



National Park Service
U.S. Department of the Interior

Big Thicket National Preserve
Texas

FINDING OF NO SIGNIFICANT IMPACT
BP America Production Company Proposal to Directionally Drill and Produce up to 9 Wells from 6 Surface Locations Outside the Neches Bottom / Jack Gore Baygall Unit


Recommended:



Wayne Prokopetz
Superintendent, Big Thicket National Preserve

5/25/2017
Date

Approved:



Sue E. Masica
Regional Director, Intermountain Region, National Park Service

6/7/17
Date

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), and the National Park Service (NPS) regulations for nonfederal oil and gas rights (36 CFR 9B), NPS began preparing an Environmental Assessment (EA) in December 2015 to examine alternative actions and environmental impacts associated with the proposed project to allow BP America Production Company (BP) to directionally drill and produce up to 9 wells from 6 surface locations 261 to 920 feet outside the Neches Bottom/Jack Gore Baygall Unit (Unit). BP holds rights to nonfederally-owned oil and gas beneath the Unit. As stated in section 1.1 of the EA, the project is needed to grant BP a § 9.72(b)(1) exemption to directionally drill and produce the T well from a location outside the Unit of the Big Thicket National Preserve (Preserve).

In November of 2016, the NPS published a final rule that, among other things, updated the provision governing operations that directionally drill from surface locations outside an NPS System unit to reach bottom hole locations inside NPS System unit boundaries. This updated rule became effective December 5, 2016. The updated version of the provisions formerly at 36 CFR § 9.32(e) now appears at 36 CFR §§ 9.70 through 9.73. Although these updated provisions contain more specific guidance to an operator regarding information requirements and processing timelines for exemption determinations, the standard by which the NPS evaluates and grants exemptions remains consistent. Because this EA was prepared prior to the effective date of the updated regulation, the EA still refers to the former directional drilling provision at 36 CFR § 9.32(e). NPS need not delay the processing of BP America's request for an exemption for this reason, and will approve BP's exemption under 36 CFR § 9.72. The required NEPA analysis was not affected by the update of these regulatory provisions, and the analysis conducted in the EA remains sufficient to approve the exemption under the new provisions.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA and associated decision file to grant BP a § 9.72(b)(1) exemption to directionally drill and produce the T well from a location outside Unit of the Preserve. Additionally, upon receipt of supplemental information – and before implementation could occur – the NPS would review and determine whether the NEPA analysis provided in this EA is valid for each of the additional 8 wells and whether each well qualifies for a § 9.72(b)(1) exemption.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA, NPS selected Alternative B – to allow BP to Directionally Drill and Produce up to 9 Wells from 6 Surface Locations Outside the Neches Bottom / Jack Gore Baygall Unit (the NPS preferred alternative) for implementation.

The selected alternative will allow the NPS to grant BP a § 9.72(b)(1) exemption for BP's first proposed directional well, T well. The NPS also will consider granting exemptions to directionally drill and produce an additional eight wells in the Ticonderoga Gas Unit if BP decides to move forward with them and provides the NPS with the additional information required, including, for each well, 1) an approved state of Texas drilling permit, 2) a Groundwater Advisory Unit, and if applicable, and 3) a description of any revisions to the currently-proposed development methodology for the eight wells.

All surface activities, including construction of well pads and spur roads, drilling and production, and eventual well plugging and surface reclamation, will be located outside of the Unit. Surface locations for the wells will be located 261 to 920 feet from the Unit boundary. The specific surface and bottomhole locations for the wells are provided in Chapter 2 or the EA. Operations inside the Unit boundaries (in-park operations) will consist only of the wellbores (i.e., drill holes) crossing into the plane of the Unit boundary.

