United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer To:
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July 5, 2022

Memorandum

To: Regional Director, Region 2, Albuquerque, New Mexico

Through: Assistant Regional Director, Ecological Services, US Fish and Wildlife Service Region 2, Albuquerque, New Mexico

From: Project Leader, New Mexico Ecological Services Field Office, Albuquerque, New Mexico

SHAWN SARTORIUS Digitally signed by SHAWN SARTORIUS Date: 2022.07.05 10:51:31 -06'00'

Subject: Intra-Service Section 7 Conference Opinion on the Proposed Issuance of an *Amended Candidate Conservation Agreement and Candidate Conservation Agreement with Assurances for the Conservation of the Lesser Prairie-Chicken and Dunes Sagebrush Lizard in Southeastern New Mexico*

This memorandum represents reinitiation of the U.S. Fish and Wildlife Service's (Service) 2008 intra-Service Conference Opinion on the proposed issuance of a section 10(a)(1)(A) Enhancement of Survival Permit (Permit) to the Center of Excellence for Hazardous Materials (Center of Excellence), pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) as amended (Act). The Center of Excellence applied for the Permit for incidental take of the lesser prairie-chicken (*Tympanuchus pallidicinctus*) and dunes sagebrush lizard (*Sceloporus arenicolus*), formerly known as the sand dune lizard, in association with the implementation of a Candidate Conservation Agreement with Assurances (Conservation Agreement with Assurances) between the Center of Excellence and the Service, and its parent document, the Candidate Conservation Agreement (Conservation Agreement), between the Center of Excellence, the Bureau of Land Management, and the Service in the state of New Mexico. A section 10(a)(1)(A) Enhancement of Survival permit associated with the Conservation Agreement with Assurances was authorized and issued to the Center of Excellence on December 8, 2008.

The lesser prairie-chicken is currently proposed for listing under the Act as two Distinct Population Segments. The Northern Distinct Population Segment encompasses the northern range of the prairie-chicken in western Oklahoma, southeastern Colorado, western Kansas, and the north Texas panhandle. The Southern Distinct Population Segment encompasses the southern range of the prairie-chicken, in the sand shinnery oak prairie ecoregion of eastern New Mexico, and the western panhandle of Texas. The status of the dunes sagebrush lizard is currently under review by the Service and is not currently listed as federally threatened or endangered pursuant to the Act. The Conservation Agreement with Assurances and the existing and proposed amended Permit associated with the Conservation Agreement with Assurances will address incidental take of the lesser prairie-chicken and/or dunes sagebrush lizard should either species become listed during the term of the Conservation Agreement with Assurances. The Service encourages cooperative conservation efforts for species of conservation concern because they may warrant future protection under the Act. The Conservation Agreement and Conservation Agreement with Assurances (collectively referred to as Conservation Agreements) provide an effective mechanism for the cooperative conservation of rare or imperiled species, including species that are candidates or are proposed for listing under the Act. Additionally, the Conservation Agreement with Assurances provides participants regulatory assurances that they will not incur additional land-use restrictions on their property should either species become listed, as long as they are compliance the terms of the Conservation Agreement with Assurances and their respective Certificate of Inclusion The Conservation Agreement with Assurances is structured as a programmatic document with the Center of Excellence as the permit holder and under which participants can enroll with an individual Certificate of Inclusion for their operation.

In 2018 the Center of Excellence in cooperation with the Service and stakeholders began developing amendments to the Conservation Agreements as a result of discussions with multiple industry partners. The amendments would: add an enrollment option to cover all activities for participants in the covered area, reclassify habitat categories based on lesser prairie-chicken habitat and lek locations, add certificates of participation and/or inclusion tailored to companies that develop linear infrastructure (e.g., midstream, electrical distribution, and utility) associated with oil and gas development, reduce enrollment fees for select new parcel-by-parcel enrollees, and add an annual inflation/deflation adjustment for all habitat conservation fees. These amendments, if adopted, would require the issuance of a new Permit with updated language. This document transmits the Service's Conference Opinion based on review of the proposed amendments to the Conservation Agreements and the continued implementation of the Conservation Agreements.

The Service has considered the potential effects of Permit issuance on the lesser prairie-chicken, the dunes sagebrush lizard, and other federally listed species and candidates for Federal listing that are known to occur within the action area. At this time there are no other species of fish, wildlife, or plants listed under the Act which occur in or near the action area. The continued implementation of the Conservation Agreements, and the proposed amendments are not anticipated to alter the potential effects of implementation of the Conservation Agreements on any listed, candidate, or proposed species.

This Conference Opinion is based on information contained in the 2008 Conference Opinion, the Conservation Agreements, the 2008 Environmental Assessment, the 2022 Environmental

Assessment, the Species Status Assessment Report for the Lesser Prairie-Chicken, the proposed rule to list two distinct population segments of the lesser prairie-chicken (86 FR 29432), and other sources of information referenced below.

CONFERENCE OPINION

Conference History

November 21, 2008 - The Service received a request for conferencing from the Bureau of Land Management.

December 4, 2008 - The Service published the Intra-Service Section 7 Conference Opinion (USFWS 2008d) on the Proposed Issuance of a Section 10(a)(1)(A) Enhancement of Survival Permit for Lesser Prairie-Chicken and Dunes Sagebrush Lizard to the Center of Excellence for Hazardous Materials Management and proposed implementation of the Bureau of Land Management's Candidate Conservation Agreement (USFWS 2008d).

December 8, 2008 - The New Mexico Lesser Prairie-chicken and Dunes Sagebrush Lizard Candidate Conservation Agreement and New Mexico Lesser Prairie-chicken and Dunes Sagebrush Lizard Candidate Conservation Agreement with Assurances were signed by Federal and State authorities.

September 3, 2019 - The Center of Excellence reached out to the Service and provided a draft of the amendments to the Conservation Agreements in response to discussions with industry partners.

August 12, 2020 - The Center of Excellence provided a final draft of the amendments to the Conservation Agreements to the Service.

December 10, 2021 - The Center of Excellence officially submitted an application to amend their Permit.

February 9, 2022 - The Draft Environmental Assessment for Amendments to the Agreements and issuance of an amended Enhancement of Survival Permit for the Lesser Prairie-chicken and Dunes Sagebrush Lizard in New Mexico was posted to the Federal Register for a 30-day public comment period. This comment period was subsequently extended by 7 days.

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the continued implementation of the Conservation Agreements for the lesser prairie-chicken and dunes sagebrush lizard in New Mexico. Additionally, these Conservation Agreements will be amended (described below), the amendments to the Conservation Agreement with Assurances will result in an amended Permit, which would become effective should the lesser prairie-chicken and/or dunes sagebrush lizard be listed as "threatened" or "endangered" under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*; Act), as amended during the life of the Permit. Impacts to the species and conservation efforts have been tracked since approval of the original Conservation Agreements on December 8, 2008 and will continued to be tracked.

The Conservation Agreements address the conservation needs of the lesser prairie-chicken and dunes sagebrush lizard, formerly known as the sand dune lizard, in southeastern New Mexico. The Conservation Agreements are separate agreements; the Conservation Agreement applies to

participants on Federal lands, and the Conservation Agreement with Assurances applies to participants on State and/or private lands. The Conservation Agreement provides a mechanism for implementing and monitoring conservation measures not addressed or applicable by the Bureau of Land Management's Special Status Species Resource Management Plan Amendment (Management Plan), approved in 2008. Under the Conservation Agreement, the Center of Excellence enrolls Federal lessees, permittees, and operators (including industry) (Participating Cooperators) through Certifications of Participation. Under the Conservation Agreement with Assurances, the Center of Excellence implements conservation measures for the lesser prairie-chicken and/or dunes sagebrush lizard within the Covered Area by providing technical assistance to Participating Landowners. By receiving regulatory certainties, Participating Landowners are incentivized to implement voluntary conservation measures for the lesser prairie-chicken and/or dunes sagebrush lizard on their properties. Under the Conservation Agreement with Assurances the Center of Excellence enrolls Participating Landowners via Certificates of Inclusion. The Participating Cooperators and Participating Landowners (collectively referred to as Participants) along with the Service, the Bureau of Land Management, and the Center of Excellence, work collaboratively so that practices to conduct or maintain specific habitat enhancement/protection measures to benefit lesser prairie-chicken and/or dunes sagebrush lizard are adopted on Federal and non-Federal lands. This landscape approach to conservation across a mix of land ownerships provides the greatest benefit to both species.

Participants and others in the industry have approached the Center of Excellence and the Service requesting changes to the Conservation Agreements. The Service is now proposing to amend the Conservation Agreements to remove barriers to increased participation by:

1. adding an enrollment option that will cover all activities for Participants in the Covered Area (All Activities Enrollment Option);
2. re-classifying habitat categories based on lesser prairie-chicken habitat and lek locations (Re-Classify Habitat Categories);
3. adding Certificates of Participation and/or Inclusion for companies that develop linear infrastructure (e.g., midstream, electrical distribution, and utility) (Certificates of Participation/Certificates of Inclusion for Linear Infrastructure Developers);
4. reducing initial enrollment fees for new parcel-by-parcel enrollments (Lower Initial Enrollment Fees for Some Participants); and,
5. adding an annual inflation adjustment for all habitat conservation fees (Inflation/Deflation Adjustment).

The proposed amendments are described in further detail below, and the effects of amending the Conservation Agreements to include these amendments are discussed in the Effects of the Action section below.

Covered Activities

The existing Conservation Agreements cover the following activities, and the effects of these Covered Activities are discussed in the Effects of the Action section below:

Oil and gas activities

Construction

Construction includes, but is not limited to, construction of facility sites and associated infrastructure and access roads, which involves the use of heavy equipment and trucking activities in clearing vegetation, contouring, compacting, stabilizing soils and installing erosion control. Well site construction may include pit construction and closure, as well as temporary fencing and/or netting around pits, locations, or portions thereof, for livestock and wildlife protection. A water well, disposal well and/or injection well may be drilled near the location and possible boring and trenching related activities associated with installation of flowlines, pipelines, and utilities may occur. Associated infrastructure for compressor facilities and gathering/processing facilities may also be constructed on site or at adjacent sites. Where practical, equipment may be electrified (which greatly reduces noise and emissions from gas/diesel-driven equipment), which involves the installation of in-field electrical distribution systems (poles, transformers and overhead wires). Activities may be conducted to plug and abandon a well, which may involve workover rig mobilization, removal of facility equipment and associated infrastructure, access roads, abandonment in place of subsurface lines, and reclamation pursuant to surface use lease agreements and regulatory requirements. Construction may also include activities associated with emergency operations such as mobilization of heavy equipment, building structures, and any associated reclamation activities.

Drilling, Completion, and Workovers (Recompletion)

Drilling, well completion, recompletion, and well workover activities may include rig mobilization, which involves the use of heavy equipment and frequent traffic. Recompletions and workovers typically do not increase existing well pad size and typically utilize smaller rigs and equipment, require less time for onsite activities, and involve less vehicular traffic. Well site fencing may be utilized after completion of operations for security and to limit access.

Routine Production Operation and Maintenance

Routine production operation and maintenance may include, but is not limited to, stimulations; wellbore repair; daily site inspections and maintenance; testing; linear infrastructure, gathering line, and flow line repairs; right-of-way and road maintenance; unloading of storage tanks; truck traffic for removal of product or waste; emergency response activities; workovers; recompletions; flaring; weed control; pipeline pigging activities; and regulatory inspections.

Remediation and Reclamation Activities

Remediation activities and reclamation activities include, but are not limited to, assessment, removal and reclamation of access roads, fences, well pads, reserve pits and other facilities for the disposal of waste; tanks and storage facilities; treaters, separators, dehydrators, electric and other utility lines and pipelines (e.g., gathering lines, flow lines, distribution lines, and waterlines); and associated infrastructure for compressor facilities and gathering/processing facilities.

Agricultural and ranching activities

Brush management may consist of using approved herbicide, mechanical, and prescribed burning practices to control or suppress shinnery oak, mesquite, and other brush in accordance with the Conservation Agreements. Livestock grazing, maintenance and construction of fences may occur if

in accordance with conservation measures described in the Conservation Agreements. Water storage facilities, agricultural water pipelines, and water trough construction, maintenance, and placement may also occur in accordance with conservation measures described in the Conservation Agreements.

Conservation, Research, and Monitoring

Conservation, research, and monitoring projects performed or approved under the Conservation Agreements include, but are not limited to, protections to conserve lesser prairie-chicken and dunes sagebrush lizard habitat; surveys for lesser prairie-chicken and dunes sagebrush lizard; captive breeding and reintroduction of lesser prairie-chicken and dunes sagebrush lizard; and other similar activities to study, monitor, and assess the species, and the efficacy of and compliance with the Conservation Agreements.

Construction and maintenance of linear infrastructure (servicing oil and gas development)

Upon amending the Conservation Agreements, the Conservation Agreements will provide a more direct mechanism for the enrollment of linear infrastructure directly associated with oil and gas development (i.e., pipelines, electrical transmission, distribution infrastructure, and other utilities) and construction and operation if conducted in accordance with applicable statutory and regulatory standards. This activity includes land surveying, construction, routine operation, maintenance and repairs, emergency response activities, reclamation activities for pipeline and appurtenant structures (e.g., pipe yards, interconnects, compressor stations), and electric utility facilities (e.g., distributions lines, service lines, and substations).

Action Area

The action area for this Conference Opinion includes all or portions of Lea, Eddy, De Baca, Curry, Roosevelt, Quay, and Chaves counties in southeastern New Mexico (Figure 1, Figure 2). The Conservation Agreement includes current and future enrollment on Federal lands, while the Conservation Agreement with Assurances includes current and future enrollment on State and/or private lands.

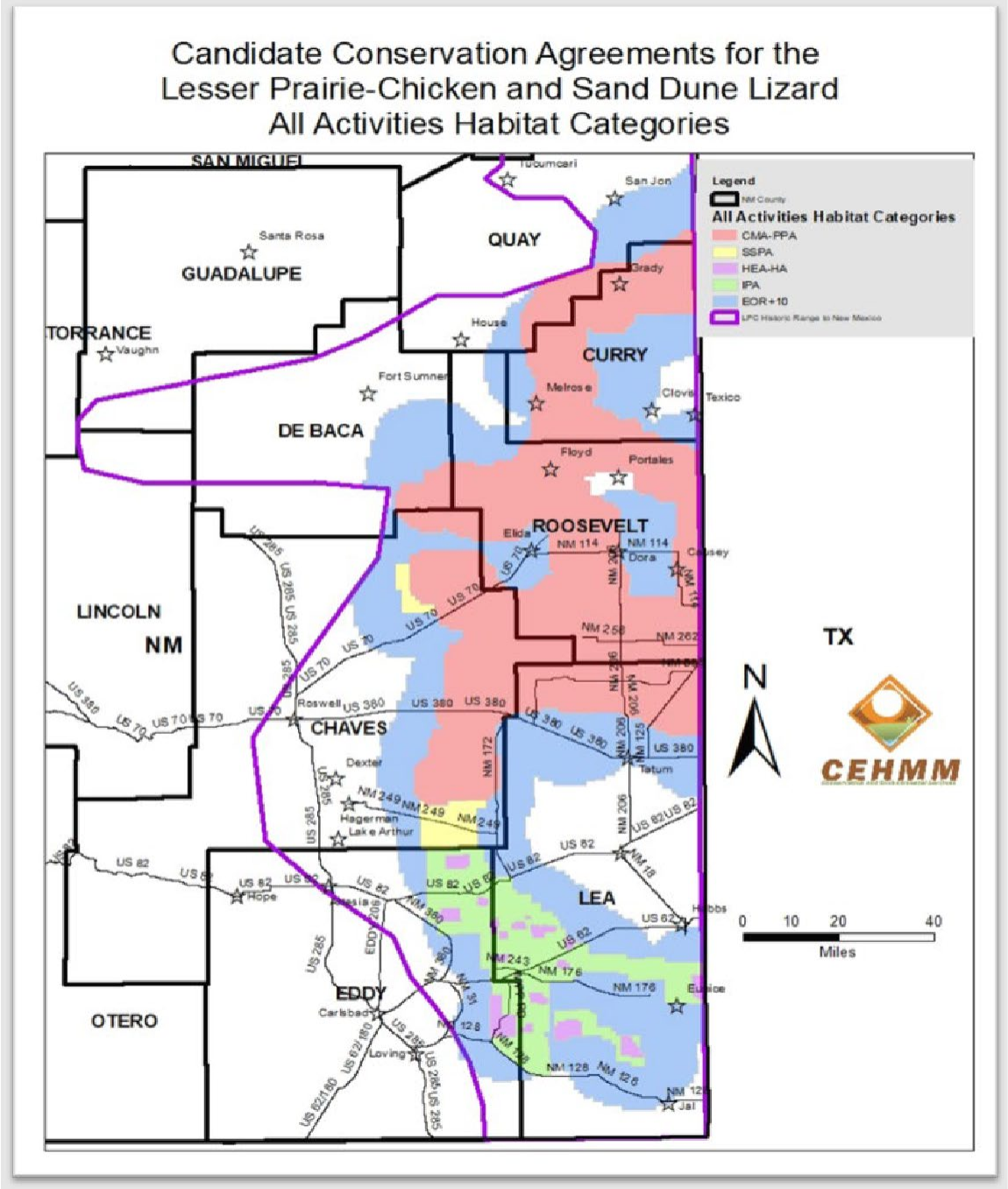

Figure 1. Covered Area including Core Management Area and Primary Population Area (CMA-PPA), Habitat Evaluation Areas and Habitat Areas (HEA-HA), Sparse and Scattered Population Area (SSPA), Isolated Population Area (IPA), Estimated Occupied Range Plus 10 (EOR+10), and Historic LPC Range (Other).

