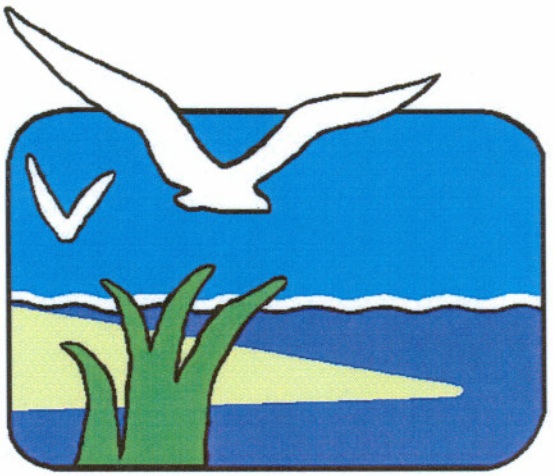


Environmental Assessment

BNP Petroleum Corporation
Lemon/Lemon Seed Units
No. 1-1000S and No. 1-1008S
Padre Island National Seashore • Texas



Environmental Assessment

BNP Petroleum Corporation
Lemon/Lemon Seed Unit Wells
Padre Island National Seashore, Texas

Summary

On November 26, 2001, BNP Petroleum Corporation (BNP) submitted a Plan of Operations to the National Park Service (NPS) to drill and produce the Lemon/Lemon Seed Unit wells from a surface location approximately 12.5 miles south, from the end of Park Road 22. The wells would be directionally drilled to bottom-hole locations east of the surface location in the Gulf of Mexico.

This Environmental Assessment (EA) evaluates two alternatives for BNP to drill and produce the Lemon/Lemon Seed Unit wells. Alternative A evaluates baseline conditions under No Action. In this case, No Action means that BNP would not drill the wells. Under No Action, there would be no additional impacts on the affected environment. However, there could be a negligible adverse impact on the domestic energy supply, and a moderate to major adverse impact on BNP if the well was not drilled and produced. Alternative B evaluates the Plan of Operations, as submitted by BNP, to drill and produce the wells. Due to mitigation measures, most notably directional drilling, there would be no impacts to seagrass beds or algal flats, trees, cultural resources; and impacts on air quality, soils, water resources and floodplains, vegetation, natural soundscapes, wildlife, and visitor use and experience would be localized and long-term, with adverse impacts ranging from negligible to minor. A section of the foredunes would be impacted with the construction of the new access road, with measures taken to stabilize this area immediately after construction. A small portion of emergent wetlands would be impacted during the construction of the pipeline. We recognize that these are sensitive resource areas and would be managed as per mitigation measures established in the Padre Island Oil and Gas Management Plan (March 2001). Alternative B is the proposed action. Alternative A is the environmentally preferred alternative.

Public Comment

If you wish to comment on the Plan of Operations, Environmental Assessment, draft Floodplains Statement of Findings, or draft Wetlands Statement of Findings please mail comments to the name and address below. These documents will be on public review for 30 days from the publication date of a Notice of Availability in the *Federal Register.* The Notice of Availability will also be published in the *Corpus Christi Caller Times*. Please note that names and addresses of people who comment become part of the public record. If you wish us to withhold you name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations, businesses, and individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Superintendent
Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78480

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1.0. PURPOSE AND NEED

This Environmental Assessment (EA) evaluates two alternatives for the National Park Service (NPS) to permit BNP Petroleum Corporation (BNP) to drill and produce the Lemon/Lemon seed Unit, Well No. 1-1000S and Well No. 1-1008S respectively within Padre Island National Seashore (PAIS). The purpose of this analysis is to provide a decision-making framework for the NPS to approve the use of parklands for BNP to explore and develop its mineral rights, while protecting and preventing impairment to park resources and values, and allowing for a safe visitor experience.

When Congress authorized the establishment of Padre Island National Seashore on September 28, 1962 (16 U.S.C. §459d, *et seq.*), surface ownership within the area was acquired by the U.S. Government. Private entities or the State of Texas retained the subsurface mineral interests on these lands. Thus, the federal government does not own any of the subsurface oil and gas rights in the park, yet the NPS is required by its laws, policies and regulations to protect the park from any actions, including oil and gas operations, that may adversely impact or impair park resources and values. Padre Island National Seashore was created "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 ...". Currently, there are 13 nonfederal oil and gas operations within the park. The park comprises 130,473 acres.

On November 26, 2001, BNP submitted to Padre Island National Seashore a Plan of Operations to drill and produce the Lemon/Lemon Seed Unit. The NPS reviewed and determined the plan to be substantially complete December 13, 2001. BNP has revised the Plan of Operations to include all NPS recommendations. The NPS must decide whether to approve the plan and if additional mitigation measures are needed.

The analysis area for this EA includes the area within the park that would be directly or indirectly affected by the operations. The analysis area for evaluating cumulative impacts on park resources and values includes the entire park, and for nonfederal oil and gas includes the nation's domestic energy supply.

1.1. Objectives of Taking Action

There are three objectives for this project:

- Provide BNP Petroleum Corporation, as holder of nonfederal oil and gas mineral interests, reasonable access for exploration and development.
- Avoid or minimize impacts on park resources and values, visitor use and experience, and human health and safety.
- Prevent impairment of park resources and values.

1.2. Special Mandates and Direction

The NPS evaluates project-specific proposals for oil and gas production and transportation on a case-by-case basis by applying a variety of Current Legal and Policy Requirements prior to issuing a permit under the general regulatory framework of the NPS Nonfederal Oil and Gas Rights Regulations (36 CFR 9B). The following discussion is a summary of the basic management direction the NPS follows for permitting nonfederal oil and gas operations in units of the National Park System.

1.2.1. NPS Organic Act and General Authorities Act

The NPS Organic Act (16 U.S.C. § 1, *et seq.*) provides the fundamental management direction for all units of the National Park System. Section 1 of the Organic Act states, in part, that the NPS shall:

> "...promote and regulate the use of the Federal areas known as national parks, monuments, and reservations...by such means and measure as conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. §1.

The National Park System General Authorities Act, (16 U.S.C. § 1a-1 *et seq.*) affirms that while all national park system units remain "distinct in character," they are "united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage." The Act makes it clear that the NPS Organic Act and other protective mandates apply equally to all units of the system. Further amendments to the Organic Act state that "[t]he authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress." 16 USC 1a-1.

Current laws and policies require the analysis of potential effects to determine whether or not actions would impair park resources. While Congress has given the NPS the managerial discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement (enforceable by the federal courts) that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise (2001 Management Policies, §1.4).

The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

1.2.2. NPS Nonfederal Oil and Gas Regulations, 36 CFR 9B

The authority to manage and protect federal property arises from the Property Clause of the United States Constitution. The Property Clause provides that "Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . ." U.S. Const. Art. IV, ¶ 3, cl. 2.

In 1916, Congress exercised its power under the Property Clause and passed the NPS Organic Act, 16 U.S.C. § 1 *et seq.* Section 3 of the Organic Act authorizes the Secretary of the Interior to "make and publish such rules and regulations as he may deem necessary or proper for the use of the parks..." 16 U.S.C. § 3.

Pursuant to section 3 of the NPS Organic Act and individual park statutes, the Secretary of the Interior promulgated regulations at 36 CFR Part 9, Subpart B ("9B regulations") in 1979. The 9B regulations apply to operations that require access on or through federally owned or controlled lands or waters in connection with nonfederally owned oil and gas in all National Park System units (36 CFR § 9.30(a)).

The NPS Nonfederal Oil and Gas Rights Regulations (36 CFR 9B) and other regulatory requirements assist park managers in managing oil and gas activities so they may be conducted in a manner consistent with the NPS mandate to protect park resources and values. The application and implementation of these regulations on the ground must be assessed park wide for each site-specific oil and gas activity to determine if these activities have the potential to impair park resources and values.

Table 1, below, summarizes many, but not all, of the statutes, regulations, executive orders and policies that govern the exercise of nonfederal oil and gas rights in National Park units.

Table 1. Current Legal and Policy Requirements

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
Statutes and Applicable Regulations	
National Park Service (NPS) Organic Act of 1916, as amended, 16 U.S.C. §§ 1 *et seq.*	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
National Park System General Authorities Act, 16 U.S.C. §§ 1a-1 *et seq.*	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
NPS Omnibus Management Act of 1998, 16 U.S.C. §§ 5901 *et seq.*	Any living or non-living resource
NPS Nonfederal Oil and Gas Regulations – 36 Code of Federal Regulations (CFR) Part 9, Subpart B	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
16 U.S.C. § 19jj (commonly referred to as the Park System Resource Protection Act)	Any living or non-living resource that is located within the boundaries of a unit of the National Park system, except for resources owned by a nonfederal entity
American Indian Religious Freedom Act, as amended, 42 U.S.C. §§ 1996 – 1996a; 43 CFR Part 7	Cultural and historic resources
Antiquities Act of 1906, 16 U.S.C. §§ 431-433; 43 CFR Part 3	Cultural, historic, archeological, and paleontological resources
Archeological Resources Protection Act of 1979, 16 U.S.C. §§ 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7	Archeological resources
Clean Air Act, as amended, 42 U.S.C. §§ 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23	Air resources
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601-9675; 40 CFR Parts 279, 300, 302, 355, and 373	Human health and welfare and the environment
Endangered Species Act of 1973, as amended, 16 U.S.C. §§ 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450	Plant and animal species or subspecies, and their habitat, which have been listed as threatened or endangered by the U.S. Fish and Wildlife Service (FWS) or the National Marine

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
	Fisheries Service
Federal Insecticide, Fungicide, and Rodenticide Act, as amended (commonly referred to as Federal Environmental Pesticide Control Act of 1972), 7 U.S.C. §§ 136 *et. seq.;* 40 CFR Parts 152-180, except Part 157	Human health and safety and the environment
Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. §§ 1251 *et seq.;* 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328	Water resources, wetlands, and waters of the U.S.
Historic Sites, Buildings, and Antiquities Act (Historic Sites Act of 1935), 16 U.S.C. §§ 461-467; 18 CFR Part 6; 36 CFR Parts 1, 62, 63 and 65	Historic sites, buildings, and objects
Lacey Act, as amended, 16 U.S.C. §§ 3371 *et seq.;* 15 CFR Parts 10, 11, 12, 14, 300, and 904	Fish, wildlife, and vegetation
Migratory Bird Treaty Act, as amended, 16 U.S.C. §§ 703-712; 50 CFR Parts 10, 12, 20, and 21	Migratory birds
National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. §§ 4321 *et seq.;* 40 CFR Parts 1500-1508	The human environment (e.g. cultural and historic resources, natural resources, biodiversity, human health and safety, socioeconomic environment, visitor use and experience)
National Historic Preservation Act of 1966, as amended, 16 U.S.C. §§ 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810	Cultural and historic properties listed in or determined to be eligible for listing in the National Register of Historic Places
Native American Graves Protection and Repatriation Act, 25 U.S.C. §§ 3001-3013; 43 CFR Part 10	Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony
Noise Control Act of 1972, 42 U.S.C. §§ 4901-4918; 40 CFR Part 211	Human health and welfare
Oil Pollution Act, 33 U.S.C. §§ 2701-2761; 15 CFR Part 990; 33 CFR Parts 135, 137, and 150; 40 CFR Part 112; 49 CFR Part 106	Water resources and natural resources
Pipeline Safety Act of 1992, 49 U.S.C. §§ 60101 *et seq.*; 49 CFR Subtitle B, Ch 1, Parts 190-199	Human health and safety and the environment
Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et. seq.*; 40 CFR Parts 240-280; 49 CFR Parts 171-179	Natural resources and human health and safety
Rivers and Harbors Act of 1899, as amended, 33 U.S.C. §§ 401 *et. seq.*; 33 CFR Parts 114, 115, 116, 321, 322, and 333	Shorelines and navigable waterways, tidal waters, and wetlands
Safe Drinking Water Act of 1974, 42 U.S.C. §§ 300f *et seq.*; 40 CFR Parts 141-148	Human health and water resources
Executive Orders	
Executive Order (E.O.) 11593 – Protection and Enhancement of the Cultural Environment, 36 Federal Register (Fed. Reg.) 8921 (1971)	Cultural resources
E.O. 11988 - Floodplain Management, 42 Fed. Reg. 26951 (1977)	Floodplains and human health, safety, and welfare
E.O. 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)	Wetlands
E.O. 12088 – Federal Compliance with Pollution Control Standards, 43 Fed. Reg. 47707 (1978)	Natural resources and human health and safety
E.O. 12630 – Governmental Actions and Interference with Constitutionally Protected Property Rights, 53 Fed. Reg. 8859 (1988)	Private property rights and public funds
E.O. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, amended by Exec. Order No.	Human health and safety

AUTHORITIES	RESOURCES AND VALUES AFFORDED PROTECTION
12948, 60 Fed. Reg. 6379 (1995)	
E.O. 13007–Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)	Native Americans' sacred sites
E.O. 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)	Vegetation and wildlife
E.O. 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)	Migratory birds
E.O. 13212 - Actions To Expedite Energy-Related Projects (2001)	
Policies, Guidelines and Procedures	
NPS Management Policies (2001)	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, and visual resources
Department of the Interior (DOI), Departmental Manual (DM) 516 –NEPA policies	Human health and safety and the environment
DOI, DM 517 - Pesticides	Archeological and prehistoric resources, historic resources, Native American human remains, and cultural objects
DOI, DM 519 – Protection of the Cultural Environment	Human health and safety
DOI, Onshore Oil and Gas Order Number 2, Section III, Drilling Abandonment Requirements, 53 Fed. Reg. 46,810-46,811 (1988)	All resources, including air resources, cultural and historic resources, natural resources, biological diversity, human health and safety, endangered and threatened species, visitor use and experience, socioeconomic development, and visual resources
NPS Director's Order (D.O.) –12 and Handbook – National Environmental Policy Act (2001)	Cultural, historic, and ethnographic resources
NPS D.O. - 28 – Cultural Resource Management (1997)	Natural resources and human health and safety
NPS 66 – Minerals Management Guideline (1990)	Natural resources
NPS 77 – Natural Resources Management Guideline (1991)	Wetlands
NPS D.O. 77-1 – Wetland Protection	Floodplains
NPS Special Directive 93-4 – Floodplain Management Guideline	Cultural and historic resources
Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation," 48 Fed. Reg. 44716 (1983), also published as Appendix C of NPS D.O. 28 – Cultural Resource Management	Native American Tribal rights and interests
Government-to-Government Relations with Native American Tribal Governments, Presidential Memorandum signed April 29, 1994	

1.3. Issues and Impact Topics Evaluated

Early in the planning and development of the Plan of Operations by BNP, the NPS met with BNP and its contractor, Belaire Environmental, Inc. (BEI), to identify resources, values, and other concerns that could be potentially impacted by drilling and producing the Lemon/Lemon Seed Unit wells. In addition, early input from other federal, state and local agencies was sought. Scoping with the U.S. Fish and Wildlife Service (FWS), U.S. Army Corps of Engineers (COE), and Texas Natural Resources Conservation Commission (TNRCC) involved contacts by telephone, written correspondence, and meetings at the proposed project location within Padre Island National Seashore. Scoping involved defining appropriate alternatives, impact determinations, mitigation measures, and identification of major issues. Based on scoping, the NPS identified the following park resources, values, and other concerns for evaluation in this EA:

- nonfederal oil and gas development
- air quality
- geology and soils
- water resources and floodplains
- wetlands
- vegetation
- natural soundscapes
- wildlife
- threatened and endangered species
- visitor use and experience

Based on the above list of park resources, values, and other concerns identified during scoping, issue statements were developed to define problems or benefits pertaining to the proposal to drill and produce the Lemon/Lemon Seed Unit wells. The issue statements in Table 2, below, describe a cause-and-effect relationship between an activity and a resource, value, or concern. The issue statements were used in developing and evaluating alternatives.

