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To: Regional Director, Fish and Wildlife Service, Lakewood, Colorado

From: Field Supervisor, Colorado Ecological Services Field Office, Lakewood, Colorado
Dea Colin

Subject: Intra-Service Section 7 Conference Opinion on the proposed Issuance of a Section 10(a)(1)(A) Enhancement of Survival Permit for Lesser Prairie-Chicken to Western Association of Fish and Wildlife Agencies (WAFWA).

This document transmits the U.S. Fish and Wildlife Service's (Service) conference opinion for the proposed issuance of a 10(a)(1)(A) Enhancement of Survival Permit to Western Association of Fish and Wildlife Agencies (WAFWA) for incidental take of the lesser prairie-chicken (*Tympanuchus pallidicinctus*) (LEPC) pursuant to the proposed Range-wide Oil and Gas Candidate Conservation Agreement with Assurances (CCAA) dated February 28, 2014. This conference opinion is pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S. C. 1531 et seq.) (ESA).

WAFWA has applied to the Service for a section 10(a)(1)(A) enhancement of survival permit (permit) to authorize incidental take of LEPC within the Covered Area, which includes lands encompassed by the currently estimated occupied range of the LEPC plus 10 miles around that range (EOR+10), which includes Kansas, Colorado, Oklahoma, New Mexico, and Texas. LEPC is a candidate for listing pursuant to the ESA. As a condition of the proposed permit, WAFWA would be responsible for implementing the Range-wide Oil and Gas Candidate Conservation Agreement with Assurances (CCAA) (WAFWA 2013).

The LEPC is a Federal candidate species and currently is not listed as federally threatened or endangered pursuant to the ESA. LEPC habitat and historical range has diminished substantially and there is concern for the species' continued survival. In 2012, the Service issued a proposed rule to list the LEPC as threatened on December 11, 2012 (77FR73828). The Service announced the re-opening of the public comment period for the 4(d) rule on January 29, 2014 (79FR4652).

The CCAA and its proposed permit will address incidental take of the LEPC should it become listed during the term of the CCAA. CCAAs provide an effective mechanism for the conservation of rare or imperiled species, including species that are candidates for protection

under the ESA. This conference opinion was prepared using information from the CCAA and its accompanying Environmental Assessment (EA), *The Lesser Prairie-Chicken Range-wide Conservation Plan (RWP)* (Van Pelt et al. 2013), the proposed listing rule (77FR73828), and other sources of information referenced below.

The Service has determined there are three other species of fish, wildlife, and plants that are listed or candidate under the ESA that occur in or near the action area that could be affected by the implementation of the CCAA. Those species include:

- Sprague's pipit (*Anthus spragueii*)
- Northern aplomado falcon (*Falco femoralis septentrionalis*)
- Black-footed ferret (*Mustela nigripes*)

The Service anticipates that the proposed action may affect, but is not likely to adversely affect these species due to lack of overlapping suitable habitat within the action area, local extirpations, and differences in habitat preferences. Therefore, these three species will not be addressed further in this conference opinion. Should any information reveal that any of these species may be adversely affected by the implementation of the proposed action while the permit is in effect, the Service will reinstate this consultation and address any concerns, as appropriate.

This conference opinion may be confirmed as a biological opinion issued through formal consultation if the LEPC 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 and no further section 7 consultation will be necessary on the project.

CONFERENCE OPINION

DESCRIPTION OF THE PROPOSED ACTION

Action Area

The action area includes the Covered Area, which includes non-Federal lands within the estimated occupied range of the LEPC plus 10 miles around that range (EOR+10), as shown in Figure 1. The Covered Area encompasses approximately 40,149,404 acres across parts of Colorado, Kansas, New Mexico, Oklahoma, and Texas. The buffer around the range provides for shifts in the estimated occupied range over time due to changes in habitat, movements of birds, and detectability of birds in areas of low population density. The Covered Area is divided into four ecoregions that reflect the different ecotypes across the LEPC range: mixed grass prairie, sand sagebrush prairie, shinnery oak prairie, and shortgrass/CRP mosaic.

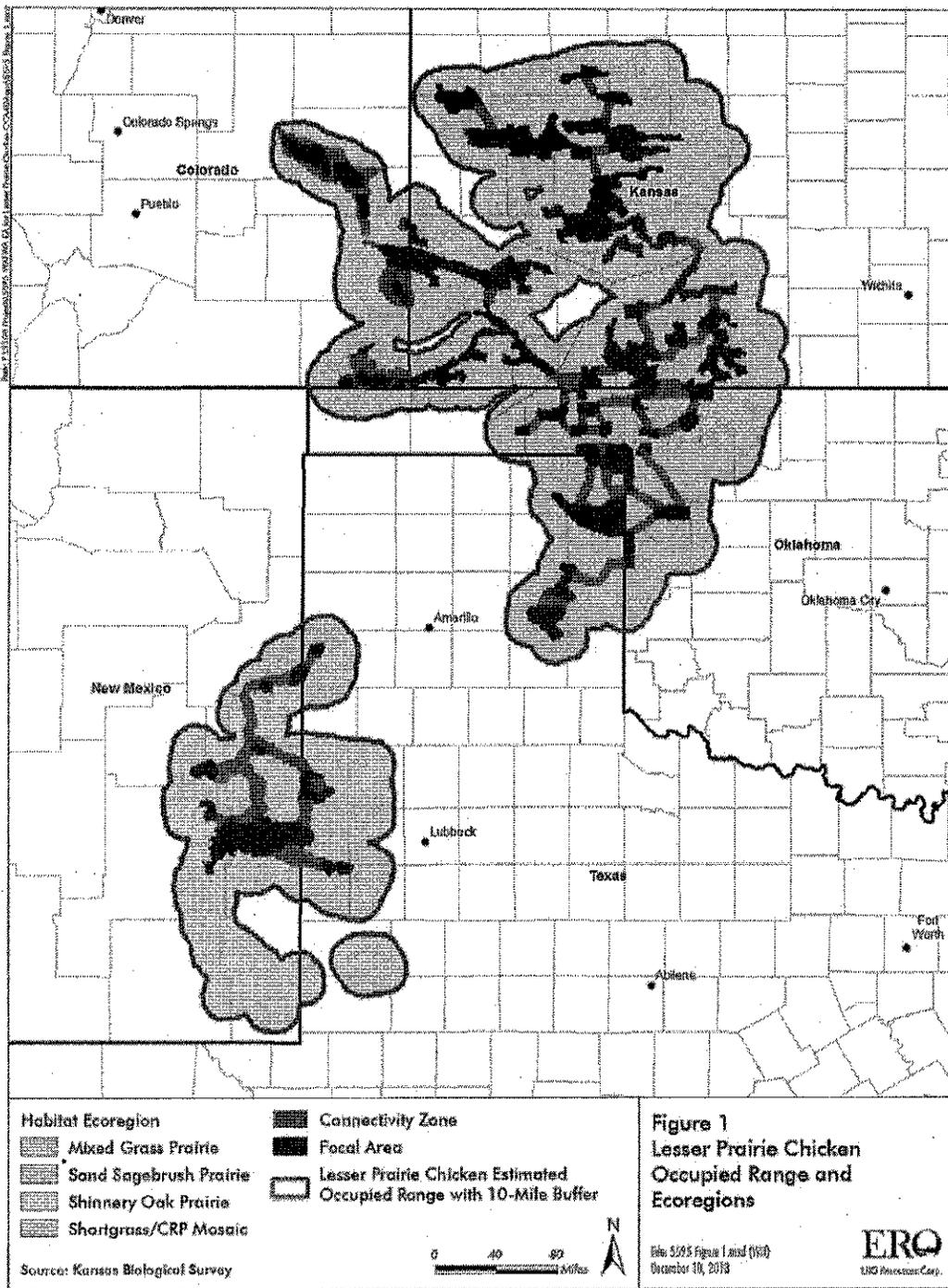


Figure 1. Map of Covered Area for CCAA (Van Pelt et al. 2013).

Proposed Action

The proposed action is the issuance of a section 10(a)(1)(A) enhancement of survival permit and the approval of the CCAA between the U.S. Fish and Wildlife Service (Service), WAFWA (Permit Holder), and participating oil and gas companies (Participants). The CCAA has been developed to provide for the conservation needs of the LEPC while allowing for oil and gas development activities within the Covered Area in Colorado, Kansas, Oklahoma, New Mexico, and Texas. The Covered Area includes the estimated currently estimated occupied range plus 10 miles (EOR+10). The CCAA would have a duration of 30 years.

The CCAA would allow any non-Federal property owner (Participant) to voluntarily enroll their property under the CCAA. WAFWA would enroll cooperating Participants into the CCAA through issuance of Certificates of Inclusion (CIs) and would provide technical assistance. Participants would commit to implement conservation measures that benefit the LEPC by avoiding and minimizing impacts to LEPC habitat and by avoiding and minimizing disturbance impacts and threats to LEPC. Where impacts cannot be avoided or minimized, the Participant will be responsible for paying mitigation fees to WAFWA that will provide for offsite mitigation practices designed to improve LEPC habitat, especially in high priority areas. In return for implementing the conservation measures, the Service would provide the Participants assurances that, for the duration of the CCAA and its associated Section 10(a)(1)(A) permit, no additional conservation measures or additional land, water, or resource use restrictions beyond those voluntarily agreed to and described in the CCAA would be required by the Service should the LEPC become listed in the future, unless otherwise agreed to by Participant.

The CCAA addresses oil and gas activities that have the potential to cause specific threats to LEPC, including seismic and land surveying, construction, drilling, completion, and workovers (recompletion), routine operations and maintenance, and oil and gas remediation and restoration. Further descriptions on these oil and gas activities are provided in Appendix A.

The CCAA tiers to, and incorporates the RWP, which is a conservation strategy and framework developed by WAFWA (Van Pelt et al. 2013). The CCAA uses the same goals, conservation measures, impact metrics, and conservation delivery system as the RWP. The goal of the RWP is to conserve the LEPC for future generations while facilitating continued and uninterrupted economic activity throughout the entire five-state LEPC range. The RWP identifies a two-pronged strategy for LEPC conservation: (1) the coordinated implementation of incentive-based landowner programs, and (2) the implementation of a mitigation framework that reduces threats to the LEPC and provides resources for off-site conservation.

Project Goals

The CCAA incorporates the project goals identified in the RWP. The overall project goal in the RWP is a desired population of 67,000 birds, as an annual spring time average, to be achieved within the first 10 years of the RWP. This population goal represents an increase of

9.4 percent from the current 10-year average of 60,702 birds (Van Pelt et al. 2013). This goal was determined sufficient to meet the following population objectives: 1) to increase populations numbers to ensure a sustainable long-term population within each of the four delineated ecoregions for the next 10 years of the RWP implementation; 2) to maintain and expand the current distribution of the LEPC across its estimated occupied range with some expansion into the area identified as current occupied range buffered by 10 miles; and 3) to maintain higher population sizes in areas where they currently occur and are stable.

Additional population and habitat goals have been identified in the RWP. These goals work collectively towards supporting the overall population goal of 67,000 birds, as an annual spring time average, within a 10-year period, and include the following:

- Ecoregion Population Goals – The four ecoregion goals, as annual spring time averages, were established as follows and will be adjusted, as appropriate, through adaptive management in order to maintain the species for the first 10 years of the implementation of the RWP:
 - Sand shinnery oak ecoregion—8,000 birds
 - Sand sagebrush ecoregion—10,000 birds
 - Mixed grass prairie ecoregion—24,000 birds
 - Short grass/CRP mosaic prairie ecoregion—25,000 birds
- Focal Area Goals – The focal area goals were developed based on best available science on minimum sizes of LEPC habitat, movements, survival, and population status and trends, and include the following:
 - Average size of focal areas should be at least 50,000 acres
 - Goal of at least 70 percent good to high quality habitat within each focal area
 - Focal areas should strive to be <20 miles apart to provide connectivity for genetic and population support.
- Connectivity Zone Goals – The connectivity zones goals were developed based on best available science regarding minimum sizes of habitat blocks and LEPC movements, and include the following:
 - At least 40 percent good to high quality habitat
 - No greater than 2 miles between habitat patches
 - Minimum of five miles in width
 - Few or no barriers to LEPC movement
 - Connectivity zones connecting focal areas should provide suitable habitat to support movements by LEPC.
- Focal Area and Connectivity Area Habitat Goals - The RWP identifies a goal of having sufficient habitat in focal areas to sustain 75 percent of the desired population.

This goal translates into the equivalent of a combined 4,972,800 acres of quality LEPC habitat within the focal areas. The habitat to sustain the remaining 25 percent of the population goal (1,243,136 acres) would be maintained elsewhere within connectivity zones and the remaining EOR+10. The composition of each reporting unit will also be evaluated to assess progress towards achieving the stated habitat goals of 70 percent and 40 percent quality habitat for focal areas and connectivity zones, respectively.

- Focal Area and Connectivity Area Development Impact Goals - The development impact goals for focal areas and connectivity zones in the RWP are no more than 30 percent development impacts in focal areas and no more than 60 percent development impacts in connectivity zones. Where those development goals are surpassed for an individual reporting unit, the habitat goals under the plan cannot be met. In that case, remediation of existing impacts will be required for further development. The remediation offset units should be generated from the same reporting unit as the new impact, but if that is not possible they can originate from a nearby reporting unit within the same ecoregion.
- Stronghold Goals – The stronghold goal is that one or more strongholds will be established in each of the four ecoregions in the Covered Area. Each stronghold will provide a minimum of 25,000 acres of high quality habitat, or up to 50,000 acres if in lower quality habitat, and should contain at least 6-10 leks each, with at least 6 males/lek.
- Conservation Practices (Mitigation) Goals – On areas where conservation practices are implemented, the goals of the conservation practices are: 1) to maintain optimum habitat in 3 of 5 years when it existed at the baseline and was the desired outcome identified in the associated management plan, and 2) to improve vegetation structure by 25 percent over the baseline, if it was a desired outcome identified in the associated management plan.

The proposed action utilizes a combination of conservation measures, the mitigation framework, and an adaptive management strategy to achieve the identified goals. The proposed action is summarized in the following text (specific details of the proposed action of the RWP are provided on pages of 66 – 135 of RWP).

Conservation Measures

The CCAA contains conservation measures that provide for avoidance and minimization of impacts to LEPC habitat, avoidance and minimization of collisions and other threats, and avoidance and minimization of disturbances to breeding and nesting LEPC (see complete list of conservation measures below): With the conservation measures, the standard for avoidance is that no impacts are expected to occur wherever feasible alternatives are available to avoid the impacts. The standard for minimization is that impacts will be

minimized through design, siting and other available methods, but some impact is expected to remain. For those Mitigation will be utilized to offset any remaining impacts.

To summarize, the conservation measures specify that oil and gas development should avoid high priority LEPC areas, namely focal areas, connectivity zones, and within 1.25 miles of known leks that have been active in the past 5 years, and should instead be focused in lands with existing impacts (e.g., developed oilfields) or cultivation (i.e., row-crops). The conservation measures also specify that impacts of oil and gas development should be minimized by reducing the area of surface disturbance through directional drilling and clustering of facilities as well as by use of common rights-of-way for infrastructure such as roads, pipelines, and power lines, etc. The conservation measures address mortality and injury threats by providing guidance to reduce collision risks with new distribution lines, fences, and other structures in the vicinity of active leks. The conservation measures also provide measures to avoid and minimize disturbances to LEPC during the lekking, nesting, and brooding seasons within 1.25 miles of active leks (e.g., occupied in the past 5 years). For operation and maintenance activities that must occur during the breeding season within 1.25 miles of an active lek, the conservation measures require that activities cannot occur during the primary lekking time of 3:00 am to 9:00 am. (Specific conservation measures are provided in greater detail in *Conservation Measures* section below).

The Covered Area has been prioritized and categorized into four levels of LEPC habitat; this system is known as the Crucial Habitat Assessment Tool (CHAT). CHAT 1 is the top priority category and represents the focal areas for LEPC conservation. CHAT 2 represents connectivity areas around the focal areas. CHAT 3 represents predicted high-quality available and potential habitat. CHATs 1 through 3 collectively contain the estimated currently occupied range. CHAT 4 represents a 10-mile buffer around the currently occupied range and provides for range expansion and project planning. Focal areas and connectivity zones are shown in Figure 1.