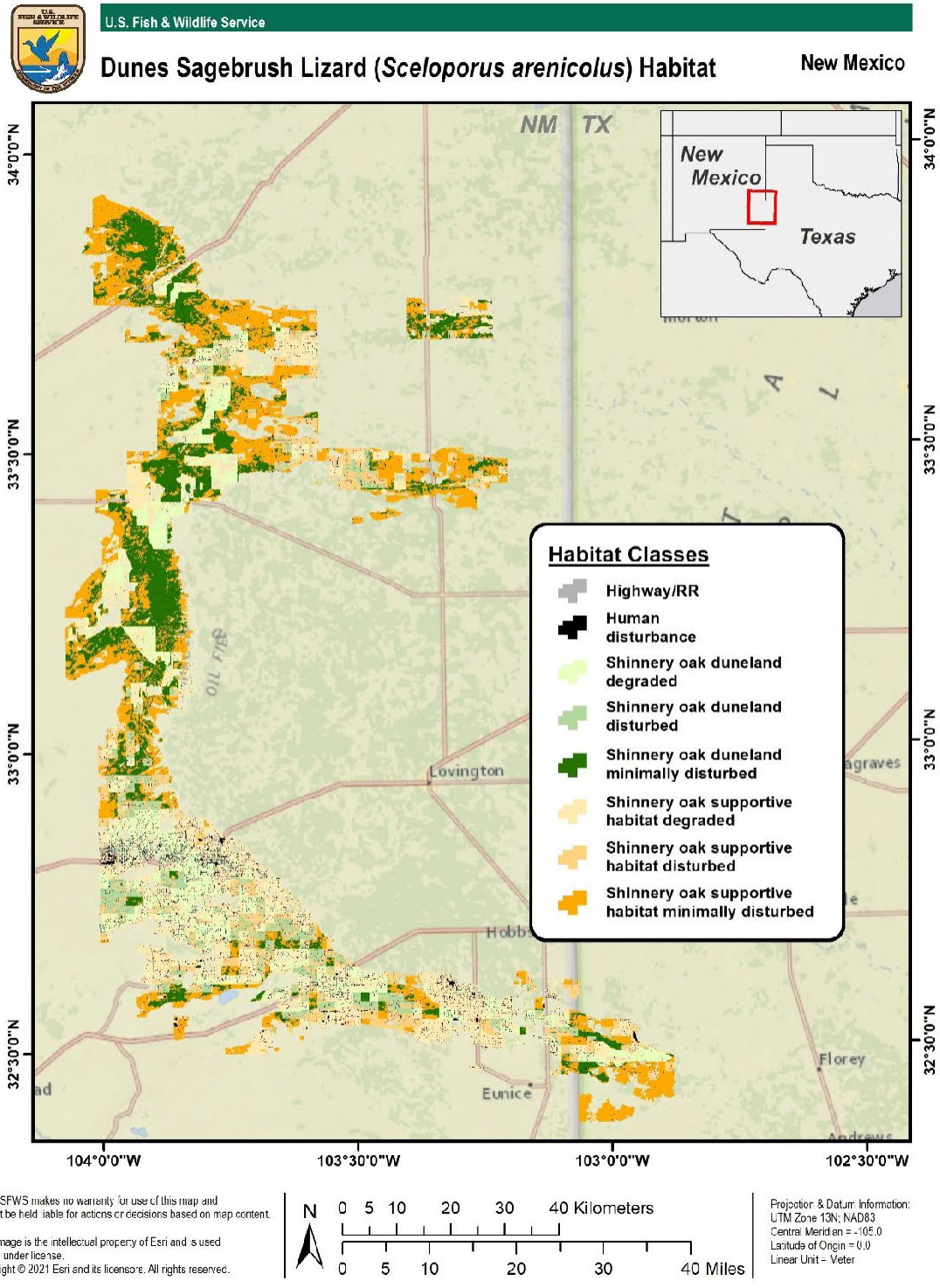

Figure 2. Dunes sagebrush lizard habitat in New Mexico.

Conservation Measures

The conservation measures included in the Conservation Agreements are meant to minimize impacts to the lesser prairie-chicken and dunes sagebrush lizard from oil and gas development and provide

funding to conserve, restore, and enhance lesser prairie-chicken and dunes sagebrush lizard habitat, and will not change with the proposed amendments. In addition to implementing the conservation measures described under the Bureau of Land Management's Management Plan (2008), participants in the Conservation Agreements may undertake a suite of additional conservation measures that go above and beyond those outlined in the Bureau of Land Management's Management Plan for the lesser prairie-chicken and dunes sagebrush lizard. Currently, individual participants sign a Certificate of Participation or Certificate of Inclusion for a particular parcel of land (enrolled property) to either implement the conservation measures or provide funding for implementation of conservation measures for the species their actions may affect. Under the Conservation Agreements, oil and gas Participants contribute funds or provide in-kind work and implement conservation actions for the lesser prairie-chicken and/or dunes sagebrush lizard to minimize and avoid disturbances associated with oil and gas development. The funds contributed may be used outside the enrolled property on high priority lands (lands defined in the Bureau of Land Management's Management Plan as being important habitat for the lesser prairie-chicken and/or dunes sagebrush lizard).

In addition to the foundational requirements in the Bureau of Land Management's Management Plan, conservation measures under the Conservation Agreement may be implemented as determined in negotiations at the time of enrollment during the plan of development (as applicable to a Participating Cooperators' enrolled property). In addition to contributing to the habitat conservation fund for new disturbance, industry (oil and gas) participants agree to the following conservation measures under the Conservation Agreement:

- To the extent determined by the Bureau of Land Management's representative at the Plan of Development stage, all infrastructures supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor.
- On enrolled parcels that contain inactive wells, roads, and/or facilities that are nor reclaimed to current standards, the Participating Cooperator shall remediate and reclaim their facilities within three years of executing the Certificate of Participation, unless the Cooperator can demonstrate they will put the facilities back to beneficial use for the enrolled parcel(s). If an extension is requested by the Cooperator, they shall submit a detailed plan (including dates) and receive Bureau of Land Management approval prior to the three-year deadline. All remediation and reclamation shall be performed in accordance with Bureau of Land Management requirements and be approved in advance by the Bureau of Land Management's Pecos District Manager (Bureau of Land Management's Authorized Officer).
- Allow no new surface occupancy within 30 meters of areas designated as occupied or suitable, unoccupied dunes sagebrush lizard dune complexes or within delineated shinnery oak corridors. The avoidance distance is subject to change based on new information received from peer reviewed science.
- Utilize alternative techniques to minimize new surface disturbance when required and as determined by the Bureau of Land Management representative at the Plan of Development stage.
- Provide escape ramps in all open water sources under the Participant Cooperator's control.
- Install fence markings along fences owned, controlled, or constructed by the Participating Cooperator that cross through occupied habitat within 2 miles (3.2 kilometers) of an active lesser prairie-chicken lek.

- Bury new power lines that are within 2 miles (3.2 kilometers) (measured from the lek) of lesser prairie-chicken lek sites that have been active at least once within the past 5 years. The avoidance distance is subject to change based on new information received from peer reviewed science.
- Bury new power lines that are within one mile of historic lesser prairie-chicken lek sites where at least one lesser prairie-chicken has been observed within the past 3 years (measured from the historic lek). The avoidance distance is subject to change based on new information received from peer reviewed science.
- Limit seismic exploration to areas outside of occupied and suitable shinnery dune complexes to protect dunes sagebrush lizard habitat.
- Submit a routine monitoring and schedule of inspection for oil, gas, and produced water pipelines and facilities to ensure accidental pollution events are avoided in sensitive habitats for dunes sagebrush lizard.
- Inside the Bureau of Land Management's dunes sagebrush lizard polygon, the following will apply:

    Any trench left open for 8 hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of open trench and remove all trapped wildlife and release them at least 100 yards from the trench.

    For trenches left open for 8 hours or more, earthen escape ramps (built at no more than a 30-degree slope and spaced no more than 500 feet apart) shall be placed in the trench. The open trench shall be monitored each day by an agency approved monitor during the following three time periods: (1) 5:00 a.m. to 10:00 a.m., (2) 11:00 a.m. to 2:00 p.m., and (3) 3:00 p.m. to sunset. All trapped wildlife shall be released at least 100 yards from the trench.

    One agency approved monitor shall be required for every mile of open trench. A daily report (consolidate if there is more than one monitor) on the wildlife found and removed from the trench shall be provided to the Bureau of Land Management (email is acceptable) the following morning.

    This stipulation shall apply to the entire length of the project in the dunes sagebrush lizard habitat regardless of land ownership.

- Management recommendations may be developed based on new information received from peer-reviewed science to mitigate impacts from hydrogen sulfide and/or the accumulation of sulfates in the soil related to production of gas containing hydrogen sulfide on the dunes sagebrush lizard and lesser prairie-chicken. Such management recommendations will be applied by the Participating Cooperator as conservation measures under the Certificate of Participation in suitable and occupied dunes sagebrush lizard/lesser prairie-chicken habitat where peer-reviewed science has shown that hydrogen sulfide levels threaten the lesser prairie-chicken/dunes sagebrush lizard.

Landowner (agricultural) participants agree to the following conservation measures under the Conservation Agreement:

- Identify suitable lesser prairie-chicken/dunes sagebrush lizard habitat (conservation lands) to be improved or maintained as suitable lesser prairie-chicken and/or dunes sagebrush lizard habitat for the duration of the Certificate of Participation.
- At a minimum, adhere to rangeland and grazing guidelines as described in the Bureau of Land Management's Management Plan for ranch operations.
- Allow Center of Excellence, the Service, and/or New Mexico Department of Game and Fish personnel, and/or their designees, with prior notification, to survey enrolled lands for the presence of lesser prairie-chicken and/or dunes sagebrush lizard and for habitat suitability for these species.
- Allow Center of Excellence personnel and/or their designees access to the enrolled lands for purposes of monitoring lesser prairie-chicken and/or dunes sagebrush lizard populations and habitat.
- Allow Center of Excellence personnel or their designees access to the enrolled lands for purposes of compliance monitoring of conservation commitment.
- Use herbicides for shinnery oak management only when habitat goals cannot be achieved by other means, including grazing system management.
    - No herbicide treatments will be applied in dune complexes (Natural Resources Conservation Service sand hills ecological sites) and corridors between dune complexes. Maintain an application buffer around dune complexes of 100 meters to ensure dunal stability.
    - Prohibit tebuthiuron spraying within 500 meters of dunes sagebrush lizard habitat. In addition, prohibit spraying in dune complexes or within corridors, which connect dune complexes that are within 2000 meters of each other. All application of tebuthiuron will be by a licensed applicator and in accordance with the New Mexico supplemental label for wildlife habitat. In conducting such treatments, the goal will be to temporarily reduce shinnery oak competition with grasses, allowing grass cover to increase naturally. Herbicides should be used at dosages that would set back (defoliate) shinnery oak, not kill it.
    - Large block and linear application of herbicides will be avoided. Application should follow the natural patterns on the landscape such that only patches needing treatment are treated.
    - For lesser prairie-chicken, herbicide treatment should not be applied around large oak motts, and within 1.5 miles (2.4 kilometers) of active lek sites.
    - Post-treatment grazing management is essential to success. Grazing by any livestock will be deferred during the growing season for at least two consecutive years following treatment. If vegetation response to treatment has been hindered due to drought or other factors additional deferments to ensure success of the treatment may be required.
    - Experimental treatments outside these guidelines may occur with the approval by the Service. Experimental treatments must be part of a quantitative research design to study vegetation response, viability of shinnery oak, drift, sub-surface spread, the

interaction of herbicide treatment and/or grazing management and the response of lesser prairie-chicken and dunes sagebrush lizard to various treatments.

- For livestock ranches, implement grazing management plans intended to move towards meeting specific habitat goals for the lesser prairie-chicken and/or dunes sagebrush lizard as defined in the Collaborative Conservation Strategies for the Lesser Prairie-Chicken and Sand Dune Lizard in New Mexico (Strategy) (NM LPC/SDL Working Group 2005) on individual ranches. This may include adjustment of stocking rates, rest-rotation patterns, grazing intensity and duration, avoidance of nesting areas during nesting season, and contingency plans for varying prolonged weather patterns including drought.
- Avoid construction of new roads. If unavoidable, route and construct new roads, pipelines and power lines outside of occupied and suitable, unoccupied shinnery dune complexes as delineated by the Service, Bureau of Land Management, New Mexico Department of Game and Fish, and/or designees.
- Provide escape ramps in all open water sources and trenches for lesser prairie-chicken and/or dunes sagebrush lizard. Any trenches dug on enrolled property will have escape ramps placed at the ends and approximately every 500 feet to allow for lesser prairie-chicken/dunes sagebrush lizard escape. Trenches may alternatively be covered to avoid entrapment and should be inspected three times a day.
- Install fence markings along fences that cross through occupied habitat within 2 miles (3.2 kilometers) of an active lesser prairie-chicken lek. The Bureau of Land Management, Service, and Center of Excellence will help identify where the markers are needed and help plan the acquisition and installation of the markers.
- Initiate control of shinnery oak only after coordinating with and gaining approval from Bureau of Land Management and the Service concerning control procedures so they will not be detrimental to lesser prairie-chicken and/or dunes sagebrush lizard.
- Provide information on annual basis to the Center of Excellence on implementation of conservation commitment, observations of lesser prairie-chicken/dunes sagebrush lizard on enrolled property, and any mortality of either species observed.

Conservation measures under the Agreement with Assurances may be implemented as determined in negotiations at the time of enrollment during the plan of development (as applicable to a Participating Landowner's enrolled property). In addition to contributing to the habitat conservation fund for new disturbance, industry (oil and gas) participants agree to the following conservation measures under the Conservation Agreement with Assurances:

- To the extent determined by the Service or Center of Excellence representative at the Plan of Development stage, all infrastructure supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor.
- On enrolled parcels that contain inactive wells, roads, and/or facilities that are nor reclaimed to current standards, the Participating Landowner shall remediate and reclaim their facilities within 3 years of executing the Certificate of Inclusion, unless the Participating Landowner can demonstrate they will put the facilities back to beneficial use for the enrolled parcel(s). If an extension is requested by the Participating Landowner, they shall submit a detailed plan (including dates) and receive Service or Center of Excellence approval prior to the 3-year deadline. All remediation and reclamation shall be performed in accordance with the Service

or Center of Excellence requirements and be approved by the Service's New Mexico Ecological Services Field Office Field Supervisor (Service's Authorized Officer) and/or Center of Excellence's Executive Director (Center of Excellence's Authorized Officer).

- Allow no new surface occupancy within 30 meters of areas designated as occupied or suitable, unoccupied dunes sagebrush lizard dune complexes or within delineated shinnery oak corridors. The avoidance distance is subject to change based on new information received from peer reviewed science.
- Utilize alternative techniques to minimize new surface disturbance when required and as determined by the Service or Center of Excellence representative at the Plan of Development stage.
- Provide escape ramps in all open water sources under the Participant Landowner's control.
- Install fence markings along fences owned, controlled, or constructed by the Participating Landowner that cross through occupied habitat within 2 miles (3.2 kilometers) of an active lesser prairie-chicken lek.
- Bury new power lines that are within 2 miles (3.2 kilometers) of lesser prairie-chicken lek sites (measured from the lek) that have been active at least once within the past 5 years immediately prior to the construction of the line. The avoidance distance is subject to change based on new information received from peer reviewed science.
- Bury new power lines that are within 1 mile of historic lesser prairie-chicken lek sites (measured from the lek) where at least one lesser prairie-chicken has been observed within the past 3 years. The avoidance distance is subject to change based on new information received from peer reviewed science.
- Allow no 24-hour drilling operations or 3-D geophysical exploration during the period from March 1st through June 15th, annually, on lands enrolled by the Participating Landowner that are located within Zone 1. Other activities that produce noise or involve human activity, such as geophysical exploration (other than 3-D operation) and pipeline, road, and well pad construction will be allowed during these dates except between 3:00 A.M. and 9:00 A.M. The 3:00 A.M. to 9:00 A.M. restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exceptions to these requirements would be considered in emergency situations, such as mechanical failures, but would not be considered for routine planned events.
- Noise abatement during the period from March 1st through June 15th, annually. Noise from facilities (e.g., pumpjack, compressor) under the control of the Participating Landowner that service enrolled lands located within Zone 1 (see Exhibit D) will be muffled or otherwise controlled so as not to exceed 75 decibels measured at 30 feet from the source of the noise.
- Limit seismic exploration to areas outside of occupied and suitable shinnery dune complexes to protect dunes sagebrush lizard habitat.
- Submit a routine monitoring and schedule of inspection for oil, gas and produced water pipelines and facilities to ensure accidental pollution events are avoided in sensitive habitats for dunes sagebrush lizard.
- Inside the Bureau of Land Management's dunes sagebrush lizard polygon, the following will apply:

Any trench left open for 8 hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of open trench and remove all trapped wildlife and release them at least 100 yards from the trench.

For trenches left open for 8 hours or more, earthen escape ramps (built at no more than a 30-degree slope and spaced no more than 500 feet apart) shall be placed in the trench. The open trench shall be monitored each day by an agency/Center of Excellence approved monitor during the following three time periods: (1) 5:00 a.m. to 10:00 a.m., (2) 11:00 a.m. to 2:00 p.m., and (3) 3:00 p.m. to sunset. All trapped wildlife shall be released at least 100 yards from the trench.

One agency/Center of Excellence approved monitor shall be required for every mile of open trench. A daily report (consolidate if there is more than one monitor) on the wildlife found and removed from the trench shall be provided to the Center of Excellence (email is acceptable) the following morning.

This stipulation shall apply to the entire length of the project in the dunes sagebrush lizard habitat regardless of land ownership.

- Management recommendations may be developed based on new information received from peer reviewed science to mitigate impacts from hydrogen sulfide and/or the accumulation of sulfates in the soil related to production of gas containing hydrogen sulfide on the dunes sagebrush lizard and lesser prairie-chicken. Such management recommendations will be applied by the Participating Landowner as conservation measures under this Certificate of Inclusion in suitable and occupied dunes sagebrush lizard/lesser prairie-chicken habitat where peer-reviewed science has shown that hydrogen sulfide levels threaten the lesser prairie-chicken/dunes sagebrush lizard.
- Upon the plugging and subsequent abandonment of a well within Zone 1 (see Exhibit D), the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well unless otherwise precluded by law or private surface owner. See Exhibit E for more information.

For landowner (agricultural) participants:

- Identify suitable lesser prairie-chicken/dunes sagebrush lizard habitat (conservation lands) to be improved or maintained for the duration of the Certificate of Inclusion.
- Adhere to rangeland and grazing guidelines as described in the Bureau of Land Management's Management Plan at a minimum for ranch operations.
- Allow Center of Excellence, Service, and/or New Mexico Department of Game and Fish personnel, and/or their designees, with prior notification, to survey enrolled lands for the presence of lesser prairie-chicken and/or dunes sagebrush lizard and for habitat suitability for these species.
- Allow Center of Excellence personnel and/or their designees access to the enrolled lands for purposes of monitoring lesser prairie-chicken and/or dunes sagebrush lizard populations and habitat.

