States because of the alteration of grassland habitats by overgrazing, brush invasion, and contamination from pesticides entering the food chain (TPWD, http://www.tpwd.state.tx.us/nature/ending/birds/aplomfal.htm). Historical Ranges include portions of the United States including Arizona, New Mexico, and Texas, Mexico, and Guatemala (USFWS, http://ecos.fws.gov/serlet/SpeciesProfile?spcode=BO6V). The present range of Aplomado Falcons in the United States consists mainly of extreme south Texas.

The Aplomado Falcon was reintroduced in the United States through a project conducted by the Peregrine Fund from which 578 captive bred falcons were released. Two captive-bred adult falcons successfully fledged young in Cameron County, Texas in 1995. The Peregrine Fund has released captive-bred Aplomado Falcons at Laguna Atascosa National Wildlife Refuge, Matagorda Island National Wildlife Refuge, Aransas National Wildlife Refuge, Welder Wildlife Refuge, and the King Ranch.

Results from 2000 indicate that 112 captive-bred falcons were released at eight sites along the Gulf Coast, resulting in 30 confirmed pairs in two core nesting sites, Matagorda Island and Laguna Atascosa National Wildlife Refuge (Peregrine Fund, http://www.peregrine fund.org/conserv_aplomado.html). In Arizona, this species most likely occurred in desert grasslands at relatively low elevations adjacent to shrubby habitats. A reintroduction program may be extended into Arizona and New Mexico in the future (Peregrine Fund, 2002. http://www.peregrinefund.org/conserv_aplo_plans.html).

The primary diet of this species includes mostly small birds and insects caught in flight (Peregrine Fund, http://www.peregrine fund.org/conserv_aplomado.html). Pairs work together to find and flush prey from cover. Aplomado Falcons inhabit open grasslands or savannahs with scattered trees or shrubs (TPWD, http://www.tpwd.state.tx.us/nature/ending/birds/aplomfal.htm), including tall cacti, yuccas and tall pines and oaks in open stands (Peregrine Fund, http://www.peregrine fund.org/conserv_aplomado.html).

Northern Aplomado falcons use old stick nests of other species, which share similar ranges and habitats. Several instances of ground nesting within Cordgrass (*Spartina spp.*) have occurred at Laguna Atascosa. Two are generally laid at different times of the year depending on locality. Historically breeding occurs March to May in the Southwestern United States (Peregrine Fund, http://www.peregrine fund.org/conserv_aplomado.html). This species is not known to migrate.

Over the past ten years, approximately four sightings of individual Northern Aplomado Falcons have occurred in the Park along the main road, beach foredunes, and grasslands of the Northern ten miles of the park. These sporadic sightings generally



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occurred in winter and early spring. The most recent park sighting of a Northern Aplomado Falcon occurred in December 1999 on the park's northern boundary.

Individuals sighted appear to be transients, and no established adult pairs, territories, or nests have been documented within the park.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for foraging and resting by the Northern Aplomado Falcon. Since this species is transient in nature and rarely occurs at the park, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the Northern Aplomado Falcon will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Northern Aplomado Falcon.

**Ferruginous Hawk**

***Biology and Ecology:***
The Ferruginous Hawk (*Buteo regalis)* is considered a federal species of concern.

Ferruginous Hawks range from Southeastern Alberta, east to Extreme Southwestern Manitoba, South through the western United States into Northwest and north Central Mexico, and east in the United States to the Central plains (BLM, http://www.id.blm.gov/bopnca/ferrug.htm).

Ferruginous Hawks primarily inhabit open, level to rolling, arid to semi-arid grasslands where they feed on small to medium sized mammals, including jackrabbits (*Lepus californicus merriami*) and ground squirrels (*Spermophilus spp.*). Their diet may also include birds and reptiles. The particular prey species depends primarily on availability in any given part of their range. This species is migratory in the northern parts of its range, but can be found year round in the mid and southwestern United States (BLM, http://www.id.blm.gov/bopnca/ferrug.htm).

Ferruginous Hawks prefer to nest in tall trees and can nest on ledges, dirt or rock outcrops, bare ground, and a variety of manmade structures. Nests are typically made from sticks, twigs, and bones and accumulate debris, as they are used year after year. Historically this species bred in Texas but currently nesting is limited to the northwestern Panhandle of Texas. Breeding generally occurs in winter to mid-summer (TPWD, http://www.tpwd.state.tx.us/nature/wild/birds/ferhawk.htm).