Rationale

Alternative B was selected because it best meets the project purpose that allows an exemption to be granted under § 9.72(b)(1) of the NPS Nonfederal Oil and Gas Rights Regulations at Title 36 of the Code of Federal Regulations (CFR), Part 9, Subpart B (9B Regulations). The NPS may grant an exemption to the Operations Permit requirement when the NPS is able to determine from available data that downhole permit requirements are not needed to protect against a significant threat of damage to: (a) Federally owned or administered lands, waters, or resources within System units; (b) NPS visitor uses or experiences; or (c) Visitor or employee health or safety. 36 CFR § 9.70. Through the analysis presented in Chapter 3 of the EA it was determined that there will be no significant threat of damage to Federally owned or administered lands, waters, or resources within System units; NPS visitor uses or experiences; or visitor or employee health or safety park resources, and therefore Alternative B is the Selected Alternative.

MITIGATION MEASURES

In order to reduce impacts on the environment, BP has incorporated the mitigation measures listed in Appendix A of this document. While many of the mitigation measures are required by other state and federal requirements, the NPS does not have the regulatory authority under § 9.72(b)(1) to require mitigation for surface activities outside the Preserve boundary.

FINDING OF NO SIGNIFICANT IMPACT

CEQ regulations at 40 CFR Section 1508.27 identify ten criteria for determining whether the Selected Action will have a significant effect on the human environment. The NPS reviewed each of these criteria given the environmental impacts described in the EA and determined there will be no significant direct, indirect, or cumulative impacts under any of the criteria.

The following topics were dismissed from full analysis in Chapter 1 of the EA: Catastrophic Incidents, such as Well Blowouts, Well Fires, or Major Spills; Geology and Soils in and outside the Unit; Water Resources, including Nearby Waterbodies, Groundwater, Floodplains and Wetlands in and outside the Unit; Vegetation in and outside the Unit; Fish and Wildlife in and outside the Unit; Federally-listed Threatened and Endangered Species in and outside the Unit; Cultural Resources in and outside the Unit; Visitor Use and Experience in the Unit; Greenhouse Gas Emissions; Socioeconomics; Environmental Justice; Indian Trust Resources and Indian Sacred Sites in the Unit.

There are no impacts on park resources from in-park operations based primarily on the separation between downhole activities inside the Unit and the groundwater protection depth, therefore, the NPS finds there is no reasonable expectation of impacts to the Unit resources from drilling and production operations conducted inside the Unit (in-park operations). The proposed T well surface location will be approximately 261 feet from the Unit boundary and the wellbore will enter the Unit at approximately 9,300 feet from surface. Operations in the Unit for

the proposed T well will occur approximately 7,350 feet below the protection depth of the usable quality water zone located 1,950 feet from the surface. Setting and cementing of the surface casing to protect the groundwater will be completed outside the Unit.

As described in the EA and summarized below, the selected alternative has the potential for adverse impacts on natural soundscapes in and outside the Unit, night skies in and outside the Unit and air quality in and outside the Unit, however no potential for significant adverse impacts on these resources was identified.

Impacts on natural soundscapes in and outside the unit

As described in § 3.1 in the EA, an ambient sound value of 41dBA was recorded in 1999 along the Timber Slough Road within the Upper Slope Pine Oak Forest of the Unit and was considered equivalent to sound levels experienced during listening to bird calls, a quiet evening at home, or the sound of a drilling rig at 1,500 feet.

The area of analysis has been delineated to include the site of the well drilling, representing the highest noise-producing activity, and includes the distance required for the drilling noise to attenuate to the measured background sound level of 41 dBA. Beyond this distance, there is an increased likelihood that noise sources will no longer adversely affect the natural sounds of the Unit.

The level of noise related to the proposed directional drilling and production of up to nine wells, from initial construction through plugging and surface reclamation, will be no greater than 85 dBA, 50 feet from the source. Such elevated noise levels will attenuate to background levels of 41 dBA recorded in the Unit within 1,900 feet of the source. Though these localized impacts will be intermittent during the construction and plugging/reclamation phases, elevated noise will be continuous over the 30-45 days to drill each well, and a variety of activities over the possibly long-term producing life of the wells could introduce elevated noise levels that will range from intermittent to continuous. This level of noise is appropriate to oil and gas development, as the exercise of nonfederal mineral rights is provided for in the enabling legislation of the Preserve (Public Law 93-439, 16 USC § 698 c(b)). Following the Preserve's General Management Plan (NPS 2014), areas within the Unit boundaries that could be affected by elevated noise generated by the proposed drilling and production of the directional wells will be part of the exploration/mining subzone for the duration of proposed activities.