Table 2. Issue Statements

Impact Topic	Issue Statement
Nonfederal Oil and Gas Development	• The NPS permitting process, regulatory requirements, and operating stipulations generally increase the cost to operate on parklands, compared to operating on non-NPS lands. These increased costs could reduce income to mineral owners (or mineral interest holders) and operators, and influence an owner's or operator's decision to defer, modify, undertake as planned, or not conduct certain nonfederal oil and gas operations.
Air Quality	• Construction of roads, wellpads, production facilities, and pipelines; vehicle use on and off paved roads; and exhaust from combustion of gasoline and diesel-powered vehicles and equipment used for drilling and production operations would increase emissions of particulate matter which could affect air quality, including visibility in the general vicinity of the park. • Maintenance activities, such as use of herbicides for vegetation control on and around operations sites, emit pollutants, including nitrogen oxides, volatile organic compounds, carbon monoxide, sulfur dioxide, particulate matter, and objectionable odors. These emissions could degrade air quality within the parks and could contribute toward regional air quality degradation. Nitrogen oxides and volatile organic compounds are primary precursors to ozone formation, which, depending on ambient concentrations, can have damaging effects on some vegetation and on the health of humans and wildlife.
Geology and Soils	• The construction of well/production pads and access roads require leveling surface contours and the import of nonnative materials (i.e. caliche). • The foredune terminus of the new road would have a southeast northwest orientation. The elevation of the pass over the dunes would be left as high as feasible to allow for long industrial type vehicles to travel and still prevent "water funneling" through the dunes inn the event of extremely high tides. • The release of hydrocarbons or other contaminating and hazardous

Impact Topic	Issue Statement
	substances from vehicles and equipment, exploration and production operations, and flowlines and pipelines could alter the soil and sands chemical and physical properties. Changes in the soil and sands properties could result directly, from contact with contaminants on-site, or indirectly, via runoff from contaminated areas. • Vehicle use along the Gulf beach, particularly from heavy vehicles transporting the drilling rig, water, and drilling muds for disposal outside the park, could cause deep rutting.
Water Resources and Floodplains	• Vehicle use; removal or modification of vegetation; and surface disturbance associated with construction, maintenance and use of roads, wellpads, production facilities, and flowlines could alter surface drainage patterns in the vicinity of operations. • The release of hydrocarbons and contaminating or hazardous substances from vehicles, equipment, or pipelines used for exploration and production operations could degrade water quality. Degraded water quality could affect the growth and survival of vegetation, cause declines in wildlife populations, affect recreational uses, and threaten human health and safety. • Reclamation of oil and gas sites could adversely affect water quality over the short-term. However, long-term benefits could occur when native vegetative communities and surface and subsurface water flow are re-established. • There is no practical alternative to locating roads, wellpads, production facilities, and flowlines in or across floodplains. Because of the hydraulic and erosive forces of flooding, the above activities could potentially harm life, property, and floodplain resources, functions, values, and uses. • The siting, maintenance, and use of roads, wellpads, production facilities, and flowlines in floodplains, or the release of hydrocarbons and contaminating or hazardous substances from these operations, could adversely affect floodplain functions, values and uses, including: the natural moderation of floods, water quality, sediment control, ground water recharge or discharge, fish and wildlife habitat, maintenance of biodiversity, recreational opportunities, and natural beauty. • Reclamation activities that re-establish the contour of the area, restore surface and subsurface water flow, control non-native vegetation, and re-establish native vegetative communities could restore natural and beneficial functions, values, and uses.
Wetlands	• A pipeline route was chosen that utilized hummocky uplands, except for an unavoidable 55.3-foot section that crosses an emergent wetland. • Construction of the pipeline could adversely affect vegetation and hydrology over the short term. • Reclamation activities that re-establish the contour of the area, restore surface and subsurface water flow, control non-native vegetation, and re-establish native vegetative communities could restore natural and beneficial functions, values, and uses.
Vegetation	• Vegetation would be totally removed in areas for the construction of roads, wellpads, production facilities, and flowlines. Vegetation removal could change the structure and composition of vegetative communities in the project area; alter wildlife habitat and species composition; increase storm runoff; and increase soil erosion. • Roads, wellpads, production facilities, and flowlines could disrupt

Impact Topic	Issue Statement
	the surface, which may adversely affect the localized water budget necessary to maintain vegetative communities. • The release of hydrocarbons and contaminating or hazardous substances could damage or kill vegetation directly, via contact with contaminants on-site, or indirectly, via pathways from contaminated areas. • Disturbances/removal of native vegetation could lead to the unintentional spread and establishment of non-native plant species transported in or on drilling and maintenance equipment. • Reclamation of oil and gas sites could re-establish native vegetative communities and surface and subsurface drainage patterns necessary to support vegetative growth.
Natural Soundscapes	• Vehicles and equipment used for construction and maintenance of roads, wellpads, production facilities, and pipelines could result in increased noise, adversely affecting wildlife and visitor experience.
Wildlife	• Oil and gas activities, including vehicle use and the construction, maintenance, and use of roads, wellpads, production facilities, and pipelines, could adversely affect wildlife. These activities could increase predation in open areas; directly harm or kill wildlife; and disrupt wildlife feeding, denning, nesting, spawning/reproduction, and other behavior. Oil and gas activities could also result in avoidance of the area by wildlife due to increased noise and human presence. • Lighting can confuse birds, causing some mortality. Furthermore, open-topped tanks and/or secondary containment are an attractant to birds when there is liquid present. • Loss or modification of wildlife habitat could occur from the construction of roads, wellpads, production facilities, and pipelines. These activities could increase edge effects, increase human access, and alter wildlife species, composition, and migration. • The release of hydrocarbons and hazardous or contaminating substances from vehicles, drilling and production equipment, and pipelines could injure wildlife. The adverse effects could become worse over time if wildlife species ingest the contaminants and are consumed by other wildlife species. • Heavy equipment used for reclamation operations could injure or kill wildlife and degrade water quality over the short-term. However, reclamation of oil and gas sites over the long-term could re-establish native vegetative communities and surface and subsurface water quality and quantity that support wildlife populations.
Threatened and Endangered Species	• Motor vehicle traffic on the Gulf beach is permitted on Padre Island throughout the year. BNP staff and contractors would be instructed to watch for and report sea turtles and their tracks to park staff. • Monitors would be used should equipment need to be moved down the Gulf beach between April and September. • Due to the wells proximity to the Gulf beach, the use of reduced or directionally hooded lighting maybe necessary, especially since drilling will occur during sea turtle nesting season. • These mitigations are expected to prevent any impacts to sea turtles.
Visitor Use and Experience	• Oil and gas operations could pose a threat to human health and safety from a number of sources, including the use of roads by commercial vehicles (particularly vehicles with less maneuverability and visibility); hazardous equipment at wells and production

Impact Topic	Issue Statement
	facilities; and pipeline failure. Spilled or released hydrocarbons and contaminating or hazardous substances could be inhaled, absorbed, or ingested by human beings. • Oil and gas operations could adversely affect air quality; alter scenic resources; increase background sound levels; and degrade water quality. These effects could adversely affect or preclude visitor uses and experiences.

1.4. Issues and Impact Topics Eliminated from Further Analysis

The following topics have been eliminated from further analysis for the reasons described.

1.4.1. Environmental Justice.

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998). Therefore, environmental justice was dismissed as an impact topic in this EA.

1.4.2. Prime and Unique Farmlands.

In August 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland is defined as soil that produces specialty crops such as fruits, vegetables, and nuts. There were no prime or unique farmlands located in PAIS; therefore, prime and unique farmlands was dismissed as an impact topic in this EA.

1.4.3. State and Federally Listed Threatened and Endangered Species and Their Critical Habitat.

Discussion of the state and federally listed threatened and endangered species and their critical habitat, as resource topic is mandatory in an NPS EA. FWS, Ecological Services in Corpus Christi, Texas, was consulted during project scoping. FWS and NPS staff inspected the proposed operations area on December 10, 2001, and found that the proposed project would have no effect on federally listed threatened and endangered species or their critical habitat. Drilling the Lemon/Lemon Seed Unit during the late spring months will require monitors for transporting the drill rig, supplies, and other heavy equipment down the Gulf beach during sea turtle nesting season. This will be required during all hours of operation on the Gulf shoreline. BNP staff and contracted personnel will receive turtle awareness training from NPS staff. In addition weekly meetings are required to access potential impacts on sea turtles and habitat and to address required number of daily truck trips for the week.

Further, BNP has selected a location to site the proposed well that would avoid important wintering habitat for the Piping Plover. Padre Island National Seashore anticipates receiving written documentation of the "no effect" determination from the Corpus Christi FWS office.

Receipt of the FWS written verification will be documented in the NPS decision document. There are no state-listed threatened or endangered species in the project area; therefore, state-listed threatened or endangered species was dismissed as an impact topic in this EA.

1.4.4. Cultural Resources.

Cultural resources are another mandatory topic requiring discussion in an NPS EA. There are no historic structures, ethnographic resources, or cultural landscapes within or near the operations area. During project scoping, research was conducted to determine the extent and continuing adequacy of archeological surveys that had been performed in the analysis area. A walk-across reconnaissance level archeological survey was conducted for a 3-D seismic survey in 1999. Archeological data is lacking in some areas however; therefore, BNP contracted for further archeological surveys to be conducted. William Moore and James Warren were used to survey for archeological resources in the area of the proposed project. The survey was conducted between November 27 and December 6,2001 and found no archeological or historic resources in the survey area. The survey will be submitted to the State Historic Preservation Office (SHPO) for review and approval. Receipt of the SHPO written conformation of "no adverse effect" will be documented in the NPS decision document.

1.4.5. Local and Regional Economics.

Local and regional economics was dismissed as an impact topic in this EA because the outcome of whether two wells are drilled would have minimal beneficial impact on the local or regional economies.

2.0. ALTERNATIVES

Two Alternatives, A and B, are described and evaluated in this EA. Alternative locations and strategies that were considered but dismissed from further analysis are then described. An analysis for selecting the environmentally preferred alternative is also provided. This section concludes with three summary tables comparing the two alternatives.

2.1. Alternative A, No Action

The No Action Alternative is required under the National Environmental Policy Act (NEPA) and establishes a baseline for comparing the present management direction and environmental consequences of the action alternative. Under No Action, the wells would not be drilled.

2.2. Alternative B, Proposal (Preferred Alternative) Plan of Operations as Submitted

Under Alternative B, Proposed Action, the NPS would approve BNP's Plan of Operations, to drill and produce the Lemon/Lemon Seed Unit.

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.

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 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	

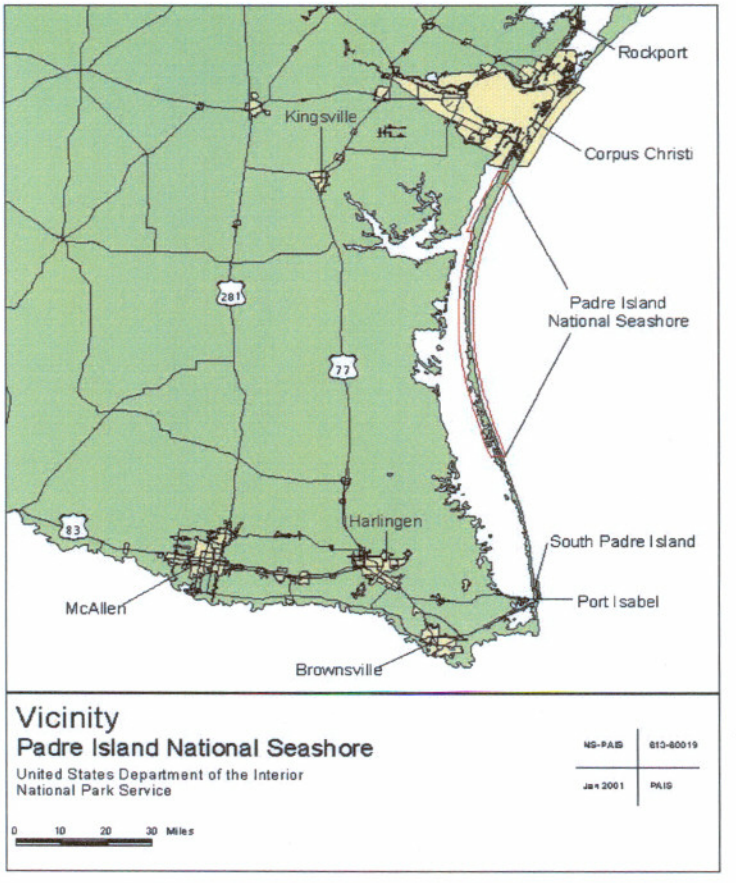


Figure 1: Region/Vicinity map. Depicts the location of Padre Island National Seashore in relation to the Gulf of Mexico coastline.