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The Ferruginous Hawk has been documented within grassland habitats of the park but is considered rare with less than one bird sighted a year. It has only been documented during the winter months (McCraken and Clark, 1990).

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for foraging and resting by the Ferruginous Hawk. Potential effects could include temporary displacement and use of the production facility for perching. However, since this species rarely occurs at the park, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the Ferruginous Hawk will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Ferruginous Hawk.

**Swallow-tailed Kite**

***Biology and Ecology:***
The Swallow-tailed Kite (*Elanoides forficatus*) is considered a threatened species by the state. This species has only been documented in east Texas in bottomland hardwood forests associated with the Neches, Trinity, and Sabine rivers (Shackelford and Simons, 1999).

This species has not been documented at Padre Island National Seashore (McCraken and Clark, 1990).

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does not include habitat that could be used for nesting, foraging, or resting by the Swallow-tailed Kite. Therefore, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the Swallow-tailed Kite will occur from this proposed project, no additional conservation measures are needed.



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***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Swallow-tailed Kite in either the project or action areas.

**White-tailed Hawk**

***Biology and Ecology:***
The White-tailed Hawk (*Buteo albicaudatus*) is not federally listed but is listed as threatened by the state.

The White-tailed Hawk is a tropical and subtropical species ranging from southern Texas (year round) to Mexico and Central and South America: also some of the islands of the South Caribbean. It's preferred habitat includes open, semi-open, or thinly forested country, whether flat or hilly. In southern Texas, they are most visible in the grassland prairies near the coast, often where there are only scattered bushes, yuccas, or large cacti (Channing, http://www.hawk-conservancy.org/priors/whitetailedhawk.html). White-tailed Hawks are considered common to uncommon in south Texas (Rappole and Blacklock, 1994).

In southern Texas, where rabbits are abundant, White-tailed Hawks feed upon them extensively, although not exclusively. It has been known to take cotton rats, snakes, lizards, frogs, grasshoppers, cicadas, and beetles, and occasionally a quail or other bird. When the wind is favorable, the White-tailed Hawk resorts to hovering while hunting.

Breeding begins late January and usually ends in July (Baicich and Harrison, 1997). This Buteo builds a large nest of freshly broken twigs, often thorny ones, mixed with bunches of dry grass and lined with finer material, among which are some green sprays of mesquite or other plants. The nest is added to each year and may become quite large, measuring almost three feet across (Channing, http://www.hawk-conservancy.org/priors/whitetailedhawk.shtml).

Within the park, the White-tailed Hawk is common during the winter months and uncommon throughout spring, summer, and fall (McCraken and Clark, 1990).

White-tailed Hawks have been observed in grassland and wind-tidal flat habitats within the park. In 1993, four White-tailed Hawks were seen flying over the wind tidal flats between the 19 and 26-mile mark while 20 birds were observed between Yarborough Pass and the north boundary (Chaney *et. al.*, 1993b and 1995a). White-tailed Hawks have been observed during the fall and winter months within the park. Less than 10% of the White-tailed Hawks documented in 1995 occurred over the Gulf beach habitat while the remaining 90% were seen flying over the wind tidal flats of the Laguna Madre Chaney *et. al.*, 1995b). This indicates that the White-tailed Hawk generally prefers the western portion of the park.

Nesting accounts for White-tailed Hawks are rare. However, a single nest was documented in 2002 in a grassland habitat located 6.5 miles south of the end of Park



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Road 22. The nest was built in a 6-foot huisache (*Acacia farnesiana*) and appeared to be have been used previously and may indicate that the hawk had been nesting for several years.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for nesting, foraging, or resting by the White-tailed Hawk.

White-tailed Hawks utilize small shrubs and trees for nesting which are not located within or adjacent to the project area. Therefore, no direct effects to White-tailed Hawks will occur from the removal of nesting structure. However, the action area includes Park Road 22, which is used by vehicles accessing the project area. The action area has numerous small shrubs and trees that could be used for nesting but no nests have been documented in this area.

No effects to White-tailed Hawks will occur from oil and gas vehicles traversing the Gulf beach since this species rarely is seen in this habitat. When this species is observed in the Gulf beach habitat, it has been observed flying overhead and not actually perching or foraging.