- Allow Center of Excellence personnel and/or their designees access to the enrolled lands for purposes of compliance monitoring of conservation commitment.
- Use herbicides for shinnery oak management only when habitat goals cannot be achieved by other means, including grazing system management.
    - No herbicide treatments will be applied in dune complexes (Natural Resources Conservation Service sand hills ecological sites) and corridors between dune complexes. Maintain an application buffer around dune complexes of 100 meters to ensure dunal stability.
    - Prohibit tebuthiuron spraying within 500 meters of dunes sagebrush lizard habitat. In addition, prohibit spraying in dune complexes or within corridors, which connect dune complexes that are within 2,000 meters of each other. All application of tebuthiuron will be by a licensed applicator and in accordance with the New Mexico supplemental label for wildlife habitat.
    - In conducting such treatments, the goal will be to temporarily reduce shinnery oak competition with grasses, allowing grass cover to increase naturally. Herbicides should be used at dosages that would set back (defoliate) shinnery oak, not kill it.
    - Large block and linear application of herbicides will be avoided. Application should follow the natural patterns on the landscape such that only patches needing treatment are treated.
    - For lesser prairie-chicken, herbicide treatment should not be applied around large oak motts, and within 1.5 miles (2.4 kilometers) of active lek sites.
    - Post-treatment grazing management is essential to success. Grazing by any livestock will be deferred during the growing season for at least 2 consecutive years following treatment. If vegetation response to treatment has been hindered due to drought or other factors additional deferments to ensure success of the treatment may be required.
    - Experimental treatments outside these guidelines may occur with the approval by the Service. Experimental treatments must be part of a quantitative research design to study vegetation response, viability of shinnery oak, drift, sub-surface spread, the interaction of herbicide treatment and/or grazing management and the response of lesser prairie-chicken and dunes sagebrush lizard to various treatments.
- No leasing of lands within the Participating Landowner's designated conservation lands to wind power development (including any appurtenant turbine towers, roads, fences, or power lines).
- No leasing any lands within the conservation lands to oil and gas development (including roads, fences, or power lines), where the private land holder has discretion.
- No conversion of conservation lands to crop production (sodbusting) or development as part of maintaining existing lesser prairie-chicken and/or dunes sagebrush lizard habitat.
- Avoid construction of new roads. If unavoidable, route and construct new roads, pipelines and power lines outside of occupied and suitable, unoccupied shinnery dune complexes as delineated by the Service, Bureau of Land Management, New Mexico Department of Game and Fish, and/or their designees.
- Provide escape ramps in all open water sources and trenches for lesser prairie-chicken and/or dunes sagebrush lizard.

- Install, or allow the installation of, fence markers along fences that cross through occupied habitat within 2 miles (3.2 kilometers) of an active lesser prairie-chicken lek.
- Avoid well pad construction within 1.5 miles (2.4 kilometers) of an active lek (as defined in the Strategy and/or the Bureau of Land Management's Management Plan), unless reviewed and approved by Center of Excellence and the Service.
- Initiate control of shinnery oak only after coordinating with and gaining approval from Center of Excellence and the Service concerning control procedures so they will not be detrimental to lesser prairie-chicken and/or dunes sagebrush lizard.
- Any trenches dug on enrolled property will have escape ramps placed at the ends and approximately every 500 feet to allow for lesser prairie-chicken/dunes sagebrush lizard escape. Trenches may alternatively be covered to avoid entrapment and should be inspected three times a day.
- Provide information on annual basis to Center of Excellence on implementation of conservation commitment, observations of lesser prairie-chicken/dunes sagebrush lizard on enrolled property, and any mortality of either species observed.
- Grazing by any livestock will be deferred during the growing season for at least 2 consecutive years following vegetation treatment (e.g., mesquite spray). If vegetation response to treatment has been hindered due to drought or other factors additional deferments to ensure success of the treatment may be required.

Additionally, a landowner may choose to implement as many of the following optional conservation enhancements as desired. This list is not inclusive. Conservation measures from the companion Conservation Agreement, or the Strategy, may also be implemented in accordance with stipulations above. All conservation measures and conservation enhancements must be included on the Certificate of Inclusion and agreed upon by the Service, the Center of Excellence, and Participating Landowner. These optional conservation enhancements are as follows.

- Allow release of captive-reared or translocated lesser prairie-chickens on enrolled lands if deemed appropriate by the Center of Excellence, the Service, and New Mexico Department of Game and Fish personnel.
- Participate in annual meetings with Center of Excellence, the Service, and other Participating Landowners to discuss progress in recovery of lesser prairie-chickens and dunes sagebrush lizards on participating lands. In addition, contribute information to an annual progress report as deemed appropriate about range conditions, land management activities, lesser prairie-chicken and/or dunes sagebrush lizard abundance and distribution, and factors that may be having positive and negative effects on lesser prairie-chicken and/or dunes sagebrush lizard populations.
- Control mesquite invasion especially in sandy soils where shinnery oak-bunch grass is the dominant plant association preferred by lesser prairie-chicken and dunes sagebrush lizard. If mesquite control involves the use of herbicides, it must be greater than 500 meters from suitable and occupied habitat for dunes sagebrush lizard. All application of herbicides will be by a licensed applicator and in accordance with the manufactures and Environmental Protection Agency labeling.
- Maintain enrollment in the Conservation Reserve Program.

- Allow removal of legacy oil and gas wells and infrastructure, and restoration of lesser prairie-chicken and/or dunes sagebrush lizard habitat.
- Provide access for academic and agency researchers to study lesser prairie-chicken and/or dunes sagebrush lizard on their lands.

A team composed of representatives from the Service, the Bureau of Land Management and the Center of Excellence will develop and review the Certificates of Participation and Certificates of Inclusion to ensure the greatest benefit is occurring for the lesser prairie-chicken and/or dunes sagebrush lizard. The team will meet initially to review the Participating Landowners' or Participating Cooperators' application and to develop the appropriate Certificate of Participation or Certificate of Inclusion for their lands. Subsequent meetings will occur to review the progress and success of the conservation measures being implemented.

Proposed Amendments to the Conservation Agreements

1. All Activities Enrollment Option:

The parcel-by-parcel method of enrollment in the current Conservation Agreements does not allow Participants to add acreage beyond what is identified in their Certificate of Participation or Certificate of Inclusion after an effective listing date. Participants requested an All Activities option to allow inclusion of acreage that may be acquired following an effective listing and was not previously enrolled. The purpose of the All Activities option is to allow for existing participants the opportunity to receive coverage in areas where they acquire new assets, which in turn ensures that conservation is being implemented on both new and previously-acquired parcels, encompassing projects that otherwise have no Federal nexus (in the case of the Conservation Agreement with Assurances). The All Activities enrollment will also provide for the implementation of conservation measures intended to minimize impacts from development on all of a Participant's acreage in the Covered Area, rather than selective enrolled parcels. Participants will also contribute funding for off-site conservation for all enrolled acres. Habitat categories will be amended, as described below, to ensure conservation fees for disturbance are appropriate in relation to occupied lesser prairie-chicken habitat.

The All Activities option is an amendment to the Certificates of Participation and Inclusion. The All Activities option will be available for current or new Participants to enroll all activities specific to their certificate (e.g., Oil and Gas CP/CI) within the Covered Area. This differs from the current method of enrollment, because there is no defined Covered Area. Currently, existing Participants may acquire assets within the Covered Area, but may not enroll them because they were not identified as being within the historic lesser prairie-chicken range. By allowing for an All Activities option to be implemented, all lands acquired in the future within the agreement area by Participants will be covered by the Conservation Agreements because a Covered Area is defined. When exercising the All Activities option, Participants have agreed that all of their activities in the Covered Area will be subject to implementation of conservation measures and habitat improvement projects funded through conservation fees. With the All Activities enrollment option, all the lands (e.g., oil and gas leasehold, rights-of-way, and rights-of-entry) held by the Participant within the Covered Area are considered enrolled. Exercise of the All Activities option is only available prior to the effective date of a listing for either or both species. All Habitat Conservation Fees and conservation

measures described in the initial Conservation Agreement are still applicable, except for those amended as described below.

Participants that enroll via the All Activities option may add all lands to (and remove all Enrolled Lands from) the Certificate of Participation or Inclusion at any time, including after any effective date of listing of a Covered Species. A Participant enrolled in All Activities will provide updated GIS shapefiles reflecting additions or removals of properties on an annual basis, no later than October 1. Lands may not be removed where a surface disturbance has occurred due to operations on the enrolled lands. In cooperation with the Service, the Center of Excellence will develop a framework for tracking land acquisitions and development by Participants who have enrolled via the All Activities option.

2. Re-Classify Habitat Categories

Allowing habitat categories to change upon discovery of new lek locations outside of current occupied habitat will provide for greater protection of the lesser prairie-chicken. Upon the discovery of new leks, Participants will be notified of the change of habitat category and conservation fees can be adjusted appropriately. In the event that a Federal agency's (e.g., Bureau of Land Management) management plan calls for more stringent conservation action than the Conservation Agreements, the conservation measures may be revised in the Conservation Agreement, and may be amended in the Conservation Agreement with Assurances through Adaptive Management. Existing Certificates of Participation or Inclusions will only be amended if agreed to by the Participant.

Appendix B of the Conservation Agreement and Exhibit B of the Certificate of Participation and Inclusion are amended by adding a Characterization of Habitat Categories (below) and Figure 1 (above). The habitat categories, as defined below, were determined by location of active lesser prairie-chicken leks, connectivity between active leks, suitability of habitat, potential for restoration or reclamation, the estimated occupied range of the lesser prairie-chicken, and the historic range of the lesser prairie-chicken.

> Core Management Area (CMA) and Primary Population Area (PPA) – Areas where lesser prairie-chicken populations are well-distributed, intact, and provide connectivity to smaller, occupied patches of habitat.
>
> Habitat Evaluation Areas and Habitat Areas (HEA or HA) – Areas within the Isolated Population Area where habitat characteristics for lesser prairie-chicken and dunes sagebrush lizard are present and with reclamation and/or restoration could provide connectivity to isolated patches of habitat.
>
> Sparse and Scattered Population Area (SSPA) – Areas where leks are sporadically distributed, and local extirpation of lesser prairie-chicken may occur.
>
> Isolated Population Area (IPA) – Areas in the historic range of the lesser prairie-chicken where it is nearly extirpated.
>
> Estimated Occupied Range Plus 10 (EOR+10) – Areas that are in the estimated occupied range of the lesser prairie-chicken buffered by 10 miles (16.1 kilometers) but are outside of the zones described above.

Historic LPC Range (Other) – Areas outside of the zones listed above that were historically occupied by the lesser prairie-chicken.

3. Certificates of Participation and Certificates of Inclusion for Linear Infrastructure Developers

Section VI of the Conservation Agreement and Section IV of the Conservation Agreement with Assurances describes the process of entering into the Conservation Agreements by executing a Certificate of Participation or Certificate of Inclusion, respectively, which identifies parcels where Conservation Measures for the lesser prairie-chicken and/or dunes sagebrush lizard will be implemented. While the parcel-by-parcel option will remain available to Participants, the All Activities option will also be available to allow enrollment that covers all of a Participant's activities in the Covered Area.

By introducing a mechanism for companies that develop linear infrastructure (e.g., pipelines, utilities, and electrical distribution lines) that service oil and gas development to enroll in the Conservation Agreements, the inability to enroll and implement conservation measures on parcels that have not yet been contractually secured (e.g., easements) will be resolved. Companies that primarily develop linear infrastructure, including but not limited to midstream, electrical distribution lines (servicing oil and gas development), and utility, may enroll in the All Activities option with no enrollment fee. These Participants will add acreage as rights-of-way and rights-of-entry and pay Habitat Conservation Fees for new surface development.

Section VI of the Certificate of Participation and Certificate of Inclusion are proposed to be amended by adding the following:

All Activities Enrollment: Transfers and Additions

Participants that enroll via the All Activities option may add any lands to (and remove Enrolled Lands from) the CP/CI at any time, including after any decision to list a Covered Species. A Participant enrolled in All Activities will provide updated GIS shapefiles reflecting additions or removals of properties on an annual basis, no later than October 1.

4. Lower Initial Enrollment Fees for Some Participants

It has been noted that initial enrollment fees may deter operators with less than 10,000 acres from enrolling. In order to encourage enrollment by these operators, this amendment will lower enrollment fees. Conservation fees will remain the same based on actual disturbance and development on the ground. The narrative and Table 1 (below) describe and illustrate the new enrollment fee structure and changes/additions to Section VI of the Certificate of Participation and Certificate of Inclusion.

The Certificate of Participation and Certificate of Inclusion are amended by the addition of Table 1, which displays annual prepayment tiers for oil and gas enrollment, and the addition of language describing application. Upon the execution of a Certificate of Participation or Certificate of Inclusion, an oil and gas Participant will create a Habitat Conservation Fund in accordance with the schedule in Table 1. The initial payment will be made on the date the Certificate of Participation and/or Certificate of Inclusion is executed with subsequent payments on the first and second anniversary of the execution date of the Certificate of Participation and/or Certificate of Inclusion. The Participant may, at their discretion, pay more than the required amount into their Habitat Conservation Fund Account. Conservation fees for development will be deducted from this fund.

Existing Oil and Gas Participants that convert to an All Activities enrollment will be credited for prepayments and will not pay additional fees unless the resulting enrolled acreage is at a higher tier differential from the previous enrolled parcels. After the initial three-year period, any enrolled lands added by addendum to an All Activities Certificate of Participation and/or Certificate of Inclusion will require a one-time payment of $4,000.00 into the Habitat Conservation Fund per tier increase (e.g., if the Participant goes from Tier 2 to Tier 3, a one-time payment of $4,000.00 will be required). Once a Participant has entered Tier 4, no further payment will be required to add acreage in an All Activities enrollment.

Linear infrastructure Participants (e.g., midstream, electrical distribution (servicing oil and gas development), utility) are not required to prepay but will pay conservation fees as projects are initiated. Participants that do not choose the All Activities option but wish to have coverage for specific parcels may enroll those parcels according to the schedule in Table 1.

The total acreage enrolled in an All Activities Certificate of Participation and/or Certificate of Inclusion, and the resulting annual prepayment, will be recalculated on the remaining anniversary dates of the three-year cycle. No annual prepayment will be required after the initial three-year period, but Habitat Conservation Fees will remain in effect.

Table 1. Annual Prepayment Tiers for Oil and Gas Enrollment (No previous Certificate of Participation and/or Certificate of Inclusion executed by the Participant).

Tier	Number of Acres Identified in CP and/or CI that Coverage is Desired	Annual Prepayment	Total Payment Over Three Years
1	0-2,500	$5,000.00	$15,000.00
2	2,501-6,250	$12,000.00	$36,000.00
3	6,251-9,999	$16,000.00	$48,000.00
4	> 10,000 (All Activities)	$20,000.00	$60,000.00

5. Inflation/Deflation Adjustment

The amendment allows for an annual readjustment of habitat conservation fees due to inflation and deflation. Previously the habitat conservation fees were set at one fee based on the estimated cost to restore an acre of habitat when the program was created in 2008. This did not allow for the cost of inflation or deflation, which could cause the estimated cost to restore an acre to increase or decrease. The habitat conservation fee for new wells and new surface development associated with oil and gas development activities will be calculated using the following scales. The scales also apply to third parties doing work for the Participant either on or off the Participant's enrolled lands, regardless of who constructs or operates the facility. The Participant may prepay habitat conservation fees at any time at their discretion. The participant must notify the Center of Excellence prior to conducting any surface disturbing activities associated with this Certificate of Participation on or off the enrolled lands either by the Participant or third-party subcontractors. The habitat class of the new surface

disturbance or well site is determined by the location of the activity being developed, not actual habitat found on site.

For this change Exhibit B of the Certificate of Participation and Certificate of Inclusion is amended by replacing the scales for 1) New Well Location Fees (Table 2, Conservation Fee column) and 2) New Surface Development Fees (Table 3, Conservation Fee column):

Table 2. New well location fees (including well pad and associated access road) and habitat class scale. Note that all acreage calculation will be rounded up to the next whole acre, and that the "other" habitat class includes areas outside the Management Plan planning area boundary and the Southern Great Plain's Crucial Habitat Assessment Tool zones, but within historic range of lesser prairie-chicken in New Mexico.

Habitat Class	Conservation Fee
Primary Population Area and Core Management Area	$20,000.00/location
Habitat Evaluation Area	$15,000.00/location
Scarce and Scattered Population Area	$12,500.00/location
Isolated Population Area	$10,000.00/location
Estimated Occupied Range Plus 10	$3,000.00/location
Other	$0-1,000.00/location

Table 3. New surface development fees for other new surface disturbances associated with Enrolled Lands, but not directly attributable to a new well pad (note that co-located wells that require an increase in the size of the existing pad will be assessed by new acres disturbed) and associated road, and habitat class scale. Note that all acreage calculation will be rounded up to the next whole acre, and that the "other" habitat class includes areas outside the Management Plan planning area boundary and the Southern Great Plain's Crucial Habitat Assessment Tool zones, but within historic range of the lesser prairie-chicken in New Mexico.

Habitat Class	Conservation Fee
Primary Population Area and Core Management Area	$5,000.00/acre
Habitat Evaluation Area	$3,750.00/acre
Scarce and Scattered Population Area	$3,125.00/acre
Isolated Population Area	$2,500.00/acre
Estimated Occupied Range Plus 10	$750.00/acre
Other areas	$0-250.00/acre

All habitat conservation fees will be adjusted once yearly by the Center of Excellence. This will account for inflation or deflation. The term "Base Habitat Conservation Fee" shall refer to the values of the habitat conservation fees set forth in this Exhibit. For purposes of this section, the term "CPI-U" shall refer to the Consumer Price Index for All Urban Consumers, U.S. City Average, all items less food and energy (base 1982 – 84=100), not seasonally adjusted, as published by the U.S. Department of Labor, Bureau of Labor Statistics. The Maximum Annual Inflation Increase shall be based on the percent increase between the annual average CPI=U for the calendar year that precedes the date of adjustment ("Current CPI-U") and the annual average CPI-U for calendar year 2020 ("Base CPI-U").

The Maximum Annual Inflation Increase shall be calculated as follows:

Base Habitat Conservation Fee x [(Current CPI-U – Base CPI-U) / Base CPI-U].

Increases, if any, shall occur on the January release date of the CPI-U. The Maximum Annual Inflation Increase will reflect the most recent revision to the annual average Current CPI-U, if any. The Center of Excellence will send Participants a notification, both electronically and by mail, each year at the time the fees are adjusted. If the annual average CPI-U is unavailable for a calendar year, no increases will be made. If the CPI-U is discontinued entirely or unavailable for a period longer than 2 calendar years, the Center of Excellence will consult with the Participant to select an appropriate alternative index.

STATUS OF THE SPECIES

Lesser prairie-chicken

For this Conference Opinion we provide a brief overview of biological and ecological information, for a complete and detailed description of the biological and ecological information on the lesser prairie-chicken please see the lesser prairie-chicken Species Status Assessment Report (USFWS 2022).

Species Description and Life History

The lesser prairie-chicken is a species of prairie grouse endemic to the southern and central high plains of New Mexico, Texas, Colorado, Oklahoma, and Kansas. The lesser prairie-chicken is commonly recognized for its stout build, feathered legs, ground-dwelling habit, and elaborate breeding behavior. Plumage of the lesser prairie-chicken is characterized by a cryptic pattern of alternating brown and buff-colored barring, with body length ranging from 38-41 centimeters (15-16 inches) (Johnsgard 1973). Lesser prairie-chicken average body mass is 752 grams for males and 712 grams for females (Giesen 1998).