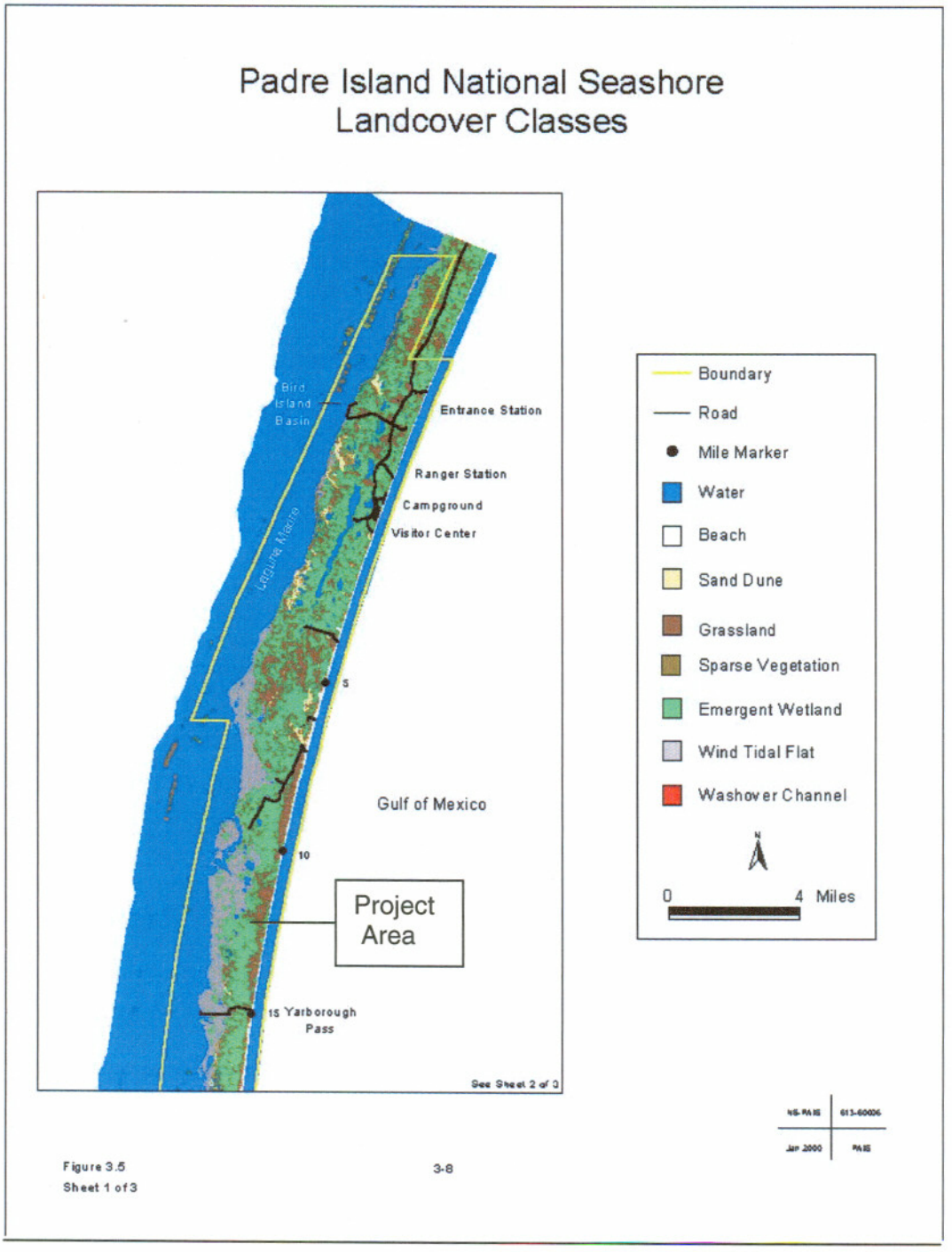
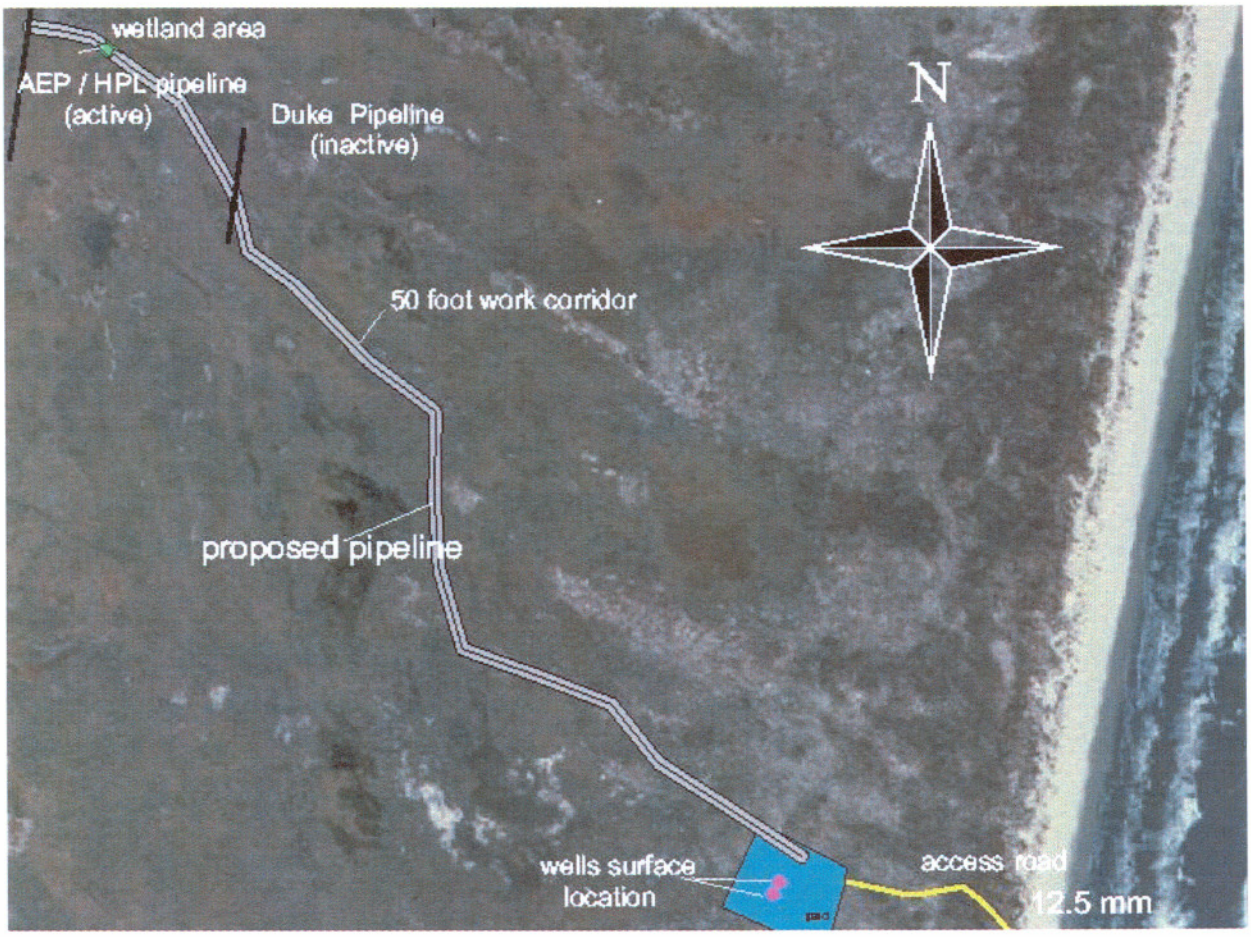


Figure 2: General location of the proposed Lemon/Lemon Seed Unit in relation to Padre Island National Seashore boundaries.



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Figure 3: Proposed location of the Lemon/Lemon Seed Units, 12.5 mile marker on Padre Island National Seashore. Depicts location of access road, pad/production site, proposed pipeline, and wetland area.

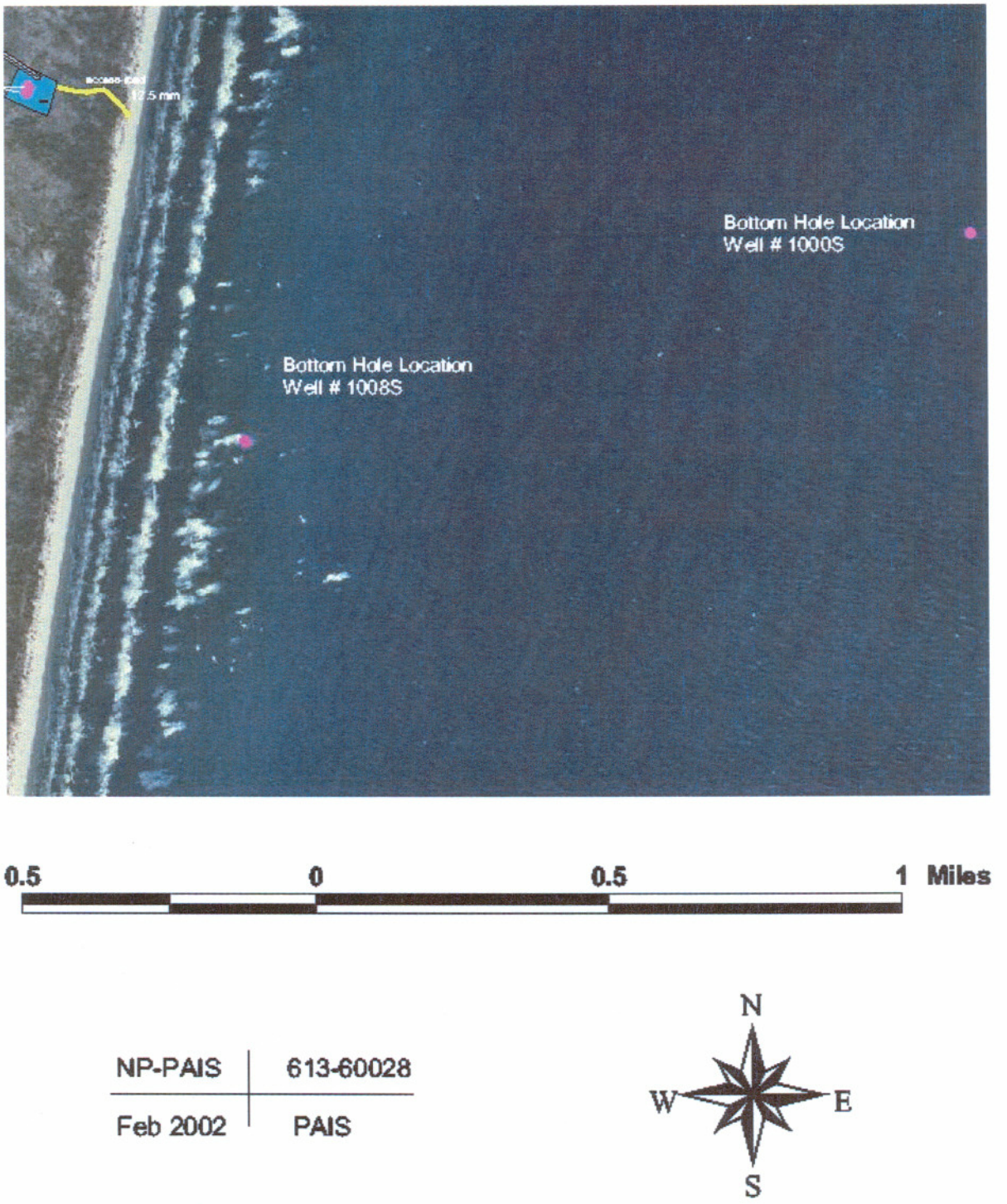


Figure 4: Surface and bottom hole locations of Lemon/Lemon Seed Units, wells No. 1-1000S and No. 1-1008S.

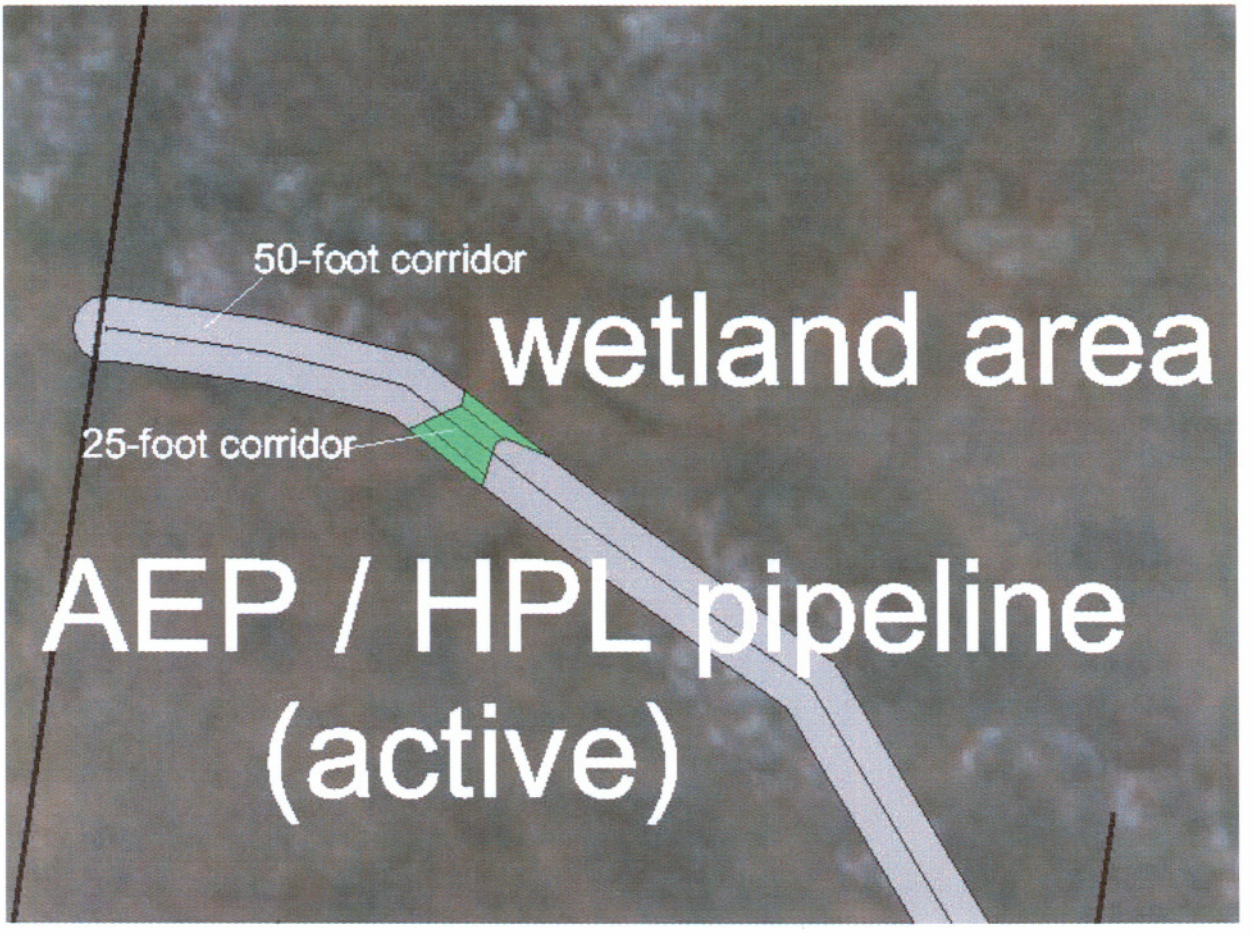
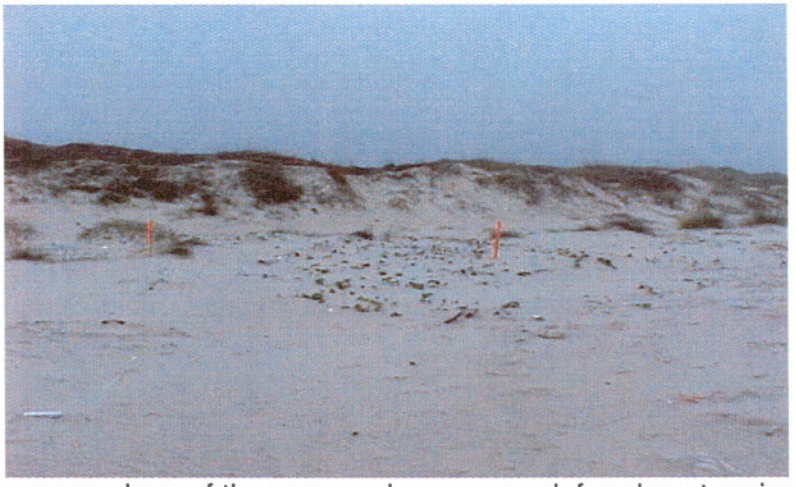


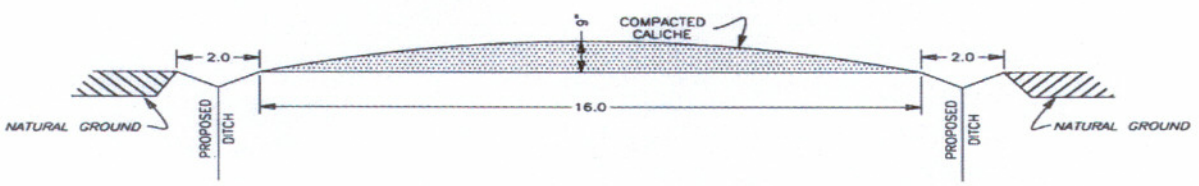
Figure 5: Close-up of wetland area with the 25-foot work corridor marked.

