

APPENDIX D—PROPOSED CONSERVATION MEASURES AND BEST MANAGEMENT PRACTICES

INTRODUCTION

This appendix describes conservation measures to reduce adverse effects caused by surface-disturbing or disruptive activities that are proposed under the action alternatives (Alternatives 2, 3, and 4). The information contained in this appendix would not apply to Alternative 1 (No Action). Most measures are specifically designed to protect sensitive wildlife species and habitats. While these measures are presented primarily as lease stipulations and Best Management Practices for oil and gas operations, they would also be applied to other actions permitted or undertaken by BLM.

ALTERNATIVE 3 (PREFERRED ALTERNATIVE) AND ALTERNATIVE 4

Proposed Stipulations

Three types of lease stipulations would be applied, defined as follows:

- **No Surface Occupancy (NSO)** – A constraint that prohibits occupancy or disturbance on all or part of a lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the lease surface through use of directional drilling from outside of the NSO area.
- **Controlled Surface Use (CSU)** – A constraint under which use and occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational limitations that may modify lease rights.
- **Seasonal (Timing Limitation)** – A constraint that prohibits surface use during specified time periods to protect identified resource values.

For each stipulation there are provisions for waiver, modification and exception. A waiver is a permanent exemption to the stipulation. A modification is a change to the provisions of the stipulation either temporarily or for the term of the lease. An exception is a one-time exemption to the stipulations determined on a case-by-case basis. For Federally-listed species, waiver, modification and exception will normally require coordination and possible formal consultation with the USFWS.

Bald eagle

Stipulation (NSO): No surface occupancy or disturbance will be permitted within a 1,500-foot buffer zone around active or inactive bald eagle nests and communal roost sites (primary zone).

Objective: To avoid impact to nesting eagles, including important courtship and nesting behavior, egg laying and incubation, and feeding and fledging activity.

Exception: An exception may be granted if the operator agrees to implement measures developed in consultation with USFWS and appropriate state agencies.

Modification: This stipulation may be modified to remain consistent with federal or state guidelines, or if a portion of the stipulated area is no longer within the 1,500-foot buffer zone.

Waiver: This stipulation may be waived if no suitable nest sites are within 1,500 feet of any portion of the leased tract, or if the nest site has not been used for at least 5 years.

Stipulation (Controlled Surface Use): BLM permitted projects will not remove trees suitable for nesting within a 1.5 mile buffer zone around active or inactive bald eagle nests and communal roost sites (secondary zone).

Objective: To protect foraging habitat, promote nest fidelity, and maintain habitat integrity around bald eagle nests and communal roosting sites.

Exception: An exception may be granted if the operator agrees to implement measures developed in consultation with USFWS and in coordination with state agencies.

Modification: This stipulation may be modified to remain consistent with federal and state guidelines, or if a portion of the stipulated area is no longer be within the 1.5 mile buffer zone.

Waiver: This stipulation may be waived if no nest or communal roosting site can be identified within 1.5 miles of the leased tract, or if the applicant can document that the no sites have been used by bald eagles for five consecutive years.

Stipulation (Timing): Surface-disturbing and other activities that are potentially disruptive to nesting bald eagles are prohibited within 1.5 miles from a bald eagle nest or communal roosting site between December 1 and August 1.

Objective: To protect foraging habitat, promote nest fidelity, and maintain habitat integrity around bald eagle nest and roosting sites.

Exception: An exception may be granted if the operator agrees to implement measures developed in consultation with USFWS and in coordination with state agencies.

Modification: This stipulation may be modified to remain consistent with federal and state guidelines, or if a portion of the stipulated area is no longer within the 1.5 mile buffer zone.

Waiver: This stipulation may be waived if no nest site can be identified within 1.5 miles of any portion of the leased tract, or if the applicant can document that the no sites have been used by bald eagles for five consecutive years.

Red-cockaded woodpecker

Stipulation (NSO): No surface occupancy or disturbance within one-half mile of a red-cockaded woodpecker cluster, defined as the area containing all active and inactive cavity trees, plus a 200-foot buffer zone surrounding that area. Vehicle use is prohibited within a cluster except for through-travel on existing, maintained, paved roads.

Objective: To protect red-cockaded woodpecker nest sites from disturbance and habitat degradation.

Exception: An exception may be granted to allow surface occupancy within one-half mile of a cluster if the operator agrees to measures developed in consultation with USFWS and in coordination with state agencies.