Although oil and gas development activities can occur throughout the Covered Area, the strategy encourages conservation of higher quality habitat, namely the focal areas and connectivity zones, by requiring higher mitigation fees in the focal areas and connectivity zones and, conversely, identifies areas more suitable for development by requiring lower mitigation fees in areas of lower quality habitat (CHAT 3 and 4) in the Covered Area. The prioritization of CHAT areas in this manner incentivizes oil and gas development to avoid the higher quality areas.

For the purposes of the CCAA, habitat impacts are defined as potential LEPC habitat that has been rendered unusable by LEPC based on direct or indirect habitat loss related to development. Indirect habitat loss refers to avoidance by LEPC of potential habitat around an impact site, such as a well pad, road, transmission line, etc. These estimates of indirect habitat loss are based on previous observations of avoidance behavior by LEPC. Habitat impacts are assessed by the number of acres that will be affected, the habitat quality at the impact site, and the CHAT category at the impact site. Impact Buffers are the defined

distances around Impact Activities within which LEPC habitat is considered to be impacted as a result of the Impact Activity. These buffers vary in size depending on the type of Impact Activity, as shown in Table 1.

Table 1. Impact Buffer distances for different types of developments established under the WAFWA LEPC Mitigation Framework to define impacts (Van Pelt et al. 2013, p. 95).

Type of Impact	Buffer distance feet (meters)
Oil and gas pads and small compressor stations*	656 (200)
Wind turbines	2188 (667)
Transmission lines >69 kV	1312 (400)
Distribution lines <69 kV	33 (10)
Tall vertical structures (>150 ft.)	2188 (667)
Secondary roads	220 (67)
Primary roads	1640 (500)
Industrial buildings and other compressor stations**	2188 (667)
Residential buildings (houses)	436 (133)
Private roads (ranch roads, etc.)	33 (10)

*Includes compressor stations with foot prints of <5 acres that are muffled to <75dB at 30 feet.

**Includes all other compressor stations and electrical substations.

Mitigation Framework

Where avoidance and minimization of impacts is not possible, the mitigation framework quantifies the impacts of development, quantifies the amount of mitigation necessary to offset the impacts, and then requires the payment of mitigation fees by Participants for the implementation of mitigation actions.

The mitigation framework will concentrate habitat offset units in the focal areas and the connectivity zones, allowing for the restoration, enhancement, and maintenance of large blocks of habitat needed by LEPC while also minimizing the presence of small local patches of habitat that may not support desired population levels. The location of the offset units will be focused primarily in the focal areas and connectivity zones and the Advisory Committee will be responsible for prioritizing the selection of offset projects, as described in the RWP.

All offset units generated with these funds must be of the same or higher habitat quality than impacted acreage, as determined through the use of the CHAT and on-site vegetation monitoring, thereby ensuring a significant conservation benefit for LEPC when impacts do

occur. Impact units are valued based on the cost of implementing the conservation practices (i.e., mitigation) that provide a benefit to the LEPC, plus a WAFWA administrative cost of approximately 12.5 percent of this value.

The mitigation framework evaluates impacts based on the amount of surface disturbance that results from development plus the impact buffer surrounding infrastructure, as well as the quality of the habitat impacted. As a result, a Participant that constructs a new 5-acre oil and gas well pad will mitigate approximately 31 acres, based on the 200- meter impact buffer around the well pad (although this area may be reduced if the well pad is constructed within the impacted area associated with existing infrastructure). The mitigation framework also requires that impacts will be offset with greater amounts of mitigation and will utilize a 2:1 ratio, ensuring that mitigation efforts are greater than impacts and resulting in a net conservation benefit for the LEPC habitat and, ultimately, LEPC populations. Thus, to construct a 5-acre well pad in unimpacted habitat, a Participant will be required to provide funds to allow for the mitigation of between 50 and 78 acres (depending on the multiplier for the specific CHAT category). To account for variations in the quality of on-site vegetation, the number of impacted acres is adjusted by site condition scores to create "impact units."

The mitigation framework further provides a conservation benefit to the LEPC by providing WAFWA with an early commitment of funds by Participants for use towards securing landowner contracts and generating offset units. Initially, Participants will remit an enrollment fee of \$2.25 per year for every enrolled acre for the first three years of enrollment (for a total of \$6.75 per acre). Secondly, a Participant is assessed a mitigation fee once development is proposed and the value of the mitigation fees assumes that all impacts will be permanent. Thus, mitigation fees are calculated by multiplying the number of offset units by 25, which provides sufficient funds to create a non-wasting endowment to provide permanent conservation offsets. Therefore, in the example above, a Participant developing a five-acre well pad must remit funds based on the value of between 1,250 and 1,950 impacted acres (50 and 78 acres respectively multiplied by 25), as adjusted by site condition scores.

Twenty-five percent of the resulting habitat offset units are targeted toward permanent easements to support long-term conservation and population strongholds. There is no minimum acreage for permanent easements, beyond the minimum size of 160 acres for all contracts, but WAFWA will focus and prioritize the identification of parcels that will result in large blocks of permanent easements. The remaining 75 percent of the offset units are targeted toward short-term contracts (5 to 10 years). Mitigation will also include reclamation or remediation of inactive or abandoned facilities and infrastructure that are under the control of the Participants, in compliance with applicable state rules and regulations.

The impact units must be balanced with an equal number of offset units in the same CHAT category or better each year, thereby providing for the maintenance of suitable habitat within the Covered Area. In order to provide time for WAFWA to generate offset units during the first year of the CCAA, it incorporates the RWP's waiver period until March 30, 2015 in which impacts from limited oil and gas development could go unmitigated for the first year

of its implementation. The Service is concerned about the potential of a year of unmitigated impacts combined with other ongoing impacts, the potential continuation of drought in large areas of the LEPC range, and potential continuing decline of LEPC population numbers. Accordingly, the Service and WAFWA developed a strategy to allow time for WAFWA to develop offset units while still limiting the amount of unmitigated impacts to occur during the first year. The Permit will contain stipulations for limiting the amount of unmitigated take during any given time within the first year. WAFWA will provide results from the 2014 spring surveys to the Service by July 1, 2014. If the 2014 spring surveys indicate a 20 percent decline in the population from the 2013 population estimate (14,092 birds or less), the following limitations on take would apply: no more than 5,109 Habitat Units of unmitigated take in CHAT; 7,664 Habitat Units in CHAT 2; and 11,495 Habitat Units in CHAT 3, from the effective date of the Permit through March 30, 2015. During that period, if any take of Habitat Units is documented to be fully offset, further take of Habitat Units would be authorized, as long as the unmitigated limit of Habitat Units in each CHAT is not exceeded. The Permit will also require WAFWA to provide reports to the Service every four months after July 1, 2014, and through March 30, 2015, with documentation of the level impacted Habitat Units and credited Offset Units in each of CHATs 1-3.

Description of Conservation Practices for Mitigation (Generation of Offset Units)

For the mitigation, conservation practices were selected that will develop conditions to: 1) provide shelter, cover, and food in proper amounts, locations and times to sustain LEPC during all phases of its life cycle; or 2) enable LEPC movement. These practices are the same conservation practices that are used by the Natural Resources Conservation Services (NRCS) to benefit the LEPC, as provided in their Lesser Prairie-Chicken Initiative (LPCI) (Service 2013).

The primary conservation practices that will be used for the generation of offset units will be: prescribed grazing, prescribed burning, brush management, and range planting. Other conservation practices, such as fencing, water wells, access control, etc., are also identified within the mitigation framework, although these practices serve to facilitate the implementation of the primary practices; these facilitating conservation practices are provided in Appendix B of this conference opinion.

WAFWA will develop a management plan for the lands where mitigation practices will occur under the CCAA (i.e., enrolled in the mitigation framework). The management plan will identify upland wildlife habitat concerns on the specified properties and will identify specific conservation practices to address those concerns that will be implemented as part of the mitigation framework. All management plans will use the NRCS core practice of Upland Wildlife Habitat Management (645) and will add Prescribed Grazing (528) when livestock are present, in order to determine which, if any, facilitating conservation practices are needed, as well as the extent, location, and timing of facilitating practices to ensure that LEPC habitat is maintained or improved following application. The following text describes the specific primary conservation practices:

- **Conservation Practice: Upland Wildlife Habitat Management (645).** This conservation practices will provide and manage upland habitats and connectivity within the landscape for wildlife. This core management practice will be applied or maintained annually to treat and manage wildlife, in particular LEPC resource concerns identified during the conservation planning process. This practice shall be used alone, or in combination with facilitating practices, shall result in a conservation system that will enable the planning area to meet or exceed the minimum quality criteria for upland wildlife habitat.
- **Conservation Practice: Prescribed Grazing (528).** This conservation practice will manage the harvest of vegetation with grazing and/or browsing animals to improve or maintain desired species composition and vigor of plant communities and improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity. At the individual project and landscape scale, the use of this practice standard is expected to produce a mosaic of vegetation structure and composition to benefit the LEPC by creating, as needed at the appropriate scale, areas of greater forb and resulting insect production and creating areas of higher residual cover for nesting birds. Management planning will identify the limiting biological conditions for the LEPC and create a grazing management system to address the limiting biological conditions for the LEPC.
- **Conservation Practice: Prescribed Burning (338).** This conservation practice will manage controlled fire applied to predetermined areas. The purpose is to create the desired plant community phase consistent with the ecological site description that is preferable LEPC habitat and to enhance and produce desirable or needed plant communities for all phases of LEPC life cycle. Prescribed burning will improve forage production quantity and/or quality and will facilitate distribution of grazing to target the maintenance or creation of desired LEPC habitat. Suppression of fires on the landscape has created a plant community less responsive to prescribed fire and has allowed for invasion of undesirable species such as Eastern red cedar and non-native grass species.
- **Conservation Practice: Brush Management (314).** This conservation practice will manage or remove woody plants, including those that are invasive and noxious. The purpose is to restore or enhance the desired native plant community that is consistent with the ecological site description, and which provides the most suitable habitat for the LEPC and other wildlife species. Specifically, it may be used for the purpose of removing undesirable post-settlement conifers such as juniper, Eastern red cedar or deciduous species such as mesquite and black locust that have encroached into habitats being restored for LEPC habitat.
- **Conservation Practice: Range Planting (550).** This conservation practice will establish adapted perennial or self-sustaining vegetation such as grasses, forbs,

legumes, and shrubs. This practice is used to restore important native habitats by converting cropland to grasslands to meet habitat requirements for LEPC. The purpose is to restore the native plant community to a condition similar to the ecological site description reference state for the site, provide or improve forages for livestock and browse or cover for wildlife, and reduce erosion by wind and/or water.

The conditions at the offset units will be monitored annually. As mentioned above, the goals of the conservation practices are: 1) to maintain optimum habitat in 3 of 5 years when it existed at the baseline and was the desired outcome identified in the associated management plan; and 2) to improve vegetation structure by 25 percent over the baseline when anticipated in the associated management plan.

Adaptive Management

The CCAA (and RWP) have identified activities or situations known as changed circumstances that would trigger the adaptive management process and other corrective actions to be implemented in response to these changed circumstances. Changes identified through a formal evaluation process would affect implementation of the CCAA by adjusting conservation measures for new Participants. For existing Participants, mitigation fees would be reviewed on an annual basis, as described in the CCAA, and can be adjusted annually up to 3 percent to account for inflation and up to 4 percent to account for changes in mitigation fees.

The CCAA will utilize adaptive management strategies to allow for mutually agreed-upon changes to the conservation measures to occur in response to changing conditions or new information, including those identified during monitoring and from emerging science. The primary reason for using adaptive management is to allow for changes in the conservation measures that may be necessary to reach the stated long-term goals. Under adaptive management, the mitigation and conservation activities implemented under the RWP will be monitored to identify whether or not they are producing the required results. Some of the factors that will be evaluated regularly by the various committees include LEPC population sizes, progress toward habitat goals, conservation practice costs, avoidance of high priority conservation areas, management prescriptions, etc.

Among the items being evaluated, breeding population sizes will be annually assessed by drawing comparisons between the 3-year average and the 50 percent of the population goal for each ecoregion. Every five years, a more rigorous review will occur to assess each WAFWA prescribed conservation practice, the appropriateness of the reporting area locations, and progress towards achieving the stated population and habitat goals of the RWP. The conservation practices implemented during the previous five years will be evaluated by the WAFWA committees based on their ability to achieve the desired vegetation parameters. New standards will be considered for 1) practices that have not maintained habitat quality in at least 3 of 5 years where it existed at baseline and 2) practices that have not resulted in at least a measurable level of improvement in habitat quality where

such improvements were the desired outcome of a management plan. The composition of each reporting unit will also be evaluated to assess progress towards achieving the stated habitat goals of 70 percent and 40 percent quality habitat for focal areas and connectivity zones, respectively. Identified activities that will be evaluated in the adaptive management process are provided in Appendix C of this conference opinion.

Annual monitoring and reporting of populations and mitigation sites will be conducted by WAFWA. WAFWA will also conduct compliance monitoring.

Conservation Measures

This CCAA incorporates the conservation strategy in the RWP, which includes a series of conservation measures intended to avoid and minimize impacts on LEPCs and their habitat, as well as mitigate any remaining habitat impacts. As indicated by each conservation measure below, some of the avoidance and minimization measures are required, identified below as “Required,” and some may be applied at the discretion of the Participant, identified below as “Discretionary.” If a Participant chooses not to implement a discretionary conservation measure, the Participant will need to mitigate for resulting impacts. The required mitigation fees will be determined based on the amount of habitat that would be impacted after the application of those measures, the CHAT categories that the impacts are located within, and the habitat quality based on the habitat evaluation conducted using the Habitat Evaluation Guide (HEG), as described in Appendix A of the CCAA.

A) Habitat Loss and Fragmentation. Habitat loss and fragmentation are primary threats to the LEPC. Impact Activities (construction of oil and gas pads, compressor stations, private roads (e.g., lease roads), distribution lines, and industrial building) may contribute to habitat loss and fragmentation. The following Conservations Measures apply to any action that could further negatively impact LEPC habitat or connectivity between blocks of LEPC habitat to receive coverage under the CCAA.

1) Avoidance

- a) Use available options to avoid focal areas, connectivity zones, or within 1.25 mi of known leks that have been active at least once within the previous five years, as well as project sites dominated by tracts of native grass and shrublands (see the 2013 CHAT, state fish and wildlife agency staff, and Section XIV (Development Procedures for more information).
(Discretionary)
- b) Focus development on lands already altered or cultivated (such as row-crop agriculture or developed oilfields), and away from areas of undeveloped native grass or shrublands. Select fragmented or degraded habitats over relatively intact areas, and select sites with lower LEPC habitat potential over sites with greater habitat potential. The NRCS Ecological Site Descriptions,

where available, are a good indicator to use (see Appendix C of the RWP).
(Discretionary)

2) Minimization

- a) Use common rights of way for multiple types of infrastructure in locating new roads, fences, power lines, well pads, flow lines, compressors, and other associated oil and gas infrastructure. (Discretionary)
- b) Site projects to minimize new habitat disturbance by increasing the amount of overlap between existing fragmentation and associated impact buffers. (Discretionary)
- c) Reduce impacts through the use of directional drilling and clustering where feasible or in locating facilities to reduce habitat loss and fragmentation of habitat. (Discretionary)
- d) Minimize use of herbicide treatments and limit this use to the footprint or right of way for the project. Where practical and applicable, utilize an herbicide that is targeted for specific use and spot treatments as opposed to a broadband herbicide and broadcast treatments. Apply in conditions that minimize drift. (Required)

3) Mitigation – Any impacts not offset by the avoidance or minimization measures above will be mitigated as follows:

Participants will provide for mitigation of habitat loss associated with new Impact Activities through the payment of Mitigation Fees as described in Section XIII(B) of the CCAA, Appendix B of the CCAA, and Exhibit B of the CI. WAFWA will apply Mitigation Fees to generate offset units using the process described in Appendix I of the RWP. (Required)

B) Collision and Other Direct and Indirect Sources of Mortality. LEPC have been shown to collide with fences, power lines, and cars. Power lines also serve as potential perch sites for raptors that may prey on LEPCs. It is also possible for LEPC to get caught and drown in human-made water sources (e.g., tanks).