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 (Figure 2). 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 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.



Survey markers of the proposed access road, foredune terminus.

Surface Location and Well Pad: 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-foot (3.6 acres) polygon shaped drill site. 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.



Typical Road Cross Section

All equipment, machinery, and living quarters would be placed within the 136,603 square foot pad area. This pad will 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 67,303 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 temporary water well on the well pad 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 PAIS 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. Assuming BNP drills a usable water source well for the Lemon/Lemon Seed Unit wells, communication between the water well and well #1008S in the event of a high-pressure gas kick is possible and would be a concern. Below is a comparison of the kick tolerances for surface casing setting depths of 1,750 feet and 2,230 feet. This is based on a formation pressure of 5200 psi (equivalent mud weight of 11.0 ppg) at a true vertical depth of 9,300 feet.

Depth	Fracture Gradient, ppg	Kick Tolerance, ppg	Kick Tolerance, psi
1,750 ft.	12.8	1.8	164
2,230 ft.	13.0	2.0	232

The increased separation between the casing shoe and the total depth of the water well would reduce the risk of communication with the water well. The surface casing would be set at 2,200 feet. Once the wells have been drilled and placed in production, the water well would be plugged.

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 TNRCC, but no information regarding its production is available. If drilling a water source well were successful at the Dunn-Murdock No. 1 location at Yarbrough Pass, a similar well would be drilled at the Lemon/Lemon Seed location. If a water source well cannot be made, the water used for drilling would have to be obtained 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 bbls 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 Texas Railroad Commission (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 bbls for Well No. 1-1000S and 3,000 bbls for Well No.1-1008S. At an average of 100 bbls 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 well pad. 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 2). Duke Energy operates an 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 tie-in pipeline route would briefly impact approximately 3280 linear feet for the Duke pipeline, or 4300 feet for the AEP pipeline of hummocky uplands. Prior to the tie-in point for the AEP pipeline, the route crosses an emergent wetland. Utilizing the 50 feet construction corridor, 2,765 square feet (0.0636 acres) of emergent wetland would be impacted. The stipulation of a 25 feet construction corridor in wetlands reduces the impacts to 1,382.5 square feet (0.032 acres).

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 well pad 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 will 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 on to the surrounding area. Any contaminated liquids or soils would be removed and hauled to an approved disposal site.

Reclamation Plan: As soon as all drilling operations cease, BNP would remove all foreign materials brought in for construction, drilling, and production operations from the park. This includes any contamination that might have occurred.

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.

In order to reduce the impacts to park resources and values, the mitigating measures described in Table 3 would be applied to the oil and gas operations. BNP and its contractor, BEI, sought the views and advice of personnel of Padre Island National Seashore, COE, and other experts. BNP and BEI also relied on the recommendations of the park's Final Oil and Gas Management Plan/Environmental Impact Statement (DOI 2000) for operating standards and other information. As a result of these and other efforts, BNP has agreed to apply all mitigation measures outlined in Table 3. The location of each mitigation measure in the Plan of Operations is included for ease of reference.

Table 3. Mitigation Measures under Alternative B, Proposal (Preferred Alternative), Plan of Operations as Submitted

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
1.	Direct impacts to wind-tidal algal flats, seagrass beds, and cultural resources would be avoided by directionally drilling the well from a location using a polygon-shaped well/production pad which would utilize approximately 158,403 square feet (3.60 acres) of hummocky uplands for the 790-foot long access road and wellpad/production facility.	Section X, Item D (1), page 39
2.	BNP would educate all employees and contractors regarding the need for and ways and means of minimizing disturbances to the land, natural resources, wildlife, and people at Padre Island National Seashore.	Section X, Item D (3), page 39
3.	If possible, BNP would avoid moving in the rig via the Gulf beach during the months of April through September in order to avoid disturbing sea turtle nests and nesting activity. However, should rig scheduling force BNP to move equipment down the beach during this period, a monitor would be utilized to avoid potential adverse impacts to turtle nesting.	Section X, Item D (7), page 40
4.	All field personnel would attend NPS turtle training prior to the start of sea turtle nesting season.	NPS condition of approval for Lemon/Lemon Seed Plan of Operations
5.	BNP proposes to install culverts, as needed, along the proposed 790-foot access road, where fill may directly affect surface water run-off. Culvert locations would be selected to minimize alteration of natural surface drainage patterns and would be approved by the National Park Service.	Section X, Item D (5), page 39; and Section X, Item E. Water Resources, page 45
6.	The pipeline route was selected to minimize impacting wetlands. The Construction of the proposed pipeline route would briefly impact approximately 3,280 linear feet (164,000 square feet) of hummocky uplands and 55.3 linear feet (1,387.5 square feet0 of emergent wetlands.	Section X, Item D (2), page 39.Section X, Item E, Land Features, page 44
7.	All dirt/caliche hauling trucks (18 yard and/or 9 yard) would be instructed to drive above the Gulf Beach "wet line" to prevent excessive erosion along the beach.	Section X, Item D (4), page 39
8.	To the extent possible in regard to rig scheduling and availability, BNP intends to use a diesel electric (SCR) rig to drill the well.	Section X, Item D (6), page 39
9.	BNP would cut and store vegetation prior to ground-disturbing activities for use in later mulching and native seeding for reclamation/revegetation. All equipment would be hosed off/cleaned of mud/soils/plant debris prior to	Section X, Item D (8), page 40

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
	entering the park to reduce potential introduction of non-native seed/pests into the park.	
10.	If at any time, any unknown cultural resource were discovered during the conducting of approved operations, and such resource might be altered or destroyed by the operations, the operator would immediately cease operations in the immediate area and notify the Superintendent. The operator must leave the discovery intact until the Superintendent grants permission to proceed with the operations. Before any further activities occur, a qualified cultural resource expert would assess the cultural resources, evaluate their National Register eligibility, and consult with the State Historic Preservation Officer.	Section X, Item D (9), page 40
11.	The following methods would be applied to prevent leaks and spills of hydrocarbons and produced water: all separators would be equipped with pressure relief valves that vent to the water tank; the inside wing valve on the tree would be equipped with a pressure controlled hi-lo safety shut-off actuator; all tanks would be equipped with liquid level controls to prevent overflow; and cathodic protection would be installed at each end of the proposed pipeline.	Section IIC 5(a), page 5; Section X, Item D (10), page 40
12.	BNP would utilize a water-based drilling mud for drilling the well.	Section X, Item D (11), page 40; Section X, Item E, page 47
13.	Lost circulation mud additives would be used to prevent and control lost circulation.	Section II C(5), page 5; Section X, Item D (12), page 40
14.	An 8-foot diameter by 8-foot deep corrugated steel cellar would be placed around Well No. 1000S, and a 6-foot diameter by 6-foot deep corrugated galvanized steel cellar would be placed around Well No. 1008S. The cellars are designed to collect spilled contaminating substances. Drainage ditches would be dug (12 inches wide and 8 inches deep) to route all runoff to the cellars. A portable sump pump would be used to pump the gathered liquids to steel tanks for re-use or disposal.	Section V, Item a($), page 9; Section X, Item D (13), page 40
15.	BNP would shield light bulbs to prevent unnecessary glare and direct all lighting at the rig toward the rig work area itself.	Section X, Item D(14), page 40
16.	After leveling the access road and pad area, a 20-millimeter thick polyethylene protective liner would be placed on the pad area. A 3-foot high caliche berm would be constructed around the perimeter of the pad for emergency containment. The berm and liner would provide temporary containment of spills and fires and prevent the downward movement of fluids through the soil to the ground water.	Section X, Item D (15), page 40, Item E, Soils, page 44
17.	Throughout the drilling operations, a bulldozer would be used to assist vehicles in the transportation of personnel, services and materials, and a maintainer would be on-site to smooth out any rutting that may occur.	Section V, Item B, page 9; Section X, Item D (16), page 40
18.	After setting surface casing and installing the braidenhead, a blow-out preventer would be installed on the well. Additional well control equipment would include a choke manifold equipped with a hydraulic, remote-controlled, adjustable choke.	Section V, Item C(1) and (2), page 10; Section X, Item D (17), page 40

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
19.	A closed loop "zero discharge system" would be utilized for drilling the well. No earthen pits would be utilized. All mud, drill cuttings, sewage and produced water would be collected in steel tanks for re-use or hauled by sealed dump trucks for disposal at state-approved disposal facilities outside of the park boundaries, or disposed down the well annulus.	Section V, Item D(2) and (3), page 12 & 13; Section VII, Item B, page 28; Section X, Item D (18), page 41
20.	A temporary, three-strand, barbed-wire fence would be placed around the perimeter of the project, prior to when the pad is constructed, to deter unauthorized persons from entering the operations area during drilling and completion operations. If production is established, a gate and permanent chain link fence would be installed around the production facilities as specified by the Superintendent.	Section V, Item N(6), page 22; Section X, Item D (19), page 41
21.	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
22.	A tank battery and a berm or "firewall" would be constructed and maintained to contain 1.5 times the volume of the largest tank, and an impermeable liner would be installed at the tank battery to protect soils and ground water.	Section V, Item K (2), page 19; Section X, Item D (21), page 41
23.	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
24.	BNP would cover, with netting or other covering, all open-topped tanks and/or secondary containments to effectively eliminate the likelihood of accidental deaths of migratory birds.	Section X, Item D (23), page 41
25.	BNP would plant native willow shrubs or trees around the production facility to minimize visual impacts to visitors. Plantings of native trees or shrubs would also provide and perpetuate valuable habitat for migratory birds.	Section X, Item D (24), page 41
26.	Production facility equipment and wellhead would be painted a neutral earth-tone color, approved by Superintendent, to blend with the natural environment.	Section X, Item D (25), page 41
27.	During production, the gauger would check the facilities daily for leaks, damage, corrosion, etc. and repair as needed. If leaks, damage, etc. were found, the gauger would report the status to Padre Island National Seashore staff upon leaving the site.	Section V, Item K (6)(c), page 20; Section X, Item D (26), page 41
28.	During production, the gauger would check supply gas pressure daily. A hi-lo pressure sensor would be installed at a strategic point in the flowstream to monitor the system pressure. Should system pressure go above or below the safe range of operating pressure set by a technician, the sensor would trip a relay that actuates the safety valve, shutting in the well.	Section V, Item K (7)(C), page 20; Section X, Item D (27), page 41
29.	Vegetation growth within the facility and along access road would be maintained using mowers and hand tools.	Section V, Item K (6) (g) , page 19; Section X, Item D (28), Page 41
30.	In accordance with the approved Hurricane Preparedness and Evacuation Plan, BNP will secure the well site in the event of a hurricane. If a hurricane or tropical storm is within	Section X, Item D (29) page 41

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
	540 miles or 36 hours of the operation site and the operation site is predicted to be in the severe weather area, BNP will fill the hold with drilling mud; set drill pipe slips safety clamps and safety valves 50 ' above the deepest casing string; lay down and secure drill pipe; close and lock pipe rams and annular BOP; secure loose tools, equipment and electrical connections; lower drilling derrick; close all valves in mud system; and place generators, SCR on oilfield truck floats and chain down. If the well is producing hydrocarbons, BNP will close the storm valve in the well or install backpressure valve in the tree, shut in all valves on tree, replace all hydrocarbons in storage tanks with water, and remove or secure all lose equipment and supplies.	
31.	BNP would have in place fire suppression equipment to prevent wildfires.	Section X, Item D (30), pages 41& 42
32.	During production, and as the reservoir depletes and compressors are placed at the central tank battery to maintain the gas production rates, all compressors would be equipped with hospital mufflers to reduce noise levels and oriented so that the exhaust faces away from prevailing wind direction (SE).	Section V, Item D (30), page 41; Section X, Item D (31), page 42
33.	BNP would maintain the 790-foot long access road by keeping it passable with a maintainer on an as-needed basis.	Section V, Item K (13), page 30; Section X, Item D (32), page 42
34.	Some soils and sands from outside Padre Island National Seashore on Padre Island may be hauled in to achieve pre-project contours or to restore any spill clean-up areas. Such soils and sands would be similar in character to pre-project soils and sands with regards to particle size, free of unacceptable contaminants, certified weed-free, and approved by the Superintendent prior to purchase/use.	Section X, Item D (33), page 42; Item E, Soils, page 44
35.	Source of water and annular injection: 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. Assuming BNP drills a usable water source well for the Lemon/Lemon Seed Unit wells, communication between the water well and well No 1-1008S in the event of a high-pressure gas kick is possible and would be a concern. Below is a comparison of the kick tolerances for surface casing setting depths of 1,750 feet and 2,230 feet. This is based on a formation pressure of 5200 psi (equivalent mud weight of 11.0 ppg) at a true vertical depth of 9,300 feet.	
36.	Signs would be posted at the entrance of the access road, on the tree, and on the tank battery giving operator name, lease name, well number, and Railroad Commission of Texas ID number. BNP would display a public information sign that would generally describe the management of oil and gas exploration within Padre Island National Seashore, and the important relationships between Padre Island National Seashore, the general public, and oil and gas exploration. Signs would be posted as necessary on the flowline showing operator name and telephone number. If the well is produced, signs would be posted at the entrance prohibiting public access and smoking and requiring safety equipment.	Section V, Item N (5 & 7), page 22; Section X, Item D (34), page 42

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
37.	If shut-in of the well occurred and drilling or production operations were suspended for 24 hours or more but less than 30 days, the drill pipe would be run in the hole to approximately 100 feet above the last casing depth. The pipe rams would be closed and locked, and at least one safety valve would be installed in the top of the drill pipe and closed.	Section V, Item N (3) (a), page 22; Section X, Item D (35), page 42
38.	If production operations should be suspended for 30 days or more, a back-pressure valve would be installed in the tree, the tree gate valves would be closed, and the valve handles would be removed.	Section V, Item N (4), page 22; Section X, Item D (36), page 42
39.	To prevent accumulation of oil and other materials deemed to be fire hazards, all flammable liquids (i.e. condensate, compressor oil, etc.) would be stored in steel or fiberglass tanks and contained inside the firewall or a berm at the central facility. All materials not necessary for the operation of the well would be removed. Any surplus or emergency materials or supply that need to be kept at the well site would be stored at the central facility in a locked storage shed or parts box. All containers would be labeled as to their contents.	Section V, Item N (8), page 22; Section X, Item D (37), page 42
40.	BNP has included a Contaminating or Toxic Substance Spill Control Plan in the Plan of Operations to describe actions to be performed in the event of an oil spill, brine spill, release of drilling fluids, blow-out or release of any toxic substance.	Section VI, pages 24-27, Section X, Item D (39), page 42
41.	Reclamation of the site would be initiated as soon as possible following completion of operations, and no later than six months unless the Regional Director authorizes a longer period of time. BNP would reduce the pad size following drilling operations as feasible for production operations. All imported fill materials used to construct the access road and pad would be loaded in dump trucks and hauled offsite for disposal or re-use, and the liner would be removed and hauled off for disposal.	Section VII, Items A, D page 28; Section X, Item D (39), page 42
42.	The well would be plugged in compliance with NPS standards (Federal Onshore Oil and Gas Order No. 2) and Texas Railroad Commission requirements.	Section V, Item L, pages 20-21; Section X, Item D (40), page 43
43.	Should Lemon/Lemon Seed Unit No. 1008S be plugged and abandoned as a dry hole, BNP shall test the plug set to isolate the surface casing shoe to ensure integrity. The plug would need to be tested by either tagging with the working pipe string, or pressuring to a minimum surface pressure of 1000 psi. A successful pressure test would be recorded on a chart (or equivalent) and have no more than a 10% drop during a 15-minute period.	
44.	After removal of the caliche, the pad and road areas would be re-contoured as near as possible to the original contour.	Section Vii, Item G, page 29; Section X, Item D (41), page 42
46.	All disturbed areas, including any rutting deeper than one inch, would be re-contoured and revegetated.	Section X, Item D (42), page 42
47.	Collection and sampling of soils and surface and ground water would be performed following NPS protocols (Exhibit D) prior to the start of construction, to establish baseline	Section VII, Item E, page 28;Section X, Item A (2), page 33, and Item D (43),