Modification: This stipulation may be modified if a portion of the stipulated area no longer within the one-half mile buffer zone.

Waiver: This stipulation may be waived if no cluster can be identified within one-half mile of the leased tract.

Sea Turtles

(Green sea turtle, Hawksbill sea turtle, Kemp's Ridley sea turtle, Leatherback sea turtle, and Loggerhead sea turtle)

Stipulation (NSO): No surface occupancy or disturbance is permitted in suitable sea turtle nesting habitat.

Objective: To protect sea turtle nesting habitat.

Exception: An exception may be granted if the operator agrees to implement measures developed in consultation with USFWS and coordination with state agencies.

Modification: This stipulation may be modified if a portion of the stipulated area is no longer suitable sea turtle nesting habitat.

Waiver: This stipulation may be waived if it is determined that none of the leased area is suitable sea turtle nesting habitat.

Gopher tortoise, eastern indigo snake, and black pine snake

Stipulation (Controlled Surface Use): BLM-approved surveys will be required in all suitable gopher tortoise habitat where the tortoise is listed, including: Choctaw, Washington, Sumter, and Mobile counties in Alabama; and Clarke, Covington, Forrest, George, Greene, Hancock, Harrison, Jackson, Jones, Lamar, Marion, Pearl River, Perry, Stone, Walthall, and Wayne Counties in Mississippi. No surface disturbance or activity is permitted within 600 feet of a gopher tortoise burrow.

Suitable habitat includes areas with deep, well-drained sandy soils, especially the following USDA-NRCS soil series and 10% or more open pine forests (historically longleaf pine) or savannas with an open understory with grass and forb groundcover open areas. Suitable soils include Alaga, Bigbee, Eustis, Lakeland, Waldley or Troup, McLaurin, Benndale, Heidel, Bama, Smithdale, Ruston, Lucedale, Lucy, Shuguta, Baxterville, Malbis, Poarch, Saucier, Susquehanna, Boswell, Lorman, Freestone, Freest, Prentis, Savannah, Basin, and Petal.

Objective: To protect gopher tortoise habitat.

Exception: Exceptions may be granted if the proponent agrees to implement measures developed in consultation with USFWS and coordination with state agencies.

Modification: This stipulation may be modified if suitable gopher tortoise habitat does not exist on the stipulated area and that area does not provide forage habitat for adjacent tortoise populations. Survey requirements may be modified if current tortoise surveys of the tract are approved by BLM and USFWS.

Waiver: This stipulation may be waived if suitable gopher tortoise habitat does not exist on the tract and the tract does not provide forage habitat for gopher tortoises in adjacent areas.

Alabama beach mouse

Stipulation (NSO): No surface occupancy or disturbance will be permitted within suitable Alabama beach mouse habitat or its federally designated critical habitat.

Objective: To avoid impacts to Alabama beach mouse suitable habitat and designated critical habitat.

Exception: An exception may be granted if measures are developed and implemented in consultation with USFWS to avoid potential take of the species. These measures must also be coordinated with state agencies.

Modification: This stipulation may be modified if a portion of the stipulated area is found to no longer be suitable Alabama beach mouse habitat.

Waiver: This stipulation may be waived if it is determined that none of the leased area is suitable Alabama beach mouse habitat.

Gray bat, Indiana bat, Alabama cave shrimp and Alabama cave fish

Stipulation (NSO): No surface occupancy or disturbance permitted within 250 feet of caves, fractures, large sinkholes, and perennial or intermittent streams in or adjacent to counties with documented gray or Indiana bat populations.

Objective: To prevent any impact to hydrologic networks connected to cave habitats and to protect flight paths and food sources for the bat.

Exception: An exception may be granted if the operator agrees to implement measures developed in coordination with USFWS and appropriate state agencies. Formal consultation with USFWS may be required if determined necessary to protect species and associated habitat.

Modification: This stipulation may be modified if a portion of the stipulated area is found to no longer be within the buffer zone.

Waiver: This stipulation may be waived if no portion of the leased area is within the 250 foot buffer zone.

Stipulation (NSO): No surface occupancy or disturbance is permitted within 0.5 miles of an Indiana or gray bat summer roost or gray bat wintering cave hibernacula.

Objective: To prevent fatal disturbance during summer nursery roosting or winter hibernation.

Exception: An exception may be granted if the operator agrees to implement measures developed in coordination with USFWS and appropriate state agencies. Formal consultation with USFWS may be required if determined necessary to protect species and associated habitat.