1) Avoidance

- a) Locate new roads, fences, power lines, well pads, flow lines, compressors, and other associated oil and gas infrastructure and their impact buffers outside focal areas, connectivity zones, or in other areas identified as high probability lek and nest habitat by 2013 CHAT categories 1-3. (Discretionary)

- b) Bury new distribution lines within 1.25 mi of leks active within the previous 5 years. If new distribution lines cannot be buried, justification must be provided to and approval obtained from WAFWA prior to construction of such new distribution lines. (Required)

2) Minimization

- a) Use common rights of way for multiple types of infrastructure. (Discretionary)
- b) To minimize transmission line footprint, utilize mono-pole construction for new electrical transmission lines within 2013 CHAT categories 1-3. (Required)
- c) Utilize horizontal drilling, pad drilling (multiple wells per pad), and common tank batteries where feasible with regulatory approval to minimize new surface disturbance within 2013 CHAT categories 1-3. (Discretionary)
- d) Install appropriate fence markings along new fences that are under the control of the enrolled Participant within one quarter (1/4) mile of a lek that has been recorded as active within the previous 5 years. (Required)
- e) During the LEPC breeding season (March 1-July 15), minimize traffic volume, control vehicle speed, control access where feasible, and avoid off-road travel within focal areas and areas identified as high probability lek and nest habitat by the 2013 CHAT. (Required)
- f) Within 1.25 mi of leks, it is recommended to install raptor deterrents on new electrical distribution and transmission poles as indicated by Avian Power Line Interaction Committee (APLIC) Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006, as amended. If further studies are completed that demonstrate significant benefits to the LEPC, this Conservation Measure may be amended for newly Enrolled Property and new enrollments by existing Participants. (Discretionary. Mitigation is not required.)
- g) Provide escape ramps, rafts or ladders, depending on configuration, in exposed, human-made water containment sources on Enrolled Property under the control of the enrolled Participant. (Required)

- 3) Mitigation – Any impacts not offset by the avoidance or minimization measures above will be mitigated as follows:

Participants will provide for mitigation of habitat loss associated with new Impact Activities through the payment of Mitigation Fees as described in Section XIII(B) of the CCAA, Appendix A of the CCAA, and Exhibit B of the CI. WAFWA will apply Mitigation Fees to generate offset units using the process described in Appendix I of the RWP. (Required)

C) Disturbance of Breeding, Nesting, and Brooding Activity. Disruption of courtship displays and nesting hens through construction and maintenance activities or equipment and infrastructure that emit loud noises may have direct impact on LEPC reproductive output.

1) Avoidance

- a) Avoid non-emergency operations, construction and maintenance activities, where humans are present, during lekking, nesting, and brooding season (March 1–July 15) within 1.25 mi of leks recorded active within the previous 5 years. (Discretionary, see Section XII(C)(2)(a))

Emergency operations are allowed. Emergency operations are those activities unexpectedly and urgently required to prevent or address immediate threats to human health, safety, or property; the environment; or national defense or security.

Participants must record the dates, duration and purpose of any emergency operations that occurred between March 1 and July 15 within 1.25 miles of leks recorded as active within the previous 5 years and provide that documentation to WAFWA within 30 days. (Required)

- b) Seismic surveys and similar activities that require extensive off road travel shall not be conducted in rangeland or planted grass cover during the lekking nesting and brooding season (March 1–July 15) within 1.25 mi of leks recorded active within the previous five years and lek surveys shall be required in CHAT categories 1-3 prior to any breeding season Seismic surveys. (Required subject to exception in Section XII(C)(2)(c)).

2) Minimization

- a) For non-emergency operations, construction and maintenance activities, where humans are present, that **cannot be avoided and must occur** during March 1 - July 15, restrict activities between the hours of 3:00 am and 9:00 am in areas within 1.25 mi of leks that have been recorded as active within the previous 5 years. (Required)

- b) Institute noise abatement year-round for new facility operations (post-construction, post-drilling, post-completion, and post-recompletion) located within 1.25 mi of a lek recorded as active within the previous 5 years. Noise from these new facilities shall not exceed 75 dB when measured at Participant's property line or any point greater than 30 feet from the facility boundary. This minimization measure is required unless other regulations require lower noise levels. If new scientific information becomes available supporting lower or higher decibel limits through the adaptive management process, this Conservation Measure may be amended for both new and existing Participants as provided in Section XXII (Modification of the CCAA and Amendment of the Permit). In the event of changes in noise limits for existing Participants, WAFWA and the Participants will agree upon a timeline for implementing those changes. (Required)

- c) If a complete lek survey is conducted for the proposed seismic activity area, WAFWA shall consider, on a case by case basis, the application of seismic methodologies that minimize LEPC disturbance off road travel during the lekking, nesting and brooding season (March 1-July 15) within 1.25 miles of leks recorded as active within the previous 5 years. Daily timing restrictions for lek disturbance (3:00am-9:00 am) must be observed within 1.25 miles of leks recorded as active within the previous five years. (Required)

Commitments of Participants, WAFWA, and the Service

In addition to the commitment to implement the conservation measures (described above), the Participants also commit to specific items that are provided in greater detail in the CCAA but summarized here: enter into a Certificate of Inclusion with WAFWA, pay appropriate Enrollment and Mitigation Fees, provide access to WAFWA for species and vegetation monitoring, provide access to WAFWA and the Service for compliance monitoring, and report annually to WAFWA.

In addition to the commitment to implement the conservation measures, WAFWA commits to specific items that are provided in greater detail in the CCAA but summarized here: hold the 10(a)(1)(A) permit issued by the Service, implement and administer the CCAA, implement the mitigation projects, conduct species and compliance monitoring on Enrolled Properties, address non-compliance issues, provide annual reporting, and maintain confidentiality of information regarding Participants.

In addition to issuing the 10(a)(1)(A) permit, the Service commits to specific items that are provided in greater detail in the CCAA but summarized here: provide oversight of the implementation of the CCAA, conduct compliance monitoring when accompanied by WAFWA, participate with WAFWA in resolution of non-compliance issues, and maintain confidentiality of information regarding Participants.

STATUS OF THE SPECIES

Status of the Species is an analysis of appropriate and best available scientific information on the species' life history, habitat and distribution, and other data on factors related to its survival and recovery. This analysis considers the effects of past human and natural activities or events that have led to the current condition of the species.

We are including only a summary of the status of the species, as provided by NRCS (2013). For detailed information on the status of the species, including species habitat description, life history, population dynamics, status and distribution, and analysis of the existing threats and conservation challenges to the species, refer to the proposed rule to list the LEPC as a Threatened species published in the Federal Register on December 11, 2012 (77FR73828) and the documents listed in the Literature Cited section. No critical habitat has been proposed for this species.

Species Description and Life History

The LEPC is a species of prairie grouse endemic to the southern high plains of the United States, commonly recognized for its stout build, ground-dwelling habit, and lek mating behavior. Plumage is characterized by a cryptic pattern of alternating brown and buff-colored barring, and is similar in mating behavior and appearance, although somewhat lighter in color, to the greater prairie-chicken (*T. cupido pinnatus*). Males have long tufts of feathers on the sides of the neck (pinnae) that are erected during courtship displays. Pinnae are smaller and less prominent in females. Males also display brilliant yellow supraorbital eyecombs and dull reddish esophageal air sacs during courtship displays (Copelin 1963, p. 12; Sutton 1977, entire; Johnsgard 1983, p. 318). Female LEPCs are generally smaller than the males. Adult body length varies from 38 to 41 centimeters (cm) (15 to 16 inches (in)) (Johnsgard 1973, p. 275; Johnsgard 1983, p. 318), and body mass varies from 734 to 813 grams (g) (1.6 to 1.8 pounds (lbs)) for males and 628 to 772 g (1.4 to 1.7 lbs) for females (Giesen 1998, p. 14).

The preferred habitat of the LEPC is native short- and mixed-grass prairies having a shrub component dominated by *Artemisia filifolia* (sand sagebrush) or *Quercus havardii* (shinnery oak) (Donaldson 1969, pp. 56, 62; Taylor and Guthery 1980a, p. 6; Giesen 1998, pp. 3–4). Small shrubs are important for summer shade (Copelin 1963, p. 37; Donaldson 1969, pp. 44–45, 62), winter protection, and as supplemental foods (Johnsgard 1979, p. 112). Historically, trees and other tall woody vegetation were largely absent from these grassland ecosystems, except in canyons and along water courses. Landscapes supporting less than 63 percent native rangeland appear incapable of supporting self-sustaining LEPC populations (Crawford and Bolen 1976a, p. 102).

LEPCs are polygynous and exhibit a lek mating system using leks where males traditionally gather to conduct a communal, competitive courtship display using their specialized plumage and vocalizations to attract females for mating. Males exhibit strong site fidelity to their

display grounds (Copelin 1963, pp. 29–30; Hoffman 1963, p. 731; Campbell 1972, pp. 698–699) whereas females, due to their tendency to nest within 2 miles of a lek (Suminski 1977, Riley 1978, Giesen 1994a, p. 97), also may display fidelity to nesting areas but the degree of fidelity is not clearly established (Schroeder and Robb 2003, p. 292). However, Haukos and Smith (1989, p. 418) observed that female LEPCs are more likely to visit older, traditionally used lek sites than temporary, nontraditional lek sites (i.e., those used for no more than 2 years).

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 or bare soil and enhanced visibility of the surrounding area (Copelin 1963, p. 26; Jones 1963a, p. 771; Taylor and Guthery 1980a, p. 8). Females arrive at the lek in early spring after the males begin displaying, with peak hen attendance at leks typically occurring in early to mid-April (Copelin 1963, p. 26; Hoffman 1963, p. 730; Crawford and Bolen 1975, p. 810; Davis *et al.* 1979, p. 84; Merchant 1982, p. 41; Haukos 1988, p. 49). Within 1 to 2 weeks of successful mating, the hen will select a nest site, normally within 1 to 3 km (0.6 to 2 mi) of a lek (Copelin 1963, p. 44; Giesen 1994a, p. 97), construct a nest, and lay a clutch of 8 to 14 eggs (Bent 1932, p. 282; Copelin 1963, p. 34; Merchant 1982, p. 44; Fields 2004, pp. 88, 115–116; Hagen and Giesen 2005, unpaginated; Pitman *et al.* 2006a, p. 26). Nesting is generally initiated in mid-April and concludes in late May (Copelin 1963, p. 35; Snyder 1967, p. 124; Merchant 1982, p. 42; Haukos 1988, pp. 7–8).

LEPCs forage during the day, usually during the early morning and late afternoon, and roost at night (Jones 1964, p. 69). Diet is very diverse, primarily consisting of insects, seeds, leaves, and buds and varies by age, location, and season (Giesen 1998, p. 4). They forage on the ground and within the vegetation layer (Jones 1963b, p. 22) and are known to consume a variety of invertebrate and plant materials. Generally, chicks and young juveniles tend to forage almost exclusively on insects, such as grasshoppers and beetles, and other animal matter while adults tend to consume a higher percentage of vegetative material (Giesen 1998, p. 4).

Nests generally consist of bowl-shaped depressions in the soil (Giesen 1998, p. 9) and are lined with dried grasses, leaves, and feathers. Adequate herbaceous cover, including residual cover from the previous growing season, is an important factor influencing nest success, primarily by providing concealment of the nest (Suminski 1977, p. 32; Riley 1978, p. 36; Riley *et al.* 1992, p. 386; Giesen 1998, p. 9).

LEPCs have a relatively short lifespan and high annual mortality. Campbell (1972, p. 694) estimated a 5-year maximum lifespan, although an individual nearly 7 years old has been documented in the wild by the Sutton Avian Research Center (Sutton Center) (Wolfe 2010).

Historic and Current Distribution

Prior to description by Ridgeway in 1885, most observers did not differentiate between the LEPC and the greater prairie-chicken. Consequently, estimating historical abundance and occupied range is difficult. Historically, the LEPC is known to have occupied native rangeland in portions of Colorado, Kansas, Oklahoma, Texas, and New Mexico. Records also indicate occurrence in Nebraska based on at least four specimens known to have been collected near Danbury in Red Willow County during the 1920s (Sharpe 1968, p. 50) however, none have been observed in Nebraska since that time.

Johnsgard (2002, p. 32) estimated the maximum historical range of the LEPC to have encompassed some 260,000 to 388,500 sq km (100,000 to 150,000 sq mi), with about two-thirds of the historical range occurring in Texas. Taylor and Guthery (1980a, p. 1, based on Aldrich 1963, p. 537) estimated that, by the 1880s, the area occupied by LEPC was about 358,000 sq km (138,225 sq mi), and, by 1969, they estimated the occupied range had declined to roughly 125,000 sq km (48,263 sq mi) due to widespread conversion of native prairie to cultivated cropland. Taylor and Guthery (1980a, p. 4) estimated that, by 1980, the occupied range encompassed only 27,300 sq km (10,541 sq mi), representing a 90 to 93 percent reduction in occupied range since pre-European settlement and a 92 percent reduction in the occupied range since the 1880s.

In 2007, cooperative mapping efforts by species experts from five State Fish and Wildlife Agencies, in cooperation with the Playa Lakes Joint Venture, re-estimated the maximum historical and occupied ranges. Their estimated total maximum historically occupied range is approximately 466,998 sq km (180,309 sq mi). The approximate occupied range, by State, based on this cooperative mapping effort was 4,216 sq km (1,628 sq mi) in Colorado; 29,130 sq km (11,247 sq mi) in Kansas; 8,570 sq km (3,309 sq mi) in New Mexico; 10,969 sq km (4,235 sq mi) in Oklahoma; and 12,126 sq km (4,682 sq mi) in Texas. Since 2007, the occupied and historical range in Colorado and the occupied range in Kansas have been adjusted to reflect new information. The currently occupied range in Colorado is now estimated to be 4,456 sq km (1,720 sq mi), and, in Kansas, the LEPC is now thought to occupy about 34,479 sq km (13,312 sq mi). The approximate current occupied LEPC range is 70,600 sq km (27,258 sq mi) (Playa Lakes Joint Venture 2007).

The overall distribution of LEPC within all States except Kansas has been reduced since European settlement, and the species is generally restricted to variously-sized habitat patches within a highly fragmented landscape (Taylor and Guthery 1980a, pp. 2–5) or areas with significant CRP enrollments that were initially seeded with native grasses (Rodgers and Hoffman 2005, pp. 122–123). The estimated current occupied range, based on cooperative mapping efforts described above, and as derived from calculations of the area of each mapped polygon using geographical information software, represents about an 84 percent reduction in overall occupied range since pre-European settlement.

In the spring of 2012, the States, in conjunction with the Western Association of Fish and Wildlife Agencies, implemented a range-wide sampling framework and survey methodology using small aircraft (McDonald et al., 2013). This aerial survey protocol was developed to provide a more consistent approach for detecting range-wide trends in LEPC population abundance across the occupied range. The goal of this survey was to estimate the abundance of active leks and provide information that could be used to detect trends in lek abundance over time. The results of the spring 2012 aerial survey indicated a range-wide population estimate of 34,440 birds and 2,930 leks. In 2013, the surveys were repeated and results indicate a range-wide population estimate of 17,616 birds constituting a 49 percent decline from the 2012 estimate, and 2,036 leks constituting a 30 percent decline from 2012 (MacDonald et al. 2013).

Reasons for Decline and Threats to Survival

The reduction in the range of the LEPC is primarily due to habitat loss and habitat fragmentation resulting from a variety of mechanisms, such as conversion of native prairie and grassland to cropland; improper grazing, haying, and herbicide spraying that reduces LEPC habitat quality; long-term fire suppression and encroachment by invasive woody plants; habitat fragmentation caused by energy development and petroleum production and associated vertical infrastructure such as turbines, towers, and utility lines; and prolonged drought.