Activities associated with the construction of the well pad will be conducted in a grassland habitat, which may be utilized by the White-tailed Hawk for foraging. However, since the observation frequency of White-tailed Hawks for the entire park is less than two a month during the winter and a lack of preferred habitat at the project area, it is unlikely that this species will occur at the project area.

Therefore, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the White-tailed Hawk will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the White-tailed Hawk.

**Peregrine Falcon**

***Biology and Ecology:***
The Peregrine Falcon (*Falco peregrinus*) has been federally de-listed but is still listed as endangered at the state level. The Peregrine Falcon has nearly worldwide distribution, thriving in a great variety of habitats from artic tundra to tropical rain forests. In North America, this species is best known as inhabitants of canyons and cliffs, though it has been documented to reside amongst the skyscrapers of large cities.



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This species predates upon waterbirds but normally does not attack ducks that are sitting on the water. Those individuals who have become city dwellers are most likely attracted to the high populations of Rock Doves (pigeons). They typically feed on Neotropical migrants, waterfowl, and shorebirds while in the area of Padre Island National Seashore.

The Peregrine Falcon is a migratory species that winters along the Gulf of Mexico and as far south as Central and South America. They are known as common winter inhabitants of the southern portion of Padre Island NS, arriving sometime in early fall and departing mid-May (Chaney *et. al.*, 1993a). This falcon is generally only seen twice a year as it migrates through the state in spring and fall (TPWD, http://tpwd.state.tx.us/nature/ending/birds/peregrine.htm).

Peregrines breed in a wide range of habitats including the edge of cliffs, raised mounds on the ground in bare open spaces, in hollow tree stumps, and ledges of large city buildings. Peregrines tend to return to the same site annually. Breeding season begins in early March in the south and mid-May in the north. A single brood of three to four eggs are laid in a hollow scrape with no materials added to it. Females closely tend their young for the first 14 days, but leave them more each day as they grow. The nestlings fly at 35-42 days, but appear to be dependent on the adults for an additional two months.

Peregrine Falcons are an increasingly common migrant, especially in the fall, and a rare winter resident. Peregrine Falcons hunt on broad mudflats and resting on dunes (Chaney *et. al.*, 1995b). These birds are generally concentrated in the southern portion of Padre Island, which is unique in that it is a main component of the migration route, "staging area," particularly for juveniles, during the spring and fall migration (Maechtle, 1993). From actual counts, more than 2,000 Peregrine Falcons utilize this area annually during their fall migration (Maechtle, 1993). The gulf beach is a very important stopover area for refueling, resting, and a landmark guide for many migratory birds (Chaney *et. al.*, 1993a). Padre Island National Seashore and South Padre Island are the only known localities in the Western Hemisphere where Peregrine Falcons can be found in such high concentrations during their spring migration.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for foraging and resting by the Peregrine Falcon. This species commonly perches on structures throughout the park ranging from logs washed onto the beach, trees, shrubs, and manmade structures such as production facilities, radio antennas, and light poles. Since the Peregrine uses these structures for resting, eating its prey, and prey selection, potential effects from this project could include temporary displacement and use of the production facility for perching. In addition, Peregrine Falcons routinely utilize the beach for foraging and therefore could be affected by disturbance caused by vehicles



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traversing the beach and construction activities associated with the road and pad development.

The effect of the project is expected to be minimal given the seasonal occurrence of the species, the likelihood of Peregrines to return after being displaced, the presence of perching structures where few exist, and the response by raptors to flush or take flight and fly along the shoreline to another suitable location.

***Conclusion:***
This species is a seasonal resident of the park, utilizing primarily beach and wind tidal flat habitats throughout the entire park. No Peregrine Falcon nesting has been documented within the park. Therefore, Peregrine Falcons are not likely to be affected by this action.

**Cerulean Warbler**

***Biology and Ecology:***
The Cerulean Warbler (*Dendroica cerulea*) is considered a federal species of concern that has shown a continued decline over the past 26 years.

The range for the Cerulean Warbler extends from the central United States, westward to New York, southward into the Gulf coast states, and Mexico (Sibley, 2000). This species is known to occur in Texas as it migrates to its wintering habitat in northern South America. Fall migration begins as early as late July for the Cerulean Warbler (Scott, 1983).