Modification: This stipulation may be modified if the project does not adversely affect Indiana or gray bat hibernacula with concurrence from Fish and Wildlife Service and the appropriate state agencies.

Waiver: This stipulation may be waived if the lease is not within 0.5 miles of an Indiana or gray bat hibernacula.

Stipulation (Controlled Surface Use): Within 1.5 miles of an Indiana or gray bat hibernacula a BLM permitted action will not remove shagbark hickory trees or snags.

Objective: To prevent fatal disturbance during summer nursery roosting or winter hibernation.

Exception: An exception may be granted if the operator agrees to implement measures developed in coordination with USFWS and appropriate state agencies. Formal consultation with USFWS may be required if determined necessary to protect species and associated habitat.

Modification: None.

Waiver: None.

Stipulation (Controlled Surface Use): Injection or disposal of produced water or water withdrawal will not be allowed into identified karstic habitat or any hydrologic network connected to caves used by the bats or other listed cave species.

Objective: To prevent any impact to hydrologic networks connected to bat caves and flight paths, to protect food sources for the bat.

Exception: An exception may be granted if the operator agrees to implement measures developed in coordination with USFWS and appropriate state agencies. Formal consultation with USFWS may be required if determined necessary to protect species and associated habitat.

Modification: The stipulation may be modified if a portion of the stipulated area is not in karstic habitat or a hydrologic network connected to caves used by the bats.

Waiver: The stipulation may be waived if none of the lease area is karstic habitat or is not hydrologically connected to caves used by the bats.

Freshwater Aquatic Habitat

(Habitat for Special Status Species including: Alabama redbelly turtle, flattened musk turtle, yellow-blotched turtle, ringed map turtle, blue shiner Gulf sturgeon, slack water darter, Sensitive Clam and Snail Species: ovate clubshell, southern clubshell, fine-lined pocketbook, and Tolutoma Snail, and Wood Stork)

Stipulation (NSO): No surface occupancy or disturbance, including discharges, are permitted within 250 feet of a river, stream, wetland spring, headwaters, wet meadows, wet pine savannas, pond, tributary, lake, coastal slough, sand bars, vernal pools on granite outcrops, calcareous seepage marshes or small, marshy calcareous streams. If the slope exceeds 10%, the buffer may be extended up to 600 feet to provide adequate protection for aquatic habitats and associated species.

Objective: To protect water quality of watersheds and natural stream substrate and morphology and to avoid potential impacts to federal and state-listed aquatic species.

Exception: An exception may be granted if the operator agrees to 1) span creeks and floodplains by attaching pipelines to bridges or 2) directionally drill under creeks, rivers, and other waters supporting listed species, 3) implement other measures developed in consultation with USFWS and coordination with state agencies.

Modification: The buffer may be reduced if the adjacent waterway has been surveyed for 100 yards upstream and 300 yards downstream of the site, and results document the lack of suitable/occupied habitat for special status species within the mixing zone downstream of the project, as determined by BLM and USFWS.

Waiver: The stipulations may be waived if it is determined that the lease area has no hydrological connection to habitat of sensitive aquatic species.

Louisiana black bear

Stipulation: No surface disturbance, including removal of potential den trees, is permitted within a 1,500-foot buffer around den trees in occupied bottomland hardwood and floodplain forest habitats.

Objective: To protect Louisiana black bear denning and foraging habitat.

Exception: An exception may be granted if the operator agrees to implement measures developed in coordination with USFWS and appropriate state agencies.

Modification: Temporary surface use may be permitted if the USFWS concurs that the action would not adversely affect Louisiana black bear or suitable habitat.

Waiver: This stipulation may be waived if the tract does not contain suitable Louisiana black bear habitat.

Piping plover, least tern

Stipulation: No surface disturbance in piping plover and least tern habitat from the debris rack line to the low tide line of coastal beaches.

Objective: To protect wintering piping plover and least terns.

Exception: An exception may be granted if the operator agrees to implement measures which have been developed in consultation with the USFWS and in coordination with State agencies.

Modification: Temporary surface use may be permitted if the USFWS concurs that the action would not adversely affect piping plover or least tern or suitable habitat.

Waiver: This stipulation may be waived if the tract does not contain suitable piping plover or least tern habitat.