Lesser prairie-chickens are polygamous and exhibit a lek mating system. The lek is a place where males traditionally gather to conduct a communal, competitive courtship display. The males use their specialized plumage and vocalizations (commonly referred to as booming) to attract females for mating. Leks are normally located on the tops of wind-swept ridges, exposed knolls, sparsely vegetated dunes, and similar features in areas having low vegetation height (10 centimeters (4 inches)) or less or bare soil and enhanced visibility of the surrounding area (Copelin 1963; Jones 1963; Taylor and Guthery 1980; Giesen 1998). Males gather to display on leks at dusk and dawn beginning in late February and extending through early May (Copelin 1963; Hoffman 1963; Crawford and Bolen 1976a). Dominant older males occupy the center of the lek, while younger males occupy the periphery and compete for central access (Ehrlich et al. 1988). Females arrive at the lek in early spring; peak hen attendance at leks is during mid-April (Copelin 1963; Haukos 1988).

Within 1 to 2 weeks of successfully mating, the hen will select a nest site based upon available nesting habitat, normally within 0.6 to 2.4 miles (1 to 4 kilometers) of an active lek (Copelin 1963; Giesen 1994a), construct a nest, and lay a clutch of 8 to 14 eggs with regional variability (Bent 1932; Copelin 1963; Merchant 1982; Fields 2004; Hagen and Giesen 2005; Pitman et al. 2006a). Incubation lasts 24 to 27 days (Coats 1955; Sutton 1968; Pitman et al. 2006a). Re-nesting may occur when the first attempt at a nest fails to produce offspring (Johnsgard 1973; Merchant 1982; Pitman et

al. 2006a). Females will typically establish nests at sites with tall and dense herbaceous cover, residual cover from the previous growing season, and sites free from vertical structures and anthropogenic disturbance. These characteristics provide concealment of nests and females from predators and weather events (Suminski 1977; Riley 1978; Riley et al. 1992; Giesen 1998).

Chicks are mobile upon hatching and typically leave the nest within hours of hatching (Coats 1955). Broods may remain with females for up to 18 weeks (Giesen 1998; Pitman et al. 2006c), but brood breakup generally occurs by September when the chicks are approximately 70 days of age (Taylor and Guthery 1980). Brood rearing of chicks requires areas more open than nesting habitat, with a high density of forbs. The forbs support a high biomass of invertebrate prey base, an important food and cover source. Additionally, good brood rearing habitat will have less grass cover and more forb cover than nesting habitat, as dense grass cover impedes movements of the chicks (Bell et al. 2010; Hagen et al. 2013; Pitman et al. 2006b). Throughout winter, juveniles and adults require large spans of short- and mixed grass prairies that provide physical cover to protect from predation and weather, and food (Giesen 1998; Robinson et al. 2018).

Typically, lesser prairie-chicken home ranges vary both by sex and by season and may be influenced by a variety of landscape conditions (Haukos and Zavaleta 2016). Lesser prairie chickens are not territorial, except for the small area defended by males on the lek, so home ranges of individual birds likely overlap to some extent. Habitat quality presumably influences the extent to which individual home ranges overlap. Adults tend to spend much of their daily and seasonal activity within 3.0 miles (4.8 kilometers) of a lek (Giesen 1994a; Riley et al. 1994; Woodward et al. 2001). Males tend to have smaller home ranges than do females, with the males generally remaining closer to the leks than do the females (Giesen 1998). Male lesser prairie-chickens exhibit strong site fidelity to their lek (Copelin 1963; Hoffman 1963; Campbell 1972, Hagen et al. 2005). Once a lek site is selected, males persistently return to that same lek year after year (Hagen et al. 2005; Wiley 1974) and may remain faithful to that site for life.

Historical and Current Distribution

The lesser prairie-chicken currently inhabits sand sagebrush (*Artemisia filifolia*), sand shinnery oak, and mixed grass vegetation communities within the southern Great Plains in portions of Colorado, Kansas, New Mexico, Oklahoma, and Texas (USFWS 2022). The species' historical range was approximately 115,000,000 acres, not all of which was occupied or had the ability to support the lesser prairie-chicken. Within the lesser prairie-chickens current estimated occupied range, there are a total of 21,000,00 acres, of which we estimate a maximum of 4,000,000 acres, or 18%, are potentially habitat (USFWS 2022). The causes for this reduction in range between the lesser prairie-chicken's historical and current status are primarily attributed to habitat loss, fragmentation, and degradation (USFWS 2022).

The Shinnery Oak Ecoregion is geographically disconnected from populations elsewhere in the species distribution. With the exception of lesser prairie-chicken areas owned by the New Mexico Department of Game and Fish and federally owned Bureau of Land Management lands in New Mexico, the majority of Shinnery Oak Prairie on the Southern High Plains is privately owned (Grisham et al. 2016). The Bureau of Land Management currently manages approximately 847,491 acres (342,969 hectares) of land within the lesser prairie-chicken range in eastern New Mexico and oversees another 297,832 acres (120,529 hectares) of Federal minerals below private surface

ownership. In other words, roughly 41% of the known historical and most of the estimated occupied lesser prairie-chicken range in New Mexico occurs on Bureau of Land Management land (USFWS 2022). Nearly all of the area in the Texas portion of the ecoregion is privately owned and managed for agricultural use and petroleum production (Haukos 2011). The remaining patches of shinnery oak prairie have become isolated, relict communities because the surrounding grasslands have been converted to row crop agriculture or fragmented by oil and gas exploration and urban development (Peterson and Boyd 1998). Additionally, mesquite encroachment within this ecoregion has played a significant role in available space for the lesser prairie-chicken. Prior to the late 1990s, approximately 100,000 acres (40,000 hectares) of sand shinnery oak in New Mexico and approximately 1,000,000 acres (405,000 hectares) of sand shinnery oak in Texas were lost due to the application of tebuthiuron and other herbicides for agriculture and range improvement (Peterson and Boyd 1998). Technological advances in irrigated row crop agriculture have led to recent conversion of shinnery oak prairie habitat to row crops in Eastern New Mexico and West Texas (Grisham et al. 2016).

Using the geospatial analysis described in Section 3.2 of the Species Status Assessment (USFWS 2022), the Service was able to explicitly account for habitat loss and fragmentation and quantify the current condition of this ecoregion for the lesser prairie-chicken. Of the sources of habitat loss and fragmentation that have occurred, cropland conversion, roads, and encroachment of woody vegetation had the largest impacts on land cover in this ecoregion. We estimated there are approximately 1,023,572 acres (414,225 hectares) or 27% of the ecoregion occur in potential usable unimpacted areas with 60% or greater potential usable unimpacted land cover within 1 mile (1.6 kilometers).

Hagen et al. (2017) estimated historical trends in lesser prairie-chicken abundance from 1969–2016 in the Shinnery Oak Ecoregion using population reconstruction methods. The mean population estimate ranged between about 5,000 to 12,000 males through 1980, increased to 20,000 males in the mid-1980s and declined to ~1,000 males in 1997. The mean population estimate peaked again to ~15,000 males in 2006 and then declined again to fewer than 3,000 males in the mid-2010s.

Aerial surveys have been conducted to estimate lesser prairie-chicken population abundance since 2012, and results in the Shinnery Oak Ecoregion from 2012 through 2021 indicate that this ecoregion has the third highest population size (Nasman et al. 2021) of the four ecoregions. Average estimates from 2015 to 2021 are 3,249 birds (90% CI: 170, 8,237), representing about 11% of the range-wide total. Recent estimates have varied between fewer than 1,000 birds in 2015 to more than 5,000 birds in 2020.

Presently, the Center of Excellence reports that lesser prairie-chicken populations are known from portions of seven counties in New Mexico, with an estimated 73% of lesser prairie-chicken currently occupied range occurring in Chaves, Roosevelt, and northern Lea counties (CEHMM 2021).

Threats

The Species Status Assessment has identified a variety of anthropogenic factors influencing the status of the lesser prairie-chicken, of which the majority are associated with habitat degradation, loss, and fragmentation. For a complete discussion of these threats please refer to the Service's Species Status Assessment Report (USFWS 2022). These include the following:

- Conversion of grassland to cropland – while lesser prairie-chickens may forage in agricultural croplands, croplands do not provide for the habitat requirements of the species life cycle (cover for nesting and thermoregulation), and thus they avoid landscapes dominated by cultivated agriculture, particularly where small grains are not the dominant crop (Crawford and Bolen 1976a).
- Petroleum and natural gas production – activities associated with oil and gas development can result in direct habitat loss by removal of vegetation used by lesser prairie-chicken and can cause changes in behavior due to the avoidance of vertical structures, noise, and human presence.
- Wind energy development and power transmission lines – wind turbines and associated wind energy structures can result in direct habitat loss by removal of vegetation used by lesser prairie-chicken and can cause changes in behavior due to the avoidance of vertical structures, noise, and human presence. Transmission lines can indirectly lead to alterations in lesser prairie-chicken behavior and space use, decreased lek attendance, and increased predation on lesser prairie-chicken.
- Woody vegetation encroachment – lesser prairie-chicken avoid areas with trees and other vertical structures. In the shinnery oak prairie ecoregion, lesser prairie-chicken space use in all seasons is altered in the presence of mesquite, even at densities of less than 5 percent canopy cover (Boggie et al. 2017).
- Roads and electrical distribution lines – roads and electrical distribution lines contribute to loss and fragmentation of habitat due to behavioral avoidance. Roads can contribute to lek abandonment, lead to an increase in prey presence, and may also limit lesser prairie-chicken dispersal abilities (Crawford and Bolen 1976b, USFWS 2022).

The Species Status Assessment has also identified other anthropogenic factors influencing the status of the lesser prairie-chicken, these include:

- Livestock grazing – while not inherently detrimental to lesser prairie-chicken management, and in many cases needed to maintain appropriate vegetative structure, incompatible grazing can alter the vegetation structure and composition and degrade the quality of habitat for the lesser prairie-chicken. In some cases, heavy grazing can result in areas that do not contain the biological components necessary to support lesser prairie-chicken.
- Shrub control and eradication – shrub control and eradication efforts in lesser prairie-chicken habitat are primarily focused on sand shinnery oak, a shrub that is toxic to cattle, and outcompetes more palatable grasses, for the purpose of increasing forage for livestock grazing (Peterson and Boyd 1998). As mentioned above, sand shinnery oak is an important vegetative component of lesser prairie-chicken habitat.
- Influence of anthropogenic noise – anthropogenic noise can be associated with almost any form of human activity, and lesser prairie-chicken may exhibit behavioral and physiological responses to the presence of noise. The “boom” call, an important courtship activity, can be disrupted by human activities that result in noises. Persistent anthropogenic noise could cause lek attendance to decline, disrupt courtship and breeding activity, and reduce reproductive success. Noise can also cause abandonment of otherwise usable habitat and, as a result, contribute to habitat loss and degradation.

- Hunting, and other recreational, educational, and scientific use – currently, the lesser prairie-chicken is classified as a game species in Kansas, New Mexico, Oklahoma, and Texas, although authorized harvest is no longer allowed in any of the states. Hunting lesser prairie-chicken is illegal in all states. Public and guided bird watching tours during the breeding season has the potential to negatively affect individual breeding aggregations. Research and monitoring activities such as roadside surveys, aerial surveys, and lek and flush counts that tend to rely on passive sampling rather than active handling of the birds are not likely to substantially impact the lesser prairie-chicken at the population level.
- Collision mortality from fences – fencing is a fundamental tool of livestock management and is often essential for proper herd and grazing management. However, fencing, particularly at higher densities, can contribute to fragmentation of the landscape and hinder efforts to conserve grasslands on a landscape scale (Samson et al. 2004). In addition to direct mortality of lesser prairie-chicken through collisions during flight, fencing can also indirectly lead to mortality by creating hunting perches used by raptors and by facilitating corridors that may enhance movements of mammalian predators (Wolfe et al. 2007). In most areas where landscapes have not been fenced intensively, fence collision risk is not as high and not likely to result in population level effects.
- Insecticides – recent studies have shown that neonicotinoid insecticides (a class of insecticides that share a common mode of action that targets the central nervous system of insects), which are used within the range of the lesser prairie-chicken, have adverse effects on non-target invertebrate species (Hallmann et al. 2014). Use of imidacloprid and clothianidin (two neonicotinoid insecticides) as seed treatments on some crops also poses risks to small birds, and ingestion of even a few treated seeds could cause mortality or reproductive impairment to sensitive bird species (Gibbons et al. 2014). Despite these concerns, there is currently no evidence that indicates insecticides are influencing lesser prairie-chicken populations.

Other threats to lesser prairie-chicken:

- Predation – predation is a naturally occurring process and generally does not independently pose a substantial risk to wildlife populations, including the lesser prairie-chicken. Although, as discussed above, existing trees, power poles, transmission lines, fences, and other vertical structures have either contributed to additional predation on lesser prairie-chicken through increase of perches for avian predators, provided movement areas and hunting corridors for other predators, or caused areas of usable habitat to be abandoned by lesser prairie-chicken due to avoidance behavior (Hovick et al. 2014).
- Parasites and diseases – although parasites and diseases have the potential to influence lesser prairie-chicken population dynamics, little is known regarding the consequences of parasites or diseases at the lesser prairie-chicken population level. Past adverse impacts to lesser prairie-chicken populations have not been observed, although diseases and parasites have been found in the lesser prairie-chicken (Peterson 2016). However, there is no information that indicates parasites or disease have caused, or contributed to, the decline of any lesser prairie-chicken populations.
- Fire – fire is an ecological process important to maintaining grasslands by itself and with grazing and climate. Historically, fire served an important role in maintenance and quality of habitat for the lesser prairie-chicken. Currently, due to a significant shift in fire regimes in the

lesser prairie-chicken range, fire use for grassland management plays a locally important, but overall limited role in most lesser prairie-chicken habitat. Concurrently, wildfire has increased as a threat, due to compounding influences of increased size and severity of wildfires and the potential consequences to remaining isolated and fragmented lesser prairie-chicken populations.

- Extreme weather events – Weather-related events such as drought, snow, and hailstorms can influence habitat quality or result in direct mortality of lesser prairie-chicken. Prolonged droughts can cause local extinctions of annual forbs and grasses (which lesser prairie-chicken depends on) within stands of perennial species (Tilman and El Haddi 1992; Wiens 1974). Drought can amplify the effects of incompatible grazing, and predation. Hailstorms are also known to cause mortality of prairie grouse, particularly during the spring nesting season (Fleharty 1995).

At present, long term habitat destruction and modification due to ongoing and increasing agricultural activities, increasing energy development, invasion of woody vegetation due to fire suppression, collision mortality from fences and power lines, are continuing and significant throughout the entire range of the lesser prairie-chicken. In many cases, the compounding occurrence of the above individual threats can lead to habitat fragmentation. Habitat fragmentation can exacerbate effects to the lesser prairie-chicken by:

- Shrinking habitat patches to a size that may become too small to meet the requirements of individuals and populations,
- Decreasing habitat heterogeneity,
- Contributing to high levels of predators or brood parasites between habitat patches, and
- Decreasing the probability of recolonization.

Proposed for Federal Listing

In 2021 the Service proposed to list two Distinct Population Segments of lesser prairie-chicken under the Act. The Service found that listing the Southern Distinct Population Segment as endangered was warranted, and that listing the Northern Distinct Population Segment as threatened with a 4(d) rule was warranted. The Northern Distinct Population Segment consists of populations found in the sand sagebrush ecoregion (southwest Colorado, southwest Kansas, western Oklahoma), the mixed-grass ecoregion (northeastern panhandle of Texas, panhandle of northwestern Oklahoma, south-central Kansas), and the short-grass/Conservation Reserve Program ecoregion (central and western Kansas). The Southern Distinct Population Segment, separated from the northern three ecoregions by approximately 95 miles (153 km), consists of the shinnery oak ecoregion (eastern New Mexico, southwestern panhandle of Texas). The Service intends to issue a final regulation implementing the proposed rule or a notice that the proposed regulation is being withdrawn, by June 1, 2022.

Dunes Sagebrush Lizard

Biological information (i.e., species description; life history; and population dynamics) on the dunes sagebrush lizard can be found in the Candidate Conservation Agreement for the Lesser Prairie-Chicken and Sand Dune Lizard and the 2008 Environmental Assessment (USFWS 2008c). Additional information was gathered from the June 2008 Candidate Assessment and Listing Priority Assignment Form for the dunes sagebrush lizard, the Service's dunes sagebrush lizard species status assessment technical team, and other sources.

Species Description and Life History

The dunes sagebrush lizard inhabits shinnery oak-dune landforms within the Mescalero-Monahans Sandhills of southeastern New Mexico and western Texas. The dunes sagebrush lizard is a small lizard with a maximum snout-to-vent length of 7.1 centimeters (2.8 inches) (Degenhardt et al. 1996). Its dorsal color matches that of sand and varies from a light tan to reddish tan and has grayish stripes. During breeding, females develop patches of orange along their heads, bodies, and tails, whereas males have blue patches on their bellies (Hibbitts and Hibbitts 2015). The dunes sagebrush lizard is considered a habitat specialist due to its extremely small and restricted range and its highly specialized shinnery oak-sand dune habitat niche (Hibbitts et al. 2013, Hardy et al. 2018).

Dunes sagebrush lizards have a short lifespan, living only 2 to 4 years and have a reduced reproductive output, reproducing only once or twice annually (Snell et al. 1997, Ryberg et al. 2012, Fitzgerald and Painter 2009, Hibbitts and Hibbitts 2015). Sexually mature males emerge in April, females begin developing eggs internally in April, and mating occurs from May to early July (Fitzgerald and Painter 2009, Hibbitts and Hibbitts 2015).

Males are territorial and compete for females, whereas females are not territorial and have overlapping home ranges (Fitzgerald and Painter 2009). Females dig burrows into sand dunes and blowouts and construct nest chambers at the soil moisture horizon (Ryberg et al. 2012). Females lay eggs between June and August with clutches containing an average of 5 eggs (range 3-6) (Degenhardt and Jones 1972, Cole 1975, Fitzgerald and Painter 2009, Hibbitts and Hibbitts 2015, Hill and Fitzgerald 2007). Hatchlings emerge about 30 days after the eggs are laid, between July and September (Snell et al. 1997, Fitzgerald and Painter 2009).

The dunes sagebrush lizard dives into sand to escape predators, can move several feet underneath sand, and sleeps buried in sand (Fitzgerald and Painter 2009). Dunes sagebrush lizards also bury themselves in sand as a thermoregulatory tactic to minimize heat loads and to avoid lethal and physically damaging surface temperatures (Snell et al. 1997, Fitzgerald and Painter 2009, Ferguson et al. 2014). Predators include snakes (e.g., *Arizona spp.*, *Masticophis spp.*) and birds (e.g., loggerhead shrikes (*Lanius ludovicianus*), American kestrels (*Falco sparverius*), and greater roadrunners (*Geococcyx californianus*)) (Hughes 1996, Yosef 1996, Smallwood and Bird 2002, Alderfer 2006, Hill and Fitzgerald 2007, Young et al. 2018).