The primary habitat of the Cerulean Warblers includes mature mesic deciduous woodlands, including maple, basswood, and especially oak upland and lowlands or floodplain forest. They are often found near small canopy openings in large continuous forest tracts (Wisconsin). Cerulean Warblers are insectivores whose diet includes bees, wasps, caterpillars, and weevils (Wisconsin)

Cerulean Warblers breed in the eastern U.S., with the exception of the southeastern coastal plains. Breeding takes place in wooded swamps and moist bottomlands where they nest in tall trees. Breeding occurs between mid-May and July (Baicich, 1997). The Cerulean Warbler has never been documented breeding in park.

The Cerulean Warbler is a Neotropical migrant and is not considered a park resident. This species has been documented in grassland and wetland habitats containing black willow (*Salix nigra*) and is considered uncommon in the spring but casual in the fall on Padre and Mustang Islands (USFWS, 1979).

Cerulean Warblers generally arrive at Padre Island National Seashore in March with the greatest densities being observed between April and May during migration to their breeding grounds (USFWS, 1979).

The most recent documented sighting of a Cerulean Warbler occurred in 1995 while the park conducted a mist-netting project near Bird Island Basin (Chaney, 1995). As



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songbirds migrate northward in the spring, northern weather fronts make it difficult for birds to continue north and cause the birds to "fall out". Birds that fall out remain in the park for one to three days resting and rebuilding their fat reserves before migrating northward again. No Cerulean Warbler breeding has been documented in the park.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for foraging, or resting by the Cerulean Warbler.

Cerulean Warblers utilize trees and small shrubs for foraging and resting during "fall-out" events. However, this vegetation type is not located within or adjacent to the project area and therefore, it is unlikely that this species will be present. However, the action area includes Park Road 22, which is used by vehicles accessing the project area. The action area has numerous trees and small shrubs that could be used for foraging and resting. However, this vegetation type is rarely located within 1,000 feet of Park Road 22 and is unlikely to be disturbed by vehicular traffic.

No effects to Cerulean Warblers will occur from oil and gas vehicles traversing the Gulf beach since this species has not been documented on the Gulf beach.

Activities associated with the construction of the well pad will be conducted in a grassland habitat, which Cerulean Warblers have not been documented using within the park. If a producing well is developed, secondary containment areas located at the well location may periodically hold rainwater or other materials such as condensate or motor oils. Insects may be attracted to the contained water or fluids, which if contaminated and eaten by Cerulean Warblers, could harm this species.

***Conservation Measures:***
Because potential affects to the Cerulean Warbler could occur from ponded water or other material located at the production facility, all secondary containment will be covered with netting to prevent birds from approaching the fluid. If an emergency occurs from the release of a hydrocarbon, all fluids will be removed using a vacuum truck each day. Additionally, hazardous substances such as condensate, motor oils, or other materials are not allowed to remain in an open container of any kind. These materials will not be left at the production facility and will be removed immediately.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Cerulean Warbler in either the project or action areas



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## Black-capped Vireo

***Biology and Ecology:***

The Black-capped Vireo (*Vireo atricapillus*) is considered endangered both at the federal and state level. Populations of this species are declining due to the clearing of their breeding habitat for agricultural and grazing activities.

There are two small populations in West central Oklahoma with the largest population on the Lampasas cut plains and the Edwards Plateau in Texas. The population in Mexico is unknown (Travis Audubon Society, http://travisaudubon.org/Endanger/spp.bcv.htm). The wintering range for Black-capped Vireo includes the Pacific coast of Mexico from Sonora to Guerrero in two somewhat disparate habitat types, arid shrubs ranging from three to eighteen foot tall and a diverse, lush more mesic secondary growth forest. These two habitats are similar because they both contain low deciduous vegetation (Texas Tech University, http://www.rw.ttu.edu/sp_accounts/bcvireo/).

Black-capped Vireos prefer habitat that includes semi-open rangelands with scattered clumps of small trees and shrubs separated by open grasslands (TPWD, http://www.rw.ttu.edu/sp_accounts/bcvireo/). These vegetation configurations are the most common in edaphic settings such as eroded gullies, areas with poorer soils, and rocky substrates (Texas Tech University, http://www.rw.ttu.edu/sp_accounts/bcvireo/). This species prefers oak scrub and juniper woodlands in Texas (Rappole and Blacklock, 1994).

The Black-capped Vireo is a highly active feeder that feeds on insects.