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
	conditions, and at the completion of operations, to determine if contaminating substances are present in concentrations that pose a threat to wildlife populations or human health, or would jeopardize reestablishment of native vegetation.	page 43
48.	Should contaminated soils be found, the contaminated soil would be excavated to clean soil and hauled to a state-approved off-site disposal facility where applicable. The excavation would be filled with clean native soil. If necessary, contaminated soils would be remediated on-site using Padre Island National Seashore -approved remediation methods.	Section VII, Item F, page 28; Section X, Item D (44), page 43
49.	After the pad and access road have been re-contoured and the soil has been prepared, previously harvested hay, baled from the proposed access road and pad area and containing native plant seeds, would be used to mulch the disturbed areas. If needed, additional hay for mulching and seed would be obtained by a commercial harvester approved by the NPS to prevent introduction of exotic plant species.	Section VII, Item H (2), page 29; Section X, Item D (45), page 43
50.	Herbicide application or hand-tool removal would be used to control exotic plant species in the reclamation area, as approved by the Superintendent.	Section VII, Item H (5), page 29; Section X, Item D (46), page 43
51.	Re-vegetation of the operations would be determined satisfactory when 70 percent coverage of targeted species is achieved.	Section VII, Item H (6), page 29; Section X, Item D (47), page 43
52.	The dune pass would be oriented south-east to north-west in order to reduce sand accumulation over the road during operations. During construction BNP would prevent unauthorized visitors from entering the access road either by installing a warning sign, installing a gate, or stationing a human monitor at the entrance. Once all drilling is complete, a gate would be installed across the entrance of the access road to keep unauthorized visitors out of the production facility.	Section V, Item O (4), page 23; Section X, Item D (48), page 43
53.	BNP would stabilize the dune pass side slopes as described in Section V.A., immediately after cutting and leveling.	Section V, Item A, page 8 Sect. X, Item D (49), p.43
54.	BNP would print a list of conduct and operating procedures while working within Padre Island National Seashore to be reviewed by all BNP related personnel before they begin working inside the park.	Section X, Item D (50), page 43
55.	During construction and drilling, BNP would utilize a dispatcher at a suitable site approved by Padre Island National Seashore (ie: Malaquite Parking lot, Gulf beach at the end of Park Road 22) to help regulate the flow of traffic up and down the beach. BNP representatives at the well site would be able to communicate with the dispatcher and would be able to report on existing conditions (ie: traffic, tides, etc.) further down the beach. The dispatcher would maintain logs of all personnel entering the project and would supply copies of the log to Park personnel at their request but a least weekly. The dispatcher would provide each driver a copy of BNP/Padre Island National Seashore requirements for traffic, environmental and public safety while in the park.	Section X, Item D (51), page 43
56.	After operations cease and all materials have been removed, BNP would install sand fencing parallel to the barrier dune	Section VII, Item G, page 29; Section X, Item D

No.	Mitigation Measures under Alternative B, Proposed, Plan of Operations as Submitted	Plan of Operations Reference
	ridge in order to encourage reformation over the dune pass.	(52), page 43
57.	For all releases to the ground of contaminating or toxic substances, BNP would promptly report the following initial information to Padre Island National Seashore: time of spill discovery, type of product spilled, location of spill, estimated spill volume, cause of spill, area covered; estimated rate or release if spill is ongoing; direction of spill movement; description of contaminated area; proximity to surface waters, roads or trails; weather conditions; steps being taken to remedy the situation; and initial response equipment required. For releases in excess of 5 barrels in the aggregate, BNP would provide a written report to Padre Island National Seashore within 10 working days of the incident. In addition to the information reported in the initial notification, the written report would include steps that would be or have been taken to prevent recurrence of the incident.	

Conditions of Approval: As per 36 CFR §9.48, approval of the Plan of Operations would be conditioned upon BNP tendering a performance bond to: (1) ensure timely and effective plugging of the well and reclamation of the operations area upon abandonment; and (2) guarantee rapid and effective response and cleanup of a spill. The regulations further state that the amount of the surety cannot exceed the sum of: (1) the cost of plugging the well and reclaiming the operations area; and (2) the liability amount estimated by the Superintendent required to effectively contain, cleanup, and minimize the damages resulting from the operation. The regulations limit the liability amount for the operation of a single well to $50,000. The regulations further limit the maximum overall bond for any entity to not exceed $200,000 for operations by a given operator within a unit of the National Park System.

The well plugging and surface reclamation costs listed in Section 1 of the Reclamation Plan total more than $200,000. Therefore, the NPS has set the performance bond for the Lemon/Lemon Seed Unit wells at $200,000. BNP already has on file with the park a bond specific to the Dunn-Murdock Well No. 1 plan of operations. As a condition of approving the Plan of Operations, the NPS would require BNP to modify the language of the bond to include the Lemon/Lemon Seed Unit operations

Damage to paved surfaces due to trucks carrying construction and drilling equipment will be assessed. BNP will be charged for the cost of repair of these surfaces because these roads were not constructed for heavy industrial equipment and loads. Typical repairs of this type include road resurfacing, site preparation, pack coat, and seal and chip. Price determined upon wear to the road.

2.3. Alternatives Considered but Dismissed from Further Analysis

During scoping, alternative locations were considered for siting the proposed well pad, access road, pipeline, and production facilities. For the reasons described below, these alternative locations were dismissed from further analysis.

Northern Alternative: A surface location approximately 1,500 feet north of the location presently proposed was considered. This northern alternative would require cutting and leveling higher, more established dune ridges for access than the proposed alternative. The northern

alternative may also have made hitting multiple bottom-hole locations less manageable. For these reasons the northern alternative was dismissed.

Southern Alternative: A location approximately 3,000 feet south of the proposed location was considered. This southern location alternative would bring about complications with hitting multiple bottom-hole targets. For this reason, the southern alternative was dismissed.

Gulf of Mexico Alternative: BNP also considered a location in the Gulf of Mexico. A surface location over the Gulf of Mexico would have increased the risk of spill and litter-related environmental impacts, and would have been more costly. A Gulf of Mexico location could have the potential for visual impacts to Gulf beach visitors. Bottom-hole locations for the wells would fall within the 2-mile setback from the Gulf beach. For these reasons, this alternative was dismissed.

Alternative Pipeline Location: An alternative pipeline route of approximately 15,900 feet to the south was staked from an existing pig station at Yarborough Pass. This alternative would be much more costly, and would impact more than 18 acres of uplands and almost 0.25 acres of wetlands. For these reasons, this alternative was dismissed.

Reclamation Plan. Due to the success of past reclamation projects using the same methods as the proposed plan, no other reclamation alternatives were seriously considered.

2.4. Environmentally Preferred Alternative

Section 101 of NEPA states that "...it is the continuing responsibility of the Federal Government to...(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life's amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources" [42 U.S.C. §4321 *et seq.* §101 (b)].

The environmentally preferred alternative for drilling and producing the Lemon/Lemon Seed Units is based on these national environmental policy goals. Under Alternative A, No Action, the well would not be drilled. Because there would be no oil and gas operations or subsequent impacts, Alternative A would provide the greatest protection of area and park resources and values. Alternative A meets all six of the criteria and is the environmentally preferred alternative.

BNP's Proposal, Alternative B, would have greater effects on the environment because of the drilling and production operations. Although mitigating measures would reduce effects to park resources and values, there would still be effects, and therefore this alternative would not meet the nation's environmental policy goals as well as the No Action Alternative.

However, because the enabling legislation of Padre Island National Seashore honors existing nonfederal oil and gas rights, the environmentally preferred alternative was not selected as the proposed action.

Table 4. Extent that Each Alternative Meets Objectives

Objectives	Does Alternative A: No Action Meet Objective?	Does Alternative B: (Proposed) Plan of Operations as Submitted Meet Objective?
Provide BNP Petroleum Corporation, as a holder of nonfederal oil and gas mineral interests, reasonable access for exploration and development,	**No (-)** The wells would not be permitted to be drilled, precluding BNP Petroleum Corporation reasonable access to develop its nonfederal oil and gas mineral interests.	**Yes (+)** The wells would be permitted to be drilled and produced, with the application of mitigation measures to meet other objectives.
Avoid or minimize impacts on park resources and values, visitor use and experience, and human health and safety,	**Yes (++)** Without drilling the wells, there would be no impacts.	**Yes (+)** Mitigation measures would avoid and minimize impacts.
Prevent impairment of park resources and values.	**Yes(++)** Without drilling the wells, there would be no potential for park resources and values to be impaired.	**Yes (+)** Mitigation measures would result in no impairment of park resources and values.

[1]No Action is required under NEPA to describe baseline conditions. It is acceptable for the No Action Alternative to not meet all of the planning objectives.

Table 5. Comparative Summary of Alternatives

Actions	Alternative A: No Action	Alternative B: (Proposed) Plan of Operations as Submitted
Access	Access road would not be constructed.	BNP related traffic would utilize Park Road 22 along with approximately 12.5 miles of Gulf Beach. BNP would construct a 790' x 20' access road through the foredunes to the well pad.
Surface Location Well Pad	Well pad would not be constructed.	BNP would construct an 136,603 square-foot drill site on uplands using conventional foundation construction techniques. Berms would be constructed around the perimeter and around the diesel tanks. All equipment, machinery and living quarters would be placed on the pad.
Production Facility	Production facility would not be constructed.	It the well proved to be productive, BNP would place a production facility on the well

Actions	Alternative A: No Action	Alternative B: (Proposed) Plan of Operations as Submitted
		pad. Therefore, no additional impacts would occur to previously undisturbed habitats.
Pipeline	Pipeline would not be constructed.	BNP proposes to construct a 3,280 linear feet route through uplands to the existing Duke Energy pipeline (inactive) or 4,300 linear feet upland route, in which 55.3 linear feet crosses an emergent wetland. Both are located west of the drill site.
Reclamation Plan	No reclamation plan would be needed because the well would not be drilled.	BNP would remove all foreign materials from the park. All surface disturbances would be re-contoured as near as possible to the original contour. The ground would be fertilized and mulched with native hay. The mulch would be disked into the ground. Hand tools or herbicides would control undesirable species. The restored area would be monitored until 70% native vegetation cover was achieved. Sand fencing would be installed across the dune pass to aid foredune re-establishment.

Table 6. Comparative Summary of Impacts

Impact Topic	Alternative A: No Action	Alternative B: (Proposed) Plan of Operations, As Submitted
Nonfederal Oil and Gas Development	Lemon/Lemon Seed Unit wells would not be drilled or developed, resulting in a negligible adverse impact on domestic energy supplies, and a moderate to major adverse impact on BNP due to uncertainty about future exploration and development.	Lemon/Lemon Seed Unit wells would be drilled and developed, resulting in a negligible beneficial impact on domestic energy supplies, and a minor adverse impact on BNP due to costs and time invested in preparing the Plan of Operations and contracting the preparation of a draft Environmental Assessment. Should the wells not be placed into production, this could result in major adverse impacts on BNP.

Impact Topic	Alternative A: No Action	Alternative B: (Proposed) Plan of Operations, As Submitted
Air Quality	Lemon/Lemon Seed Unit wells would not be drilled; however, continuing use of beach road, would result in localized and intermittent, negligible adverse impacts on air quality over the long-term. Cumulative adverse impacts on air quality in the park is expected to be negligible to minor, and within federal standards. No impairment to air quality would result from implementation of this alternative.	Construction and maintenance of the access road, well/production pad, and pipeline, and drilling and production of the well would result in localized, short- to long-term, negligible to minor, adverse impacts on air quality. Cumulative impacts on air quality would be localized, negligible to minor; adverse impacts near point sources, within federal standards. No impairment to air quality would result from implementation of this alternative.
Geology and Soils	Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on geology and soils, and no new impacts would occur. Cumulative impacts on geology and soils throughout the park would be short-to long-term, minor adverse impacts in the localized areas around existing park or oil and gas developments. No impairment to geology and soils would result from implementation of this alternative.	Construction and maintenance of the access road, well /production pad (3.6 acres), and pipeline (4.945 acres), and drilling and production of the well would result in localized and long-term, minor adverse impacts on soils. The access road would include a 9,000 square foot area of barrier foredunes. Cumulative impact on geology and soils throughout the park would be negligible to minor adverse impacts, localized around park and oil and gas developments. No impairment to geology and soils would result from implementation of this alternative.
Water Resources and Floodplains	Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on water resources and floodplains, and no new impacts would occur. Cumulative impacts on water resources and floodplains throughout the park would be short-to long-term, minor adverse impacts in the localized areas around existing park or oil and gas developments. No impairment to water resources and floodplains would result from implementation of this alternative.	Construction and maintenance of the access road, well/production pad, and pipeline, and drilling and production of the well would result in localized, short- to long-term, minor adverse impacts on water resources and floodplains. Cumulative impacts on water resources and floodplains would be short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments. No impairment to water resources and floodplains would result from implementation of this alternative.
Wetlands	Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts. Cumulative impacts on wetlands throughout the park would be short-to long-term, minor adverse impacts in the localized areas around existing park or oil and gas developments. No impairment to vegetation would result from	Construction of a pipeline (4.936 acres) from the well(s) to an existing pipeline would result in localized, short-to long-term, minor adverse impacts to wetlands (0.032 acres). Cumulative impacts on wetlands throughout the park would be short-to long-term, minor adverse impacts in localized areas around park or oil and gas developments. No impairment to

Impact Topic	Alternative A: No Action	Alternative B: (Proposed) Plan of Operations, As Submitted
	implementation of this alternative.	wetlands would result from implementation of this alternative.
Vegetation	Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on vegetation, and no new impacts would occur. Cumulative impacts on vegetation throughout the park would be short-to long-term, minor adverse impacts in the localized areas around existing park or oil and gas developments. No impairment to vegetation would result from implementation of this alternative.	Construction and maintenance of the access road, well /production pad (3.6 acres), and pipeline (4.945 acres), and drilling and production of the well would result in localized, short- to long-term, minor adverse impacts on vegetation. Cumulative impacts would be short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments. No impairment to vegetation would result from implementation of this alternative.
Natural Soundscapes	Lemon/Lemon Seed Unit wells would not be drilled; however, continuing visitor use of the Gulf beach as a road, would result in localized and long-term, negligible adverse impacts on the natural soundscape. Cumulative impacts would be short-to long-term, minor to moderate, adverse impacts on the park's natural soundscape localized around existing park and oil and gas developments, and visitor use areas. No impairment to natural soundscapes would result from implementation of this alternative.	Construction and maintenance of the access road, well/production pad, and pipeline, and drilling and production of the well would result in localized, short- to long-term, minor, adverse impacts on the natural soundscape. Cumulative impacts would be similar to those described under No Action; with localized, short- to long-term, minor to moderate, adverse impacts on the park's natural soundscapes, localized around park and existing oil and gas developments, and visitor use areas. No impairment to natural soundscapes would result from implementation of this alternative.
Wildlife	Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on wildlife, and no new impacts would occur. Cumulative impacts on wildlife throughout the park would be short-to long-term, minor adverse impacts in the localized areas around existing park or oil and gas developments. No impairment to wildlife would result from implementation of this alternative.	Construction and maintenance of the access road, well /production pad (3.6 acres), and pipeline (4.945 acres), and drilling and production of the well would result in localized, short- to long-term, minor adverse impacts on wildlife. Cumulative impacts would be similar to those described under No Action; with short- to long-term, minor adverse impacts on wildlife in localized areas around park and oil and gas developments. No impairment to wildlife would result from implementation of this alternative.
Visitor Use and Experience	Lemon/Lemon Seed Unit wells would not be drilled. There should be no impacts on visitor use and experience. Cumulative short- to long-term, minor to moderate adverse impacts on visitor use and experience would be localized around existing and future developments	Construction and maintenance of the access road, and well/production pad, would result in the direct loss of 3.6 acres of hummocky uplands. Pipeline construction would disturb an additional 4.936 acres of hummocky uplands, of which 0.032 acres are emergent wetlands. If the wells were

Impact Topic	Alternative A: No Action	Alternative B: (Proposed) Plan of Operations, As Submitted
	throughout the park.	placed in production, the total pad/production and road areas of disturbance would be reduced to approximately 2.1 acres, which would be inaccessible for visitor use during the life of the well for up to 20 years. However, if the wells were unproductive, the area would be reclaimed and returned to visitor use over the short-term. These activities would result in localized, short- to long-term, minor to moderate, adverse impacts on visitor use and experience. Cumulative impacts would result in short- to long-term, minor to moderate adverse impacts on visitor use and experience in localized areas around existing and future developments throughout the park. No impairment to visitor use and experience would result from implementation of this alternative.