Impacts on night skies in and outside the unit

All phases of the proposed action could introduce artificial lighting and impact the dark night skies. Drilling of each well will introduce the greatest levels of artificial lighting over the 30-45 days of drilling with a lux value of 1.3 measured at 300 feet from the drilling operations. This level of lighting will take 1,500 feet to attenuate to the background levels of 0.1 lux, the illumination by the quarter moon. The dense vegetation and tall forest canopy in the Unit will block the passage of light. All other activities proposed outside the Unit, including construction of the well pads and spur roads, production operations including construction of flowlines, and eventual well plugging and surface reclamation will be conducted during daylight hours; low levels of artificial lighting will be introduced due to vehicle access, heavy equipment use on overcast days, individual security lights at wells, and nighttime security lighting at the CDP. Impacts will be localized near light sources and extend up to 1,500 feet.

This level of impacts on night skies is typical of oil and gas development and the exercise of nonfederal mineral rights is recognized in the enabling legislation of the Preserve (Public Law

93-439, 16 USC § 698 c(b)(2)). Following the Preserve's General Management Plan (NPS 2014), areas within the Unit boundaries that could be affected by artificial lighting generated by the proposed drilling and production of the directional wells will be part of the exploration/mining subzone for the duration of proposed activities.

Impacts on air quality in and outside the unit

All phases of oil and gas activities could result in emissions of particulate matter, NOX, CO, CO₂, and SO₂. Drilling of wells will have the greatest impact during the short-term (30-45 days) due to increased use of vehicles and large gasoline and diesel engines used to power the drill rig, pumps, and auxiliary equipment during drilling. Total emission levels for each well, for all phases of operations, will fall well below the regulatory emission threshold of 100 tons of total emissions per year per well for the de minimis values for NOX and VOCs in non-attainment areas. Emissions from all phases of activities will be greatest near sources of emissions, and depending on wind and atmospheric conditions could disperse to contribute towards air quality impacts in the Beaumont/Port Arthur airshed.

The NPS has analyzed other past, present, and reasonably foreseeable future actions in order to consider the significance of cumulative impacts associated with the implementation of the Selected Alternative. A discussion of the cumulative impacts for each resource is included in Chapter 3 of the EA. The selected alternative will contribute only minimally to overall cumulative impacts. Overall, the impacts of the Selected Alternative, combined with the cumulative impacts from other past, present, and reasonably foreseeable future actions, will not result in significant adverse cumulative impacts.

SECTION 7 - Since the wells will cross through the Unit at a sufficient depth to preclude any effect on surface resources (species or habitat) within the Unit, there will be no effect on federally listed threatened and endangered species and/or critical habitat from in-park operations. For connected actions, the analysis area encompasses an area within a 1,900 feet radius from each proposed well, five threatened and endangered species were listed: the endangered least tern (*Sterna antillarum*), threatened piping plover (*Charadrius melodus*), threatened red knot (*Calidris canutus rufa*), endangered red cockaded woodpecker (*Picoides borealis*), and endangered Texas trailing phlox (*Phlox nivalis* ssp. *texensis*). There is no suitable or critical habitat for least tern, piping plover, and red knot within the analysis area. There is no suitable or critical habitat present within the analysis area for either red cockaded woodpecker or Texas trailing phlox. These five species would not utilize the analysis area or habitat. There are no federally-listed species or critical habitat in the analysis area nor would these species utilize the analysis area, resulting in a "no effect" ESA determination for connected actions.