The species feeds on ants, small beetles, crickets, grasshoppers, and spiders. Most feeding takes place within or adjacent to patches of vegetation, usually shinnery oak habitat. Individuals are diurnal and wary, and will seek protection and shelter in burrows, under the sand, beneath leaf litter, and under the shinnery oak canopy.

Historical and Current Distribution

The dunes sagebrush lizard is a habitat specialist endemic to the Mescalero-Monahans Sandhills of southeastern New Mexico and west Texas (Painter et al. 1999). These sandhills are interspersed with shinnery oak vegetation which acts as a soil stabilizer and can influence dune formation (Dhillion and Mills 2009; Gucker 2006; Machenberg 1984). These sand dune complexes are often separated by large stretches of habitat unsuitable for dunes sagebrush lizard, either due to anthropogenic development or natural barriers (Chan et al. 2009; Painter et al. 1999). Dunes sagebrush lizard habitat in New Mexico was once estimated to be 1,179,980 acres (477,521 hectares), but that number has

dwindled and is now estimated to be 346,319 acres (140.150 hectares). Sagebrush lizard habitat in Texas has also decreased from between 494,927 to 984,921 acres (200,290 to 398,583 hectares) to 287,327 acres (116,277 hectares) (Dzialak et al. 2013; Hardy et al. 2018; Johnson et al. 2016). It is important to note that these numbers are likely an overestimation because estimates include disturbed and otherwise unusable area for the sagebrush-lizard.

Most (70%) of dunes sagebrush lizard habitat in New Mexico occurs on lands used for oil and gas exploration and is managed by the Bureau of Land Management, the New Mexico State Land Office, or is leased by private entities. Seventy-one percent of the minerals within the range of the dunes sagebrush lizard are federally owned and fall under Bureau of Land Management lease stipulations and their Management Plan.

Within shinnery oak-sand dune habitat, adult dunes sagebrush lizard have small home ranges (Young et al. 2018). Average home range of the dunes sagebrush lizard is estimated at 0.11 acre, with the largest home range documented at 0.69 acre (Hill and Fitzgerald 2007). Young et al. (2018) documented a home range of 0.25 acre for males and 0.15 acre for females.

Within the geographic range of the species, habitat is localized and fragmented where known populations are separated by vast unoccupied areas. Fitzgerald et al. (1997) observed isolated areas of apparently suitable habitat where dunes sagebrush lizard were not observed. It is possible that these observations are the result of local extinction events in isolated areas where recolonization is either impossible or has not yet occurred (Snell et al. 1997). It is also possible that these areas have never been occupied, and other factors such as competition (or predation), prevent sagebrush lizard occupation in otherwise suitable habitat.

A recent analysis conducted by the dunes sagebrush lizard species status assessment technical team determined that out of 877 observations of dunes sagebrush lizard in New Mexico, 94% of observations occur in shinnery oak duneland, and 6% of observations occur in supportive habitat (i.e., shinnery oak-mesquite shrubland). Dunes sagebrush lizards observed outside of dunelands were on average 130 ± 20.9 (1 SE) meters away from the nearest duneland habitat.

Threats

Threats to the dunes sagebrush lizard largely result from removal of shinnery oak, sand dune compaction, fragmentation of habitat, and disturbance to dunes. Rangewide threats to the dunes sagebrush lizard will be described in this section.

- Changes to landscape-scale dynamics – disruption in landscape-scale dynamics of the dune-blowout ecosystem can result in degradation of dune-blowout landforms, leading to less dune blowouts and more barren ground (Leavitt and Fitzgerald 2013; Walkup et al. 2017).
- Oil and gas development – various activities associated with oil and gas development can result in removal of shinnery oak and associated duneland habitat. Roads are especially known to fragment dunes sagebrush lizard habitat, and can lead to reduced movement, reduced access to mates and prey, and consequently reduced population size.
- Sand mining – sand removal and processing for industrial and commercial processes directly destroys dunes sagebrush lizard habitat and can harm individuals (Forstner et al. 2018).
- Sand dune compaction – the use of heavy machines for sand mining, oil and gas development, and other construction activities can compact sand dunes, impeding the ability

of the dunes sagebrush lizard to burrow beneath the surface. Off-highway vehicles can reduce vegetation cover, arthropod diversity, and can also lead to direct mortality by crushing individuals and burrows (Luckenbach and Bury 1983; Bury et al. 1977).

- Shinnery oak treatment – dunes sagebrush lizard abundance is known to decrease as dunelands are converted into homogenous grasslands following the treatment and removal of shinnery oak.
- Mesquite encroachment – mesquite can degrade dunes by establishing itself into blowouts, leading to blowouts becoming filled with mesquite and short grasses (Johnson et al. 2006; Fitzgerald et al. 2011).
- Grazing – grazing does not inherently pose a threat to the dunes sagebrush lizard, but removal of shinnery oak for better cattle forage can destabilize dunes (Peterson and Boyd 1998). Heavy grazing can remove vegetation, leading to extensive open sand dunes which are not suitable dunes sagebrush lizard habitat (Painter et al. 1999).
- Groundwater depletion – groundwater pumping can affect shinnery oak communities by reducing photosynthesis and growth and can lead to death of shinnery oak plants (Machenberg 1984; Gucker 2006). Changes to shinnery oak health can lead to increased erosion and disturbance to dune landforms (Machenberg 1984; Kocurek and Havholm 1993; Muhs and Holliday 2001; Laity 2003). Groundwater depletion can also directly affect the dunes sagebrush lizard. Female dunes sagebrush lizard prefer nesting in sandy soils with high moisture (Ryberg et al. 2012).
- Predation – Snakes (e.g., coachwhips) and birds (e.g., loggerhead shrikes) are known to prey on dunes sagebrush lizard. In fragmented dunes sagebrush lizard habitat, increased perches and removal of vegetation could increase dunes sagebrush lizard mortality due to predation.

Under Review for Federal Listing

The dunes sagebrush lizard has been petitioned for listing under the Act. On December 14, 2010, the Service proposed to list the dunes sagebrush lizard as endangered under the Act and noted that critical habitat was prudent but not determinable at the time. After two comment period extensions, the Service extended the determination to list the dunes sagebrush lizard to June 14, 2012, due to significant scientific disagreement. On June 19, 2012, the Service withdrew the proposal to list the dunes sagebrush lizard, based on our conclusion that the threats to the species were no longer as significant as believed to be at the time of the proposed rule (77 FR 36871). On July 16, 2020, in response to another petition to list the dunes sagebrush lizard, the Service published a 90-day petition finding and initiation of a status review (85 FR 43203). Based on the status review, the Service found that the petition presented substantial scientific or commercial information indicating that listing the dunes sagebrush lizard may be warranted. The Service is currently conducting a Species Status Assessment and a listing determination is expected in the near future.

Conservation Efforts for Both Species

While there are a variety of ongoing conservation efforts in place for the lesser prairie-chicken across the five states, this section focuses on those efforts occurring with the Southern Distinct Population Segment for the lesser prairie-chicken and the action area for this Conference Opinion. In January 2003, a working group composed of local, State and Federal officials, along with private and commercial stakeholders, was formed to address conservation and management activities for the lesser prairie-chicken and dunes sagebrush lizard. This group, formally named the New Mexico

Lesser Prairie-Chicken/Sand Dune Lizard Working Group, worked diligently for 2.5 years to develop the Collaborative Conservation Strategies for the Lesser Prairie-Chicken and Sand Dune Lizard in New Mexico (Strategy) (2005). This Strategy provided guidance in the development of the Bureau of Land Management's Special Status Species Resource Management Plan Amendment (Management Plan).

The Bureau of Land Management's Management Plan, approved in April 2008, addresses the concerns and future management of lesser prairie-chicken and dunes sagebrush lizard habitat on Bureau of Land Management lands, and established the Lesser Prairie-Chicken Habitat Preservation Area of Critical Environmental Concern (BLM 2008). Since the Management Plan was approved in 2008, the Bureau of Land Management has closed approximately 300,000 acres (121,000 hectares) to future oil and gas leasing and closed approximately 850,000 acres (344,000 hectares) to wind and solar development, and 106,091 acres (42,934 hectares) of dunes sagebrush lizard habitat have specifically been removed from future oil and gas leasing. From 2008 to 2020, the Bureau of Land Management reclaimed 3,500 acres (1,416 hectares) of abandoned well pads and associated roads and has required burial of power lines within 2 miles (3.2 kilometers) of lesser prairie-chicken leks. Additionally, the Bureau of Land Management has implemented control efforts for mesquite on 832,104 acres (336,740 hectares) and has plans to do so on an additional 30,000 acres (12,141 hectares) annually. In 2010, the Bureau of Land Management acquired 7,440 acres (3,010 hectares) of land east of Roswell, New Mexico, to complete the 54,000-acre (21,853-hectare) Area of Critical Environmental Concern for lesser prairie-chicken which is managed to protect key habitat. The Bureau of Land Management has also developed a habitat predictability model to help define the parameters of the known geographic range of the dunes sagebrush lizard.

Following approval of the Bureau of Land Management's Management Plan, the Conservation Agreement was drafted by a team which included the Service, the Bureau of Land Management, the Center of Excellence, and Participating Cooperators to address the conservation needs of the lesser prairie-chicken and dunes sagebrush lizard on Bureau of Land Management lands in New Mexico, by undertaking habitat restoration and enhancement activities and minimizing habitat degradation. The Conservation Agreement with Assurances was also developed in association with the Conservation Agreement to facilitate conservation actions for the lesser prairie-chicken and dunes sagebrush lizard on private and State lands in southeastern New Mexico.

Since the Conservation Agreements were finalized in 2008, 43 oil and gas companies have enrolled a total of 1,964,163 acres (794,868 hectares) in the historical range of the lesser prairie-chicken. Additionally, 72 ranchers in New Mexico, and the New Mexico Department of Game and Fish, have enrolled a total of 2,055,461 acres (831,815 hectares) in the historical range of the lesser prairie-chicken. Forty oil and gas companies and 37 ranchers have enrolled a total of 539,046 acres (218,144 hectares) in dunes sagebrush lizard habitat (shinnery oak dunelands), and 637,577 acres (258,018 hectares) in the surrounding supportive matrix habitat (shinnery oak supportive habitat). The New Mexico State Land Office has enrolled a total of 406,673 acres (164,575 hectares) in the historical range of the lesser prairie-chicken, and 72,474 acres (29,329 hectares) in dunes sagebrush lizard habitat, and 115,147 acres (46,598 hectares) in the surrounding supportive matrix habitat. Currently, 85% of dunes sagebrush lizard range in New Mexico is covered under the Agreement.

Under the Conservation Agreements, 79,297 acres (32,090 hectares) of mesquite have been treated, and 154 abandoned well pads and associated roads have been reclaimed. The Center of Excellence

has also removed 7,772 acres (3,145 hectares) of dead, standing mesquite, and has another 12,000 acres (5,000 hectares) of mechanical mesquite treatment scheduled in the upcoming 2 years.

In addition to the above, Restore New Mexico, initiated in 2005, is a proactive conservation partnership between the Bureau of Land Management, other Federal natural resource agencies, non-governmental organizations, and private landowners to restore New Mexico's grasslands, woodlands, and riparian areas. By 2014, the Bureau of Land Management and its conservation partners, had restored approximately 659,660 acres (267,000 hectares) of mesquite-infested grasslands in the historic range of the lesser prairie-chicken and had identified an additional 652,254 acres (264,000 hectares) of lesser prairie-chicken historic range for mesquite treatment.

There are other conservation efforts occurring throughout southeastern New Mexico, unrelated to the Conservation Agreements and the Bureau of Land Management's Management Plan, including the acquisition of land for the protection of lesser prairie-chicken habitat, mesquite treatment, and prescribed burns. The Nature Conservancy owns and manages the 28,000-acre (11,331-hectare) Milnesand Prairie Preserve near Milnesand, New Mexico. Additionally, the New Mexico Department of Game and Fish has designated 30 Prairie Chicken Areas specifically for management of the lesser prairie-chicken, these Prairie Chicken Areas range in size from 28 to 7,189 acres (11 to 2,909 hectares) and total more than 27,262 acres (11,033 hectares). In 2007, the New Mexico State Game Commission acquired 5,285 acres (2,137 hectares) of private ranchland in Roosevelt County. This property, the Sandhills Prairie Conservation Area (formerly the Lewis Ranch), is located east of Milnesand, New Mexico, and is surrounded by multiple Prairie Chicken Areas. Various entities (including private landowners, the Service's Partners for Fish and Wildlife program, New Mexico Department of Game and Fish, New Mexico State Land Office) have also conducted mesquite treatments and prescribed burns separate from the Conservation Agreements to improve lesser prairie-chicken habitat.

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

Status of the Species within the Action Area

Lesser Prairie Chicken

The Southern Distinct Population Segment of the lesser prairie-chicken encompasses portions of southeastern New Mexico and the western panhandle of Texas. Lesser prairie-chickens are known from portions of seven counties in New Mexico. New Mexico Department of Game and Fish estimates occupied range of the lesser prairie-chicken encompasses approximately 2,200 square

miles (5,698 square kilometers) of shinnery oak habitat, a smaller figure compared to its estimated historical range of 8,645 square miles (22,390 square kilometers) (Davis 2006). Roughly 41% of lesser prairie-chicken's known historical and most of its estimated occupied range in New Mexico occurs on Bureau of Land Management land, the rest occurs on private and State lands (USFWS 2022). Between 1969 and 1980, the mean population (based off minimum number of lesser prairie-chicken males attending leks) estimated rangewide was between 5,000 to 12,000 males, this number peaked in the mid-1980s at approximately 20,000 males. The most recent estimate using this method of population abundance estimation occurred in 2016 and estimated an abundance of approximately 5,000 males. For the shinnery oak ecoregion, approximate estimates of lesser prairie-chicken population abundance using aerial surveys range from 706 birds in 2015 to 4,950 birds in 2018, with a 5-year average of 3,249 birds between the years 2016 to 2021 (surveys did not occur in 2019) (Nasman et al. 2021).

Dunes Sagebrush Lizard

In New Mexico, dunes sagebrush lizards are known from the Mescalero Sands in Chaves, Roosevelt, Eddy, and Lea counties. Using a combination of Landfire and Natural Resources Conservation Service's Soil Survey Geographic database, the Service estimates that historically there was approximately 1,179,980 acres (477,521 hectares) of dunes sagebrush lizard habitat in New Mexico, now, the Service estimates there is currently 346,319 acres (140,150 hectares) of dunes sagebrush lizard habitat. As of 2021, approximately 70% of dunes sagebrush lizard habitat in New Mexico is managed by the Bureau of Land Management, and the New Mexico State Land Office, and 71% of the minerals within the range of the dunes sagebrush lizard are federally owned and fall under Bureau of Land Management lease stipulations and the Bureau of Land Management's Management Plan. Within New Mexico (as in Texas), habitat is localized and fragmented where known populations are separated by vast areas of unoccupied habitat. Population size estimates do not currently exist for the state of New Mexico, but dunes sagebrush lizard densities have been estimated and range from 4.6 individuals per hectare (using distance sampling methods) to 20 individuals per hectare (using total removal plots) (Smolensky and Fitzgerald 2010).

Factors Affecting Species Environment within the Action Area

Most of the threats detailed above that impact lesser prairie-chicken and dunes sagebrush lizard rangewide, also affect the species in New Mexico. Within the action area, in southern New Mexico, ongoing activities that affect the lesser prairie-chicken and dunes sagebrush lizard include oil and gas development, livestock grazing, and other agricultural activities. On Federal lands and mineral leases managed by the Bureau of Land Management, the effects of these actions are minimized through the implementation of the Bureau of Land Management's Management Plan and the Conservation Agreement. On private and State lands, the effects of these activities can be minimized through the implementation of the Agreement with Assurances.

According to the lesser prairie-chicken Species Status Assessment, the future of lesser prairie-chicken habitat in this ecoregion will be largely influenced by habitat loss and fragmentation from ongoing energy development (oil, gas, and wind projects) and encroachment by mesquite. Additionally, due to the geographic location of this lesser prairie-chicken ecoregion, this ecoregion is more susceptible to the effects of climate change, as this area is already relatively drier and is projected to experience additional hotter and drier conditions in the future. The potential for population extirpation due to extended drought events is high.

Due to the dunes sagebrush lizard being endemic to a specific geographic location and habitat, threats to the sagebrush lizard in New Mexico compared to Texas are similar. One difference between states is the current lack of sand mining in New Mexico compared to Texas. The largest threat to the sagebrush lizard in New Mexico is likely ongoing oil and gas development.

In December 2021, the Service approved a Habitat Conservation Plan covering impacts from renewable energy development on the lesser prairie-chicken. In May 2022, the Service approved a Habitat Conservation Plan covering impacts from oil and gas development on the lesser prairie-chicken. The renewables Habitat Conservation Plan includes 300,000 acres of take coverage for the Northern Distinct Population Segment of the lesser prairie-chicken and 200,000 acres for the Southern Distinct Population Segment of the lesser prairie-chicken. The oil and gas Habitat Conservation Plan includes 300,000 acres of take coverage for the Northern Distinct Population Segment of the lesser prairie-chicken and 200,000 acres for the Southern Distinct Population Segment of the lesser prairie-chicken. The renewables Habitat Conservation Plan and oil and gas Habitat Conservation Plan were designed to fully offset impacts from covered activities and thus it is not expected to substantially impact the baseline.

EFFECTS OF THE ACTION

In accordance with 50 CFR 402.02, effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of all other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see §402.17).

The proposed action is the Service's approval of the amendments to the Conservation Agreements and the issuance of an amended Permit to authorize incidental take of lesser prairie-chicken and dunes sagebrush lizard that may result from implementation of the Conservation Agreement with Assurances. The Permit would become effective should one or both of the species become listed during the life of the Permit. The proposed action may have consequences to both the lesser prairie-chicken and dunes sagebrush lizard. The amendments to the Conservation Agreements and Permit do not introduce any new potential effects from those analyzed in the Conference Opinion for the original Permit in 2008, but may increase the scale of the effects by removing barriers to participation in the Conservation Agreements.