Sensitive Plant Species

(Including Alabama canebreak pitcher plant, green pitcher plant, Alabama leather flower, Eggert's sunflower, Kral's water plantain, Mohr's Barbara's buttons, Morefield's leather flower, Price's potato bean, and harperella)

Stipulation (Controlled Surface Use): All suitable special status plant species habitat will be identified during environmental review of any proposed surface use activity. If field examination indicates that habitat of one or more of these species is present, BLM will require a survey by a qualified botanist for special status plants during time periods appropriate to each species. Operations will not be allowed in areas where sensitive plants would be affected.

Objective: To protect threatened, endangered, candidate, proposed, and BLM Sensitive Plant Species.

Exception: An exception may be granted if the operator agrees to implement measures developed in consultation with USFWS and coordination with state agencies.

Modification: The stipulation may be modified if it is determined that a portion of the lease area does not support sensitive plant species.

Waiver: The stipulation may be waived if it is determined that the lease area does not support sensitive plant species.

Hancock County Marshes

Stipulation (NSO): No surface occupancy will be permitted within the component of the Mississippi Coastal Preserve System (MCPS) designated as Hancock County Marshes.

Objective: To promote the preservation marshes habitat the preserve, including the following ecological communities expected or known to occur: estuarine subtidal, 1) large tidal creek; estuarine intertidal, 1) sand shore 2) mesohaline marsh 3) oligohaline marsh; and other shell middens.

Objective: For the protection of coastal marshes within this state-designated preserve.

Exception: An exception may be allowed if, in consultation with the State agency responsible for the MCPS, it is determined that potential affects of the proposal would be adequately mitigated.

Modification: The stipulation may be modified if a portion of the leased area is no longer identified as part of the MCPS.

Waiver: The stipulation may be waived if the leased area is no longer identified as part of the MCPS.

BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are mitigation measures applied on a site-specific basis to reduce, prevent, or avoid adverse impacts. They may be incorporated as designs features when actions are proposed or may be attached as conditions of approval for BLM permitted actions Applications for Permit to Drill (APDs) for oil and gas.

The BMPs described below will be considered mandatory in Alternatives B and C, and will be applied to oil and gas operations on new and existing leases. Note that the objective of each BMP is to reduce adverse impacts to specific resources, and that there is some flexibility in implementation. The degree of flexibility will vary. Application of BMPs where there is potential to affect Federally listed, proposed or

candidate species or designated critical habitat will normally require coordination and possible formal consultation with the USFWS. Examples of national environmental BMPs are listed below, and other BMPs that could be applied during site specific evaluation can be found in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Gold Book* (BLM 2006) and at <http://www.blm.gov/bmp>.

- Interim reclamation of the well and access road.
- Painting of all facilities to blend into the background.
- Design and construct all new roads to a safe and appropriate standard, “no higher than necessary” to accommodate intended vehicular use.
- Final reclamation of all disturbed areas, including access roads, to the original or similar contour.
- Raptor perch avoidance devices on powerlines.
- Burial of powerlines and flow lines in or immediately adjacent to the access roads.
- Centralized production facilities.
- The use of submersible pumps where feasible.
- Below ground wellheads where feasible.
- Multiple wells from a single well pad where feasible.
- Noise reduction techniques to reduce noise from compressors or other motorized equipment.
- Seasonal restrictions on public vehicular access where there are wildlife conflict or road damage/maintenance issues.
- Avoidance of production facilities on hilltops and ridgelines.

Disposal of Produced Water

Objective: To protect aquatic habitats for and to avoid potential impacts to special status fish, mussels, turtles, snails, plants, and migratory birds.

The preferred method for disposal of produced water will be disposed of through reinjection to a permeable formation with total dissolved solids (TDS) content higher than 10,000 mg/L* where the aquifer is not hydrologically connected to caves, wetlands, or surface water. If reinjection is not practicable, closed-containment treatment systems should be used to contain and treat produced water for those contaminants and for sediments exceeding State standards or EPA criteria. Salt content of any surface ponds for produced water, pigging pits, or other fluids must be less than 7500 $\mu\text{S}/\text{cm}^*$. If surface pond salt content is greater than 7500 $\mu\text{S}/\text{cm}$ or other bird toxicity is present or surface exhibits sheen, the ponds must be netted, covered with floating balls, or other methods used to exclude migratory birds

Produced waters may be released into an impounded reservoir if there is documentation that the discharge site and affected waters do not support special status species, are not designated critical habitat, and State and Federal water quality standards/criteria are met.