SECTION 106 – Since the wellbores crossing into the plane of the Unit at sufficient depth below the protection depth for the usable quality groundwater zone will have no impact on the usable quality groundwater or the surface of the Unit. Under a § 9.72(b)(1) exemption, actions by the NPS with respect to the National Historic Preservation Act are non-discretionary; the NPS has no § 106 responsibility, nor authority, associated with the wells for the proposed in-park operations for which a § 9.72(b)(1) exemption is being evaluated (NPS 2006a). As part of the NEPA analysis, however, the NPS is providing the following analysis, using available data, of the effects of the connected actions occurring outside the Unit on cultural resources.

Although the NPS has no authority to require BP to contract an archeological survey in the project area on lands outside the Unit, BP voluntarily contracted with DESCO to conduct a

records search for the presence of any previously recorded archeological sites or cemeteries in the areas where ground-disturbing activities are proposed to construct well pads, spur roads, and flowlines, and extending up to approximately one mile from the proposed developments.

Because there are no known cultural resources located in the areas where BP proposes to construct well pads, spur roads, and flowlines; and there will be low risk for catastrophic incidents and low probability for accidental releases from escaping the well pads and being transported into the Unit, the impact topic, cultural resources, was dismissed from further analysis.

TRIBAL CONSULTATION – A letter was mailed to the Alabama-Coushatta Tribe of Texas on December 19, 2016. One comment was received via PEPC from Mr. Byrant J. Celestine on behalf of Mikko Colabe III Clem Sylestine and the Alabama-Coushatta Tribe of Texas. See response to comment in Appendix B.

The project will not result in the loss or destruction of significant scientific, cultural, or historical resources. There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A

MITIGATION MEASURES UNDER THE SELECTED ALTERNATIVE, PROPOSED ACTION

No.	Mitigation Measures	Resource(s) Protected	Required or Voluntary
Project Planning and General Procedures			
1.	Conduct a desktop archeological survey (i.e. a data file search of existing sites in the vicinity (Class II survey)) of the proposed project pad area(s) and immediate vicinity	Archeological and cultural resources	Voluntary: The NPS has no NHPA §106 responsibility for wells that originate on nonfederal lands located outside of the Unit, where the wellbore crosses into the Unit to extract nonfederally-owned hydrocarbons from beneath the Unit. (NPS 2006b)
2.	Prepare and comply with a Spill Prevention Control and Countermeasure (SPCC) Plan	All resources, and human health and safety	EPA requirement as per 40 CFR, Chapter 1, Subchapter D, Part 112 – Oil Pollution Prevention
3.	Site wells, flowlines, and production facilities outside of the Preserve boundary	All resources and visitor use and experience in the Unit	Required to qualify for NPS exemption under 36 CFR § 9.72(b)(1)
4.	Use existing cleared areas to the extent possible and use existing roads to minimize construction of new roads	All resources outside the Unit	Voluntary
5.	Cover all pits, ponds, or other containment areas and unprotected oil field equipment containing hydrocarbon liquids with screen, netting or other appropriate materials to prevent migratory birds, other wildlife, and sensitive species from being attracted to and entrapped in collected liquid.	Wildlife (with emphasis on migratory birds, bats, rodents, and herptiles)	Required for any open-top storage tanks, skimming pits and collections pits. RRC Statewide Rule 3.22, Protection of Birds.
Construction of Spur Roads and Well Pads			
6.	Implement the following stormwater best management practices, to prevent potential contaminated fluids and sediments from leaving the site and impacting surface water: <ul style="list-style-type: none"> • Minimize the footprint of the disturbed area, • Construct a berm around the approximately 3.1-acre well pads, • Plan the site location to choose low-slope sites away from waterways, • Manage slopes to decrease steepness, • Maintain the maximum amount of vegetative cover as 	All natural resources, and human health and safety	Voluntary