Black-capped Vireos leave the wintering grounds and arrive in Texas from late March to mid-April (Travis Audubon Society, http://travisaudubon.org/Endanger/spp.bcv.htm). Males sing to attract mates and to defend territories, which are usually two to four acres in size (TPWD, http://www.rw.ttu.edu/sp_accounts/bcvireo/).

The Black-capped Vireo is a Neotropical migrant and is not considered a park resident. This species has been documented in grassland and wetland habitats containing black willow (*Salix nigra*) and common cane (*Phragmities sp.*).

Black-capped Vireos generally arrive at Padre Island National Seashore during the spring migration and are considered an uncommon species within the park.

The one and only documented sighting of a Black-capped Vireo within the park occurred in the spring of 1997 while the park conducted a mist-netting project near Bird Island Basin (Blacklock *et. al.*, 1997). As songbirds migrate northward in the spring, northern weather fronts make it difficult for birds to continue north and cause the birds to "fall out". Birds that fall out remain in the park for one to three days rebuilding their fat reserves and resting before migrating northward again.

No Black-capped Vireos have been documented breeding in the park.



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***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for foraging, or resting by the Black-capped Vireo.

Black-capped Vireos utilize trees and small shrubs for foraging and resting during "fall-out" events. However, this vegetation type is not located within or adjacent to the project area and therefore, it is unlikely that this species will be present. The action area does include Park Road 22, which is used by vehicles accessing the project area and includes numerous trees and small shrubs that could be used for foraging and resting. However, this vegetation type is rarely located within 1,000 feet of Park Road 22 and is unlikely to be disturbed by vehicular traffic.

No effects to Black-capped Vireos are expected to occur from oil and gas vehicles traversing the Gulf beach since this species has not been documented on the Gulf beach.

Activities associated with the construction of the well pad will be conducted in a grassland habitat, which Black-capped Vireos have not been documented using within the park. If a producing well is developed, secondary containment areas located at the well location may periodically hold rainwater or other materials such as condensate or motor oils. Insects may be attracted to the contained water or fluids, which if contaminated and eaten by Black-capped Vireos, could harm this species.

***Conservation Measures:***
Because potential affects to the Black-capped Vireo could occur from ponded water or other material located at the production facility, all secondary containment will be covered with netting to prevent birds from approaching the fluid. If an emergency occurs from the release of a hydrocarbon, all fluids will be removed using a vacuum truck each day. Additionally, hazardous substances such as condensate, motor oils, or other materials are not allowed to remain in an open container of any kind. These materials will not be left at the production facility and will be removed immediately.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Black-capped Vireo.

**Tropical Parula**

***Biology and Ecology:***
The Tropical Parula (*Parula pitiayumi*) is considered as a species of concern at the federal level.

This small tropical American warbler ranges from Mexico to the United States but only into south Texas.



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The Tropical Parula lives in low dry woodlands or in semi-dry cultivated valleys with scattered trees. In south Texas, this species utilizes thick woods near edges of lagoons where there is Spanish moss.

This species feeds on larger insects, but other specifics of diet are not well documented. Nesting occurs from south Texas and north Mexico south through Central America to Peru, northern Argentina, and Uruguay.

The Tropical Parula is a Neotropical migrant and is not considered a park resident. This species has been documented in grassland and wetland habitats containing black willow (*Salix nigra*).

Tropical Parula's generally arrive at Padre Island National Seashore during the spring migration. Consequently, Tropical Parula's are not common species.

The one and only documented sighting of a Tropical Parula within the park occurred in the spring of 2001 while the park conducted a mist-netting project near Bird Island Basin. As songbirds migrate northward in the spring, northern weather fronts make it difficult for birds to continue north and cause the birds to "fall out". Birds that fall out remain in the park for one to three days rebuilding their fat reserves before migrating northward again.

No Tropical Parula's have been documented breeding in the park.

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does include habitat that could be used for foraging, or resting by the Tropical Parula.

Tropical Parula's utilize trees and small shrubs for foraging and resting during "fall-out" events. However, this vegetation type is not located within or adjacent to the project area and therefore, it is unlikely that this species will be present. However, the action area includes Park Road 22, which is used by vehicles accessing the project area. The action area has numerous trees and small shrubs that could be used for foraging and resting. However, this vegetation type is rarely located within 1,000 feet of Park Road 22 and is unlikely to be disturbed by vehicular traffic.