3.0. ENVIRONMENTAL CONSEQUENCES

This section describes direct, indirect, and cumulative impacts under the two alternatives. Impacts are described in terms of context, duration, and intensity. The context or extent of the impact may be localized or widespread. The duration of impacts could be **short-term**, ranging from weeks to three years in duration, or **long-term**, extending up to 20 years or longer. Generally, short-term impacts would apply to construction activities and long-term impacts would apply to roads, production operations, and pipelines. The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. Where the intensity of an impact can be described quantitatively, the numerical data are presented. However, most impact analyses are qualitative.

The impact analyses are organized by impact topic. Under each impact topic, the affected environment is described, impacts under each alternative is given, a cumulative impact analysis is provided (analysis area is parkwide), and a conclusion is stated. The conclusion section summarizes all major findings, including whether or not an impairment of resources or values is likely or would occur. Impairment analyses are only performed for park resources and values.

Intensity of impacts are defined as follows:

- **Negligible** – at lower levels of detection
- **Minor** – detectable, but slight
- **Moderate** – readily apparent environmental or economic effects with the potential to become major
- **Major** – severely adverse or exceptionally beneficial impacts

3.1. Impacts on Nonfederal Oil and Gas Development

Affected Environment

Oil and gas exploration and production have been actively pursued on Padre Island since the early 1950's. A total of 72 operations have occurred within the park. Currently, there are five natural gas wells, one saltwater well, and six pipelines in operation. BNP has recently been permitted for Dunn-Murdock No.1 well (gas) and a temporary water well at their Yarbrough Pass site. Direct surface disturbances associated with oil and gas operations affect approximately 413.2 acres. A reasonable foreseeable development (RFD) scenario was developed by the NPS based on an assessment by the U.S. Geological Survey of remaining hydrocarbons beneath Padre Island National Seashore (DOI 2000). The RFD provides a reasonable assumption of future development. The RFD projects that initially 3-D seismic surveys would be conducted over the entire island, followed by drilling and production of up to 18 wells. For this level of exploration and development, the RFD scenario projected the potential for 748 acres of the island to be directly impacted by 3-D seismic surveys, and that 249 acres would be directly impacted by construction of roads and well/production pads and pipelines, for a total future development scenario of 998 acres or 0.77 percent of the park.

Impacts of Alternative A, No Action, on Nonfederal Oil and Gas Development

Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, and BNP's projected production of up to 250 BCF of petroleum resources would not be produced at this location. This would result in a negligible adverse impact on domestic energy supplies and a moderate to major adverse impact on BNP due to lost revenues invested in collecting data, preparing a Plan of Operations, contracting the preparation of a draft EA, and not being permitted to develop its private mineral interests at this location.

Cumulative Impacts

Under Alternative A, No Action, the result of two exploratory wells not taking place out of the 18 anticipated under the NPS RFD scenario would result in minor adverse impacts on nonfederal oil and gas development within the park. However, by not drilling the Lemon/Lemon Seed Unit causes BNP not to proceed with additional exploration and development within Padre Island National Seashore as projected under the NPS RFD scenario, the severity of impacts on BNP's ability to develop its private mineral interests would be a moderate to major adverse impact.

Conclusion

Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled or developed, resulting in a negligible adverse impact on domestic energy supplies, and a moderate to major adverse impact on BNP due to uncertainty about future exploration and development.

Impacts of Alternative B, Proposal (Preferred Alternative) on Nonfederal Oil and Gas Development

Under Alternative B, Proposed Action, the Lemon/Lemon Seed Unit wells would be drilled, and if placed in production, up to 250 BCF of petroleum resources would be produced, resulting in a negligible beneficial impact on the nation's domestic energy supplies. Costs and time BNP has invested to contract the preparation of the Plan of Operations and for the drafting the Ea, and to drill the wells with the mitigation measures would result in minor adverse impacts. Should the wells not be placed in production, this could result in moderate to major adverse impacts on BNP.

Cumulative Impacts
Under Alternative B, Proposed Action, should additional exploration and development wells anticipated under the NPS RFD scenario be developed, production of petroleum resources underlying Padre Island National Seashore would increase available petroleum products to the domestic energy supplies, resulting in a minor beneficial impact. BNP's investment in preparing plans of operations and contracting the preparation of the EA would be a minor adverse impact.

Conclusion
Under Alternative B, Proposed Action, the Lemon/Lemon Seed Unit wells leads to full development of nonfederal oil and gas resources underlying the park, there could be a cumulative, minor beneficial impact on the nation's domestic energy supplies. The costs and time to prepare a plan of operations and draft an EA, and drill the wells with NPS required mitigation would result in a minor adverse impact on BNP; but if the wells are not placed in production, there could be moderate to major adverse impacts on BNP.

3.2. Impacts on Air Quality

Affected Environment
According to the TNRCC and the Final Oil and Gas Management Plan/Environmental Impact Statement (DOI 2000), Kenedy County continues to be an attainment area for regulated pollutants. Prevailing southeast winds from March through September and north-northeasterly winds from October through February are likely to dissipate any pollutants in the park (DOI 2000). Padre Island National Seashore is designated as a Class II air shed by the State of Texas, as authorized by the Prevention of Significant Deterioration provisions of the Clean Air Act. The park's air quality is protected by allowing limited increases over baseline concentrations of sulfur dioxide, nitrogen oxides, and particulate matter (DOI 2000).

Impacts of Alternative A, No Action, on Air Quality
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled; therefore, there would be no impacts on air quality.

Cumulative Impacts
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. Continuing visitor use of the Gulf beach as a road, would contribute to cumulative impacts on air quality. Additional air quality impacts throughout the park would be caused by the use of vehicles and combustion engines associated with the continuing operation of 13 oil and gas wells and pipelines, visitor vehicular traffic and recreational activities, and limited prescribed fire activities conducted by the park. Future oil and gas operations projected under the NPS RFD scenario would contribute to air quality impacts, but it is anticipated that as some operations are undertaken others would be abandoned and reclaimed. As a result, cumulative impacts on air quality in the park is expected to be negligible to minor adverse impacts, localized around point sources, and within state and federal standards.

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, resulting in no impacts on air quality. Cumulative adverse impacts on air quality in the park are expected to be negligible to minor and within federal standards. No impairment to air quality would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Air Quality
Under Alternative B, Proposed Action, construction of the access road, well/production pad and pipeline would result in localized and short-term, negligible increased emissions of particulate

matter from ground-disturbing activities, importing and compacting caliche base materials, and vehicle exhaust. Emissions of particulate matter, nitrogen oxides, carbon monoxide, carbon dioxide, and sulfur dioxide would be greatest during the short-term drilling operations due to increased use of vehicles and large gasoline and diesel engines used to power the drill rig, pumps, and auxiliary equipment. These emissions during the drilling phase of operations would result in localized and short-term, negligible to minor adverse impacts on air quality.

Air quality impacts during the long-term production phase of operations, for 20 years or longer, would be similar to those during drilling but at reduced levels, resulting in localized and long-term, negligible adverse impacts on air quality.

Cumulative Impacts
Under Alternative B, Proposed Action, impacts would be similar to those described under No Action, resulting in localized, negligible to minor, adverse impacts near point source locations throughout the park, within state and federal standards.

Conclusion
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, and pipeline, and drilling and production of the wells would result in localized, short- to long-term, negligible to minor, adverse impacts on air quality. Cumulative impacts on air quality would be localized, negligible to minor; adverse impacts near point sources, within federal standards. No impairment to air quality would result from the implementation of this alternative.

3.3. Impacts on Geology and Soils

Affected Environment
Padre Island consists of Pleistocene and Holocene sands, silts, clays, and shell fragments, which were transported by wind and water (NPS 2001). According to the U.S. Department of Agriculture (1965), soil pH generally ranges from 5.5 to 8.0, with higher pH occurrences nearer the Gulf side of the island. Soils are comprised of the Galveston and Mustang series. To establish baseline conditions, BNP would sample soils immediately prior to the start of construction. Soils would be collected and tested according to the sampling protocol prescribed by the NPS.

Impacts of Alternative A, No Action, on Geology and Soils
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on geology and soils, and no new impacts would occur.

Cumulative Impacts
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, and there would be no contribution towards cumulative impacts to geology and soils in the park. Cumulative impacts on soils throughout the park are the result of direct impacts on 413.2 acres from existing oil and gas wells, production facilities, and pipelines; future exploration and development of 18 wells projected under the NPS RFD scenario that could directly impact up to 998 acres; and existing park developments on 391 acres. Clean-up activities at several existing and abandoned oil and gas sites are proceeding to remove or remediate hydrocarbon and heavy metal contamination. Additional incidents of leaks and spills of hydrocarbons and contaminating or hazardous substances could occur in the future. The cumulative effects of existing and potential impacts on park soils result in short- to long-term, negligible to minor adverse impacts within localized areas around park or oil and gas developments.

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit would not be drilled. The proposed project area is undisturbed; there are no existing impacts on geology and soils, and no new impacts would occur. Cumulative impacts on soils throughout the park would range from negligible to minor adverse impacts, localized around park or oil and gas developments. No impairment to soils would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Geology and Soils
Under Alternative B, Proposed Action, construction of the access road, and well/production pad would result in direct impacts on 3.6 acres of undisturbed soils. The foredune terminus of the new road (00.207 acres) would have a southeast northwest orientation over the dunes. The elevation of the pass over the dunes would be left as high as feasible to allow for long industrial type vehicles to travel and still prevent "water funneling" through the dunes in the event of extremely high tides. Stabilization and revegetation of the dune pass would be initiated immediately after construction. Protecting the foredunes from adverse impacts is extremely important because they provide primary protection for the mainland in the event of a hurricane by reducing the severity of a storm surge. Pipeline construction would disturb and additional 4.936 acres of hummocky uplands, of which 0.032 acres are emergent wetlands. If the wells were placed in production, the total pad/production area of disturbance would be reduced to approximately 2.1 acres

With the application of mitigation measures, particularly importing caliche to build the well pad and road, and use of primary and secondary containment to contain any leaks or spills of hydrocarbons and contaminating or hazardous materials from escaping into the environment, the construction, drilling and production operations would result in localized, short-to long-term, minor adverse impacts on geology and soils.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts would be greater than those described under No Action, but are negligible to minor adverse impacts, and are localized around park and oil and gas developments.

Conclusion
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, and pipeline, and drilling and production of the well would result in localized and long-term, minor adverse impacts on geology and soils. Cumulative impact on geology and soils throughout the park would be negligible to minor adverse impacts, localized around park and oil and gas developments. No impairment to geology and soils would result from implementation of this alternative.

3.4. Impacts on Water Resources and Floodplains

Affected Environment
The proposed project is located on foredunes and hummocky uplands. No streams are present in the project vicinity. Drainage from rainfall events tends to accumulate in lower-lying areas before seeping into the ground water, draining to the Laguna Madre tidal flats, or evaporating. Ground water at the site is approximately 2 to 5 feet deep, depending upon the season.

According to the Final Oil and Gas Management Plan/Environmental Impact Statement (DOI 2000), and Federal Emergency Management Agency floodplain maps, most of the park and all

of the project area lies within the 100-year floodplain. The exception is higher dune areas. The hurricane season begins June 1 and continues through November 30.

Impacts of Alternative A, No Action, on Water Resources and Floodplains
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on water resources and floodplains, and no impacts would occur.

Cumulative Impacts
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, and there would be no contribution towards cumulative impacts on water resources and floodplains. Cumulative impacts on the park's water resources and floodplains are the result of direct impacts on 413.2 acres from existing oil and gas wells, production facilities, and pipelines; future exploration and development of 18 wells projected under the NPS RFD scenario that could directly impact up to 998 acres; and existing park developments on 391 acres. Because the entire park is located within 100-year floodplain, with the exception of the foredunes, there is no practical alternative to sitting in the 100-year floodplain. Clean-up activities at several existing and abandoned oil and gas sites are proceeding to remove or remediate hydrocarbon and heavy metal contamination. Additional incidents of leaks and spills of hydrocarbons and contaminating or hazardous substances could occur in the future. Cumulative impacts on park water resources and floodplains would be short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments.

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on water resources and floodplains, and no new impacts would occur. Cumulative impacts on water resources and floodplains throughout the park would be short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments. No impairment to water resources and floodplains would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Water Resources and Floodplains
Under Alternative B, Proposed Action, there is no practical alternative to siting the proposed access road, well/production pad and pipeline within the 100-year floodplain because the entire park, with the exception of the foredunes, is located within floodplains.

The proposed temporary water well and use of approximately 1,302,000 gallons of water needed for drilling both wells would not adversely affect park wetlands or other park resources. However, by locating the proposed operations on hummocky uplands and applying mitigation measures, such as installing culverts along the access road where needed, collecting sewage and hauling it off-site for disposal, and constructing a berm around the drilling equipment area and well/production pad to provide primary and secondary spill containment and prevent releasing any leaked or spilled hydrocarbons and contaminating or hazardous substances off the operations pad into the environment, impacts would be reduced. As a result of applying these and other mitigation measures, construction, drilling and production operations would result in localized, short- to long-term, minor adverse impacts on water resources and floodplains.