Vertical structures such as power poles, transmission lines, etc. to accommodate energy transmission historically were not common in LEPC habitat or on or near lek sites. The presence of those structures now provides perches for hawks and owls to sit, observe, and hunt LEPC's habitat, making loss of chicks and adults much more likely than before. Additionally, due to decreases in land parcel size over time, more fencing is needed to delineate property boundaries creating a network of low perches for predators across the landscape that historically did not occur at today's scale.

Grazing, haying and mowing can contribute to increased predation as well by reducing grass height that LEPCs have historically relied upon for food and cover. If these activities are applied at an inappropriate frequency, intensity, time, or duration across a larger landscape, the collective effect of loss of cover (to hide from predators), thermal cover (to stay warm in the winter), and reduced food sources can result in significant harm to local populations.

This habitat loss is a significant threat to the LEPC because the species requires large parcels of intact native grassland and shrubland to maintain self-sustaining populations. Due to its reduced population size and ongoing habitat loss and degradation, the LEPC's resiliency to recover from adverse effects resulting from present and future impacts and persist in the long term is compromised. Many of these threats may exacerbate the normal effects of periodic drought on lesser prairie-chicken populations. In many cases, the remaining suitable habitat has become fragmented by the spatial occurrence of these individual threats. 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). Habitat fragmentation can be a threat to the species through several mechanisms: remaining habitat patches may become smaller than necessary to meet the requirements of individuals and populations, necessary habitat heterogeneity may be lost to areas of homogeneous habitat structure, areas between habitat patches may harbor high levels of predators, and the probability of recolonization decreases as the distance between suitable habitat patches expands.

Threats Specific to Oil and Gas Development

Because LEPCs require large contiguous tracts of prairie ecosystems to fulfill their life history requirements, the cumulative impacts of well pads, pipelines, roads and increased traffic, overhead transmission lines, compressor stations, and production facilities not only result in direct habitat loss, but also results in fragmentation of remaining suitable habitat (Pitman et al. 2005). Collisions with overhead transmission lines cause direct mortality to LEPCs and may further limit LEPC populations (Bidwell et al. 2003). Transmission lines also provide perches for raptors, which could potentially increase the mortality rate of LEPCs (Bidwell et al. 2003). Prairie grouse have been shown to avoid roads, power lines, and other man-made infrastructures (Pitman et al. 2005). Crawford and Bolen (1976) noted that LEPC leks adjacent to heavily traveled roads were abandoned at a higher rate than those found further from anthropogenic disturbance. The effect of daily vehicular traffic associated with maintenance of oil and gas operations along these road networks can also impact breeding activities and may further decrease the availability of habitat (Braun et al. 2002).

While all the effects of oil and gas development on LEPCs are not understood, recent studies have suggested that development of oil and gas resources negatively impacts prairie grouse, particularly during the breeding season (Lyon and Anderson 2003; Pitman et al. 2005). Noise associated with oil field activities may impact breeding activities if mating display vocalizations are disrupted by background noise (Davis 2006). Braun et al. (2002) noted that sage-grouse lek attendance was lower on breeding grounds located in close proximity to active mineral resource developments compared to less disturbed lek sites. Smith et al. (1998, p. 3) observed that almost one-half, 13 of 29, of the abandoned leks examined in southeastern New Mexico in an area of intensive oil and gas development had a moderate to high level of noise. Braun (1986) speculated that if noises associated with oil field activity deter recruitment of yearling sage-grouse males to breeding grounds, leks may become extinct.

Studies to assess whether sounds from oil and gas exploration may have played a role in the abandonment of a number of historically active lek sites in southeast New Mexico show that abandoned lek sites were exposed to higher ambient noise levels than active sites (Hunt 2004). The same study also reports a significantly higher number of operating wells within one mile of abandoned lek sites. Whether this pattern of lek abandonment reflects sensitivity to noise or some other form of disturbance associated with intensive oil and gas development, or is a response to factors not associated with drilling, remains unknown.

However, all of these studies emphasize the importance of taking behavioral avoidance into consideration when assessing development impacts on LEPC habitat.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, state, or private actions in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of state and private actions that are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under conference.

Estimates of Current LEPC Populations

As provided in the RWP, WAFWA has developed an estimate of the densities of LEPC for each of the ecoregions. The density estimate utilized in their analysis is based on a reconstruction of LEPC populations across the range by Garton (2012). This reconstruction used LEPC ground survey data and aerial survey data collected across all four ecoregions. Depending on the ecoregion, this collective long-term average population estimate represents a period of 13-22 years from 1990 to 2012. During this period, populations ranged from roughly 37,000 to 84,000 birds, and that population estimate is representative of past and future conditions, including the population goals within the RWP. The density estimate uses the Garton average population estimate divided by the area of suitable habitat as predicted by a Maximum Entropy lek habitat model developed by USGS (Jarnevich et al. unpublished data) (Table 2). It conservatively represents all potential take resulting from development or habitat and population management actions within that suitable habitat. The MaxEnt lek habitat model used estimates approximately 30 percent of the areas within the EOR+10 is currently suitable habitat for LEPCs. This analysis assumes that take of LEPCs is a function of the average lifespan or generation time for the species. Mean lifespan is calculated based on Farner (1955) as $0.4343/\log_{10}(S) = 1.95$ years (95% CIs = 0.99 to 5.6 years), where S represents the estimated yearling survival rate of 60 percent. Note that these estimates have not been updated to include the 2013 aerial surveys, which show a 50 percent decline in LEPC numbers rangewide (MacDonald et al. 2013).

Table 2. Estimated density of LEPCs within suitable habitat identified in each ecoregion. The population estimates represent long-term averages based on Garton (2012) and the acreages of suitable habitat are based on the lek habitat model developed for the CHAT (Van Pelt et al. 2013, p. 130).

	LEPC Suitable Habitat Density per 640 acres				Suitable Habitat Avg
	MIXED GRASS (1990-2012)	SAND SAGE (1990-2012)	SHORTGRASS (1999-2012)	SHINNERY OAK (1999- 2012)	
Population Estimate	32117	6118	24271	4967	67473
Suitable Habitat Acreage	3,823,650.82	1,661,175.92	1,169,141.06	5,409,080.10	12063047.9
Suitable Habitat Density	5.38	2.36	13.29	0.59	3.58

Description of Overall Impacts from Oil and Gas Development to LEPC Habitat within the Covered Area

Well densities have increased dramatically throughout many portions of lesser prairie-chicken range. For example, the amount of habitat fragmentation due to oil and gas extraction in the Texas panhandle and western Oklahoma associated with the Buffalo Wallow oil and gas field within the Granite Wash formation of the Anadarko Basin has steadily increased over time. In 1982, the rules for the Buffalo Wallow field allowed one well per 130 ha (320 ac). In May of 2005, the Texas Railroad Commission changed the field rule regulations for the Buffalo Wallow oil and gas field to allow oil and gas well spacing to a maximum density of one well per 8 ha (20 ac) (Texas Railroad Commission 2007). When fully developed at this density, the region will have experienced a 16 fold increase in habitat fragmentation in comparison with the rates allowed prior to 2005.

Impacts from oil and gas development and exploration is thought to be the primary reason responsible for the species' near absence throughout previously occupied portions of the Carlsbad BLM unit in southeastern New Mexico (Belinda 2003, p. 3). This reasoning is supported by research examining lesser prairie-chicken losses over the past twenty years on Carlsbad BLM lands (Hunt and Best 2004, pp. 114-115). In this study, factor analysis (a statistical method used to describe variability among observed variables in reference to a number of unobserved variables) of characters associated with active and abandoned leks was conducted to determine which potential causes were associated with the population decline. Those variables associated with oil and gas development explained 32 percent of observed lek abandonment (Hunt and Best 2004) and the consequent population extirpation.

In the BLM's RMPA some limited protections for the lesser prairie-chicken in New Mexico are provided by reducing the number of drilling locations, decreasing the size of well pads, reducing the number and length of roads, reducing the number of powerlines and pipelines, and implementing best management practices for development and reclamation (BLM 2008, pp. 5-31). The RMPA provides guidance for management of approximately 344,000 ha (850,000 ac) of public land and 121,000 ha (300,000 ac) of Federal minerals in Chaves, Eddy, Lea, and Roosevelt Counties in New Mexico. Implementation of these restrictions, particularly curtailment of new mineral leases, would be greatest in the Core Management and Primary Population Areas (BLM 2008, pp. 9-11). The Core Management and Primary Population Areas are located in the core of the lesser prairie-chicken occupied range in New Mexico. The effect of these best management practices on the status of the lesser prairie-chicken is unknown, particularly considering about 60,000 ha (149,000 ac) have already been leased in those areas (BLM 2008, p. 8).

Oil and gas development and exploration is ongoing in the remaining states although the precise extent is currently unknown. Some development is anticipated in Baca County, Colorado, although the timeframe for initiation of those activities is uncertain (CPW 2007, p. 2). In Oklahoma, oil and gas exploration statewide continues at a high level. Since 2002, the average number of active drilling rigs in Oklahoma has steadily risen (Boyd 2009, p. 1). Since 2004, the number of active drilling rigs has remained above 150, reflecting the highest level of sustained activity since the 'boom' years from the late 1970s through the mid-1980s in Oklahoma (Boyd 2007, p. 1).

Existing Conservation Efforts for LEPC

Although the LEPC is not federally listed, a number of conservation efforts, including numerous state, Federal, and private programs, are currently in place that provides conservation benefits to the species and directly address threats to the LEPC. These programs provide technical and financial assistance to landowners for habitat management for LEPC. Other programs provide assurances to landowners and industries that if LEPC considerations are included in management activities, future management can continue in this manner even if LEPC are listed by the USFWS. Several programs address industry siting, best management practices, and avoidance, minimization and voluntary mitigation. Additional programs provide for direct management of LEPC habitat on public or other lands within LEPC range.

Five federal agencies have programs or initiatives that directly relate to delivery of LEPC habitat improvement or assurances. The NRCS initiated the Lesser Prairie-Chicken Conservation Initiative (LPCI) in 2008 to increase the abundance and distribution of the LEPC and its habitat while promoting the overall health of grazing lands and the long-term sustainability of ranching operations. The Farm Service Agency (FSA) administers a voluntary program for agricultural landowners that address threats to LEPC, including agricultural conversion, by providing a pathway to incentivize landowners to take cropland

out of production and plant back into grassland. The Service's Partners for Fish and Wildlife Program improves, restores, and protects habitat on private lands through partnerships with landowners. The Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) manage lands within occupied LEPC habitat through various management plans. These conservation efforts are described in detail in the proposed listing rule (77FR73828) and the RWP (Van Pelt et al. 2013). Combined with the RWP, these programs provide for a high level of certainty and predictability to the USFWS regarding LEPC conservation.

Methodology for Estimating Current Level of Development Impacts in Action Area

Oil and gas activity has occurred throughout the range of the LEPC, more intensely in certain areas, as described in the Service's proposed listing rule (Service 2012, p. 73785). The Service is utilizing the analysis conducted by WAFWA in their RWP to estimate the existing level of development impacts within the Action Area. The following text summarizes WAFWA's methodology and results (Van Pelt et al. 2013) for their analysis. Specific details on this analysis are provided on pages 131-134 of the RWP.

WAFWA's analysis evaluated the current level of impacts by infrastructure type for all industries within each ecoregion within the EOR+10. Existing infrastructure or developments were identified based on publicly available GIS data for Colorado, Kansas, New Mexico, Oklahoma and Texas. The sources and dates for these data sources are described in detail on pages 131–134 of the RWP. These datasets represent the best available data on developments within the region, but in many cases, the spatial and attribute error rates of these datasets are undefined. It is expected that the mitigation framework under the RWP and this CCAA will incentivize industry to provide better data on existing developments and will improve the assessment of impacts over time. In addition to the infrastructure data sources, this analysis uses data from the 2013 CHAT, which includes the focal areas (CHAT 1), connectivity zones (CHAT 2) and the remainder of the EOR+10.

All available spatial data for active oil and gas wells, wind turbines and cell towers, transmission and distribution lines and roads was used. Each type of development was buffered in ArcGIS 10 (ESRI 2011) using the appropriate impact buffer distanced defined within the RWP, as shown in Table 1. The total acreage of impacted habitat for each impact type within focal areas (CHAT 1), connectivity zones (CHAT 2) and CHAT Categories 3 and 4 within each ecoregion and across ecoregions were summarized, as provided in Table 3. The total number of acres impacted by all infrastructure types within each ecoregion and across all ecoregions (Table 4) also were summarized. The calculation of all infrastructure impacts includes any overlap of multiple infrastructure impacts counted only once. The total acres impacted by each infrastructure type and the proportion of acres infrastructure within each ecoregion were also calculated.

Estimates of Current Level of Development Impacts in Action Area

A summary of the total number of acres impacted by various types of development within each LEPC ecoregion is provided in Table 4. Impact acres are defined by the area within the impact buffer distances for each development location. The acreage of all infrastructure impacts is less than the sum of the categories due to the overlap of impact buffers between types of impacts.

Table 3. Summary of total number of acres impacted by various types of development within each of the ecoregions. Impact acres are defined by the area within with impact buffer for each development location (Van Pelt et al. 2013, p. 136).

Infrastructure Type	CHAT Category	Mixed Grass	Sand Sage	Shortgrass	Shinnery Oak	Total Acres by Impact
Oil and Gas	CHAT 1	113,548	107,721	34,387	30,230	2,562,112
	CHAT 2	76,132	6,221	4,989	7,444	
	CHAT 3 & 4	675,826	350,351	330,270	824,993	
Wind and Vertical Structures	CHAT 1	12,936	11,105	8,023	1,390	503,270
	CHAT 2	13,122	949	731	4,220	
	CHAT 3 & 4	187,738	72,767	90,918	99,371	
Transmission	CHAT 1	33,923	72,666	28,947	32,120	1,819,096
	CHAT 2	22,344	11,931	6,686	38,190	
	CHAT 3 & 4	388,513	269,359	261,079	653,339	
Roads	CHAT 1	284,871	154,472	171,646	98,717	6,206,543
	CHAT 2	174,047	39,608	26,893	120,865	
	CHAT 3 & 4	1,542,104	1,059,147	1,125,614	1,408,559	
All Infrastructure	CHAT 1	415,940.3	321,603	232,480	154,247	9,874,839
	CHAT 2	257,963.9	55,221	37,232	160,515	
	CHAT 3 & 4	2,477,513.5	1,585,759	1,642,870	2,533,494	
Impact Acres		3,151,418	1,962,583	1,912,582	2,848,257	
Total Acres		12,827,528	8,349,445	8,822,405	10,682,886	
% Impacted		24.6	23.5	21.7	26.7	

At the scale of the entire EOR+10, roads are the most common source of infrastructure impacts. When impact types are considered separately without overlap, roads account for 56 percent, oil and gas development account for 23 percent and transmission and distribution lines account for about 16 percent of infrastructure impacts acres for this analysis. Spatial data for distribution lines are very sparse and this impact is probably underestimated. However, distribution lines are generally sited along roads so the lack of data for this infrastructure type likely has little impact on the overall analysis. Wind turbines and other

vertical structures such as cell and radio towers are the least common source of infrastructure impact on the landscape, accounting for less than 5 percent.

As shown in Table 3, the level of existing development impacts within the Action Area for each of the ecoregions is relatively similar, ranging from 21.7 to 26.7 percent. This value could suggest that approximately 75 percent of remaining land within each ecoregion is presently available as LEPC habitat. However, not all the remaining area within the Action Area contains suitable LEPC habitat, and furthermore, much of this area is present as smaller areas of often fragmented habitat. A spatial analysis conducted by the Service (Service 2012, p. 73856) of the currently existing habitat within the occupied LEPC range determined that 99.8 percent of the suitable habitat patches were less than 5,000 acres in size. Only approximately 70 patches remain that were equal to, or larger than, 25,000 acres.

A comparison of the current amount of development impacts between the different CHAT categories shows that there are significant differences between the focal areas (CHAT 1), connectivity zones (CHAT 2), and the remainder of the EOR+10 (CHAT 3 & 4), as shown in Table 4. These differences between the CHAT categories are to be expected as the best remaining habitat for LEPCs is present in areas least impacted by infrastructure.