Produced waters may be released into a stream/river, if the discharge site and affected waters have been recently surveyed and lacks special status species, or the applicant conducts approved surveys documenting the absence of special status species and State and Federal water quality standards/criteria are met. Applicant should be aware that some species can only be surveyed during certain times of year.

Produced waters may be released into a stream/river if the applicant can document that the produced waters would not adversely affect special status species. Water quality tests would be conducted on stream segment(s) or other locations proposed as discharge points, volumes to be released, and any settling ponds or other treatments proposed to improve wastewater quality. The water quality test data, any monitoring proposed, and other available information on general CBM effluent characteristics (from published or unpublished literature) shall be reviewed by the Fish and Wildlife Service. Information on

timing of the releases in relation to low water and other planned BMPs would also be required. Testing would include analysis of the discharge site and affected waters for COD, conductivity, TSS, As, Hg, Se, and PAHs. Dissolved oxygen and ammonia standards/criteria must be met in bottom waters if they support listed benthic or epibenthic species. If a special status species has been documented to be more sensitive than State/Federal standards/criteria, site-specific standards for that species may be imposed. Calculations would be based on State standards (or Federal CCC criteria for protection of freshwater aquatic life when the State has not determined a standard for these parameters).

Invasive and Non-Native Species

Objective: To discourage the spread of invasive, non-native plants.

Use of native and/or non-invasive cover plants in seeding mixtures will be encouraged to stabilize disturbed areas and during restoration activities. In the case of split-estate land final seed mixtures will be formulated in consultation with the private landowner.

Migratory Birds and Federally Listed Wildlife

Objective: To protect perch and roosting sites and terrestrial habitats for and to avoid potential impacts to migratory birds and federally listed wildlife.

Any reserve pit not closed within 10 days after a well is completed and which contains water must be netted, covered with floating balls, or use other methods to exclude migratory birds.

Maximum design speed on all operator-constructed and maintained (non-public) roads shall not exceed 25 miles per hour to minimize the chance of a collision with migratory birds or other listed wildlife species.

All power lines would be built to protect raptors and other migratory birds, including bald eagles, from accidental electrocution using methods detailed by the Avian Power Line Interaction Committee (1996)*.

* Avian Power Line Interaction Committee (APLIC). 1996. *Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 1996*. Edison Electric Institute and the Raptor

Research Foundation. Washington, D.C.

Perching and Nesting Birds and Bats

Objective: To prevent birds and bats from entering or nesting in or on open vent stack equipment.

Open vent stack equipment, such as heater-treaters, separators, and dehydrator units, will be designed and constructed to prevent birds and bats from entering or nesting in or on such units, and to the extent practical, to discourage birds from perching on the stacks. Installing cone-shaped mesh covers on all open vents is one suggested method. Flat mesh covers are not expected to discourage perching and will not be acceptable.

Pesticide Application

Objective: To protect the water quality of watersheds and natural stream substrate and morphology supporting special status species and their host species.

Any ground application of herbicides or other pesticides, sterilants, or adjuvants within 150' of listed species or habitat, will require site specific control measures developed in coordination or formal consultation with the USFWS. No aerial application of herbicides or pesticides will be permitted.

ALTERNATIVE 2

The lease stipulations and BMPs implemented under Alternative 2 would be the same as those discussed above for Alternatives 3 and 4, except for the following:

Alabama Beach Mouse: Suitable Alabama beach mouse habitat or its federally designated critical habitat would be unavailable for lease.

Freshwater Aquatic Habitat: No surface occupancy or disturbance, including discharges, are permitted within 1,000 feet of a river, stream, wetland spring, headwaters, wet meadows, wet pine savannas, pond, tributary, lake, coastal slough, sand bars, vernal pools on granite outcrops, calcareous seepage marshes or small, marshy calcareous streams.

Objective: To protect water quality of watersheds and natural stream substrate and morphology and to avoid potential impacts to federal and state-listed aquatic species.

Exception: An exception may be granted if the operator agrees to 1) span creeks and floodplains by attaching pipelines to bridges or 2) directionally drill under creeks, rivers, and other waters supporting listed species, 3) implement other measures developed in consultation with USFWS and coordination with state agencies.

Modification: The buffer may be reduced if the adjacent waterway has been surveyed for 100 yards upstream and 300 yards downstream of the site, and results document the lack of suitable/occupied habitat for special status species within the mixing zone downstream of the project, as determined by BLM and USFWS.

Waiver: The stipulations may be waived if it is determined that the lease area has no hydrological connection to habitat of sensitive aquatic species.