No effects to Tropical Parula's are expected to occur from oil and gas vehicles traversing the Gulf beach since this species has not been documented on the Gulf beach.

Activities associated with the construction of the well pad will be conducted in a grassland habitat, which Tropical Parula's have not been documented using within the park. If a producing well is developed, secondary containment areas located at the well location may periodically hold rainwater or other materials such as condensate or motor



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oils. Insects may be attracted to the contained water or fluids, which if contaminated and eaten by Black-capped Vireos, could harm this species.

***Conservation Measures:***
Because potential affects to the Tropical Parula could occur from ponded water or other material located at the production facility, all secondary containment will be covered with netting to prevent birds from approaching the fluid. If an emergency occurs from the release of a hydrocarbon, all fluids will be removed using a vacuum truck each day. Additionally, hazardous substances such as condensate, motor oils, or other materials are not allowed to remain in an open container of any kind. These materials will not be left at the production facility and will be removed immediately.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Tropical Parula.

**Loggerhead Shrike**

***Biology and Ecology:***
The Loggerhead Shrike (*Lanius ludovicianus*) is considered a species of concern at the federal level. All populations within the United States seem to be declining which has been attributed to the loss of habitat.

This species is found throughout most of the United States, Mexico, and south-central Canada. It's wintering range includes the southern United States and into Mexico.

Loggerhead Shrikes prefer open country such as savannas, prairie, and farmland with patches of trees or shrubs present. This species is a permanent resident throughout most of the state but is uncommon to rare in southern Texas (Rappole and Blacklock, 1994).

Shrikes are often found hunting from low perches where they can strike their prey quickly and return to the perch. They do not have talons and kill with a stunning blow from their beaks. They are known for their unique habit of impaling their prey on thorns or barb-wired fences and returning to feed later. Loggerhead Shrikes forage on insects in the summer and mice in winter. This species is solitary except for the breeding season, which begins in early May and continues into mid-July. Nests are constructed of twigs, bark, and other materials and usually found in isolated small trees. Loggerhead Shrikes can produce up to two broods annually.

Loggerhead shrikes commonly occur in park grasslands throughout the park and black willow and small shrub habitats occurring in the northern section of the park. This species is common during the spring, fall, and winter (McCracken and Clark, 1990) and considered rare in summer (Rappole and Blacklock, 1994). In 1997, a Loggerhead shrike was captured and banded in a dune area near Bird Island Basin (Blacklock *et. al.*, 1997). There has been no documented nesting of Loggerhead Shrikes at Padre Island National Seashore.



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***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
Direct effects of the proposed project are those that occur during construction, drilling, and production activities. No direct effects of the proposed project are likely to occur.

The action and project areas for this proposed project does include habitat that could be used for foraging or resting by the Loggerhead Shrike.

Loggerhead Shrikes utilize grasslands with trees and small shrubs for foraging and resting. The project area contains grassland habitats, but no trees or shrubs are present. It is possible that Loggerhead Shrikes present in the project area could be displaced due to activities associated with the construction of the well pad and access road. In addition, the action area includes Park Road 22, which is used by vehicles accessing the project area. The action area has numerous trees and small shrubs that could be used for foraging and resting. However, this vegetation type is rarely located within 1,000 feet of Park Road 22. Increased vehicular traffic on Park Road 22 could have an indirect effect, because of their habit of feeding on grasshoppers and other insects, making Loggerhead Shrikes more susceptible to automobiles.

No effects to Loggerhead Shrikes will occur from oil and gas vehicles traversing the Gulf beach since this species has not been documented on the Gulf beach.

***Conservation Measures:***
Activities associated with the construction of the well pad will be conducted in a grassland habitat, which Loggerhead Shrikes have been documented using within the park. If a producing well is developed, secondary containment areas located at the well location may periodically hold rainwater or other materials such as condensate or motor oils. Insects may be attracted to the contained water or fluids, which if contaminated and eaten by Loggerhead Shrikes, could harm this species.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Loggerhead Shrike.

**Plants**

**Roughseed Sea-purslane**

***Biology and Ecology:***
Roughseed sea purslane or Texas sea-purslane (*Sesuvium trianthemoides*) is considered federally as a species of concern. Aizoaceae (Carpet-weed) is a very large family, exhibiting considerable diversity of structure. Annual or perennial herbs, succulent or subsucculent, commonly with numerous stems from near the base, often prostrate. This species is apparently endemic to Texas, particularly Kenedy County.