Table 4. The total acres impacted by each infrastructure type by CHAT category, where acreage is defined by impact buffer distances around each impact type (Van Pelt et al. 2013).

Infrastructure Type	CHAT 1	CHAT 2	CHAT 3&4
Oil and Gas	285,886	94,786	2,181,441
Wind and Vertical Structures	33,454	19,022	450,794
Transmission	167,656	79,151	1,572,289
Roads	709,706	361,413	5,135,424
All Infrastructure Impacts	1,124,270	510,933	8,239,636
Acres per CHAT category	7,104,000	3,107,840	30,939,520*
% Impacted Acres	15.8	16.4	26.6

*The acreage of all infrastructure impacts is less than the sum of the categories due to the overlap of impact buffers between types of impacts

EFFECTS OF THE ACTION

This conference opinion evaluates the effects of the implementation of the CCAA on the LEPC and its habitat. In the event that LEPC becomes listed under the ESA, a variety of oil and gas development and management actions have the potential to result in take of the species. Field development (well pads, roads) and facility construction and ancillary facilities such as compressor stations, pumping stations and electrical generators would result in direct loss of habitat and habitat fragmentation if these activities occur in or near LEPC habitat. Construction activities, maintenance activities, seismic surveys, off-road travel, and other activities would result in disturbance of lekking behavior, breeding, and nest and brood

attendance. Direct mortality from development may occur, for example, from collisions with structures, fencing or vehicles. In addition, construction and maintenance activities related to development may result in increased travel on primary and secondary roads that lead to increased disturbance beyond what is expected from these roads. And finally, management activities relating to conservation practices (mitigation), such as prescribed grazing, prescribed burning, brush management, and range planting, all have the potential to result in some low levels of take.

WAFWA's Analysis for Estimating Future Oil and Gas Related Impacts

This section analyzes the potential impacts to LEPCs as a result of the Covered Activities. We rely on the analysis conducted by WAFWA in their RWP (Van Pelt et al. 2013) to estimate the future development impacts within the Action Area. However, there are several challenges related to estimating take that are unique to the LEPC. First and foremost, the scale of the analysis is large, covering parts of five states. In addition, like most birds, the extent of the range of the species is very much in flux from year to year. Detecting the birds in low density habitat around the periphery of the range is difficult and the species is highly mobile. And finally, LEPC is difficult to survey, and those surveys occur only when the birds come to leks in the spring. Until very recently, survey methodology and intensity varied widely between states, but recent range-wide aerial surveys have begun to solve that problem. As a result of these factors, this analysis will focus on estimating the potential acreage impacted by those development and management activities and will estimate take based on estimates of LEPC density. This analysis considers everything that is not within an existing impact buffer, including cropland, as potential habitat. Cropland ranks as low quality habitat under the habitat metrics in the RWP.

The intent of this analysis is to estimate potential take on 10, 20, and 30 year timeframes. The CCAA evaluates development levels based on 30-year projections. However, energy markets and technology, climatic conditions, land use patterns and practices, and ultimately, LEPC populations vary over time. It is important to recognize that although this analysis assumes that any development action that occurs outside of buffers from pre-existing impacts may result in incidental take of LEPC, such development will not necessarily result in incidental take of LEPC throughout all of EOR+10.

General Methodology of WAFWA's Estimation of Future Oil and Gas Related Impacts

The following text summarizes WAFWA's methodology (WAFWA 2013) for their analysis. Specific details on this analysis are provided on pages 129-134 of the RWP. The WAFWA analysis involved an estimate of the LEPC population density as well as an estimate of the rate and extent of habitat loss resulting from oil and gas development.

Well permitting data from each state was utilized to define the number of active wells within the EOR+10 as a starting point for forecasting future development. Wells are the most common type of oil and gas impact on the landscape and are the basis for the calculations

below. Oil and gas development does include other types of infrastructure, some of which have very small impact buffers, such as privately maintained roads and distribution lines that are often covered by the larger well impact buffers. In the case of downstream infrastructure, such as pipelines and compressors, any buried infrastructure does not constitute a source of long-term habitat loss for LEPCs. However, there is sufficient scientific data suggesting that compressor stations result in nesting habitat loss through avoidance. Smaller compressors that may be muffled to 75dB were given the same impact buffer as a well (i.e., 200 m), but large compressors that are louder and much less common on the landscape have been assessed a correspondingly larger impact buffer.

The U.S. Energy Information Administration produced the Annual Energy Outlook 2013 (AEO2013), which includes long-term projections of energy supply, demand, and prices out to 2040. These projections include forecast of both U.S. natural gas production (AEO2013:78) and the production of petroleum and other liquids (AEO2013:81). These projections are based on both high and low price scenarios for each resource. The highest price scenario was used to reflect a maximum projected development scenario. The estimated annual growth rates for oil production and gas production were calculated by first summing the year 2040 estimates for oil production and gas production. This sum was then divided by the sum of the current estimates to determine the overall combined growth rate for oil and gas production for the 30-year period. The overall combined growth rate was then divided by 30 to determine the average annual combined growth rate for oil and gas production. This result was then divided by two to determine the average annual growth rates for oil production and gas production independently. The annual growth rate for the high oil and high gas price scenario is 0.0549. Production growth rate was assumed to result in a corresponding increase in wells drilled.

The number of wells was forecasted for 10, 20 and 30 year durations across the EOR+10 as: projected wells = existing wells + (existing wells X annual growth rate X years), as shown in Table 5. Because of the lack of data to forecast where future development will occur within the region, well numbers were forecasted across the entire EOR+10 and not individual ecoregions or CHAT categories.

Table 5. The projected number of new wells across the LEPC EOR+10 over 10, 20, and 30 year periods based on the high oil and gas price scenario projected from the Annual Energy Outlook 2013.

Projected New Wells Drilled Across the EOR+10 under the EIA High Price Scenario		
10 Year	20 Year	30 Year
59,804	119,608	179,416

To estimate the number of acres impacted by each well:

- The new wells drilled within each ecoregion were identified for the most recent year available;
- Each well was buffered by 200 m, and the total number of acres within those buffers was calculated;
- Any existing or overlapping new impacts were removed from the total number of acres within the buffers; and
- This total was divided by the number of new wells.

Based on this calculation, each well impacted an average of 17.94 acres of previously unimpacted habitat. This average level of impact was utilized to calculate the acres of habitat loss.

Results of WAFWA's Analysis of Estimation of Future Oil and Gas Related Impacts

The results of WAFWA's analysis are listed in Table 6, which include the estimation of the acres impacted by new wells and the potential number of LEPCs that may be taken by that development across the EOR+10. This table includes the estimation of the acres impacted by new wells based on an average 17.94 acre impact, and the potential number of LEPCs that may be taken by that development across the EOR+10, given an average lifespan of 1.95 years. These estimates represent the high oil and gas price scenario from AEO2013.

Table 6. WAFWA's estimation of acres of potential LEPC habitat and individual LEPC impacted resulting from projected oil and gas development forecast (Van Pelt et al. 2013).

Acres of Potential LEPC Habitat Impacted Across the EOR+10 under the EIA High Price Scenario		
10 Year	20 Year	30 Year
1,072,883	2,145,767	3,218,716

Number of LEPCs Potentially Taken Across the EOR+10 under the EIA High Price Scenario		
10 Year	20 Year	30 Year
3,593	7,185	10,778

Assumptions of the Estimates of Future Oil and Gas Related Impacts

The values represented in Table 6 represent a worst reasonable case scenario. The actual

acres of LEPC habitat to be impacted are likely to be less, although we do not have a specific means to estimate and calculate the benefits of the Conservation Measures. Reasons for considering that actual habitat losses will be less than the values provided in Table 6 are provided in the following text:

- The analysis assumed the high price oil and gas scenario for entire 30 years of the CCAA.
- The analysis does not include the benefits of implementation of the conservation measures (e.g., overlap of well pads with areas of existing disturbance or infrastructure) and other factors.
- The analysis did not attempt to identify areas where development would not occur either due to geological or administrative limitations.
- As drilling and production technology improve in the future, oil and gas producers will continue to increase production per surface location, which will likely result in meeting future demands for energy with fewer surface and habitat impacts.
- The analysis assumed that any development action that occurs outside of pre-existing impact buffers may result in loss of LEPC habitat. However, much of the habitat within the EOR is not suitable habitat, and development within those areas is not likely to affect LEPC.
- The analysis did not attempt to project where development might occur within the EOR+10 in relation to suitable habitat or otherwise.
- The analysis assumed a single well pad for each surface location. However, where the geology allows, oil and gas producers may drill multiple wells per pad, and this practice is incentivized under the mitigation framework of the CCAA because it reduces the total surface disturbance impacts. Horizontal drill techniques increase siting flexibility, which may decrease the average number of acres of habitat impacted by a well or pad.
- The CCAA also incentivizes siting new well pads within prior impacts. This framework incentivizes siting in unsuitable or low quality habitat by imposing higher mitigation fees for siting wells in higher quality habitat.

However, the Service notes that this estimate by WAFWA for oil and gas development only included impacts resulting from the construction of new well pads (200 m impact buffer) and did not include other infrastructure. WAFWA considers that impacts from new roads and transmission lines relating to oil and gas development are generally within the impact buffers for the new well pads.

In an effort to quantify benefits of reducing habitat loss through the co-location of

infrastructure, WAFWA (2013a) conducted a GIS analysis of the level of overlap of existing infrastructure overlap within the EOR+10. At the scale of the entire EOR+10, and when considering all impact types, there is an average 12 percent overlap of existing current infrastructure based on the difference between the sum of all individual impact types and the total impacted acres summarized including overlap. This level of existing overlap suggests that collocation of different types of infrastructure is relatively uncommon overall prior to the implementation of the RWP.

When this same analysis is done for recent development of infrastructure types such as oil and gas, there is significant evidence that buffer overlap reduces the overall impact acres of development. When the acreage impacted by new oil and gas wells in the most recent year available (2012 for CO, KS, NM, TX, and 2009 for OK) was examined, preexisting and adjoining new impacts reduced the overall impact acreage by approximately 58 percent (Van Pelt et al. 2013). Much of this overlap is related to in-field development in high-density crude oil fields. This analysis of recent oil and gas development indicates a strong potential for decreasing surface disturbances through collocation of infrastructure, especially through the mitigation framework in the CCAA (and RWP) that provide financial incentives for collocation. Furthermore, collocation is expected to increase with plan implementation.

For our estimate of incidental take for the 30 years of the implementation of the CCAA, we utilized WAFWA's estimates of impacted acres and the birds potentially taken, as provided in Table 6. We then reduced those values by using WAFWA's estimate of reduced surface disturbance (58 percent reduction) due to the use of overlap with existing infrastructure and rights-of-way that is estimated to occur by WAFWA through the implementation of the conservation measures in the CCAA. Additionally, we added the estimated incidental take resulting from implementation of the conservation practices. Our estimates are provided in Table 7.

Table 7. Estimates of acres impacted and anticipated incidental take of LEPC resulting from implementation of CCAA considering benefits of overlap with existing infrastructure (acres in Table 6 x 0.58) plus the effects of conservation practices.

Years	Acres Potential Habitat Impacted by new wells - Considering Overlap Benefit	Number of LEPC Potentially Taken by new wells - Considering Overlap Benefit	Number of Birds Potentially Taken by Implementation of Conservation Practices (est.76 birds/yr)	Total Number of Birds Potentially Taken
10	622,272	2,084	760	2,843
20	1,244,545	4,167	1,520	5,687
30	1,866,855	6,251	2,280	8,530

EFFECTS OF IMPLEMENTATION OF CCAA

We have divided discussion of the effects of the implementation of the CCAA into three impacts categories: (I) Impacts relating to LEPC habitat; (II) Impacts relating to mortality and injury of LEPC; and (III) Impacts relating to disturbance of LEPC.

Impact Type: (I) Impacts Relating to LEPC Habitat

Expected Beneficial Effects of CCAA Relating to LEPC Habitat

The implementation of this CCAA will benefit the LEPC through the application of the conservation measures and the mitigation practices that will occur throughout the currently occupied range of the LEPC. The avoidance and minimization measures will reduce the overall level of impacts to LEPC and their habitat. The mitigation framework of the CCAA will provide for the enhancement and restoration of LEPC habitat and will contribute to establishment, augmentation and maintenance of LEPC populations. The adaptive management strategy will monitor and evaluate the mitigation and conservation activities implemented under the CCAA and will adjust these activities accordingly in order to meet the CCAA goals.

Benefits to LEPC habitat from the implementation of the CCAA are summarized as follows:

Avoidance and Minimization

- The CCAA creates financial incentives to Participants to avoid construction of new developments in focal areas, connectivity zones, and other high quality habitat by assigning higher mitigation fees for development in areas with higher quality habitat and in higher priority areas (CHAT 1 and 2). As a result, direct and indirect impacts to LEPC habitat are expected to be greatly reduced as compared to development that would occur without this conservation framework.
- In addition to encouraging development outside high priority habitat and high priority areas, the CCAA also uses the mitigation fee structure to encourage location of new oil and gas development within areas with existing infrastructure (e.g., directional drilling techniques and clustering of facilities) and previously impacted areas by providing reduced mitigation fees in these areas. These measures should minimize habitat losses and fragmentation effects from future oil and gas development. We do not have a specific estimate of the amount by which habitat losses will be reduced, however, we are using the assumption from WAFWA's GIS analysis of more recent oil and gas development in which overlapping with existing infrastructure and colocation reduced the overall surface impact by 58 percent.
- For example, mitigation fees for a 5-acre well pad in the sand sagebrush ecoregion in the CHAT 4 category in low quality habitat could be \$1,336, while mitigation fees in

high quality habitat in CHAT 4 area could be \$26,729. In comparison, the mitigation fees for a 5-acre well pad in low quality habitat in CHAT 1 category (i.e., focal areas) would be \$2,088 while the mitigation fees in high quality habitat in CHAT 1 would be \$41,764. As shown in this cost structure, mitigation fees will be reduced substantially if a project occurs within an area of existing impacts. Furthermore, development that is contained within previously impacted habitat will result in no mitigation costs beyond the initial enrollment fees.

- By encouraging development to occur outside of focal areas (CHAT 1) and connectivity zones (CHAT 2), we expect that the result of the implementation of the CCAA will be the retention of higher quality habitat within these areas. These actions should provide for the concentration of larger blocks of high quality habitat and a reduction of the existing habitat fragmentation, providing for better connectivity between the focal areas and areas of population expansion.
- Furthermore, through the focal area and connectivity zone goals in which the focal areas shall have no more than 30 percent in development impacts and the connectivity areas shall have no more than 60 percent in development impacts, the CCAA shall minimize the levels of development impacts that can occur within these high priority areas. Where the 30 percent and 60 percent caps have been reached, remediation of existing development impacts will be required prior to further development. These restrictions on development impacts in these important areas will be maintained during the Waiver Period of the first year of implementation of the CCAA.
- Restrictions on herbicide use that limit herbicide use to the project footprint or rights-of-way will minimize potential impacts that would remove or alter the suitability of LEPC habitat.

As prescribed in the adaptive management table (provided in Appendix C), a number of habitat-related elements in the adaptive management strategy provide for the monitoring and evaluation of habitat and population conditions and for the adjustment of the CCAA operations, as appropriate. Some of these elements will be evaluated annually and others evaluated every 5 years and include:

- Progress made towards the overall population goal and ecoregion population goals
- Evaluation of differentiation of new impacts occurring in different CHAT categories
- Evaluation of level of development impacts in CHAT 1 and 2
- Progress made towards stronghold goals
- Evaluation of emerging science relating to the LEPC and the CCAA.