No.	Mitigation Measures	Resource(s) Protected	Required or Voluntary
	<p>possible,</p> <ul style="list-style-type: none"> • Practice good housekeeping including proper material storage, and • Use erosion control measures, including the use of mulching, seeding, silt fences, and/or hay bales. 		
Drilling			
7.	Begin drilling the wells outside of the Preserve and directionally drill wells so that wellbores, after being cased, isolates useable quality groundwater and contains and isolates produced fluids, inside and outside of the Preserve.	Groundwater	Required to qualify for NPS Operations Permit exemption
8.	Design the hydraulic fracturing treatment such that the resulting fractures are contained within the targeted rock formation, both inside and outside of the Preserve.	Groundwater	Required to qualify for NPS Operations Permit exemption
9.	Construct washout / emergency pit and line with plastic.	All resources, and human health and safety	Construction, design and maintenance of pit in conformance with RRC Statewide Rule 8; liner would be voluntary
10.	BP would switch from using a reserve pit to contain the water-based mud for drilling the surface casing portion of the hole to a closed-loop containerized mud system to continue the drilling using an oil-based mud	All resources, and human health and safety	Voluntary
11.	Set surface casing according to State of Texas RRC requirements	All resources, and human health and safety	Required per RRC Statewide Rule 13(b)(2)
12.	Dispose of drilling mud and well cuttings offsite or downhole	All resources, and human health and safety	Disposal in accordance with RRC Statewide Rule 8
Production			
13.	Backfill washout / emergency and water pits with native soil in accordance with RRC Statewide Rule 8	All resources, and human health and safety	Fill in washout/emergency and water pits required by RRC Statewide Rule 8(d)(4)(G)
14.	Construct an earthen, rock covered firewall around the tank battery with a capacity of the largest tank plus precipitation from a 25-year/24-hour storm event.	All resources, and human health and safety	Voluntary to build capacity for holding the volume of the largest tank plus precipitation from a 25-year/24-hour storm event. Secondary containment as required per 40 CFR, Chapter 1, Subchapter D, § 112.9(c)(2) to construct secondary containment (earthen, steel, etc.) capable of holding the volume of largest tank plus sufficient freeboard to contain precipitation.

No.	Mitigation Measures	Resource(s) Protected	Required or Voluntary
15.	Notify regulatory authorities and Big Thicket Superintendent within 24 hours in the event of a release or spill of hydrocarbon condensate, crude oil, or other contaminating substance exceeding five barrels	All resources, and human health and safety	Required release reporting in accordance with applicable regulations including RRC requirement to report well blowout/well control problems or spills exceeding 5 barrels as per Statewide Rules 20 and 91(e); in the event of any condensate spill, operator must consult with RRC as per Statewide Rule 91(b) and any spills of crude oil into water must be reported to the RRC as per Statewide Rule 91(e)(3); spills of other contaminating substances may require reporting to the TCEQ or EPA under a variety of laws and regulations depending on the substance released, the amount, whether or not the release was into soil, water or air, whether the release was ongoing, etc.; notification to NPS would be voluntary.
Well Plugging			
16.	Consult RRC district office regarding well plugging, plug well to isolate each productive horizon and usable water quality strata according to RRC Statewide Rules 13 and 14	All resources, and human health and safety	Required per RRC Statewide Rule 14
Reclamation			
17.	If the wells are not produced, equipment and related materials would be removed and the area would be restored to original contours to the extent possible and/or as agreed to with the surface owner.	All resources, and human health and safety	Required per RRC Statewide Rule § 14(d)(12), this section of the Statewide Rules requires an operator to "contour the location to discourage pooling of surface water at or around the facility site," restoration of original contour voluntary
18.	Use of crushed aggregate with cement binding at the well pad to allow for easier removal and restoration of the site, when compared to the use of cement well pads.	All natural resources	Voluntary
19.	Reclamation in conformance with the Land Entry Permit or surface agreement between surface owner and BP.	All resources	Required per RRC Statewide Rule 14(d)(12), required by landowner as per surface use agreement

APPENDIX B

ERRATA

According to NPS policy, substantive comments are those that 1) question the accuracy of the information in the EA, 2) question the adequacy of the environmental analysis, 3) present reasonable alternatives that were not presented in the EA, or 4) cause changes or revisions in the proposal.

A total of 1 comment from the single piece of correspondence received during public review of the EA was considered substantive or warranted a response, and is addressed in the *Responses to Comments* section.