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This species is similar to Slender Sea-purslane (*Sesuvium maritimum),* which differs from *S. trianthemoides* in having smooth rather than rugose seeds. Roughseed Sea-purslane is a poorly understood species known only from the type collection. Reports from Aransas and Nueces counties were based on misidentified specimens of *S. maritimum*.

Based on an email from Jason Singhurst of the Texas Parks and Wildlife Department, this species was thought to typically be found in dune habitats in 1966.

Only one documented occurrence of this species has occurred within Padre Island National Seashore. In 1998, this species was documented on a mudflat habitat near the Bird Island Basin area of the park (Nelson, 1997).

***Critical Habitat:***
No critical habitat has been designated for this species.

***Potential Effects of Proposed Project:***
The action and project areas for this proposed project does not include habitat for the Roughseed Sea-purslane. Therefore, no direct or indirect effects of the proposed project are likely to occur.

***Conservation Measures:***
Because no potential affects to the Roughseed Sea-purslane will occur from this proposed project, no additional conservation measures are needed.

***Conclusion:***
Based on the preceding analysis, the overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect the Roughseed Sea-purslane.

## 13. OTHER CONSIDERATIONS

In order to minimize impacts to both federally and state protected species, the mitigation measures outlined in Table 4 will be applied to operations conducted by BNP in association with the Lemon/Lemon Seed Unit wells. For the purposes of this table, larger vehicles will be defined as any vehicle that is 1) larger than a pickup or suburban type vehicle, 2) towing a trailer, or 3) any construction machinery such as a grader, backhoe, or bulldozer.

Table 4. Resources Mitigation and Conservation Measures.

| Resource Concern | Mitigation Measures | Reference |
|---|---|---|
| **Sea Turtles** | NPS awareness training for BNP employees and contractors<br>- Identification of tracks<br>- Notification protocol<br>- Marking tracks or nest area if they are unable to stay on site until official crew arrives | Final Oil & Gas Management Plan Environmental Impact Statement (FEIS), 5-11 (9) |
| **Crushing and Rutting** | Escort for larger vehicles | |



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| Resource Concern | Mitigation Measures | Reference |
|---|---|---|
| | Monitor on ATV preceding larger vehicles during the sea turtle nesting and hatchling emergence season (April 1 to October 15) | FEIS, 5-11 (9) |
| | Driving above the "wet line" on the beach to identify sea turtle tracks | |
| | Speed limits strictly enforced, large trucks will drive 15 mph or less in a posted 25 mph zone | |
| | Backhoe or tractor stationed on beach to smooth out ruts as needed after having a monitor on an ATV check for nesting turtles or tracks | |
| | During peak Kemp's ridley nesting season, vehicle convoys will not leave before a turtle patroller patrols the beach ahead of them and notifies BNP that it is ok for large vehicles to travel the beach | |
| | Drilling crew will utilize shuttle service provided by escort vehicle to limit traffic | |
| **Vibration** | Larger vehicles limited to 20 round trips per day | |
| | Scheduling trips of larger vehicles to facilitate caravanning | |
| **Night sky** | Lighting on the drilling rig will be directed inward to reduce distraction potential for turtle hatchlings and nesting turtles | FEIS, 5-11 (10) |
| | No night trips for larger vehicles to minimize impacts to and protect night nesting turtles which include the green, loggerhead, hawksbill, and leatherback | |
| | | |
| **Birds** | BNP would cover, with netting or other covering, all open-topped tanks and/or secondary containments to effectively eliminate the likelihood of accidental deaths to migratory birds | Section X, Item D (23), page 41 |
| **Contamination** | If the well were placed in production, all produced water would be stored in a closed top fiberglass tank(s). The water would be transported to an off-site, state-approved disposal facility by vacuum truck | Section V, Item K (4), page 19; Section X, Item D (20), Page 41 |
| **Mortality** | BNP would construct all open-vent exhaust stacks on production vessels designed to heat the product using an open flame in a manner that prevents birds and bats from entering or perching | Section X, Item D (22), page 41 |
| **Flushing** | Driving above the "wet line" on the beach to minimize disturbance | |
| | Scheduling trip of larger vehicles to facilitate caravanning | |
| **Habitat Alteration** | Reducing corridor in wetlands from 50 feet to 25 feet. | |
| | | |
| **Visitors** | Escort for all larger vehicles | |
| **Experience** | Scheduling trip of larger vehicles to facilitate caravanning | |
| | Increasing well pad size by approximately .5 acres to increase temporary storage area, allowing flexibility in scheduling larger disposal vehicles | |
| | No night trips for larger vehicles | |
| | Speed limits strictly enforced, large trucks will drive 15 mph or less | |
| **Visual Impact** | No night trips for larger vehicles | |
| | Larger vehicles limited to 20 round trips per day | |