Mitigation

- In situations when impacts occur that cannot be fully addressed through avoidance and minimization procedures, this CCAA employs a mitigation framework that is a biologically based system that incorporates space, time and habitat quality to quantify both the impacts to habitat (impact units) and improvements to habitat (offset and remediation units). The resulting mitigation practices will result in both improvement of habitat conditions and creation of habitat for the LEPC. Mitigation projects will be focused in the focal areas and connectivity areas, which will provide for better habitat connectivity and the concentration of larger blocks of suitable habitat in these areas, ultimately benefitting LEPC populations.
- The mitigation framework evaluates impacts based on the impact buffer surrounding infrastructure, the size of which varies by infrastructure type. As a result, a Participant that constructs a new five-acre oil and gas well pad will mitigate for a 200 meter buffer, which is approximately 31 acres (although this area may be reduced if the well pad is constructed within the impacted area associated with existing infrastructure).
- The Participant is also required to provide additional mitigation. The mitigation framework assigns an impact multiplier depending on CHAT category of the project site. The impact multiplier ranges between 2.5 for CHAT category 1 and 1.6 for CHAT category 4 that, when averaged across the CHAT categories, produces an average 2:1 mitigation ratio. This 2:1 ratio ensures that mitigation efforts are greater than impacts, resulting in a net conservation benefit for the LEPC habitat, and ultimately LEPC populations. Thus, to construct a five-acre well pad in unimpacted habitat, a Participant will be required to provide funds to allow for the mitigation of between 50 and 78 acres (31 acres multiplied by 1.6 and 2.5, respectively).
- All offset units generated with these funds must be of the same or higher habitat quality than impacted acreage, further ensuring a significant conservation benefit for LEPC when impacts do occur.
- The CCAA and mitigation framework further provide a conservation benefit to the LEPC by providing WAFWA with an early commitment of funds by Participants that provides WAFWA with substantial resources to begin securing landowner contracts and generating offset units. Upon enrollment in the CCAA, Participants will remit enrollment fees of \$2.25 per year for every enrolled acre for the first three years of enrollment (for a total of \$6.75 per acre).
- Additionally, the value of the mitigation fees assumes that all impacts will be permanent. Thus, fees are calculated by multiplying the number of offset units by 25, which provides sufficient funds to create a non-wasting endowment to provide permanent conservation offsets. Therefore, in the example above, a Participant developing a five-acre well pad must remit funds based on the value of between 1,250

and 1,950 impacted acres (50 and 78 acres respectively multiplied by 25), as adjusted by site condition scores.

- Private land owners will be paid by WAFWA for their generation of offset units. WAFWA will develop a management plan for all enrolled sites that identifies recommended conservation practices. WAFWA will track impacts and monitor the acreages in grassland, cropland, etc. Towards this purpose, vegetation monitoring will be conducted annually on lands enrolled for offset generation to determine habitat quality.
- The ratio of permanent easements and shorter-term habitat offset units (25 and 75 percent, respectively) provides for a combination of conservation. The goal of the permanent easements is to create large, unfragmented blocks of LEPC habitat that contribute to the strongholds in each ecoregion. Short-term contracts provide a level of flexibility in the conservation within the CCAA as mitigation types and locations can be adjusted throughout the focal areas and connectivity zones to meet the conservation needs of the LEPC. Mitigation activities will include conservation practices that are specifically designed to provide conservation benefits for LEPC (e.g., prescribed grazing, prescribed burning, brush management, range planting) (see section below for specifics on conservation practices).
- Additionally, mitigation actions will include the remediation of existing impacts (i.e., removal of infrastructure) by Participants. Removal of infrastructure is expected to both create and improve habitat conditions for LEPC.
- Information obtained through annual range-wide aerial population monitoring and compliance monitoring on enrolled properties by WAFWA will be used in the adaptive management program.
- As prescribed in the adaptive management table (provided in Appendix C), a number of mitigation-related elements in the adaptive management strategy provide for the monitoring and evaluation of habitat and population conditions and for the adjustment of the CCAA operations, as appropriate. Some of these elements will be evaluated annually and others evaluated every 5 years and include:
 - Progress made towards maintaining optimum habitat in 3 of 5 years on offset units, where was identified as desired outcome;
 - Progress made toward 25 percent improvement on vegetation structure on offset unit over baseline, where anticipated in associated management plan;
 - Progress towards annual goals for total restoration and remediation;
 - Evaluation of emerging science relating to conservation practices for the LEPC and the CCAA.

Conservation Practices on Mitigation Properties (Offset Generation Units)

- Benefits of Conservation Practices: Prescribed Grazing

Prescribed grazing will benefit LEPC habitat and populations by improving or maintaining the composition and vigor of desired plant communities. Management plans developed for prescribed grazing will identify the limiting biological conditions for the LEPC and will create a grazing management system to address the limiting biological conditions for the LEPC. By producing a mosaic of vegetation structure and composition, prescribed grazing will benefit the LEPC by creating areas of higher residual cover for nesting birds and by creating areas with greater forb production, resulting in greater forage by an increased insect production. Conservation measures for prescribed grazing specify that the frequency and duration of grazing will be designed to create or maintain adequate habitat structure. The intensity of grazing will be at a level appropriate for specific life cycle requirements (i.e., nesting, lekking, brood rearing, etc.). Benefits from the implementation of prescribed grazing are expected to occur within the same season as the implementation of the grazing management plan. Prescribed grazing will help to address the issues of habitat loss and fragmentation.

- Benefits of Conservation Practices: Prescribed Burning

Prescribed burning will benefit LEPC habitat and populations by improving habitat specifically to enhance and produce desirable or needed plant communities for all phases of LEPC life cycle. Management plans developed for prescribed burning will be developed to identify the conditions of the controlled fire that will be applied to a predetermined area. Management of prescribed burning will typically be coordinated with prescribed grazing, if livestock are present. Prescribed burning will help to facilitate distribution of grazing to target the maintenance or creation of desired LEPC habitat and will restore and/or maintain ecological sites in a shifting mosaic across the landscape (Fuhlendorf and Engle 2004). Prescribed fires generally improve forage production quantity and/or quality for livestock. Improvements in the diversity of sand sagebrush brush communities following prescribed burns were documented for 1 to 3 years following the fire, including forb production, after which vegetation conditions returned to those in the adjacent unburned pastures (Winter et al. 2011). Prescribed fires can result in the reduced suitability of nesting habitat, although this is generally a short-term effect (Winter et al. 2011).

Suppression of wildfires in the past has resulted in ecological sites that are vastly different from historic plant communities for LEPC and for grazing by large ungulates. Plant productivity, health, and vigor have been reduced due to a lack of fire. Longer fire return intervals have created a plant community less responsive to prescribed fire and have allowed for invasion of undesirable species such as Eastern Red Cedar and non-native grass species. Depending on the site conditions in areas

with invasive shrubs, it may be necessary to cut and remove the shrubs prior to the prescribed burn in order to maintain the desired burn conditions. Conservation measures for prescribed burning specify that implementation of the conservation practice within 0.5 miles of known leks will be deferred until breeding and nesting activities are completed, typically March 1 through July 15. The practice will be designed to create the desired habitat conditions for the LEPC. Prescribed fire will help control these invasive shrubs, helping to address the issues of habitat loss and fragmentation.

- **Benefits of Conservation Practices: Brush Management**

Brush management will benefit LEPC habitat and populations by removing undesirable post-settlement conifers (eastern red cedar and juniper) and deciduous species (mesquite and black locust) that have invaded LEPC habitat, often causing the birds to avoid and abandon these areas. The goal of brush management is to restore or enhance the desired native plant community that is consistent with the ecological site description and which provides the most suitable habitat for the LEPC and other wildlife species. Removal of these tall shrubs and trees will restore habitat that has been avoided by LEPC and will create a release to allow for native grass and forb production.

Conservation measures for brush management specify that implementation of the conservation practice within 0.5 miles of known leks will be deferred until breeding and nesting activities are completed, typically March 1 through July 15. The practice will be designed to create the desired habitat conditions for the LEPC. Treated sites may be deferred from livestock grazing, as deemed necessary. Brush management will help to address the issues of habitat loss and fragmentation.

- **Benefits of Conservation Practices: Range Planting**

Range planting will benefit LEPC habitat and populations by restoring native habitats by converting cropland to grasslands to meet habitat requirements for LEPC. The goal is to restore the native plant community to a condition similar to the ecological site description reference state for the site, provide or improve forages for livestock, provide browse or cover for wildlife and reduce erosion by wind and/or water.

Cropland sites typically provide inadequate food and cover for LEPC and other grassland species. Conservation measures for range planting specify that implementation of the conservation practice within 0.5 miles of known leks will typically be deferred until breeding and nesting activities are completed, typically March 1 through July 15, although planting may need to occur during this season. In these situations, an effort shall be made to complete these activities with as little disturbance as possible to adjacent and surrounding existing LEPC habitat. Range planting will create and improve habitat for LEPC, helping to address the issues of habitat loss and fragmentation.

- Benefits of offset unit generation (mitigation) with other NRCS practices: Other conservation practices may also be implemented on the mitigation property as appropriate and include practices that facilitate the implementation of the primary practices, such as a water development or fences to better manage grazed land, for example. These practices and their associated benefits and impacts to LEPC are discussed in Appendix B.

Remediation Activities

Oil and gas remediation and restoration include the removal of existing infrastructure (i.e., pump jacks, etc). Because these actions will occur within areas of existing impacts, we consider it less likely these areas will be occupied by LEPC. Therefore, we did not expect many adverse effects from the implementation of remediation activities. In addition, the conservation measures such as the seasonal timing restrictions around leks still apply to these activities such that disturbances of breeding, lekking, or brooding birds will be minimized.

Evaluation of Potential Negative Effects of CCAA Relating to Habitat Loss

Although the implementation of the conservation measures would provide substantial benefits to the LEPC throughout the currently occupied range of the LEPC, we recognize that the proposed action would still allow for adverse effects to LEPC habitat, as described as follows:

- The avoidance measures specify that oil and gas development should avoid areas of high quality LEPC habitat (i.e., focal areas, connectivity areas, or areas within 1.25 miles of known leks) and, instead, should focus developments in areas with existing disturbances or lower quality habitat. However, if these conservation measures are not followed, oil and gas development would still be allowed to occur throughout the Action Area (EOR+10), including areas of higher quality habitat with the provision that offsetting mitigation is provided through the mitigation framework. The resulting consequences to the Participants for developing in areas of higher quality habitat would be that the Participants would be required to pay significantly higher mitigation fees than if the development occurred in lower quality habitat. In terms of impacts to LEPC, high quality habitat would be directly impacted if the habitat avoidance and minimization measures were not followed, although lekking, nesting, and brooding birds themselves would not be disturbed since development would not be allowed during the breeding season (March 1 – July 15) within 1.25 miles of leks that have been active in the last 5 years.
- The conservation measures provide for the minimization of impacts from oil and gas development through collocation of infrastructure, development in areas of existing disturbance, use of directional drilling, and clustering of facilities. However, if these conservation measures are not followed and habitat impacts were not minimized, oil

and gas development would still be allowed to occur with the resulting consequences to the Participants that they would be required to pay higher mitigation fees than if minimization measures were followed. In terms of impacts to LEPC, a greater area of surface disturbance would occur, likely resulting in habitat loss and fragmentation, if these habitat minimization measures were not followed.

- The discretionary nature of the avoidance and minimization measures allows for oil and gas development to occur in areas of high quality habitat. The potential loss of high quality habitat, especially lek sites, is of concern given the strong site fidelity of LEPC to leks (Copelin 1963, Hoffman 1963, Campbell 1972) and low dispersal distances (Braun et al. 1994). Jamison (2000) considered site fidelity to be more important than habitat in influencing the movements of male LEPC. Although the mitigation framework will provide for improved habitat or create new habitat offsite, the birds may not readily disperse and occupy the new or improved habitat.
- Once the conservation practices (e.g., prescribed grazing, prescribed burning, brush management, and range planting) are implemented, there may be a lag time between when the practice is implemented and when the conservation benefits are effectively available to the LEPC. Benefits from prescribed grazing are expected to be available rather quickly, likely starting within the year of implementation. Benefits from prescribed burning are also likely to be available rather quickly; the effects of prescribed burns were observed within 1- 3 years (Jamison 2000). Timing of availability of benefits from brush removal would probably take longer for the response of grasses and forbs and for the birds to reoccupy the area. No data were found describing the re-occupation of LEPC into areas of brush removal. The benefits of range planting will take longer before the site provides suitable habitat for LEPC, based on information from Conservation Reserve Projects (CRP) range planting. Seeding of native grasses in Kansas in areas of croplands can take 8-10 years before the grass has sufficient structure and cover to support LEPC (Rodgers and Hoffman 2005). In their design of the mitigation framework of the RWP, WAFWA has addressed the issue of a time lag between impacts units and offset units by ensuring that impacts are balanced with same quality or better quality by offset units annually within each focal area. Additionally, WAFWA has specified that contracts for the restoration projects (i.e., range planting and brush removal) will be for a minimum of 10 years, with the opportunity to extend those contracts at 5 year intervals, thereby allowing time for these conservation practices to provide for LEPC habitat.
- The conservation practice of range planting provides for the planting and establishment of native grasses, although it does not provide for the establishment of sand sagebrush and shinnery oak, which are important components in their respective ecoregions. We recognize, however, that seed mixes that contain tall bunch grasses will provide similar vegetative structure and cover for the LEPC.

- The avoidance measure specifies that oil and gas activities should avoid leks by 1.25 miles. Pitman et al. (2006) found that 80 percent of LEPC nesting activity occurs within 0.6 miles (1 km) of a lek. Giesen (1998) reported that hens usually nest within 1.7 miles (3.4 km) of nests and others have identified nesting occurring within 2 miles of leks. The potential remains for oil and gas development that occurs in the area between 1.25 miles and 2 miles of leks to result in the loss of nesting habitat and the disturbance and abandonment of birds in these areas, although the Service recognizes that the majority of the nesting habitat around active leks will be protected from habitat loss.
- Although the minimization conservation measures will reduce habitat loss and fragmentation impacts from oil and gas development by collocating and clustering infrastructure, the RWP does not provide specific guidance for maintenance of suitable habitat patch size (except for a minimum size of 160 acres for offset generation contracts). Therefore, there is no specific guidance for addressing issues relating to habitat fragmentation. However, several items within the RWP do help provide for issues of habitat fragmentation, including the prioritization of mitigation projects within the focal areas and connectivity areas and the development of strongholds (minimum of 25,000 acres) in each ecoregion.
- The Waiver Period during the first year of the implementation of the CCAA would allow for impact activities to occur prior to the establishment of offset units, potentially resulting in an imbalance of impacts units versus offset units and overall loss of habitat during this first year of the CCAA. The Service is concerned about the potential of a year of unmitigated impacts combined with other ongoing impacts, the potential continuation of drought in large areas of the LEPC range, and potential continuing decline of LEPC population numbers. The strategy developed by the Service and WAFWA will allow for limiting the amount of unmitigated development during the first year of the CCAA if the 2014 annual surveys indicate the population has dropped by 20 percent or more from the 2013 surveys (14,092 birds or less), with the provision that additional development can occur following adequate establishment of offset units (see description in *Proposed Action* section). This limited development during the first year of the CCAA is anticipated to limit the potential impacts from habitat loss and help provide for maintenance of the population.
- Another concern is that oil and gas development may occur on the mitigation property (i.e., offset unit) if there is a split estate situation in which the subsurface mineral rights are owned independently of the surface rights. This scenario applies to short-term contracts, permanent easements, and strongholds. The impact of development in permanent easements and strongholds would be to reduce the effect benefits of these areas through increasing habitat fragmentation. If a Participant were to develop land that is already in an offset unit contract, the Participant would be required to pay substantial mitigation fees both for the high quality habitat and for

reimbursement of the conservation practices, which may serve as a sufficient detriment to development at that site.