RESPONSES TO COMMENTS:

1. **Comment:** If in the unlikely event that an inadvertent discovery of archaeological artifacts and/or human remains are discovered, activity in proximity to the location must cease and appropriate authorities, including tribal office, notified without delay for additional consultations.

Response: In regards to adding a mitigation to cease operations if discoveries are encountered, see page 21 in the EA under Cultural Resources, which states that the NPS has no authority outside the Preserve in regards to protecting cultural resources.

TEXT CHANGES:

The following includes changes that have been made to the EA. Italicized and underlined text indicates the section in the EA that has been altered. Strike-out is used to show text that has been removed; bold text is used to show new text.

- *p. 1, paragraph 2, under Proposed Action*
...both surface and subsurface, resulting from surface subsidence, fracture of geological formations with resultant fresh water ~~aquifer~~ aquifer [sic] contamination, or natural gas escape, or the like.
- *p. 41, paragraph 2, under: Cumulative Impacts*
Cumulative Impacts. Past, present, and reasonably foreseeable future actions that have impacted the soundscapes of the Unit and extend approximately ½ mile outside the Unit include vehicle use, existing and future oil and gas operations in and outside the Unit, maintenance of transpark oil and gas pipelines, routine park operations, recreational activities including hunting in and outside the Unit, and forestry operations adjacent to the Unit. These activities introduce elevated noise levels ranging in magnitude from **an estimated 40 to 85 160 dBA (during construction)**. ~~Periodic larger caliber gun fire would attain the loudest of the noises (160 dBA)~~ **Higher level noise impacts from periodic gun fire could be audible during authorized hunting seasons.** Other activities that routinely contribute to the noise from outside the Unit are: timber harvesting, oil and gas exploration and production, hunting (year round), residential reoccurring noises (lawn maintenance), and traffic along county roads.

- p. 51, paragraph 3, under: Cumulative Impacts

Past, present and reasonably foreseeable future impacts on air quality would continue primarily as the result of industrial sources including pulp mills, oil refineries, and petrochemical manufacturing plants, public utilities, and urban sources. Activities in and outside the Unit that would contribute to air quality impacts would include oil and gas operations, prescribed fires in the Unit, and farming and commercial timber activities occurring adjacent to the Unit. The use of vehicles and other combustion engines, and fires would also emit PM, NOX, CO, CO₂, and SO₂. The Preserve's Oil and Gas Management Plan (NPS 2006a) describes moderate, adverse cumulative impacts on the regional airshed. As previously described, under Alternative B would contribute moderate impacts on air quality. When the effects of Alternative B are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impact on **air quality** ~~night skies~~ in and outside the Preserve would be moderate and adverse. The incremental impacts of Alternative B would contribute slightly to, but would not substantially change, the overall cumulative impacts.

APPENDIX C

NON-IMPAIRMENT DETERMINATION

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS *Management Policies 2006*, Section 1.4.4, explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment, the NPS must evaluate the "particular resources and values that will 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. An impact on any park resource or value may constitute impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance (NPS 2006, Section 1.4.5).

Fundamental resources and values for Big Thicket National Preserve are identified in the enabling legislation for the park, the Foundation Document and the General Management Plan completed in August 2014. Based on a review of these documents, the fundamental resources and values for Big Thicket National Preserve come from visitor experience in a natural setting, free-flowing water and dependent systems, biodiversity, compositional diversity, structural diversity, processes and functional diversity, scientific value, the Thicket, and cultural resources. Resources that were carried forward for detailed analysis in the EA and are considered necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; are key to the natural or cultural integrity of the park; and/or are identified as a goal in relevant NPS planning documents include: natural soundscapes both inside and outside the Unit, night sky both inside and outside the Unit and air quality both inside and outside the Unit. Accordingly, a non-impairment determination is made for each of these resources. Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these

impact topics are not generally considered park resources or values according to the Organic Act.

This non-impairment determination has been prepared for the selected alternative, as described in the Finding of No Significant Impact for BP America Production Company proposal to directionally drill and produce up to 9 wells from 6 surface locations outside the Neches Bottom / Jack Gore Baygall Unit EA.