Assuming BNP drills a usable water source well for the Lemon/Lemon Seed wells, communication between the water well and Well No.1-1008S in the event of a high-pressure gas kick is possible and would be a concern. Below is a comparison of the kick tolerances for

surface casing setting depths of 1750 feet and 2230 feet. This is based on a formation pressure of 5200 psi (equivalent mud weight of 11.0 ppg) at a true vertical depth of 9200 feet.

Depth	Fracture Gradient, ppg	Kick Tolerance,ppg	Kick Tolerance, psi
1750 feet	12.8	1.8	164
2230 feet	13.0	2.0	232

The benefit gained by setting deeper surface casing is minimal. However, the increased separation between the casing shoe and the total depth of the water well may reduce the risk of communication with the water well. The surface casing would be set at 2200 feet.

There is no assurance that drilling a water well for this operation would be successful. Sun had plugged back their Dunn McCampbell #1A well to a water well with perforations in the Goliad sand from 1530 feet to 1560 feet. No information regarding fresh water production rates has been found. American Exploration plugged this well in 1994. The Laguna Madre #1 near Yarborough Pass was also used as a water source well according to the TNRCC but no information regarding its' production is available. If drilling a water source well were successfully drilled at the Dunn-Murdock location, a similar well would be drilled at the Lemon/Lemon Seed Location. If a water source well cannot be made, the water used for drilling would have to be obtained from the fire hydrant at the south end of Park Road 22 and hauled to the wellsite. At 1300 bbls 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.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts on water resources and floodplains would be similar to those described under No Action, with short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments.

Conclusion
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, pipeline, and drilling and production of the well would result in localized, short- to long-term, minor adverse impacts on water resources and floodplains. Cumulative impacts on water resources and floodplains would be similar to those described under No Action; with short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments. No impairment to water resources and floodplains would result from implementation of this alternative.

3.5. Impacts on Wetlands

Affected Environment
On August 24, 2001, BEI, under contract by BNP, and Frontier Surveying Co. performed a site visit and the wetland determination of the proposed analysis area. BEI personnel performed another site visit on September 6, 2001, to verify the lack of hydrology and hydric soils along the proposed pipeline route after Padre Island National Seashore had received the majority of it's 7.46 inches of rain in August, 2001. Based on a site survey performed by BEI, the proposed pad site, operations area, and access road are located in uplands: therefore, a U.S. Army Corps of Engineers Section 404 permit would not be needed for these areas of the proposed operations. There are emergent wetlands located along a 55.3-foot section of the pipeline corridor near the AEP's pipeline tie-in point. Wetlands totaling 2,765 square feet (0.0636 acres) would be directly impacted by construction and maintenance of this segment of pipeline. To minimize the impacts, the 50 foot wide construction corridor for the pipeline would be reduced to 25 foot in the wetland, resulting in a reduction of impacts to 1,382.5 square feet

(0.032 acres). The NPS adheres to the administration's "no-net loss" principle for wetlands protection. The adversely impacted area represents less then one tenth of an acre, therefore compensation for the disturbed wetland is not required.



View of wetland area, AEP pipeline marked in the distance

Impacts of Alternative A, No Action, on Wetlands
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; and there are no existing impacts on wetlands.

Cumulative Impacts
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, and there would be no contribution towards cumulative impacts on wetlands

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on wetlands, and no new impacts would occur. Cumulative impacts on wetlands throughout the park would be short-to long-term, minor adverse impacts in the localized areas around park or oil and gas developments. No impairment to wetlands would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Wetlands
Under Alternative B, Proposed Action, construction of a pipeline from the well(s) to an existing pipeline for delivery of product, there would be localized short to long-term, minor adverse impacts on 2,765 square feet of emergent wetlands. To minimize the impacts, the 50 foot wide construction corridor for the pipeline would be reduced to 25 foot in the wetland, resulting in a reduction of impacts to 1,382.5 square feet (0.032 acres).

The procedure that would be 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 would 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 an approved disposal site.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts are minor adverse impacts and localized around the oil and gas development.

Conclusion
Under Alternative B, Proposed Action, construction of a pipeline from the well pad to an existing pipeline for delivery of product, would result in localized short to long-term, minor adverse impacts on wetlands. Cumulative impact on wetlands throughout the park would be negligible to minor adverse impacts, localized around park and oil and gas developments. No impairment to wetlands would result from implementation of this alternative.

3.6. Impacts on Vegetation

Affected Environment
Drawe (1992) provides a detailed characterization of species composition and abundance in the various vegetation types on Padre Island. He found 140 species of plants, including 27 grasses, 92 forbs, 3 cacti, 3 wood species, and 15 other species.

The area in the vicinity (i.e. within 1,000 feet) of the proposed operations area is comprised of a diverse group of habitats. Higher elevations near the Gulf beach were made up of two rows of foredunes adjacent to the Gulf beach and high dune fields with scattered upland swales. The two rows of fordunes were typically dominated by silver-leaf croton gulf croton (*Croton punctatus*), beach morning-glory (*Ipomea imperati*), goatfoot morning-glory (*Ipomea pre-caprae*), camphorweed (*Heterotheca subaxillaris*), prairie clover (*Dalea sp.*), western ragweed (*Ambrosia psilostachya*), and seaoats (*Uniola paniculata*) with associated species. The foredunes typically have a vegetation coverage of 60%-90%.

The high dune fields were generally dominated by camphorweed, prairie clover, seaoats, seacoast bluestem (*Schizachyrium littorale*), western ragweed, with some tropic croton (*Croton glandulosus* var. *lindheimeri*). The area in the vicinity of the proposed work is comprised of a diverse group of habitats. The majority of the work area is comprised of hummocky uplands. Hummocky uplands are typically dominated by gulfdune paspalum (*Paspalum monostachyum*), and seacoast bluestem. Slim-leaf panicum (*Dichanthelium linearifolium*) tends to dominate the lower areas. Other species inhabiting the hummocky uplands include bulrush (*Schoenoplectus pungens* var. *pungens*), seaside (Marsh) large leaf pennywort (*Hydrocotyle bonariensis*), blue mist flower (*Conoclinium coelestinum*), narrow-leaf sumpweed (*Iva angustifolia*), bushy bluestem (*Andropogon glomeratus*), pairie clover, partridge pea (*Chamaecrista fasciculate* var. *fasiculata*), camphorweed, and American snoutbean (*Rhynchosia americana*). High hummock ridges are generally comprised of prairie clover, partridge pea, gulfdune paspalum, and camphorweed, with Eastern prickly pear (*Optunia ficus-indica*), seaoats, white-stem wild indigo (*Baptisia bracteata* var. *leucophaea*), and narrow-leaf sumpweed. High hummock ridges are typically 75%-90% covered with vegetation.

Lower lying areas are comprised of transitional areas and sparsely vegetated to unvegetated sand flats. The transitional areas are typically dominated by marshhay cordgrass (*Spartina patens*), bulrush, and gulfdune paspalum, with sea ox-eye daisy (*Borrichia frutescens*), narrow-leaf sumpweed, bushy bluestem, sea lavender (*Limonium carolinianum*), blue mist flower, largeleaf pennywort, frog fruit (*Phyla nodiflora*), and slim-leaf dichanthelium. Transitional areas are usually 60%-85% covered with vegetation. The sparsely vegetated to unvegetated sand flats are dominated by marshhay cordgrass and sea oxeye daisy. Vegetation coverage ranges from 0%-60%. These flats are non-tidal. Drawe (1992) provides a detailed characterization of species composition and abundance in the various vegetation types on Padre Island. There are

no state or federally listed threatened or endangered plant species known to occur in the project area (NPS 2001).

Impacts of Alternative A, No Action, on Vegetation

Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on vegetation, and no impacts would occur.

Cumulative Impacts

Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, and there would be no contribution towards cumulative impacts on vegetation. Cumulative impacts on vegetation are the result of direct impacts on 413.2 acres from existing oil and gas wells, production facilities, and pipelines; future exploration and development of 18 wells projected under the NPS RFD scenario that could directly impact up to 998 acres; and existing park developments on 391 acres. Clean-up activities at several existing and abandoned oil and gas sites are proceeding to remove or remediate hydrocarbon and heavy metal contamination. Additional incidents of leaks and spills of hydrocarbons and contaminating or hazardous substances could occur in the future. The cumulative effects of existing and potential impacts on park vegetation would result in short- to long-term, minor adverse impacts on up to 1,800 acres (1.5% of the park) in localized areas around park or oil and gas developments.

Conclusion

Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on vegetation, and no new impacts would occur. Cumulative impacts on vegetation throughout the park would be short- to long-term, minor adverse impacts in the localized areas around park oil and gas developments. No impairment to vegetation would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Vegetation

Under Alternative B, Proposed Action, construction and maintenance of the access road and well/production pad would result in the direct loss of approximately 158,403 square feet (3.6 acres) of hummocky uplands vegetation. Pipeline construction would disturb an additional 4.936 acres of hummocky uplands, of which 0.032 acres are emergent wetlands. If the wells were placed in production, the total pad/production area of disturbance would be reduced to approximately 2.1 acres, which would be inaccessible for visitor use during the life of the well for up to 20 years. Indirect impacts to adjacent vegetation communities could result from leaks and spills of hydrocarbons and contaminating and hazardous substances. However, the application of mitigation measures, including the application of primary and secondary spill containment to prevent the release of any leaked or spilled hydrocarbons and contaminating or hazardous substances into the adjacent vegetation communities, preventing the introduction of exotic plant species, and careful use of NPS-approved herbicides would result in localized, short- to long-term, minor adverse impacts on vegetation.

Cumulative Impacts

Under Alternative B, Proposed Action, cumulative impacts on vegetation would be localized, short- to long-term, minor adverse impacts in the localized areas around park or oil and gas developments.

Conclusion

Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, pipeline, and drilling and production of the well would result in localized,

short- to long-term, minor adverse impacts on vegetation in the localized areas around park or oil and gas developments. No impairment to vegetation would result from implementation of this alternative.

3.7. Impacts on Natural Soundscapes

Affected Environment
The natural quiet of Padre Island National Seashore contributes heavily to a positive visitor experience. Surveys in 1987 (Ditton and Gramann) and 1989 (Gramann and Ruddell) examined visitor motive for coming to Padre Island. The top motives include "to get away," "be outdoors," and "for rest and relaxation." In 1998, the NPS contracted Dr. Jim Foch of Livermore Laboratory to record background sound measurements at various locations in the park. A useful measure of background sounds is the sound level observed 90 percent of the time, abbreviated L90. Although measurements were not recorded at this exact location, the relatively constant sound level of the surf (about 62 dBA at 60 yards from the water), means that background levels can be estimated anywhere on the island. The L90 levels inland fall off in a systematic manner with distance from the surf (Foch, 1998).

Impacts of Alternative A, No Action, on Natural Soundscapes
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. Continuing visitor use of the Gulf beach, as a road would result in localized and long-term, intermittent increase in noise levels, resulting in negligible adverse impacts on the natural soundscape.

Under Alternative A, No Action, Lemon/Lemon Seed Unit would not be drilled. Continuing visitor use of the Gulf beach, as a road would result in localized and long-term, intermittent increase in noise levels, resulting in negligible adverse impacts on the natural soundscape. Other sources throughout the park would include operation and maintenance of 13 existing oil and gas wells, production facilities, and pipelines, future exploration and development of 18 wells projected under the NPS RFD scenario, park operations, and visitor uses. Impacts are expected to be localized within 1,500 feet of the source, and result in short- to long-term cumulative, minor to moderate, adverse impacts on the park's natural soundscape.

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled; however, resulting in no impacts on natural soundscapes. Cumulative impacts would be short- to long-term, minor to moderate, adverse impacts on the park's natural soundscape localized around park and oil and gas developments, and visitor use areas. No impairment to natural soundscapes would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Natural Soundscapes
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad would result in elevated noise in the vicinity of the proposed 3.6 acre Lemon/Lemon Seed Unit wells location. If the wells were placed in production, a pipeline would be constructed to tie-in to an existing pipeline for product delivery. During the construction of a 4300 linear foot (4.945 acres) pipeline there would be a temporary elevation of noise.

However, the use of a diesel electric drilling rig would substantially reduce noise levels from drilling operations. In addition, during production, and as the reservoir depletes and compressors are placed at the central tank battery to maintain the gas production rates, all compressors would be equipped with hospital mufflers to reduce noise levels and oriented so that exhaust faces away from prevailing wind direction (SE). As a result of these mitigation

measures, adverse impacts on the natural soundscape would be substantially reduced, resulting in localized, short- to long-term minor impacts.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts would result in localized and short- to long-term, minor to moderate, adverse impacts on the park's natural soundscape.

Conclusion
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, and pipeline; and drilling and production of the well would result in localized, short- to long-term, minor, adverse impacts on the natural soundscape. Cumulative impacts would be similar to those described under No Action; with short- to long-term, minor to moderate, adverse impacts on the park's natural soundscape localized around park and oil and gas developments, and visitor use areas. No impairment to natural soundscapes would result from implementation of this alternative.

3.8. Impacts on Wildlife

Affected Environment
During BEI's August 24 and September 6, 2001, field investigations, personnel made notes of wildlife observed in the area of the proposed access road and well pad. The only species observed were the Mourning Dove (*Zenaida macroura*), coyote (*Canis latrans*), Northern Bobwhite Quail (*Colinus virginianus*), Black-tailed jackrabbit (*Lepus californicus*) and white-tailed deer (*Odocoileus virginianus*). The diverse vegetation offers feeding opportunities for a wide variety of birds and other wildlife.

Birds. Continental Shelf Associates (CSA), Inc. (1985), Chapman (1981, 1988), Brown and Huey (1991) and U.S. Department of the Interior (2000), provide data and discussions of the wildlife utilization of the project area. Ecoservices (1993) surveyed bird activity south of the project site from July 1992 through April 1993. A total of 281,045 birds of 97 species were identified and counted. Important species included the Brown Pelican (*Pelecanus occidentalis*), Piping Plover (*Charadrius melodus*), Snowy Plover (*C. alexandrinus*), Peregrine Falcon (*Falco peregrinus*), and the Reddish Egret (*Egretta rufescens*). Species of goose, duck, gull, tern and sandpiper were also observed. Padre Island has 322 species of birds, including migratory and resident waterfowl, shorebirds, neo-tropical songbirds and raptors. During fall and winter, Sandhill Cranes (*Grus canadensis*) frequent the west side of Padre Island, near Bird Island Basin. The cranes can be observed feeding in the wetlands, uplands, and shallow water of the Laguna Madre. Many bird species utilize ephemeral and freshwater ponds. They include Northern Bobwhite Quail (*Colinus virginianus*), Northern Harrier (*Circus cyaneus*), Sandhill Crane, Great Egret (*Casmerodius albus*), Great Blue Heron (*Ardea herodias*), Long-billed Curlew (*Numenius americanus*), Sanderling (*Caldris alba*), Killdeer (*Charadrius vociferus*), terns, ducks, and grebes (DOI 2000).

Mammals. Mammals likely to utilize habitat in the general project area include the gulf coast kangaroo rat (*Dipodomys compactus.*), Texas pocket gopher (*Geomys personatus*), coyote (*Canis latrans*), northern grasshopper mouse *(Onychomys leucogaster*), eastern mole (*Scalopus aquaticus*), raccoon (*Procyon lotor*) and the eastern cottontail (*Sylvilagus floridanus*) (CSA 1985, and DOI 2000).