The Conservation Agreements cover activities related to oil and gas development, livestock grazing, and agricultural practices. These Covered Activities will continue to occur within the Covered Area for the Conservation Agreements. Consequences of these activities on the lesser prairie-chicken and dunes sagebrush lizard are described in detail below. In addition to these consequences, this Conference Opinion analyzes the consequences the proposed action would have on the lesser prairie-chicken and dunes sagebrush lizard. For the lesser prairie-chicken, many adverse effects will be in the form of short-term behavioral responses ranging from flushing, temporary changes behavior, interruptions in feeding, stress, etc., resulting in insignificant and discountable effects that do not rise to the level of take. The primary adverse consequence to the dunes sagebrush lizard from the Candidate Conservation Agreement with Assurances is the potential removal of habitat for oil and gas activities. Voluntary measures under the Conservation Agreement will continue to minimize

adverse consequences associated with current activities on lesser prairie-chicken and dunes sagebrush lizard on Federal lands and leases. The continued implementation of the conservation measures described in the Conservation Agreement with Assurances will continue to reduce the adverse consequences associated with ongoing Covered Activities on lesser prairie-chicken and dunes sagebrush lizard that occur on private and State lands and leases. Continued implementation of the Conservation Agreements, and the addition of the proposed amendments will provide additional minimization of adverse consequences associated with ongoing activities occurring at the landscape level due to the predicted increase in enrollment under the Conservation Agreements. In addition to minimization of adverse consequences, industry participants contribute money for surface disturbance on enrolled lands that will be used to provide for off-site conservation efforts.

Effects from Oil and Gas Development

Energy exploration and development occur on public and private surface lands throughout the range of the lesser prairie-chicken and dunes sagebrush lizard in New Mexico. Oil and gas development involves activities such as surface exploration, exploratory drilling, field development, and facility construction. Facilities associated with oil and gas development include compressor stations, pumping stations, and electrical generators. Activities associated with oil and gas development include well access road development (usually caliche), well pad construction, seismic surveys, and powerline and pipeline corridors. Construction for these activities can result in habitat loss and disturbance through the removal of shinnery oak and associated dune formations.

Effects to lesser prairie-chicken

There are a number of consequences to lesser prairie-chicken associated with oil and gas development, and associated infrastructure and activities. The removal of native vegetation to construct well pads and roads directly contributes to habitat loss by removing native vegetation which may result in habitat that fails to provide the foraging, nesting, predator avoidance, and thermoregulatory needs of the lesser prairie-chicken (USFWS 2022). Lesser prairie-chicken are known to avoid anthropogenic features, including oil and gas wells (Hagen et al. 2011, Hunt and Best 2004, Pitman et al. 2005), roads (Harrison et al. 2017), and power lines (Pruett et al. 2009). Lesser prairie-chicken are also known to be impacted by anthropogenic noise, especially during periods of reproduction. Considering the narrow set of acoustic conditions in which communication appears most effective for breeding lesser prairie-chickens, and the importance of communication to successful reproduction, human activities that result in noises that disrupt or alter these conditions could result in lek abandonment (Crawford and Bolen 1976b). The above examples of avoidance can lead to fragmentation of habitat, disruption to courtship and breeding activity, and reduction of reproductive success.

Additionally, lesser prairie-chicken can collide with overhead power lines, directly contributing to mortality (Bidwell et al. 2003). Electrical lines can also provide perches for raptors, such as ravens (*Corvus corax*), which are known to prey on lesser prairie-chicken, especially during the breeding season (Boal 2016).

Oil and gas development is expected to result in consequences to lesser prairie-chicken through habitat destruction and displacement from habitats that otherwise would have been used, loss or a reduction in habitat quality, destruction of nests, and mortality to individuals. Displacement into lower quality habitat could result in direct impacts to fitness parameters (e.g., nest, brood, and

individual mortality). Of these impacts, loss of suitable habitat and subsequent displacement of individuals is the principal reason for population declines (USFWS 2022). Impacts could occur later in time, leading to take through decreased survivorship or fecundity due to compromised access to suitable foraging, nesting, sheltering, and wintering habitat, or from the introduction of barriers to movement and therefore reduced/altered access to essential habitat components of the lesser prairie-chicken annual cycle. For lesser prairie-chicken, such habitat alterations may compromise the species' ability to complete the breeding/nesting cycle, meet bioenergetic demands, or expose individuals to other environmental stressors, such as predation and increased disturbance that lead to death or injury.

As described in above, oil and gas activities can lead to increased habitat fragmentation and loss of suitable habitat, the effects of which are expected to extend beyond the boundaries of project footprints causing lesser prairie-chicken displacement or avoidance of otherwise suitable habitats (USFWS 2022).

For a complete description of consequences to lesser prairie-chicken from oil and gas development and associated activities please see the lesser prairie-chicken Species Status Assessment (2022).

Analysis of oil and gas activities "likely to adversely affect" the lesser prairie-chicken

Hagen et al. (2011) suggests that to protect 90% of breeding and summer habitat of lesser prairie-chicken, oil wells should be sited greater than 300 meters (984 feet) from breeding and summer habitat, so to account for indirect impacts of oil and gas wells a buffer of 300 meters (984 feet) can be used, yielding an area of 69.9 acres. Most wells are constructed in areas with potential overlap of existing impacts in the landscape, such as roads and power lines, that have already impacted the landscape. To estimate the amount of overlap with existing infrastructure we utilized the following methodology, which was outlined within the lesser prairie-chicken Species Status Assessment Report (USFWS 2022). The Western Association of Fish and Wildlife Agencies estimated that on average new wells mitigated through their mitigation strategy overlapped existing features by 56.7% (WAFWA 2020). Additionally, the Western Association of Fish and Wildlife Agencies had previously estimated that prior to the range-wide conservation plan, wells overlapped existing features by 42% (Wolfe et al. 2019). In February 2019, the Western Association of Fish and Wildlife Agencies also estimated that approximately 25% of wells drilled within the range of the lesser prairie-chicken were being mitigated for under their mitigation strategy in 2017 (WAFWA 2019). Based on that information, we assumed that 25% of new wells would have an overlap of 56.7% with existing infrastructure, and 75% of new wells would have an overlap of 42%. Using the weighted average, we calculated that when overlap is considered, each new well would impact 38 acres. Therefore, impact from each oil and gas well is instead estimated to be 38 acres, rather than 69.9 acres.

Because it is difficult to provide precise numbers of lesser prairie-chicken that will be harmed, or killed as a result of permitting oil and gas wells habitat was used as a proxy of take. Acres of future disturbance from new oil and gas wells permitted on State and private lands within each of the CHAT categories was projected based on data provided by the Center of Excellence. The Center of Excellence summarized the annual number of State and private wells permitted in each CHAT category between 2012 and 2021. Please note that data provided by the Center of Excellence is represented as individual wells, and not well pads. Permitted wells may be co-located with other

wells on the same well pad. Data were used to produce an annual number of wells drilled per ecoregion from 2012-2021. Finally, we converted the projected number of new wells to acres of usable area impacted. On average, 1.3 oil and gas wells in CHAT 1, 1.9 oil and gas wells in CHAT 2, 120.9 oil and gas wells in CHAT 3, and 34.5 oil and gas wells in CHAT 4 are permitted annually. In the past 10 years, the maximum oil and gas wells permitted in a single year (under the Conservation Agreement with Assurances) was 5 in CHAT 1 habitat, 9 in CHAT 2 habitat, 174 in CHAT 3 habitat, and 66 in CHAT 4 habitat. Assuming 38 acres of surface impacts per well (as discussed above) and that wells are likely to be located in areas that have already been disturbed, the maximum amount of acreage we expect to be disturbed in a single year is 190 acres of CHAT 1 habitat, 342 acres of CHAT 2 habitat, 6,612 acres of CHAT 3 habitat, and 2,508 acres of CHAT 4 habitat.

Habitat loss is a significant threat to the lesser prairie-chicken because the species requires large parcels of intact native grassland and shrubland to maintain self-sustaining populations. Loss of habitat can result in the remaining suitable habitat to become fragmented. Because the habitat loss from oil and gas development is likely to be localized and concentrated in areas where oil and gas development has already occurred, the take is likely to avoid areas with the highest prairie chicken numbers.

Effects to dunes sagebrush lizard

Oil and gas activities can result in direct habitat loss through shinnery oak duneland, and vegetation removal, and can ultimately lead to habitat fragmentation. Fragmentation of dunes sagebrush lizard habitat can directly be attributed to density of oil and gas well pads. One study found a 25% reduction in dunes sagebrush lizard abundance in landscapes with well densities of 13.64 wells per square mile, and a 50% reduction in abundance with well densities of 29.82 wells per square mile (Sias and Snell 1998). Following the Sias and Snell (1998) study, Painter et al. (1999) recommended well densities not to exceed 13 well pads per square mile. Leavitt and Fitzgerald (2013) also found reduced dunes sagebrush lizard abundance at well densities of 13 wells per square mile and higher, they also found that oil and well pad density influences sand dune blowout abundance and size. Johnson et al. (2016) found a marked decline in dunes sagebrush lizard occurrence at well densities of 5 and 8 well pads per square mile with no lizards found at well densities above 23 well pads per square mile. As a result of the study, Johnson et al. (2016) recommended that 13 well pads per square mile should be considered “degraded” habitat.

Researchers have suggested that the grid-like network of well pads and connecting roads isolate disrupt the geomorphologic processes that maintain shinnery oak dune blowout formations, and can reduce access to habitat, prey, and mates, ultimately decreasing population size and persistence (Walkup et al. 2017; Young et al. 2018). The construction phase of oil and gas infrastructure is also a significant threat to the dunes sagebrush lizard, first due to the removal of vegetation, which can destabilize dunes, and also because heavy machinery can cause direct mortality (Van Pelt et al. 2013).

Pipeline construction requires the digging of trenches, which dunes sagebrush lizards are not able to escape, which can lead to death if dunes sagebrush lizards are entrapped in uncovered excavations (Romano et al. 2014). Use of off highway vehicles can also be associated with oil and gas development, which can reduce vegetative cover, directly strike lizards, and contribute to sand dune erosion (Van Pelt et al. 2013).

Analysis of oil and gas activities "likely to adversely affect" the dunes sagebrush lizard

The Service anticipates incidental take of individual dunes sagebrush lizard will be difficult to document, since the species is not easily detected, and reliable population size and densities are not known at this time. However, take of this species can be expressed by the destruction and degradation of dunes sagebrush lizard habitat. We used data from the past 10 years, provided by the Center of Excellence, to estimate the maximum amount of oil and gas wells that may be permitted on state and private lands annually. We then used the impact distance suggested by Sias and Snell (1996) to estimate acres of impacts to dunes sagebrush lizard supportive habitat.

In large part, oil, gas, and associated activities are sited outside of occupied, or suitable unoccupied dunelands, by a minimum of 30 meters. However, because the lizards are mobile, and because the lizards have been observed outside of dunelands, they may be exposed to habitat disturbance associated with oil and gas activities in supportive habitat surrounding duneland habitat. The Center of Excellence provided an annual number of wells permitted on state and private lands within supportive dunes sagebrush lizard habitat (i.e., shrublands). Please note that data provided by the Center of Excellence is represented as individual wells, and not well pads. Permitted wells may be co-located with other wells on the same well pad. We then projected annual disturbance for the remaining term of the Agreement. Since 2012, an average of 8.81 wells are permitted annually in supportive habitat on private and state lands, the maximum amount of oil and gas wells permitted in the last 10 years occurred in 2014, with 16 new wells permitted. Sias and Snell (1996) suggest that well pads with a size of 6,750 square meters have an impact diameter of 253 meters, this yields an area of 12.39 acres (50,152 square meters). Using this maximum, and an impact distance of 12.39 acres, the maximum amount of supportive shrublands (rounded up to the nearest whole number) we expect to be disturbed in a single year is 199 acres.

Impacts to supportive habitat may increase fragmentation within the range of the dunes sagebrush lizard. Development in this area can also expose sagebrush lizards in these areas to direct impacts from oil and gas development. Over time, these impacts could reduce the movement of dunes sagebrush lizards between occupied dunelands and reduce connectivity. However, given the low occurrence of dunes sagebrush lizards in these supportive habitats, there are not expected to be significant impacts to local dunes sagebrush lizard populations.

Oil and Gas Conservation Measures - Effects to Both Species

The Conservation Agreements include measures that can be implemented to reduce consequences to the lesser prairie-chicken and dunes sagebrush lizard from oil and gas development and associated activities. By enrolling under the agreement, the Participant agrees to conservation measures found in their Certificate of Inclusion or Certificate of Participation. A complete list of conservation measures that industry participants agree to can be found on page 9 (for Candidate Conservation Agreement participants) and page 12 (for Conservation Agreement with Assurances participants) of this document.

These measures are intended to reduce fragmentation of habitat associated with past oil and gas development, and to avoid and minimize future disturbance associated with oil and gas development covered under the Conservation Agreements. These conservation measures aid in minimizing loss of suitable habitat through avoidance of suitable habitat and reducing the footprint of oil and gas activities. Additionally, these conservation measures are intended to reduce collisions with vertical

features and reduce anthropogenic disturbance that has been known to disturb birds during lekking periods. For the dunes sagebrush lizard in particular, these conservation measures preserve dune complexes and attempt to restore suitable dune complexes.

Additionally, participants contribute funds in the event of new surface disturbance and conduct in-kind conservation work to benefit the lesser prairie-chicken and/or dunes sagebrush lizard. Oil and gas operators and linear infrastructure developers are required to pay fees that will offset impacts from new ground disturbing activities and infrastructure development on their enrolled lands. The contributed funds will be held and utilized by the Center of Excellence to accomplish high priority conservation projects in high priority areas as determined by the Service and the Bureau of Land Management. Examples of these projects include the following:

- Chemical treatment of mesquite
- Removal of dead standing mesquite
- Construction and replacement of damaged fences and water troughs to improve rangeland and allow for cattle rotation
- Removal of fences
- Replacing windmills with solar pumps
- Caliche removal and reseeding
- Research and education

Effects from Livestock Grazing

Effects to lesser prairie-chicken

Historically, the interaction between grazing by large ungulates, fire, and drought created and maintained the prairie ecosystems that lesser prairie-chicken and other grassland bird species depend on today (Bragg and Steuter 1996, Derner et al. 2009, Knopf and Samson 1997). As such, the practice of grazing is not inherently detrimental to the lesser prairie-chicken, but in certain cases can lead to lesser prairie-chicken habitat loss. When livestock grazing is managed with lesser prairie-chicken in mind, grazing is an invaluable tool for maintaining healthy prairie ecosystems, however, when rangeland is over utilized, there could be significant negative consequences to the lesser prairie-chicken (USFWS 2022). Within the range of the lesser prairie-chicken, heavy grazing can potentially remove portions of tallgrass and midgrass cover, and in some cases can be reduced to a degree that leaves less than adequate residual cover in the spring. Inadequate tallgrass and midgrass cover can lead to poor nesting cover and reduced availability of food plants, which can be detrimental to lesser prairie-chicken populations (Bent 1932; Davis et al. 1979; Crawford 1980; Bidwell and Peoples 1991; Riley et al. 1992; Giesen 1994b). Residual cover at and around nests is thought to increase nest success because the nest is better concealed from predators (Davis et al. 1979; Wisdom 1980; Riley et al. 1992; Giesen 1994b).

The impacts of grazing on lesser prairie-chicken habitat can vary widely, depending on climatic conditions, the state or health of range vegetation, and the type of grazing regime utilized. Drought tends to magnify grazing impacts, as both processes reduce plant cover (Giesen 2000). When forage is reduced by drought, what remains tends to be grazed more heavily unless animal numbers are reduced. As a result, some grazed areas may supply adequate habitat during periods of normal rainfall but may be unable to support lesser prairie-chickens during periods of drought (Merchant

1982). Intense and/or persistent grazing may reduce or eliminate residual tallgrass cover needed for nesting (Davis et al. 1979; Riley et al. 1992). Heavy grazing that repeatedly interrupts plant succession over a broad area may result in the conversion of tallgrass prairie to shortgrass or forb-dominated habitat (Hoffman 1963; Jackson and DeArment 1963; Litton et al. 1994) or shrub-dominated landscapes. In addition, when grasslands are in a deteriorated condition due to incompatible grazing and overutilization, the soils have less water-holding capacity (Blanco and Lal 2010), and the availability of succulent vegetation and insects utilized by lesser prairie-chicken chicks can be greatly reduced.

Fencing is a fundamental tool of livestock management and is often essential for proper herd and grazing management. Fencing is used to confine livestock and prevent them from grazing areas such as public roads, agricultural fields, lands intended for hay production, outside of property boundaries, and those lands enrolled in some types of conservation programs. However, fencing, particularly at higher densities, can contribute to fragmentation of the landscape and hinder efforts to conserve grasslands on a landscape scale (Samson et al. 2004). In addition to direct mortality of lesser prairie-chicken through collisions during flight, fencing can also indirectly lead to mortality by creating hunting perches used by raptors and by facilitating corridors that may enhance movements of mammalian predators (Wolfe et al. 2007).

Grazing livestock can also unintentionally flush lesser prairie-chickens from nests and trample lesser prairie-chicken nests (Toole 2005; Pitman et al. 2006a). Flushing of adults can lead to exposure of eggs and chicks to predators, extreme temperatures, and direct mortality. Additionally, the trampling of nests can cause adults to permanently abandon their nest. These consequences have been documented but are presumed not to be significant at a population scale.

Additionally, herbicide application on native rangelands to decrease or eliminate the shrub component and increase grass forage for livestock reduces habitat quality for lesser prairie-chicken throughout the species' range. Herbicide application (primarily 2, 4-D and tebuthiuron) to reduce or eliminate shrubs from native rangelands is a common ranching practice throughout the species range.

In a study conducted in west Texas, Haukos (1989) documented strong nesting avoidance of tebuthiuron-treated shinnery oak rangelands. Similar behavior was confirmed by three other studies conducted in New Mexico that examined aspects of lesser prairie-chicken habitat use, survival, and reproduction relative to shinnery oak density and herbicide application. First, Bell (2005) documented strong thermal selection for, and dependency of lesser prairie-chicken broods on, sand shinnery oak dominance in shrubland habitats. In this study, lesser prairie-chicken hens and broods used sites within the sand shinnery community that had statistically higher percent cover and greater density of shrubs. Secondly, Johnson et al. (2004) observed through telemetry methods that the most common vegetation types in lesser prairie-chicken hen home ranges were those dominated by shinnery oak. Hens were detected more often in or near pastures untreated with herbicides, and all nests were located in areas dominated by shinnery oak. This study suggested that herbicide treatment to control shinnery oak adversely impacted nesting lesser prairie-chickens. Finally, a third study conducted by the Sutton Center, in cooperation with New Mexico Department of Game and Fish, showed that over the course of 4 years and five nesting seasons, lesser prairie-chickens in the core of occupied range in New Mexico distributed themselves non-randomly among shinnery oak rangelands treated and untreated with tebuthiuron (Patten et al. 2005). They demonstrated statistically that lesser

prairie-chickens strongly avoided habitat blocks treated with tebuthiuron but were not affected by low intensity cattle grazing. Further, herbicide treatment explained nearly 90 percent of the variation in occurrence among treated and untreated areas.