Impact Type: (II) Impacts Relating to Potential for Mortality and Injury of LEPC

Evaluations of expected beneficial effects to LEPC relating to mortality and injury

The conservation measures relating to collisions and other sources of mortality (including accidents and predation) will benefit the LEPC, as described in the following text:

- The avoidance conservation measures specify that distribution lines should be buried within 1.25 miles of leks active in the previous 5 years. Collisions with overhead transmission lines cause direct mortality to LEPCs and may further limit LEPC populations (Bidwell et al. 2003). Pittman (2006) observed that 80 percent of the females nested within 0.6 miles of a lek site. Transmission lines also provide perches for raptors, which could potentially increase the mortality rate of LEPCs (Bidwell et al. 2003). This measure will benefit the breeding birds and the majority of the nesting birds by removing a collision risk within the vicinity of the active leks.
- The avoidance conservation measures also specify that appropriate fence markings will be installed along new fences within 0.25 miles of leks that have been active in the previous 5 years. LEPC mortalities have been documented from collision with fences. This measure will benefit the breeding birds and the majority of the nesting birds by reducing the collision risk within 0.25 miles of an active lek.
- The avoidance conservation measure specifies that new roads, fences, power lines, well pads, flowlines and other infrastructure should be located outside focal areas, connectivity zones, and high probability lek and nest habitat (2013 CHAT categories 1-3); this measure will further reduce collision risks with infrastructure. The minimization conservation measures that concentrate infrastructure, by specifying that common rights-of-way should be used and consolidating drilling operations and facilities, will also reduce the collision risks with infrastructure. The use of monopole construction for new electrical transmission lines in CHAT categories 1-3 will also reduce the risk for collisions by concentrating infrastructure.
- Mortalities associated with vehicles will be minimized by the conservation measure that requires a minimized traffic volume, a controlled vehicle speed, controlled access, and avoids off-road travel within focal areas and areas identified as high probability lek habitat by the 2013 CHAT.
- Mortalities associated with predation by raptors will be reduced by the recommendation of installing raptor deterrents on new electrical poles, as indicated by the Avian Power Line Interaction Committee (APLIC).

- Mortalities associated with drowning in human-made water containment sources will be minimized by the requirement to provide escape ramps, rafts, or ladders.
- As prescribed in the adaptive management table (provided in Appendix C), a number of mitigation-related elements in the adaptive management strategy provide for the evaluation of mortality and injury issues and for the adjustment of the CCAA operations, as appropriate. The element of emerging science relating to conservation practices for the LEPC and the CCAA will be evaluated annually.

Evaluations of Potential Negative Effects to the LEPC relating to Mortality

- The avoidance measure specifies that distribution lines should be buried within 1.25 miles of leks active in the previous 5 years. Pitman et al. (2006) found that 80 percent of LEPC nesting activity occurs within 0.6 miles (1 km) of a lek. Giesen (1998) reported that hens usually nest within 1.7 miles (3.4 km) of nests and others have identified nesting occurring within 2 miles of leks (Suminski 1977, Riley 1978, Giesen 1994a, p. 97). The potential remains for risk of collision with transmission lines that are not buried in the area between 1.25 miles and 2 miles of leks, although the Service recognizes that the collision risk has been reduced for the majority of the nesting habitat around active leks.
- While the avoidance conservation measures that directs that appropriate fence markings will be installed along new fences within 0.25 miles of active leks will minimize the collision risk around leks, the potential remains for collision risk with unmarked fences in the area between 0.25 miles and 2 miles from active leks.

Effect Type III: Impacts Relating to Disturbance of LEPC

Expected Beneficial Effects to the LEPC resulting from Implementation of CCAA

- Seasonal use restrictions within the plan are designed to minimize the take related to those actions and any other Covered Activities during key breeding, nesting and brooding periods. Those seasonal use restrictions are focused within 1.25 miles of known leks that have been recorded as active at least once within the previous five years. A perfect census of all leks across the plan area is not possible due to survey effort limitations and the fact that, by their nature, leks are not permanent fixtures on the landscape. . These seasonal use restrictions during the breeding, nesting, and brooding period will help to maintain and improve LEPC population number by reducing disturbances that could otherwise interfere with breeding activities and could reduce nesting and chick rearing success.
- The year-round noise abatement policy within 1.25 miles of active leks will further reduce the disturbances of birds in these areas and should provide for lek attendance

as birds will be better able to hear and respond to auditory cues at the lek sites. Noise associated with oil field activities may impact breeding activities if mating display vocalizations are disrupted by background noise (Davis 2006). Braun et al. (2002) noted that sage-grouse lek attendance was lower on breeding grounds located in close proximity to active mineral resource developments compared to less disturbed lek sites. Braun (1986) speculated that if noises associated with oil field activity deter recruitment of yearling sage-grouse males to breeding grounds, leks may become extinct.

- For those non-emergency operations, construction and maintenance activities that cannot avoid the area within 1.25 miles of active leks during March 1 through July 15, the conservation measures require a daily timing restriction (3:00 am to 9:00 am). This requirement will reduce disturbances to breeding birds present at the lek sites and their vicinity.
- The requirement for seismic activities and other similar activities to avoid extensive off road travel in rangeland or planted grass cover within 1.25 miles of active leks from March 1 through July 15 will further reduce disturbances of breeding, nesting, and brooding birds. The requirement for surveys to be conducted in CHAT 1-3 areas prior to breeding season seismic activities provides a substantial benefit to the implementation of this conservation measure.
- As prescribed in the adaptive management table (provided in Appendix C), a number of mitigation-related elements in the adaptive management strategy provide for the evaluation of mortality and injury issues and for the adjustment of the CCAA operations, as appropriate. The element of emerging science relating to conservation practices for the LEPC and the CCAA will be evaluated annually.

Evaluation of Potential Negative Effects of CCAA Relating to Disturbance of LEPC

- The conservation measures will overall reduce the disturbances of breeding, nesting and brooding birds but a number of exceptions will still allow for disturbances during this time. These exceptions include non-emergency operations, construction and maintenance activities that need to occur at this time. Although these activities will be required to avoid the time from 3:00 am to 9:00 am in the vicinity of active leks during the breeding season, thus reducing the disturbance of breeding activities, the potential remains for these activities to disturb and harm breeding and brooding bird in these areas. Furthermore, there is not a clear description from WAFWA of the criteria for actions that “cannot be avoided and must occur during March 1 – July 15” nor is there a requirement to coordinate this activity with WAFWA, potentially resulting in non-emergency, construction and maintenance operations occurring in the vicinity of active leks during the breeding season.

- On a case-by-case basis, some seismic activities with off road travel will be allowed within the period from March 1 – July 15 within 1.25 miles of active leks. This action could result in disturbances to LEPC, although this action will be evaluated and considered by WAFWA and should in conditions that would result in fewer impacts and would not occur during the time from 3:00 am to 9:00 am.
- The mitigation framework does not provide any mitigation of impacts resulting from disturbance effects.

Effects to LEPC from Implementation of Conservation Measures and Conservation Practices

Incidental take in the form of harm or harassment may result from disturbance incidental to the implementation of the Conservation Measures, including conservation practices (i.e., mitigation activities) required to offset impacts. Direct take, in the form of incidental killing of adults, juveniles, chicks, or eggs, also may result from the implementation of conservation measures and mitigation activities such as brush management practices, prescribed fire and grazing, and range planting. Some negligible disturbance is also possible from habitat monitoring activities. The following text describes potential impacts that could result from the conservation practices, as provided in Service's conference opinion for NRCS's Lesser Prairie-Chicken Initiative (LPCI) (NRCS 2013).

- *Prescribed grazing* is a widely used management practice to improve the quality of forage for livestock, and when applied through LPCI to improve rangeland vegetation to meet the habitat needs of LEPC. Pitman et al (2005) documented 4 of 209 nests were lost to trampling by cattle. Some but not all of the items in a grazing management plan are rest and deferment periods, stocking rates, location of mineral/salt supplements, and consideration of riparian and other sensitive or high impact areas. As a result of the expected implementation of the Prescribed Grazing system (528) guided by the 645 standard and as conditioned by the other conservation measures, the Service does not anticipate incidental take coverage is needed for any potential sources of adverse effects noted in the above analysis except for those related to livestock trampling.
- *Prescribed burning* is often used in conjunction with brush management but may also be used as a stand-alone tool for improving rangeland conditions. The potential disturbance associated with this practice is the destruction of nests if the fire is conducted during the nesting season. There are no empirical data on prescribed fire causing nest loss in LEPC, but Augustine and Sandercock (2011) documented 2 of 34 greater prairie-chicken nests were lost to prescribed fires in the Flint Hills of Kansas.
- *Range planting* is applied to restore the native plant community to a condition similar to the ecological site description reference state for the site, provide or improve forages for livestock and browse or cover for wildlife, reduce erosion by wind and/or

water, improve water quality and quantity, and increase carbon sequestration. This practice is used to restore important native habitats by converting cropland to grasslands, to meet habitat requirements for LEPC. As with brush management, the Service anticipates that incidental take estimates for range planting actions are based on the practices with largest potential disturbance (destroying nests and/or incubating hens), use of heavy machinery. Thus, it is likely overestimating incidental take. There are no empirical data estimating this type of nest or female loss. However, Pitman (2003) documented 1 female (of 209 nests) LEPC having been killed by farm machinery cutting the alfalfa field where she had nested. We believe similar rates of incidental take for the range planting practice can be expected.

- *Brush management* is a tool designed to remove or reduce woody species from prairie or grassland sites, primarily focused on eastern red cedar, honey mesquite, and in limited cases thinning of shinnery oak. Practices vary depending on the goal of the producer and needs of the species but include hand felling with chain saws as well as the use of small to large tractors with special shearing devices. In the limited case of herbicide treatment for shinnery oak thinning, there is specific guidance to maintain the integrity of the habitat for LEPCs. Incidental take estimates are based on the practices with largest potential disturbance (destroying nests and/or incubating hens), use of heavy machinery. Thus, it is likely overestimating incidental take. There are no empirical data estimating this type of nest or female loss. However, Pitman (2003) documented 1 female (of 209 nests) LEPC having been killed by farm machinery cutting the alfalfa field where she had nested.

Overall, the Service anticipates that incidental take from the implementation of the conservation measures, including the conservation practices (i.e., mitigation) will likely occur sporadically, and is not expected to nullify the high conservation benefit anticipated to accrue from implementation of the conservation practices and conservation measures in the CCAA. . In an effort to quantify this incidental take, we used the October 4, 2013 letter from WAFWA to the Service, in which WAFWA estimates that it could deliver, on average, 305,886 acres of conservation per year (WAFWA 2013b, pg. 2). We also used NRCS's estimate from its LPCI conference opinion that anticipates that one bird for every 4,000 acres treated would be incidentally taken annually (NRCS 2013). Based on these values, we estimate that the conservation practices utilized for the mitigation framework could result in the incidental take of approximately 76 birds annually ($305,886 \text{ ac} / 4,000 \text{ ac} = 76 \text{ birds}$). The Service understands that the minimal incidental take resulting from these activities will be provided by a separate permit or rule through the RWP.

Summary of Effects

The RWP's conservation strategy is designed to provide a net long-term benefit to the LEPC through a combination of conservation measures, mitigation framework, and an adaptive management strategy. The RWP identifies a desired population goal of an average of 67,000

birds in the first 10 years of the RWP within the EOR+10. Additional population and habitat goals are provided in the RWP that collectively work to support this overall population goal.

Conservation Measures – Development of well pads, compressor stations, roads, transmission lines, etc., can result in LEPC habitat loss and fragmentation throughout the Covered Area. The conservation measures will provide incentives to avoid and minimize impacts to LEPC habitat, especially in the high priority areas (i.e., focal areas and connectivity areas) through the use of higher mitigation fees in these areas. Restrictions on development impacts in focal areas and connectivity zones (i.e., no more than 30 and 60 percent development impacts, respectively) will further provide for the maintenance of habitat in CHAT 1 and 2 categories.

Conservation measures also provide for the avoidance and minimization of impacts to birds during the breeding season as well as for the reduction in risks of mortality and injury to LEPC. Oil and gas operations will avoid the area within 1.25 miles of active leks (i.e., active within previous 5 years) during the breeding season, with some exceptions for emergency and other actions that need to occur. Seismic activities involving off-road travel shall not be conducted in rangeland or grassland within 1.25 miles of active leks during the breeding season, with some exceptions, and surveys will be required in CHAT categories 1-3 prior to breeding season seismic activities. These measures, and a requirement for providing year-round noise abatement within 1.25 miles of active leks, will greatly reduce disturbances to birds during the breeding season. The risks of mortality and injury to LEPC will be reduced by additional measures that require the burying of new distribution lines within 1.25 miles of active leks, installing fence markers with 0.25 miles of active leks, escape ramps in water tanks, as well as other measures. The avoidance and minimization conservation measures are expected to reduce the effects on population numbers and distribution resulting from oil and gas activities.

Mitigation - Project mitigation will be provided by implementation of NRCS conservation practices that are designed to provide food, shelter, and cover for LEPC. Mitigation will occur at a 2:1 mitigation to impact ratio and is designed to provide a permanent offset of impacts in perpetuity through a non-wasting endowment. Offset units will include 25 percent in permanent easements and strongholds and 75 percent in term contracts (5-10 years). Private landowners will be compensated for mitigation on enrolled land. Mitigation practices also include remediation of existing infrastructure in the Covered Area. The mitigation conservation measures are expected to benefit LEPC population numbers, reproduction, and distribution as a result of implementation of conservation practices that are funded through mitigation fees paid by the Participants.

Adaptive Management - The CCAA will utilize adaptive management strategies to allow for mutually agreed-upon changes to practices to occur in response to changing conditions or new information, including those identified during monitoring, that may be necessary to reach the stated short term and long-term goals. Some of the factors that will be evaluated regularly by the various committees include LEPC population sizes, progress toward habitat

goals, conservation practice costs, avoidance of high priority conservation areas, management prescriptions, etc. The adaptive management strategies in the CCAA are expected to benefit the LEPC and its habitat by providing timely adjustments to practices to better meet the habitat and populations goals stated in the RWP.

Summary - The benefits provided by the combination of the conservation measures, mitigation framework, and adaptive management will result in focal areas and connectivity zones that will have reduced threats and disturbances to LEPC, and improved habitat that is concentrated in larger blocks of contiguous habitat. These conditions are expected to 1) result in an increase in LEPC populations throughout the currently occupied range, 2) maintain and expand the current distribution of the LEPC across its estimated occupied range, and 3) increase population numbers that will result in more sustainable long-term populations within each of the four delineated ecoregions.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because those actions require separate consultation pursuant to section 7 of the Act.

The action area consists primarily of private and State lands interspersed with the public land. Unregulated activities on state and private lands such as livestock grazing, inappropriate use of OHVs, agricultural development, residential or commercial development, alternative energy and oil and gas development, conversion of CRP lands to croplands, non-native plant invasion, and inappropriate herbicide application may adversely affect the LEPC through a variety of avenues. Many of these threats may exacerbate the normal effects of periodic drought on LEPC populations.

Within the action area are a number of state, Federal, and private programs that currently provide conservation benefits to the species and directly address threats to the LEPC. These programs provide technical and financial assistance to landowners for habitat management for LEPC. Several programs address industry siting, best management practices, and avoidance, minimization and voluntary mitigation. Additional programs provide for direct management of LEPC habitat on public or other lands within LEPC range, including CRP through the FSA and grazing and ranching operations through the NRCS. Collectively, these existing conservation programs provide a net conservation benefit to the LEPC.