NATURAL SOUNDSCAPES IN AND OUTSIDE THE UNIT

The level of noise related to the proposed directional drilling and production of up to nine wells, from initial construction through plugging and surface reclamation, would be no greater than 85 dBA, 50 feet from the source. Such elevated noise levels would attenuate to background levels of 41 dBA recorded in the Unit within 1,900 feet of the source. Though these localized impacts will be intermittent during the construction and plugging/reclamation phases, elevated noise would be continuous over the 30-45 days to drill each well, and a variety of activities over the possibly long-term producing life of the wells could introduce elevated noise levels that would range from intermittent to continuous. This level of noise is typical of oil and gas development and the exercise of nonfederal mineral rights is provided for in the enabling legislation of the Preserve (Public Law 93-439, 16 USC § 698 c(b)). Following the Preserve's General Management Plan (NPS 2014), areas within the Unit boundaries that could be affected by elevated noise generated by the proposed drilling and production of the directional wells will be part of the exploration/mining subzone for the duration of proposed activities. These impacts will be short-term over the 30-45 days of drilling each well, while impacts from all other phases of activities would be negligible compared to drilling.

The Selected Alternative will not result in impairment of natural soundscapes in and outside the Unit because within 1,900 feet of the source the noise levels will attenuate to background levels even though the noise at the source could be continuous up to 45 days to drill each well.

NIGHT SKIES IN AND OUTSIDE THE UNIT

All phases of the Selected Alternative could introduce artificial lighting and impact the dark night skies. Drilling of each well would introduce the greatest levels of artificial lighting over the 30-45 days of drilling with a lux value of 1.3 measured at 300 feet from the drilling operations. This level of lighting would take 1,500 feet to attenuate to the background levels of 0.1 lux, the illumination by the quarter moon. The dense vegetation and tall forest canopy in the Unit would block the passage of light. All other activities proposed outside the Unit, including construction of the well pads and spur roads, production operations including construction of flowlines, and eventual well plugging and surface reclamation would be conducted during daylight hours; low levels of artificial lighting would be introduced due to vehicle access, heavy equipment use on overcast days, individual security lights at wells, and nighttime security lighting at the CDP. Impacts would be localized near light sources and extend up to 1,500 feet. This level of impacts on night skies is appropriate to oil and gas development, as the exercise of nonfederal mineral rights is provided for in the enabling legislation of the Preserve (Public Law 93-439, 16 USC § 698 c(b)). Following the Preserve's General Management Plan (NPS 2014), areas within the Unit boundaries that could be affected by artificial lighting generated by the proposed drilling and production of the directional wells would be part of the exploration/mining subzone for the duration of proposed activities.

The selected alternative will not result in impairment of night skies in and outside the Unit because the impacts will be short-term over the 30-45 days of drilling each well. There is also vegetation that will block the passage of light. Some work could occur during the day so this would eliminate some sources of light that could impact night skies.

AIR QUALITY IN AND OUTSIDE THE UNIT

All phases of oil and gas activities could result in emissions of particulate matter, NOX, CO, CO2, and SO2. Drilling of wells would have the greatest impact during the short-term (30-45 days) drilling operations due to increased use of vehicles and large gasoline and diesel engines used to power the drill rig, pumps, and auxiliary equipment during drilling. Total emission levels for each well, for all phases of operations, would fall well below the regulatory emission threshold of 100 tons of total emissions per year per well for the de minimis values for NOX and VOCs in non-attainment areas. Emissions from all phases of activities would be greatest near sources of emissions, and depending on wind and atmospheric conditions could disperse to contribute towards air quality impacts in the Beaumont/Port Arthur airshed.

The selected alternative will not result in impairment of air quality in and outside the Unit because total emission levels fall well below the regulatory emission threshold of 100 tons of total emissions per year per well and impacts will be short term during the construction of the wells.

Conclusion

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the selected alternative. The NPS has determined that implementation of the selected alternative will not constitute an impairment of the resources or values of Big Thicket National Preserve. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS *Management Policies 2006*.