For a complete description of consequences to lesser prairie-chicken from livestock grazing and associated activities please see the lesser prairie-chicken Species Status Assessment (2022).

Analysis of livestock grazing activities "likely to adversely affect" the lesser prairie-chicken

While prescribed grazing conducted under the Candidate Conservation Agreement with Assurances is intended to provide long-term habitat benefit to the lesser prairie-chicken, the presence of cattle in lesser prairie-chicken habitat can have adverse impacts in the form of trampling and the installation of fencing needed to manage the grazing.

Adverse consequences of *livestock grazing* include trampling of lesser prairie-chicken nests, and nest flushing, which can result in increased exposure to predators and environmental influences. Although the effect of trampling at a population level is unknown, outright nest destruction has been documented. For example, Pitman et al. (2005) documented 4 of 209 nests were lost to trampling by cattle. In another study Pitman et al. (2006a) quantified nest loss over six breeding seasons and identified 1.9% of nest loss (n = 161) to trampling by livestock. Disturbance of some individual lesser prairie-chicken may occasionally occur from feeding, calving, and herding of livestock. These effects are expected to rarely occur and are not expected to produce significant changes in species distribution and abundance. Grazing management plans often include, but are not limited to, rest and deferment periods, stocking rates, location of mineral/salt supplements, and consideration of riparian and other sensitive or high impact areas. These management plans help ensure that although some level of adverse effect is anticipated from livestock operations in the short-term, the long-term benefits will manifest as species habitat will be maintained or improved following application and the expected species response will be positive. Aside from the potential trampling of nests that may result from cattle grazing, the Service does not anticipate incidental take coverage is needed for any potential sources of adverse effect noted in the above analysis as Participants will be following a site-specific grazing plant that accounts for the habitat needs of the lesser prairie-chicken.

In order to estimate incidental take associated with the trampling impacts during the implementation of prescribed grazing (with the associated conservation measures), we estimated the number of birds exposed to this practice by multiplying the bird density in the shinnery oak ecoregion (0.0004 birds per acre) and the number of enrolled ranchland acres to date (1,878,126 acres). We then multiplied the estimated number of birds exposed to the practice (752 birds) by the rate of mortality or injury for that practice (0.0191), which resulted in an estimated number of 15 individuals taken (rounded to whole numbers) annually from implementation of prescribed grazing. This represents the highest estimate for incidental take resulting from cattle trampling while implementing prescribed grazing. The density of lesser prairie-chickens likely varies widely across all of the grazing land enrolled under the Candidate Conservation Agreement with Assurances and thus the actual number of birds impacted may be lower than our estimate. We do not anticipate additional grazing land enrollment for the remainder of the term of the Candidate Conservation Agreement with Assurances.

Fences can be a valuable tool to facilitate improved grazing management providing for improved lesser prairie-chicken habitat. However, fences have been documented as a collision risk to lesser prairie-chicken (Wolfe et al. 2007) and greater sage-grouse (Stevens et al. 2012). More recently, in

Kansas and Colorado scientists found only 3 carcasses and 12 possible collisions after observing 12,706 fence crossings by GPS-marked lesser prairie-chicken and surveying another 1,750 miles of fences (Robinson et al. 2016). The Service believes this evaluation represents the best available information on these risk to the species and has prepared an incidental take estimate in accordance with the results from Robinson et al. (2016). This study suggests a mortality or injury rate of 0.0086 strikes per mile of fence. The Service believes this evaluation represents the best available information on the risk of fences to the species and has prepared an incidental take estimate in accordance with the results from Robinson et al. (2016).

Habitat conservation fees can fund projects to remove and replace fences on lands enrolled under the Agreements. Since 2016, an average of 23.7 miles of fence were replaced every year using funds from the Agreements, and a maximum of 54 miles of fence were approved for replacement in 2017. Due to the difficulty in developing reasonable assumptions about length of fence and proximity of leks, incidental take was estimated by multiplying the strike rate of 0.0086 lesser prairie-chicken strikes per mile of marked fence. Assuming all fences are marked, the maximum annual incidental take associated with fence projects under the Agreement with Assurances, rounded up, is estimated to be 1 bird.

Take of individual birds from collisions with fences may temporarily reduce the number of birds in the area of the fence construction. However, in any given year fence installation is likely to be spread across the landscape and therefore adverse impacts are unlikely to be concentrated in any one specific area.

Effects to dunes sagebrush lizard

Alteration of native range to increase grass production for domestic livestock is the main reason for shinnery oak removal. Shinnery oak can be removed by mechanical and chemical means. The chemical removal of shinnery oak occurs through tebuthiuron application, which defoliates shinnery oak, reducing vigor as time goes on, and eventually dies off within 2-3 years (Jones and Pettit 1984; Peterson and Boyd 1998). After removal of shinnery oak from the landscape, wind erosion increases, destabilizing dunes (Peterson and Boyd 1998). Dune sagebrush lizard abundance has been found to decrease between 70-90% following shinnery oak removal (Snell et al. 1994). Following removal of shinnery oak, which transforms the landscape, it is likely that competition with other lizards increases, along with increased predation due to the inability of the dunes sagebrush lizard to hide from predators (Snell et al. 1994). At the individual level, the removal of shinnery oak vegetation can impair dunes sagebrush lizard breeding (female nesting movements, juvenile dispersal, etc.), feeding, sheltering (thermoregulation, predator avoidance, etc.), dispersal, and survival (Machenberg 1984; Degenhardt et al. 1996; Snell et al. 1997; Fitzgerald et al. 1997; Peterson and Boyd 1998; Painter et al. 1999; Sartorius et al. 2002; Painter 2004; Dhillion and Mills 2009; Leavitt and Acre 2014; Hibbitts and Hibbitts 2015).

Domestic livestock and wildlife grazing practices that reduce the ability of the land to sustain long term plant and animal production (Smith et al. 1996) may lead to the loss of grassland cover, mortality of plant species, and increased erosion (Dhillion and Mills 2009). Further, improper grazing practices and increased conversion of rangelands to agricultural production may lead to habitat fragmentation and loss by promoting conditions favorable for shrub encroachment and by increasing infrastructure development, such as roads, drinkers, windmills, water pipelines, and fences

(Dinerstein et al. 2000). These land management activities are compounded by extended drought periods and altered hydrologic functions. At this time the magnitude of risk grazing livestock pose to dunes sagebrush lizards is unknown.

Livestock Grazing Conservation Measures - Effects to Both Species

The Conservation Agreements include measures that can be implemented to reduce consequences to the lesser prairie-chicken and dunes sagebrush lizard from livestock grazing and associated activities. By enrolling under the Conservation Agreements, the Participant agrees to conservation measures found in their Certificate of Inclusion or Certificate of Participation. A complete list of conservation measures that Participants agree to can be found on page 11 (for Conservation Agreement participants) and page 14 (for Conservation Agreement with Assurances participants) of this document.

Perhaps the largest benefit to lesser prairie-chicken and dunes sagebrush lizard from the Conservation Agreement with Assurances, relating to livestock grazing, is that Participants on non-Federal lands would be required to adhere to stipulations on grazing activities required by the Bureau of Land Management's Management Plan for ranch operations. This conservation measure helps ensure consistent land management across the range of the lesser prairie-chicken and dunes sagebrush lizard in southeastern New Mexico. Grazing management plans, which address stocking rates, rotation patterns, grazing intensity and duration, and contingency plans for prolonged weather patterns, will also be developed to move towards meeting specific habitat goals for the lesser prairie-chicken and dunes sagebrush lizard.

The purposes of these conservation measures are to minimize the consequences of uniform or widespread livestock grazing or rangeland resulting in height of residual cover below that necessary for secure nesting cover and desirable food plants for lesser prairie-chicken. Additionally, marking fences in lesser prairie-chicken habitat can help reduce collisions with fences. Conservation measures relating to tebuthiuron treatment and dunes is meant to ensure protection of shinnery dunes by maintaining appropriate vegetative community.

These Conservation Agreements are based on adaptive management principles and thus, are intended to be living documents. Using adaptive management principles, the Service and/or the Bureau of Land Management can add or make necessary modifications to existing conservation measures currently found in the Conservation Agreements. Additionally, new conservation measures can be implemented if the Service and/or the Bureau of Land Management find such measures to be necessary to facilitate the continued conservation of the lesser prairie-chicken and/or dunes sagebrush lizard. Any adaptive management modifications will apply only to future Participants. Implementation of the proposed action is intended to reduce overall surface disturbance associated with various land use practices on Federal, State and private lands.

Effects from Agricultural Uses

Effects to lesser prairie-chicken

In the 1940s, 1970s, and 1980s, additional acres of previously unbroken grassland were brought into cultivation (Laycock 1987). Bragg and Steuter (1996) estimated that by 1993, only 8 percent of the bluestem-grama association and 58 percent of the mesquite-buffalo grass association as described by Kuchler (1985) remained. In New Mexico, as well as the other four states with extant lesser prairie-

chicken populations, there has been a decline in the amount of rangeland acreage over that time period, indicating that loss of important lesser prairie-chicken habitat may still be occurring. According to the lesser prairie-chicken Species Status Assessment, conversion of grassland to cropland has had one of the largest impacts on land cover in the shinnery oak ecoregion.

One of the potential consequences to the lesser prairie-chicken from the conversion of native sand sage-shinnery oak rangeland to cultivation is habitat loss and/or fragmentation. Landscapes having greater than 20 to 37% cultivated grains may not support stable lesser prairie-chicken populations (Crawford and Bolen 1976a). A more recent study found that lesser prairie-chicken abundance increased with increasing cropland until a threshold of 10% cropland, then lesser prairie-chicken abundance decreased with increased cropland cover (Ross et al. 2016). While croplands in some cases may provide opportunistic foraging opportunities, croplands do not provide necessary nesting, thermoregulation, and predator avoidance requirements, therefore lesser prairie-chickens avoid landscapes dominated by cultivated agriculture (Crawford and Bolen 1976a). Avoidance of agricultural lands can lead to habitat fragmentation, which may threaten local lesser prairie-chicken populations through several mechanisms; habitat juxtaposition and remaining patches of rangeland may be smaller than necessary to support populations (Samson 1980), necessary habitat heterogeneity may be lost, habitat between patches may accommodate high densities of predators, and ability to move and/or disperse among suitable patches of habitat may decrease (Wilcove et al. 1986; Knopf 1996).

Other consequences from agriculture can result from tree planting, fence building, and use of windbreaks, which may impact the structure and continuity of grassland habitats. As a group, prairie grouse may be particularly sensitive to habitat fragmentation due to their short dispersal distances and landscape-scale habitat requirements (Braun et al. 1994). Recent lesser prairie-chicken population declines in the southern portion of its range in New Mexico, although probably at least in part drought-related, have led to concern over the effects of fragmentation. While it is often difficult to describe cause-and effect linkages between specific sources of fragmentation and eventual population responses, studies have found lesser prairie-chicken population declines in New Mexico to be associated with several measures of overall habitat fragmentation, including patch size, edge density, and total rate of landscape change (Woodward et al. 2001; Fuhlendorf et al. 2002).

For a complete description of consequences to lesser prairie-chicken from agricultural activities please see the lesser prairie-chicken Species Status Assessment (2022).

Effects to dunes sagebrush lizard

Shinnery oak duneland is not ideal for agriculture and cropland, so the largest threat to dunes sagebrush lizards from agriculture is removal of shinnery oak. Tebuthiuron is an herbicide used to remove shinnery oak from areas in order to convert them to agricultural land or increase grass forage production in areas used for livestock grazing. Direct correlation of the species' decline is not linked to the actual application of tebuthiuron, but instead linked to the long-term effects associated with the removal of shinnery oak habitat. Snell et al. (1997) found that removal of shinnery oak through herbicide treatment resulted in a dramatic reduction and extirpation of dunes sagebrush lizards. The study showed that the species' numbers dropped 70 to 90 percent in areas chemically treated compared to adjacent untreated plots. Some plots experienced 100 percent population loss (Snell et

al. 1997). Ongoing removal of shinnery oak on State and private lands in New Mexico is an imminent threat to the species with long-term negative effects.

Besides treatment of shinnery oak, which was discussed previously, reduction of the water table as a result of groundwater pumping for irrigating croplands can also pose a threat to the dunes sagebrush lizard. Groundwater depletion is a risk specifically to shinnery oak by contributing to a reduction in photosynthesis, growth, and can eventually lead to death (Cambell et al. 2017).

Agricultural Uses Conservation Measures - Effects to Both Species

The Conservation Agreement with Assurances includes measures that can be implemented to reduce consequences to the lesser prairie-chicken and dunes sagebrush lizard from agricultural uses and associated activities. For the dunes sagebrush lizard, herbicide application is not permitted within 100 meters of dune complexes and corridors between dune complexes, and tebuthiuron spraying is not permitted within 500 meters of suitable and occupied habitat or within corridors connecting dune complexes that are within 2,000 meters from each other. Control and treatment of shinnery oak requires coordination with the Center of Excellence and the Service to ensure treatment is not detrimental to lesser prairie chicken or dunes sagebrush lizards. Additionally, for lesser prairie-chickens, fence markers can be installed on fences that cross through occupied habitat within 2 miles (3.2 kilometers) of an active lek.

Additionally, under both Conservation Agreements conversion of conservation lands to crop production or development will not be permitted, this measure is meant to maintain existing lesser prairie-chicken and/or sagebrush lizard habitat.

The purposes of these conservation measures are to minimize the consequences of uniform or widespread cropland resulting in height of residual cover below that necessary for secure nesting cover and desirable food plants for lesser prairie-chicken. Additionally, marking fences in lesser prairie-chicken habitat can help reduce collisions with fences. Conservation measures relating to tebuthiuron treatment and dunes are meant to ensure protection of shinnery dunes by maintaining appropriate vegetative community.

Effects from Proposed Amendments

The proposed Amendments are anticipated to increase enrollment in the Conservation Agreements by making the All Activities enrollment option available, opening the Conservation Agreements up to linear infrastructure developers, and lowering enrollment fees for interested parties with less than 10,000 acres.

The All Activities Amendment will allow Participants to enroll in the entire Covered Area and add parcels of land as they obtain them, even after a potential effective listing date. This change would allow for the coverage of new lands after a potential effective listing date, as opposed to only lands that were originally enrolled in the Conservation Agreements prior to an effective listing date. By potentially increasing the amount of enrolled lands, the All Activities Amendment would likely increase the amount of impacts in lesser prairie-chicken and dunes sagebrush lizard habitat in the Covered Area. Some of these impacts will be minimized and mitigated through the implementation of minimum conservation measures in all new and previously acquired parcels, even for projects with otherwise no Federal nexus. This enrollment option will still require the enrollees to provide GIS shapefiles of all enrolled properties and an annual update of enrolled properties. Enrolled lands will

still be subject to the conservation measures, obligations, and Habitat Conservation Fees set forth in the Conservation Agreements, and proposed amendment, if issued. During the project planning process, dunes sagebrush lizard habitat will continue to be avoided and disturbance to lesser prairie-chickens and their habitat will be minimized and avoided (when applicable) when siting infrastructure and roads. For operations on Federal lands, even those enrolled under the All Activities Amendment, Participants will still be subject to the Bureau of Land Management's Management Plan requirements.

The Certificate of Participation and Certificate of Inclusion for Linear Infrastructure Developers will allow the enrollment of companies that develop linear infrastructure, such as pipelines and electrical distribution lines, associated with oil and gas development. Consequences associated with linear infrastructure are analyzed in the Effects from Oil and Gas Development section above. Linear infrastructure presents several obstacles to lesser prairie-chicken, and with the introduction of an avenue for those activities to be covered under the Conservation Agreements, it is possible for consequences from those activities to increase. Consequences associated with this aspect of the amendment will be minimized through the implementation of conservation measures. Additionally, contribution to the Habitat Conservation Fund by linear infrastructure developers for new impacts will be used to improve lesser prairie-chicken habitat and populations.

Lowering the enrollment fees for small operators is intended to remove a barrier to participation in the Conservation Agreements and may increase enrollment, and thus impacts. Consequences associated with this aspect of the amendments will be minimized through the implementation of conservation measures. In addition, contribution to the Habitat Conservation Fund by interested parties with less than 10,000 acres for new impacts will be used to improve lesser prairie-chicken and dunes sagebrush lizard habitat and populations. Operators with less than 10,000 acres will still be subject to the conservation measures, obligations, and Habitat Conservation Fees set forth in the Conservation Agreements, and proposed amendments.

Another focus of the proposed amendments aims to update the previous focus in the Conservation Agreements on high quality habitats on Federal lands described in the Bureau of Land Management's Management Plan. Since the original Conservation Agreements were approved, additional investigations into high quality habitats have been performed by the Lesser Prairie-chicken Interstate Working Group that categorize habitat across the lesser prairie-chicken range into Focal Areas, Connectivity Zones, Modeled Habitat, and Modeled Non-Habitat. The original Conservation Agreements used Bureau of Land Management management categories, this amendment seeks to update the habitat categories and fees associated with the habitat categories. This amendment will add high priority lesser prairie-chicken habitat across southeast New Mexico, including those on private and State lands, which were originally left out, to the priority habitat categories. Reclassification of habitat categories will discourage development in higher quality habitat and put additional money into conservation for lesser prairie-chicken and dunes sagebrush lizard, benefitting both species.

Finally, the amendments allow for an annual readjustment of Habitat Conservation Fees due to inflation and deflation. Previously the Habitat Conservation Fees were set at one fee based on the estimated cost to restore an acre of habitat when the program was created in 2008. Inflation and deflation could cause the estimated cost to restore an acre to increase or decrease, so it is possible that the Habitat Conservation Fees do not reflect the true cost to restore an acre of habitat today. This

amendment will adjust Habitat Conservation Fees based on the Consumer Price Index for All Urban Consumers to better reflect the cost of restoring one acre of habitat. In the case of inflation, this adjustment will allow for the full potential of habitat restoration by increasing Habitat Conservation Fees.

Summary of Effects

This Conference Opinion identifies a variety of consequences associated with the implementation of the current Conservation Agreements and the implementation of the proposed amended Conservation Agreements, including the adverse consequences associated with ongoing agricultural and oil and gas activities. Adverse consequences associated with these ongoing activities are anticipated to be offset by conservation measures implemented under the Conservation Agreements and the funding of conservation projects on high priority lands using funds from new habitat disturbance.

The existing Conservation Agreements are intended to assist in the conservation of the lesser prairie-chicken and dunes sagebrush lizard by shifting energy development from areas of the greatest negative impact on the species and their habitat, to areas where impacts to the species and their habitat are lessened. At the same time, these Conservation Agreements are focusing habitat improvement projects on areas that currently support lesser prairie-chicken and dunes sagebrush lizards individuals and have the ability to support species populations. Consequently, the Conservation Agreements will continue to provide a net conservation benefit by enhancing and restoring habitat, reducing fragmentation, and maintaining and increasing populations. The All Activities amendment will help further the conservation benefit to the species by increasing enrollment.