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| Resource Concern | Mitigation Measures | Reference |
|---|---|---|
| | Well pad location and configuration to minimize the impacts to topographic features | |
| | Location of well pad suitable for drilling to multiple targets, eliminating the need for additional well pads | |
| **Beach Access** | Backhoe stationed on beach to smooth out ruts as needed | |
| | Drilling crew will utilize shuttle service provided by escort vehicle to limit traffic | |
| **Night Sky** | Lighting on the drilling rig will be directed inward to meet human safety requirements, and reduce night sky impacts | |
| | | |

Park staff, BNP (the oil and gas operator), U.S. Fish and Wildlife Service, and other resource agency representatives have visited the site and/or reviewed the Plan of Operations in order to assure protection of the natural environment and compliance with all laws and regulations.

***Site Visit Dates***

August 14, 2001 – BNP, Belaire Environmental (BEI), and NPS staff conducted a joint reconnaissance of the three proposed locations. At this time, the areas were walked and the proposed access roads and pad locations were evaluated. Considering the environmental obstacles, the middle site was thought to be the better location.

August 15, 2001 – Arlene Wimer, Environmental Protection Specialist at Padre Island National Seashore, returned to the site to take photos and re-evaluated the proposed access road.

August 24, 2001 – BNP, BEI, Arlene Wimer, and Ken McMullen, Chief or Resources Management and Science at Padre Island National Seashore, revisited the site to evaluate habitats involved and to purpose rerouting the access road.

August 28, 2001 – Arlene Wimer and Darrell Echols, Resources Management Specialist at Padre Island National Seashore visited the site to continue evaluating the wildlife habitats of the area.

December 10, 2001 – Arlene Wimer and Pat Clements of the U.S. Fish & Wildlife Service conducted a site visit to become familiar with the project area and identified several concerns:

- The terminal end of the proposed pipeline crossed a wetland area but the original delineation stated that all areas were upland,
- A Corps of Engineer site visit would be required to clarify the wetlands areas, and
- Migratory bird habitat was not an issue.

January 17, 2002 – John Wong and Marie Pattillo of the U.S. Army Corps of Engineers (COE), BEI, and Arlene Wimer conducted a site visit to determine the status of any wetlands involved. The wetland determination concluded that the flow line route would



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unavoidably cross a small section of wetland habitat. This area would be covered under the Nationwide Permit 12 from the COE and impact less than 0.1 of an acre, which would not require wetland compensation, by the NPS.



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**14. OVERALL CONCLUSION:**

_____X_____ NOT LIKELY TO ADVERSELY AFFECT
_____ MAY AFFECT (Requires Formal USFWS Consultation)
_____ BENEFICIAL EFFECTS
_____ ADVERSE EFFECTS

**15. RECOMMENDATION**: Proceed with Approval of Plan of Operations by BNP Petroleum Corporation, for the proposed Lemon/Lemon Seeds Wells, at 12.5-miles, Padre Island National Seashore with approved mitigation measures.

CONCURRENCE FORM
ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

We have reviewed your INFORMAL Biological Assessment for the Plan of Operations for BNP Petroleum Corporation, Lemon/Lemon Seed Wells, at 12.5-miles, Padre Island National Seashore, Kenedy County, Texas.

_____ We concur with your findings that the proposed National Park Service action is not likely to affect listed species or critical habitat.

_____ We do not concur with your Biological Assessment and believe additional informal/formal consultation may be necessary in this matter.

**Stipulations as necessary:** (Attach additional sheets as necessary)

Signed: _____ USFWS Office: _____

Title: _____ Date: _____

Prepared by: Arlene Wimer and Darrell L. Echols, National Park Service, Padre Island National Seashore, PO Box 181300, Corpus Christi, Texas 78480-1300

Telephone: 361-949-8173



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