Reptiles and Amphibians. Reptiles likely to utilize habitat in the general project area include the keeled earless *lizard (Holbrookia propinqua propinqua*), whiptail lizard (*Cnemidophorus sp.*), western diamondback rattlesnake (*Crotalus atrox*), slender glass lizard (*Ophisaurus attenuatus*),

western massasauga rattlesnake (*Sistrurus tergeminus*), western hog-nosed snake (*Heterodon nasicus*), glossy snake (*Arizona elegans*), checkered garter snake (*Thamnophis marcianus*), diamondback water snake (*Nerodia rhombifer*), Texas coral snake (*Micrurus fulvius*), red-eared slider (*Trachemys scripta elegans*), and the yellow mud turtle (*Kinosternon flavescens*) Chapman 1988, CSA 1985, and DOI 2000). The ornate box turtle (*Terrapene ornata ornata*) has also been reported on the island (CSA 1985). Amphibians found on the island include the northern leopard frog (*Rana pipiens*), green tree frog (*Hyla cinerea*) and Hurter's spadefoot toad (*Scaphiopus holbrookii hurterii*).

Impacts of Alternative A, No Action, on Wildlife
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on wildlife, and no impacts would occur.

Cumulative Impacts
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled, and there would be no contribution towards cumulative impacts on wildlife. Cumulative impacts on wildlife are the result of direct loss of wildlife habitat on 413.2 acres from existing oil and gas wells, production facilities, and pipelines; future exploration and development of 18 wells projected under the NPS RFD scenario that could directly remove wildlife habitat on up to 998 acres; and existing park developments on 391 acres. Clean-up activities at several existing and abandoned oil and gas sites are proceeding to remove or remediate hydrocarbon and heavy metal contamination. Additional incidents of leaks and spills of hydrocarbons and contaminating or hazardous substances could occur in the future and result in injury or mortality to wildlife. Existing and potential impacts on wildlife would result in cumulative, short- to long-term, minor adverse impacts on up to 1,800 acres (1.5% of the park) of wildlife habitat in localized areas around park or oil and gas developments.

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. The proposed project area is undisturbed; there are no existing impacts on wildlife, and no new impacts would occur. Cumulative impacts on wildlife throughout the park would be short- to long-term, minor adverse impacts, localized around park and oil and gas developments. No impairment to wildlife would result from implementation of this alternative.

Impacts of Alternative B, Proposal (Preferred Alternative), on Wildlife
Under Alternative B, Proposed Action, construction and maintenance of the access road, and well/production pad would result in the direct loss of approximately 158,403 square feet (3.6 acres) of hummocky uplands wildlife habitat. Pipeline construction would disturb an additional 4.936 acres of hummocky uplands, of which 0.032 acres are emergent wetlands. If the wells were placed in production, the total pad/production area of disturbance would be reduced to approximately 2.1 acres. Wildlife would be temporarily displaced from the project area. Displaced wildlife could increase competition in adjacent areas. There is a remote possibility for the incidental take of wildlife during the course of operations from vehicle use, construction activities, or ingestion of leaked or spilled hydrocarbons and contaminating or hazardous substances. Driving heavy equipment along the beach will have temporary short-term impacts to shorebirds and benthic organisms in the wetted zone of the gulf shoreline. The truck traffic will displace birds and cause temporary flight from the approaching vehicles. The weight of the trucks will also compact the wet sand and inhibit shorebird feeding on the organisms. There is some loss of benthic organisms expected on a short-term basis due to crushing by tires and changes in the aerobic conditions of the compressed wetted sand environment. The amount of traffic is expected to be minimal and due to the periodic inundation from tides will require traffic

to be spread over the entire beach area. Therefore, repeated traffic over the same beach area for the entire duration of the project is unlikely. This will reduce the overall impact to the birds and benthic organisms, and will help limit the long-term impacts to the beach. Recovery of the shoreline ecosystem is expected to be rapid and complete within days of the trucks ceasing use of the beach.

Elevated noise levels, particularly during drilling operations, could displace wildlife, but most wildlife are expected to return after becoming acclimated to some noise disturbance. However, the application of mitigation measures, including using a diesel electric drilling rig and hospital mufflers and compressors to reduce noise levels, fencing the operations area to exclude wildlife, using primary and secondary containment to prevent leaks and spills of hydrocarbons and contaminating or hazardous substances from being released into the environment, preventing birds and bats from entering open-vent exhaust stacks, covering all open-topped tanks and or secondary containment areas to minimize accidental injury or death of migratory birds, planting native willow shrubs or trees around the production facility to provide and perpetuate migratory bird habitat, preventing the introduction of exotic plant species, careful use of NPS-approved herbicides, good housekeeping, and routine monitoring and inspection of the operations are expected to substantially reduce the impacts to wildlife to localized, short- to long-term, minor adverse impacts.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts on wildlife would result in short- to long-term, minor adverse impacts, localized around park or oil and gas developments.

Conclusion
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, and pipeline; and drilling and production of the well would result in localized, short- to long-term, minor adverse impacts on wildlife. Cumulative impacts would be short- to long-term, minor adverse impacts, localized around park and oil and gas developments. No impairment to wildlife would result from implementation of this alternative.

3.9. Impacts on Visitor Use and Experience

Affected Environment
Annual visitation at Padre Island National Seashore averaged 775,567 visitors per year between 1991-2000 (DOI 2000, Tom Crowson, personal communication, August 2001).

Traffic on park paved roadways consist primarily of visitors who utilize the recreational attractions such as the Gulf beach, Bird Island Basin boat dock and shoreline, or the Grassland Nature Trail, for the purpose of experiencing camping, fishing, wind surfing, bird-watching, and other outdoor activities. July is the busiest visitation month (DOI 2000).

The Gulf beach is utilized by park visitors for recreation and provides the only means of access along the beach southward. The Gulf beach is located 900 feet east of the proposed project area. During the scoping process, BNP and BEI observed a daily average of four (4) visitors within a one-mile radius of the proposed project site. The proposed access road through the dune at this location would be gated and locked to limit access to authorized personal. BNP has scheduled the drilling of the proposed Lemon/Lemon Seed Unit during the late spring, when visitor attendance is increasing. This may increase short-term impacts to visitor use and experience along the seashore.

Impacts of Alternative A, No Action, on Visitor Use and Experience
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. Visitor use would continue along the Gulf beach, there would be no adverse impacts on visitor use and experience.

Cumulative Impacts
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. Visitor use would continue along the Gulf beach, there would be no adverse impacts on visitor use and experience.

Cumulative impacts on visitor use and experience would be the result of human developments on the natural scenery on 413.2 acres from existing oil and gas wells, production facilities, and pipelines; future exploration and development of 18 wells projected under the NPS RFD scenario on up to 998 acres; and existing park developments on 391 acres. Most park developments provide essential support services and facilities for visitor use, resource interpretation, and education. Some park and oil and gas operations could cause elevated noise levels and odors. Human health and safety hazards involve the potential for visitors to come into contact with leaked and spilled hydrocarbon and contaminating or hazardous substances at oil and gas operations. With the application of mitigation measures, existing and potential impacts on visitor use and experience would result in cumulative, short- to long-term, minor to moderate adverse impacts in localized areas.

Conclusion
Under Alternative A, No Action, the Lemon/Lemon Seed Unit wells would not be drilled. Visitor use would continue and there should be no impacts on visitor use and experience. Cumulative short- to long-term, minor to moderate adverse impacts on visitor use and experience would be localized around existing and future developments throughout the park.

Impacts of Alternative B, Proposal (Preferred Alternative), on Visitor Use and Experience
Under Alternative B, Proposed Action, construction and maintenance of the access road, and well/production pad, would result in the direct loss of 3.6 acres of hummocky uplands. Pipeline construction would disturb an additional 4.936 acres of hummocky uplands, of which 0.032 acres are emergent wetlands. If the wells were placed in production, the total pad/production and road areas of disturbance would be reduced to approximately 2.1 acres, which would be inaccessible for visitor use during the life of the well for up to 20 years. However, if the wells were unproductive, the area would be reclaimed and returned to visitor use over the short-term. Of the 775,567 visitors to the park annually, a small percentage of visitors that are able to access this stretch of Gulf beach by four-wheel drive vehicles could be adversely impacted by operations.

During the drilling phase, transporting the drill rig and associated drilling equipment to and from the proposed well pad could cause deeper rutting on the Gulf beach and possible conflicts with visitors sharing the beach driving corridor; however the construction and drilling phases are short-term, lasting 141 days total for both wells. Drilling could elevate noise levels. During all phases of operations, spilled hydrocarbons and contaminating or hazardous substances could pose a health and safety hazard to park visitors

However, the application of mitigation measures, including using a diesel electric drilling rig and hospital mufflers and compressors to reduce noise levels, fencing and signing the operations area to exclude visitors, using primary and secondary containment to prevent leaks and spills of hydrocarbons and contaminating or hazardous substances from being released into the environment, planting native willow shrubs or trees around the production facility to provide

visual screening, using directed and shielded lighting and focusing lighting as much as reasonably possible on the rig work area to prevent unnecessary night time light pollution; preventing the introduction of exotic plant species, good housekeeping, and routine monitoring and inspection of the operations are expected to substantially reduce the impacts on visitor use and experience to localized, long-term, minor to moderate adverse impacts.

Cumulative Impacts
Under Alternative B, Proposed Action, cumulative impacts would result in localized short- to long-term, minor to moderate adverse impacts on visitor use and experience, localized around existing and future developments throughout the park.

Conclusion
Under Alternative B, Proposed Action, construction and maintenance of the access road, well/production pad, and pipeline; and drilling and production of the well would result in localized, long-term, minor to moderate, adverse impacts on visitor use and experience. No impairment to visitor use and experience would result from implementation of this alternative.

4.0. CONSULTATION AND COORDINATION

A Notice of Availability for the Plan of Operations, EA, draft Floodplains Statement of Findings, and draft Wetlands Statement of Findings will be published in the *Federal Register,* and in the local newspaper (*Corpus Christi Caller-Times*). The 30-day public review period will begin on the date the Notice of Availability is published in the *Federal Register.*

Following the 30-day public review period, NPS will consider written comments received. Additional mitigation measures resulting from the public involvement process may be applied by the NPS as conditions of approval of the Plan of Operations. Additional mitigation measures will be identified in the decision document. Copies of the decision document will be sent to those who comment on the Plan of Operations, EA, draft Floodplains Statement of Findings, and draft Wetlands Statement of Findings during the public review period or request a copy.

4.1. Individuals and Agencies Consulted

Persons and agencies contacted for information, or that assisted in identifying important issues, development alternatives, or analyzing impacts are listed below:

Karen Bridges, Texas Natural Resources Conservation Commission, Corpus Christi, Texas
Pat Clements, U.S. Fish and Wildlife Service, Corpus Christi, Texas
Greg Cody, NEPA/Section 106 Specialist, Intermountain Support Office-Denver, National Park Service, Denver, Colorado
Linda Dansby, Intermountain Regional Minerals Coordinator Intermountain Support Office-Santa Fe, National Park Service, Santa Fe, New Mexico
Darrell Echols, Natural Resource Management Specialist, Padre Island National Seashore, National Park Service
Leslie Krueger, Wetlands Consultant, Webster Grove, Missouri
Jody Mays, Biological Technician, Padre Island National Seashore
Lisa Norby, Geologist, Geologic Resources Division, National Park Service, Denver, Colorado
Pat O'Dell, Petroleum Engineer, Geologic Resources Division, National Park Service, Denver, Colorado

Gary Smillie, Water Resources Division, National Park Service, Lakewood, Colorado
Chris Turk, Regional Environmental Quality Officer, Intermountain Support Office-Denver, National Park Service, Denver, Colorado
Joel Wagner, Service Wetlands Coordinator, Water Resources Division, National Park Service, Denver, Colorado
John Wong, U.S. Army Corps of Engineers, Corpus Christi, Texas
Jim Woods, Chief, Minerals Operations Branch, Geologic Resources Division, National Park Service, Denver, Colorado

4.2. List of Document Recipients Listing of Document Recipients

Congressional Delegation
Senator Kay Bailey Hutchison
Senator Phil Gramm
Honorable Ruben Hinojosa
Honorable Solomon P. Ortiz

Agencies
Environmental Protection Agency
U.S. Fish and Wildlife Service, Corpus Christi
U.S. Geological Survey, Denver: GRD Jim Woods
U.S. Army Corps of Engineers, Corpus Christi
National Park Service:
- Superintendent, Big Cypress National Preserve
- Superintendent, Big Thicket National Preserve
- Superintendent, Lake Meredith National Recreational Area
- Water Resources Division

Tribal Government
Don Patterson, President, Tonkawa Tribe

State Government
Senator Carlos Truan
Representative Jamie Capelo
Representative Vilma Luna
Representative Irma Rangel
Representative Gene Seaman

Railroad Commission of Texas
Texas Coastal Zone Management Program
Texas General Land Office, Coastal and Upland Management Office
Texas General Land Office, Commissioner David Dewhurst
Texas Parks and Wildlife, Corpus Christi
Texas Historical Commission

Other State Interests
Audubon Society, Coastal Bend
Austin American Statesman
Coastal Bend Sierra Club
Corpus Christi Caller Times
Corpus Christi Central Library

National Parks Conservation Association
The *Observer*
The *North Padre Island Moon*
Sierra Club / Lone Star Chapter, Austin

4.3. Preparers

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Ken McMullen, Chief, Division of Science and Resources Management, Padre Island National Seashore, National Park Service

5.0. BIBLIOGRAPHY

BNP Petroleum Corporation and Belaire Environmental, Inc. 2001. Information Document for Proposed Drilling and Production Operations for Lemon/Lemon Seed Unit wells, Padre Island National Seashore. 500 N. Water Street Suite 1000, Corpus Christi, TX.

Brown, J.E. and G. H.H. Huey. 1991. Padre Island National Seashore. Southwest Parks and Monument Association, Tucson, AZ. 62 pp.

Chaney, A.H., G.W. Blacklock, and S.G. Bartels [Ecoservices]. 1993. "Laguna Madre Bird Project From The Yarbrough Pass to Mansfield Channel During July 1992 Through April 1993". Contract 1443px7000092582, Padre Island National Seashore, Corpus Christi, Texas.

Chapman, B.R. 1981. Effects of the IXTOC 1 oil spill on the South Texas coast. In: Proceedings of the 1981 Oil Spill Conference, pp. 461-466. American Petroleum Institute.

Chapman, B.R. 1988. Environmental survey of proposed wellsite, Dunn-McCampbell Well No. 2, Kenedy County, TX. Prepared for Tana Oil and Gas Corporation, Corpus Christi, TX.

Continental Shelf Associates, Inc. 1985. Plan of Operations, Union Oil Company of California, State Lease 83801, Well No. 1, Padre Island National Seashore. P.O. Box 2267, Galveston, TX.

Crowson, Tom. August 2001. Personal Communication.

Ditton, R.B. and J.H. Gramann. 1987. A Survey of Down-Island Visitors and Their Patterns at Padre Island National Seashore. National Park Service, Cooperative Park Studies Unit, Texas A&M University, Department of Recreation and Parks, Texas Agricultural Experiment Station, College Station, Texas, Technical Report No. 6. 175 p.