Since inception, approximately 84,194 acres (34,072 hectares) of land have been impacted by development on enrolled lands covered under the Conservation Agreements. Most of these impacts occurred in areas that, while included in the planning area for the Conservation Agreements, are not occupied by either species. Specifically, for the lesser prairie-chicken, most of the development covered under the Conservation Agreements (72,071 acres (29,166 hectares)) have occurred in the Habitat Evaluation Areas, Sparse and Scattered Population Area, Isolated Population Area, Estimated Occupied Range Plus 10 miles, and historical range (see definitions above), which are areas that are not occupied and likely did not support viable lesser prairie-chicken populations when those impacts occurred. When the spatial location of these impacts is considered, it becomes apparent that only 12,123 acres of impacts under this agreement have occurred in areas that support lesser prairie-chicken populations (Core Management Area and Primary Population Area and the Estimated Occupied Range).

While approximately only 12,123 acres (4,906 hectares) of impacts under the Conservation Agreements have occurred in areas that have the potential to support lesser prairie-chickens, approximately 29,889 acres (12,096 hectares) out of 30,856 acres (12,378 hectares) of restoration funded by conservation fees have occurred in areas (Core Management Area and Primary Population Area and Estimated Occupied Range) that are immediately adjacent to or in close proximity to occupied lesser prairie-chicken habitat. These funds have been targeted in areas to maximize the conservation benefit to the lesser prairie-chicken by increasing the amount of suitable habitat and reducing fragmentation.

For the dunes sagebrush lizard, Participants have agreed to various habitat avoidance conservation measures, including no surface occupancy within a recommended distance of 200 meters of occupied or suitable sagebrush lizard habitat. Prior to construction the Center of Excellence attends site visits to ensure Participants avoid suitable duneland habitat. Since inception, 503 Federal wells, 84 State wells, and 92 rights-of-way, have been moved outside of dunes sagebrush lizard habitat through the planning stage. Additionally, 4,354 acres of seismic data acquisition has been relocated out of dunes sagebrush lizard habitat (CEHMM 2022). Restoration of habitat through the removal of 159.2 acres of roads, pads, and caliche, since 2008, has also directly benefitted the dunes sagebrush lizard.

While impacts are offset spatially, there is a temporal mismatch in mitigation. The Conservation Agreements implement a system which is equivalent to an In Lieu Fee Program where Participants are required to pay a fee prior to development but there is no requirement for mitigation efforts to be implemented. These fees are then held in fund where a "ranking committee" meets annually and determines which projects should be funded with mitigation dollars. There is typically a small temporal loss for the lesser prairie-chicken between the time in which the impacts occur and the time at which the conservation actions are implemented and the habitat becomes fully functional. Another temporal aspect that should be considered is that the primary development activities covered under the agreements (oil and gas development) are considered permanent impacts. While the development actions are permanent, the mitigation actions that are being implemented will need continued maintenance overtime to be considered permanent. For example, the primary restoration effort being implemented is mesquite removal, but once mesquite is removed from an area those areas require continued maintenance to prevent re-invasion of mesquite. Despite the temporal mismatch we believe the spatial gains in high priority habitat are enough to offset the temporal mismatch.

CUMULATIVE EFFECTS

Cumulative effects are those "effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area" considered in this Conference Opinion (50 CFR 402.02). The Bureau of Land Management manages the majority of the public land within the action area. The rest of the action area is made up of private and State lands interspersed with public land. Unregulated activities on State and private lands such as livestock grazing, inappropriate use of off highway vehicles, agricultural development, residential or commercial development, alternative energy and oil and gas development, conversion of Conservation Reserve Program lands to croplands, nonnative plant invasion, and inappropriate herbicide application may result in adverse consequences to the lesser prairie-chicken and dunes sagebrush lizard through a variety of avenues. Many of these threats may exacerbate the normal effects of periodic drought on lesser prairie-chicken and dunes sagebrush lizard populations.

CONCLUSION

As described in the effects section above, potential consequences to the lesser prairie-chicken and dunes sagebrush lizard as a result of the proposed action may occur.

Please refer to the list of voluntary conservation measures proposed within the Conservation Agreements that will be incorporated into the Certificate of Inclusion or Certificate of Participation (as determined in negotiations at the time of enrollment) to minimize the consequences to the lesser prairie-chicken and/or dunes sagebrush lizard and their habitats. In addition to those conservation

measures, Industry Participants are required to pay fees that will offset impacts from new ground disturbing activities and infrastructure development on their enrolled lands. The contributed funds will be held and utilized by the Center of Excellence to accomplish conservation measures on other high priority areas as determined by the Service and the Bureau of Land Management.

Lesser prairie-chicken

After reviewing the current status of the lesser prairie-chicken in the Southern Distinct Population Segment, the environmental baseline for the action area, the effects of the proposed action and cumulative effects for this area, it is the Service's conference opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Southern Distinct Population Segment of the lesser prairie-chicken. We anticipate that the implementation of the proposed action (approval of the amendments to the Candidate Conservation Agreement and Candidate Conservation Agreement with Assurances and issuance of the Permit) will not appreciably diminish the likelihood of both the survival and recovery of the Southern Distinct Population Segment of the lesser prairie-chicken.

Landowner enrollment is expected to contribute to a net conservation benefit for the lesser prairie-chicken. The implementation of conservation measures by landowners is expected to improve and increase available habitat in the Southern Distinct Population Segment of the lesser prairie chicken. Additionally, the effective implementation of conservation measures, contributing to a reduction in fragmented habitat and improved habitat conditions in high quality habitat is expected to result in a positive population response.

We do expect there to be adverse consequences to the lesser prairie-chicken from the proposed action. These adverse consequences could result from disturbance, habitat destruction, and habitat fragmentation. However, conservation measures are built into the proposed action to minimize and mitigate adverse impacts associated with the proposed action. Therefore, we have determined that implementation of the proposed action (approval of the amendments and issuance of the permit) will not jeopardize the continued existence of the Southern Distinct Population Segment of the lesser prairie-chicken. We base this conclusion on the following:

- Implementation of the conservation measures will reduce impacts to high quality habitat (higher fees in high priority habitat), reduce risks of collision (burying new power lines, marking fences), and reduce anthropogenic disturbances to breeding, nesting, and brooding lesser prairie-chickens (timing stipulations).
- Mitigation and other habitat improvement projects, funded by new disturbance often in lower priority areas, will be focused in high priority areas, providing for restoration, enhancement, and maintenance of habitat needed by lesser prairie-chicken.
- The remediation and reclamation of inactive wells, roads, and other facilities can reduce fragmentation of habitat.
- In areas where avoidance is not possible, the clustering of roads and development, with the retirement and restoration of existing roads and development, should reduce impacts to lesser prairie-chicken.
- Habitat conservation funds can fund conservation, research, and monitoring projects, which can provide valuable information to help further conserve the species.
- The reduction of threats in high priority area is expected to improve habitat and increase population numbers.

Dunes sagebrush lizard

After reviewing the current status of the dunes sagebrush lizard, the environmental baseline for the action area, the effects of the proposed action and cumulative effects for this area, it is the Service's conference opinion that the action, as proposed (approval of the amendments and issuance of the permit), is not likely to jeopardize the continued existence of the dunes sagebrush lizard. We anticipate that the implementation of the proposed action will not appreciably diminish the likelihood of both the survival and recovery of the dunes sagebrush lizard.

We base this conclusion on the following:

- Occupied and suitable, unoccupied, dunelands are avoided by a minimum distance of 30 meters for oil and gas development, and seismic exploration is not permitted in dunelands, minimizing disturbance to the primary habitat of the dunes sagebrush lizard.
- The remediation and reclamation of inactive wells, roads, and other facilities can reduce fragmentation of habitat.
- Routine monitoring and inspections help ensure accidental pollution events are avoided.
- Habitat conservation funds can fund conservation, research, and monitoring projects, which can provide valuable information to help further conserve the species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibits the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Amount or Extent of Take

The Service anticipates that actions covered under the Conservation Agreements will result in adverse impacts to the lesser prairie-chicken. However, the Conservation Agreements include a suite of conservation measures for the lesser prairie-chicken and dunes sagebrush lizard and their habitats that are intended to reduce these adverse impacts. Implementation of the conservation measures are intended to minimize or eliminate some threats to the lesser prairie-chicken and dunes sagebrush lizard that may result from the proposed action. Additionally, conservation fees collected as a result of infrastructure development and surface-disturbing activities will be used to improve and restore lesser prairie-chicken habitat. This project has the potential to positively impact the status of the species before any listing decisions on these species are made. However incidental take of lesser prairie-chickens and dunes sagebrush lizards is reasonably certain to occur as a result of impacts

from implementation of the proposed action. Even with successful implementation of conservation measures, take of lesser prairie-chicken and dunes sagebrush lizard will occur as a result of projects covered under the Conservation Agreements and the take estimated in the following section is that which results from the remaining impacts.

Lesser Prairie-Chicken

In a landscape-scale program with birds that can move easily among varied habitat patches, it is difficult to precisely estimate the number of birds that are likely to be exposed to impacts from the proposed action. In addition, once a bird is exposed, it is difficult to determine the individual bird's response to the impact. Below we describe the method that Service has used to approach those issues. We recognize that the resulting estimate is based on a series of assumptions, including an assumption that the birds are evenly distributed across the habitat in an ecoregion and that all birds have an equal probability of being exposed to the various practices. When evaluating a range of potential values, we chose to use the numerical values that represent greater amount of effect. We recognize that these assumptions will likely lead to an overestimate of potential effects to the species rather than underestimate the effects. However, we know of no more reasonable method for arriving at an estimate. This provides a cautious yet reasonable analysis for meta-population effects. If this high-end estimate of effects is still compatible with survival and recovery of the lesser prairie-chicken, then we can be satisfied that the realized impacts will also compatible.

In the Effects of the Action section above, we identified multiple impacts associated with the Covered Activities that are "likely to adversely affect" the lesser prairie chicken. These include livestock grazing practices (including fences and cattle trampling) and oil and gas development. Although scientific studies are limited on the effects of the covered and proposed Covered Activities, we used the best available information on rates of injury or mortality to inform our approximation of the number of lesser prairie-chicken taken incidentally by the proposed action.

<u>Estimating Birds and Habitat Subject to Incidental Take</u>

The estimated potential take of lesser prairie-chicken that could result from the proposed action will be measured using acres of suitable lesser prairie-chicken habitat affected by individual projects participating in the Conservation Agreements as a surrogate for direct take of lesser prairie-chicken individuals. A surrogate is required for the following reasons: 1) it is difficult to determine lesser prairie-chicken numbers at any given site and predict how many individuals would be taken by development of oil, gas, or linear infrastructure projects or implementation of grassland improvement and management activities; 2) the location and amount of suitable lesser prairie-chicken habitat can be readily quantified using geographic information systems data; and 3) habitat loss and fragmentation is the primary threat affecting lesser prairie-chicken populations (79 FR 19973 [April 10, 2014]). Thus, because it is impracticable to express take or conservation benefits in terms of individuals, both the impacts of activities and the mitigation of those impacts are measured in acres of habitat.

The estimated annual incidental take of lesser prairie-chickens in the action area from the installation and replacement of *fences* in the future using the assumptions identified above (page 42) is 1 bird, which is less than 1 percent of the average Southern Distinct Population Segment population estimate of 3,249 birds from 2016-2021. The estimated annual incidental take of lesser prairie-chickens in the action area from the coverage of prescribed grazing in the future using the assumptions identified

above (page 41) is 15 birds, which is less than 1 percent of the average Southern Distinct Population Segment population estimate of 3,249 birds from 2016-2021. The annual incidental take of lesser prairie-chickens in the action area from oil and gas development was estimated above (page 37) and is expressed by the destruction and degradation of habitat. The following amounts of incidental take of habitat will be authorized annually by the amended Permit associated with *oil and gas activities*:

- 190 acres of CHAT 1 habitat.
- 342 acres of CHAT 2 habitat.
- 6,612 acres of CHAT 3 habitat.
- 2,508 acres of CHAT 4 habitat.

Take will be monitored annually by activity, but reinitiation of consultation will only be required if the total annual take estimated for the action area (by CHAT category) exceeds the annual allocated take. The total estimated number of acres impacted throughout the remainder of the Conservation Agreement with Assurances (permit expires December 8, 2028) is estimated to be:

- 1,235 acres of CHAT 1 habitat.
- 2,223 acres of CHAT 2 habitat.
- 42,978 acres of CHAT 3 habitat.
- 16,302 acres of CHAT 4 habitat.

The amount of estimated annual take during the remainder of the Permit may be adjusted based on monitoring of contracts and research that provides additional information on rates of injury or mortality.

Dunes Sagebrush Lizard

The Service anticipates that the incidental take of dunes sagebrush lizard will be difficult to detect for the following reasons: 1) the uncertainty of populations number, 2) the likelihood of finding a dead or impaired specimen, and 3) because losses may be masked by seasonal fluctuations in environmental conditions and natural fluctuations in population numbers. Therefore, it is not possible to provide precise numbers of dunes sagebrush lizards that will be harmed or killed as a result of the proposed action. In such instances where take is difficult to detect and/or quantify, take may be quantified in terms of an aspect of the species' habitat that may be diminished or removed by the action.

The Service anticipates dunes sagebrush lizard will be taken as a result of this proposed action. The incidental take is expected to occur in the form of harm, injury, or mortality from the construction of oil and gas wells in supportive habitat. This take will be authorized through issuance of an incidental take permit pursuant to 10(a)(1)(A) of the Act.

The annual incidental take of dunes sagebrush lizards in the action area from the construction of oil and gas wells in supportive habitat was estimated above (page 38) and is expressed by the destruction and degradation of supportive shrubland habitat. The estimated annual incidental take of dunes sagebrush lizards in the action area from the construction of oil and gas wells in supportive shrubland habitat using the assumptions identified above (page 38) is 199 acres. The total estimated number of acres impacted throughout the remainder of the Conservation Agreement with Assurances (permit expires December 8, 2028) is expected to be 1,294 acres of supportive shrubland habitat.

Monitoring Take

Take will be estimated using ongoing extrapolation per the calculations above as oil and gas wells are permitted, or fences are funded yearly, and will be reported back to the Service. Additionally, ongoing detailed research conducted by the Center of Excellence, and other partners will be evaluating the effectiveness of conservation measures. Any known mortality or nest loss of birds will assist in further informing these extrapolated take estimates. Take of dunes sagebrush lizards will be monitored through reporting to the Service on an annual (at minimum) basis of the number of acres of sagebrush lizard habitat due to oil and gas Covered Activities from the Agreements.

Effect of the Take

In this opinion, we have determined that the level of anticipated take is not likely to result in jeopardy to the Southern Distinct Population Segment of the lesser prairie-chicken and/or to the dunes sagebrush lizard. Although we anticipate some take to occur, the implementation of the conservation measures should ultimately result in an overall increase of habitat in the long term.

Lesser Prairie Chicken

Activities conducted under the Agreements could result in loss of up to 9,652 acres of lesser prairie-chicken habitat annually and take of up to 16 individual prairie chickens per year. Annual habitat loss related to oil and gas development represents 0.37% of the total potential usable area (as estimated in the Species Status Assessment) available to the lesser prairie-chicken in the Southern Distinct Population Segment. Furthermore, only 532 acres of this estimated annual habitat loss is within the most important habitat for the lesser prairie-chicken (CHAT 1 and 2), while the majority of habitat improvement projects (30,856 acres) are in CHAT 1 and 2; these projects serve to offset much of the habitat loss resulting from oil and gas development in CHAT 1 and 2. Take of lesser prairie-chicken individuals associated with fences funded under the Conservation Agreements and the coverage of prescribed grazing represent less than 1% of the total number of birds estimated within the southern distinct population segment.

The Service anticipates that implementation of conservation measures as described in the Agreements should ultimately result in an overall increase of habitat quantity and quality in the long-term. The expected improvements in habitat quantity and quality are expected to result in concurrent increases in lesser prairie-chicken abundance (through greater adult and juvenile survivorship, improved nest success, and recruitment rates) and distribution of lesser prairie-chickens in the action area. The anticipated increase in abundance of lesser prairie-chickens as a result of the Agreements should, in turn, result in a net reduction in the effect of anticipated take. Incidental take, therefore, is not expected to nullify the conservation benefits anticipated to accrue under the proposed action.

Dunes Sagebrush Lizard

The number of acres impacted annually under the Candidate Conservation Agreement with Assurances evaluated in this Opinion is not expected to exceed 199 acres of dunes sagebrush lizard supportive habitat. Sias and Snell (1996) used the 253-meter impact distance value to determine that a single well that contains (100%) sagebrush lizard habitat can lead to a 47% reduction in dunes sagebrush lizard population index. Additionally, as a result of the dunes sagebrush lizard species

status assessment we have determined that 94% of lizard observations in New Mexico occur in dunelands, while only 6% have been observed in shrubland habitat – of those 6%, the mean distance from duneland habitat was 130 ± 20.9 meters.

We have determined that the level of anticipated take is not likely to result in jeopardy to the dunes sagebrush lizard because there is no evidence that issuance of the Permit will appreciably reduce the likelihood of both the survival and recovery of the dunes sagebrush lizard in the wild. Impacts from the Covered Activities are expected to occur regardless of Permit issuance as legally allowable. Issuance of the amended permit, and the continued implementation of the Candidate Conservation Agreement with Assurances will allow for the continued implementation of conservation measures on State and private lands, contributing to minimization of impacts on duneland habitat, conservation of the species and habitat, and outreach and research for the dunes sagebrush lizard.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

All conservation measures within the Conservation Agreement with Assurances including incidental take, compliance monitoring, and conservation measures are incorporated herein by reference as reasonable and prudent measures and terms and conditions to address the incidental take of the lesser prairie-chicken and dunes sagebrush lizard. No additional reasonable and prudent measures were identified during the conference.

REINITIATION NOTICE

This concludes the conference for the issuance of an amended section 10(a)(1)(A) Enhancement of Survival Permit associated with the Candidate Conservation Agreement with Assurances for the lesser prairie-chicken and dunes sagebrush lizard. This Conference Opinion may be confirmed as a Biological Opinion issued through formal consultation if either the lesser prairie chicken or dunes sagebrush lizard is listed in the future. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the Conference Opinion as the Biological Opinion on the proposed action and no further section 7 consultation will be necessary.

After any future listing of the lesser prairie-chicken and/or dunes sagebrush lizard as threatened or endangered, and any subsequent adoption of this Conference Opinion, consultation must be reinitiated if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the proposed action that may affect listed species or critical habitat in a manner not considered in this Conference Opinion; (3) the proposed action is subsequently modified in a manner that causes an effect to listed species not considered in this Conference Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the proposed action.

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