CONCLUSION

After reviewing the current status of the LEPC, the environmental baseline for the action area, the positive and negative effects of the proposed action, and the cumulative effects, it is

the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the LEPC. We anticipate that the implementation of the proposed action will not appreciably diminish the likelihood of both the survival and recovery of the LEPC. In fact, the Service expects the overall effect of the proposed action to result in a larger amount of suitable habitat and protection of important habitat, resulting in an improvement in LEPC numbers, distribution, and reproduction. No critical habitat has been designated for the species; therefore, none will be affected. We base this conclusion on the following:

- Implementation of the avoidance and minimization conservation measures contained within the CCAA will benefit the LEPC throughout its currently occupied range by reducing the impacts to high quality habitat, by reducing the risks of collision and other causes of mortality, and by reducing disturbances to breeding, nesting, and brooding LEPC from new oil and gas development.
- These avoidance and minimization measures are expected to enhance the survival of the LEPC throughout its currently occupied range (approximately 40 million acres), which includes Kansas, Colorado, New Mexico, Oklahoma, and Texas.
- This reduction in threats will be focused in the higher priority areas (e.g., focal areas and connectivity zones) through an impact fee structure that encourages conservation of higher quality habitat through higher mitigation fees in the priority areas and, through lower mitigation fees in lower priority areas of the Covered Area. The reduction of threats to habitat and birds, especially in high priority areas, is anticipated to result in improved habitat and increased population numbers.
- The mitigation conservation measures will enhance the recovery of the LEPC through implementation of conservation practices that improve habitat quality through prescribed grazing, prescribed burning, range planting, and brush management. These practices will improve LEPC habitat through increased vegetation cover, nesting and thermal cover, and foraging material and are expected to result in increased population numbers.
- The mitigation will be focused in the high priority areas, namely the focal areas and the connectivity zones, which will provide for the restoration, enhancement, and maintenance of large, contiguous blocks of habitat needed by LEPC and will minimize habitat fragmentation.
- Mitigation will occur at a 2:1 ratio of mitigation to impacts. Impacts will be mitigated in perpetuity through the payment of mitigation fees into a non-wasting endowment.
- The adaptive management strategy provides for the monitoring and evaluation of habitat and population conditions, and for the adjustment of the CCAA operations, as appropriate. Some of the factors that will be evaluated regularly by the various committees include LEPC population sizes, progress toward habitat goals, emerging science, conservation practice costs, avoidance of high priority conservation areas, management prescriptions, etc.

- The CCAA will complement the existing conservation efforts of other state, Federal, and private programs that provide conservation benefits to the species and directly address threats to the LEPC, thus resulting in a landscape level conservation that is expected to result in improved population numbers and re-establishment and recolonization of habitats by LEPC.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit 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 an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it 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.

Evaluation of Incidental Take

The proposed CCAA for the LEPC throughout its occupied range in five states includes a suite of conservation measures to reduce impacts from oil and gas activities activities. Implementation of these measures will result in minimizing the degree and amount of those impacts on the LEPC. However, the actions considered in the CCAA are still likely to result in some incidental take of LEPC.

The Service anticipates that the incidental take of LEPC will be difficult to determine for the following reasons: 1) the uncertainty of population numbers, 2) the minimal 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 difficult to provide precise numbers of LEPCs that will be harassed, harmed, or killed as a result of the proposed action. In such instances where take of individuals 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. Given the large scale of the proposed action, the fluctuations in oil and gas prices and the resulting changes in the extent of oil and gas development that may occur over the next 30 years, and fluctuations occurring within LEPC population numbers, the Service recognizes there is a level of uncertainty inherent to making an estimate of incidental take for this proposed action.

Amount or Extent of Anticipated Take

For our estimate of incidental take for the 30 years of the implementation of the CCAA, we utilized WAFWA's estimates of impacted acres and the birds potentially taken, as provided in Table 6. We then reduced those values by using WAFWA's estimate of reduced surface disturbance (58 percent reduction) due to the use of overlap with existing infrastructure and rights-of-way that is estimated to occur by WAFWA through the implementation of the conservation measures in the CCAA. Additionally, we added the estimated incidental take resulting from implementation of the conservation practices. Our estimates are provided in Table 7.

Based on the information shown in Table 7, the Service is anticipating incidental take for 30 years implementation of the CCAA for a total of 8,530 birds for the 30-year life of the CCAA. Because of the difficulty in detecting birds, this incidental take will be measured in terms of the acreage impacted by project activities.

Therefore, the Service considers that incidental take of LEPC will be exceeded if any of the conditions are met:

- 1) At 10 years of implementation of the CCAA, more than 622,272 acres are developed by oil and gas activities within the Covered Area;
- 2) At 20 years of implementation of the CCAA, more than 1,244,545 acres are developed by oil and gas activities within the Covered Area;
- 3) At 30 years of implementation of the CCAA, more than 1,866,855 acres are developed by oil and gas activities within the Covered Area.

Effect of the Take

In the accompanying opinion, we have determined that the level of adverse effects rising to the level of anticipated take is not likely to jeopardize the continued existence of the LEPC. Although we anticipate that incidental take to occur, the implementation of the conservation measures should ultimately result in an overall increase of habitat and presumably the number of LEPC in the long term.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

All conservation measures, including avoidance, minimizations, and mitigation of LEPC habitats, status surveys, biological and compliance monitoring, and reporting measures are considered commitments from the permittee and are part of the proposed action. Deviation from those commitments may trigger the need to reinitiate consultation.

The Service has no reasonable and prudent measures or implementing terms and conditions to minimize the effects of take on the species. The incidental take coverage for LEPC

covered by the CCAA and the section 10(a)(1)(A) permit will become effective upon the listing of these species as threatened or endangered under the Act.

Conservation Recommendations

1. The Service encourages Participants to participate in annual meetings with the WAFWA, Service, and other participating landowners to discuss progress in recovery of LEPCs on participating lands.
2. The Service encourages Participants to contribute information to an annual progress report about range conditions, land management activities, LEPC abundance and distribution, and factors that may be having positive and negative effects on LEPC populations, in addition to those reporting requirements in the CCAA.
3. The Service encourages landowners to maintain enrollment in the Conservation Reserve Program.
4. The Service encourages Participants and other landowners to allow removal of legacy oil and gas wells and infrastructure, and restoration of LEPC habitat.
5. The Service encourages research on LEPC for items identified as Research Needs, as provided in the CCAA.

REINITIATION NOTICE

This concludes the conference for the issuance of an section 10(a)(1)(A) enhancement of survival permit associated with the CCAA for the LEPC. If the species becomes listed and 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 may adopt this conference as a final biological opinion.

After any future listing of the LEPC 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, including a substantial decline in the population trend or if the identified population or habitat goals have not been achieved, following sufficient application of the adaptive management strategy; (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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Appendix A. Oil and Gas Activities Addressed in the CCAA

Oil and gas development-related activities that have the potential to cause specific threats to LEPC would be covered by the permit (Covered Activities). The implementation of associated conservation measures (see *Conservation Measures* below) on Enrolled Properties is also considered a Covered Activity. These activities, which span the entire life-cycle of oil and gas development operations, generally include, but are not limited to, the following.

Seismic and Land Surveying

Seismic activities are generally performed in the exploration mode of oil and gas development or in areas of development for refining knowledge of the geology and improving well siting. Seismic activities are conducted for short periods (i.e., days) in any given area. Activities may include the use of large equipment to induce seismic pulses. Additionally, activities may include limited clearing of vegetation to allow equipment access for seismic work, which could consist of a small crew laying/stringing temporary cables and placing receivers on foot or possibly using off-highway vehicles (OHVs). A crew would remove the cables when the project is complete. Land surveying is a temporary activity and may require some truck and/or foot traffic.

Construction

Construction of facility sites and associated infrastructure, which includes, but is not limited to, access roads, well pads or locations, 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, flowlines, and distribution lines) may include the use of heavy equipment and trucking activities in clearing vegetation, contouring, compacting, stabilizing soils, and installing erosion control (including silt fencing, earthen berms, etc., per Clean Water Act permitting requirements). Well site construction may also include erecting temporary fencing and netting around a location, 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 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 (greatly reducing noise and emissions from gas-driven equipment), which involves the installation of in-field electrical distribution systems (poles, transformers, and overhead wires).

Drilling, Completion, and Workovers (Recompletion)

Related drilling, completion, and workover activities include rig mobilization and can include heavy equipment and frequent traffic. Wellbore completion activities, such as hydraulic fracturing, would not directly impact the LEPC because these activities are contained and take place on the well site location. Well site fencing may be used after recompletion operations for security and to limit access.

Routine Operations and Maintenance

Routine operations can include stimulations and wellbore repair, daily inspections and maintenance, gathering line and flowline repairs, unloading storage tanks, truck traffic for removal of product or waste, emergency response activities, workovers, recompletions, flaring, and weed control.

Oil and Gas Remediation and Restoration

Remediation and restoration of surface impacts include, but are not limited to, removal and restoration of access roads; well pads or locations; 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, flowlines, and distribution lines); associated infrastructure for compressor facilities; and gathering/processing facilities. Remediation and restoration may occur on any lands within the Covered Area, but such lands need not be enrolled in a CI under this Range-wide Oil and Gas CCAA or in the RWP.

Appendix B. Conservation Practices

Table 1. Conservation Practices by Names, Numbers, and Definitions (Van Pelt et al. 2013, p. 150-151)

Conservation Practice Name	Conservation Practice Number	Conservation Practice Definition
Upland Wildlife Habitat Management	645	Provide and manage upland habitats and connectivity within the landscape for wildlife.
Prescribed Grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals.
Restoration and Management of Rare and Declining Habitats	643	Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area
Forage Harvest Management	511	The timely cutting and removal of forages from the field as hay, green-chop or ensilage
Prescribed Burning	338	Controlled fire applied to a predetermined area
Brush Management	314	The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious
Firebreak	394	A permanent or temporary strip of bare or vegetated land planned to retard fire
Cover Crop	340	Crops including grasses, legumes, and forbs for seasonal cover and other conservation purposes
Critical Area Planting	342	Establishing permanent vegetation on sites that have, or are expected to have, high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices
Forage and Biomass Planting	512	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production
Range Planting	550	Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees.
Watering Facility	614	A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and/or wildlife

Spring Development	574	Collection of water from springs or seeps to provide water for a conservation need
		A facility that delivers water at a designed pressure and flow rate.
Pumping Plant	533	Includes the required pump(s), associated power unit(s), plumbing, appurtenances, and may include on-site fuel or energy source(s), and protective structures
Water well	642	A hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply
Pipeline	516	Pipeline having an inside diameter of 8 inches or less
Grade Stabilization Structure	410	A structure used to control the grade and head cutting in natural or artificial channels
Fence	382	A constructed barrier to animals or people
Obstruction Removal	500	Removal and disposal of buildings, structures, other works of improvement, vegetation, debris or other materials
Herbaceous Weed Control	315	The removal or control of herbaceous weeds including invasive, noxious and prohibited plants
		A water impoundment made by constructing an embankment or by excavating a pit or dugout. In this standard, ponds constructed by the first method are referred to as embankment ponds, and those
Pond	378	constructed by the second method are referred to as excavated ponds. Ponds constructed by both the excavation and the embankment methods are classified as embankment ponds if the depth of water impounded against the embankment at the auxiliary spillway elevation is 3 feet or more
Tree and Shrub Planting	612	Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration
Heavy Use Protection	561	The stabilization of areas frequently and intensively used by people, animals, or vehicles by establishing vegetative cover, surfacing with suitable materials, and/or installing needed structures
Woody Residue Treatment	384	The treatment of residual woody material that is created due to management activities or natural disturbances
Well Decommissioning	351	The sealing and permanent closure of a water well no longer in use
Conservation Cover	327	Establishing and maintaining permanent vegetative cover

Appendix C. Adaptive Management

Table 1. Identified activities or situations that will trigger the adaptive management process or a specific conservation action.

Evaluated Element	Utilized Information	Trigger(s)	Evaluation Frequency	Primary Corrective Action(s) Considered	Spatial Scale	Anticipated Response
Administrative fee	Stability of administrative endowment using figures contained within the WAFWA financial report	Balance in the administrative endowment is not being sustained	Annually	Administrative fee is increased from 12.5%	Range-wide	Administrative fee is increased to ensure a non-wasting endowment for administrative services
Individual technical service provider compliance	Reports submitted by technical service providers	Provider is not in full compliance WAFWA reporting standards	Annually	Issue non-compliance warning with corrective measures, removal of certification	Range-wide	Provider corrects error and comes into full compliance
Population size	3-year average breeding population estimates derived from aerial survey and population reconstruction (pre-2012)	3-year moving average less than 50% of population goal	Annually	A discussion would be triggered with the science team to identify the cause of the low population. Potential corrective actions that could be taken starting in 2016 would include reauthorization of conservation actions when evaluating landowner offers and adjustment of mitigation multipliers and ratios.	Ecoregion and range-wide	Populations recover to above 50% of goal and trajectory is sufficient for bird numbers to reach or exceed goals after 10 years of plan implementation
Conservation practice costs	USDA estimated practice costs	WAFWA practice cost figures differ from USDA estimated costs	Annually	Fee structure working group reviews practice costs and recommends changes if necessary	Ecoregion	WAFWA payment rates adjusted to correlate with USDA practice cost estimates
Emerging science	Peer-reviewed literature	New peer-reviewed articles pertaining to aspects of the conservation strategy, the mitigation framework, or conservation practices become available	Annually	Science team reviews materials and recommends changes if necessary	Ecoregion and range-wide	Conservation strategy, mitigation framework, and/or conservation practices modified to conform with the best available science. If required, amendment of the CCAA or CI will proceed as provided in Section

Evaluated Element	Utilized Information	Trigger(s)	Evaluation Frequency	Primary Corrective Action(s) Considered	Spatial Scale	Anticipated Response
Tangible mitigation unit offset ratio (not acreage)	Enrolled offset and impacts units presented in WAFWA affected acreage report	Observed offset and impact unit ratio differs from planned figure (initially 2:1)	Annually	Adjust offset ratios, increase landowner outreach efforts, adjust landowner sign-up schedule and associated allocation amounts	Ecoregion	Observed offset and impact unit ratio moves toward planned figure (initially 2:1)
Quality of offset acreage	HFG scores and affected acreages provided in WAFWA Affected Acreage Report	Average HFG score per acre of offset acreage, average HFG score of impacted acreage	Annually	Adjust offset ratios, adjust mitigation unit values, prioritize higher quality habitat when ranking landowner offers	Ecoregion	Quality of offset acreage is ≥ quality of impacted acreage
Habitat Restoration Goals	Restoration acreages presented in WAFWA affected acreage report	Did not achieve the annual acreage goals for total restoration and remediation (see appendices D and E)	Annually	Adjust mitigation multipliers and ratios, increase prioritization of restoration practices when ranking landowner offers, increase assumption of 25% restoration when valuing mitigation units	Focal Area and Connectivity Zone Reporting Areas	Factors preventing maintenance at habitat goal or progress toward it are reduced or eliminated
Habitat Quantity	Occupancy model results and restoration acreages presented in WAFWA affected acreage report	Occupancy model results indicate that the amount of good to high quality habitat is below the goal for focal areas (70%) or connectivity zones (40%) of restoration and remediation has not occurred on half the required acreage (see appendices D and E)	5 Years	Shift reporting area locations, adjust mitigation multipliers and ratios, increase prioritization of restoration practices when ranking landowner offers, increase assumption of 25% restoration when valuing mitigation units	Focal Area and Connectivity Zone Reporting Areas	Factors preventing maintenance at habitat goal or progress toward it are reduced or eliminated
Sustainability of conservation offset endowment	Real rate of return on investments	The average real rate of return differs from 4%	5 Years	Multiplier adjusted	Range-wide	Endowment becomes non-wasting
Strongholds	Identified stronghold acreages provided in the WAFWA affected acreage report	Participation rate not on pace to achieve 10-year stronghold acreage goals	5 Years	Adjust percent of units going into permanent conservation, adjust offset ratios	Ecoregion	Participation in long-term conservation practices becomes sufficient to achieve 10-year acreage goals

Evaluated Element	Utilized Information	Trigger(s)	Evaluation Frequency	Primary Corrective Action(s) Considered	Spatial Scale	Anticipated Response
Conservation practices	WAFWA vegetation monitoring data presented in WAFWA affected acreage report	Optimum habitat not maintained in 3 of 5 years when it existed at baseline and was the desired outcome or vegetation structure not >25% improved over baseline when it was anticipated in the associated management plan	5 Years	Change conservation practice prescriptions	Ecoregion	Management prescriptions will be more likely to create vegetative structure that maximizes a sites LEPC habitat potential
Avoidance of high priority CHAT categories	Enrolled acreage presented in WAFWA Affected Acreage Report	Proportion of CHAT acreage affected by new impacts does not differ across categories	5 Years	Adjust offset ratios	Ecoregion	Proportionally less development begins to occur in higher priority CHAT categories
Population goal	Aerial survey breeding population estimates	10-year average population size less than stated goal	10 Years	Reallocate dollars across ecoregions, shift priority area locations, adjust offset ratios	Ecoregion	Limiting factor(s) reduced or eliminated so that conservation actions are sufficient to achieve population goal