United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Ecological Services
P.O. Box 1306, Room 6034
Albuquerque, New Mexico 87103

In Reply Refer To:
FWS/R2/ER/057136

April 14, 2014

Juan Garcia, Administrator
U.S. Department of Agriculture
Farm Service Agency
1400 Independent Avenue, Room 4768
Washington, DC 20250

Dear Mr. Garcia:

This document transmits the Fish and Wildlife Service's (Service) Biological Opinion (Opinion) enclosed for implementation of the Conservation Reserve Program (CRP) within the occupied range of the lesser prairie-chicken as described in Farm Service Agency's (FSA) Biological Assessment for the CRP. Our review is based on information provided by FSA and other sources of information referenced below. This Opinion is conducted in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA).

The focus of this Opinion is the lesser prairie-chicken (*Tympanuchus pallidicinctus*) (LPC), which is listed as "threatened" species under the ESA (79FR19974). The LPC is a species of prairie grouse that occupies a five-state range encompassing portions of Texas, New Mexico, Oklahoma, Kansas and Colorado. Lesser prairie-chicken populations need large tracts of relatively intact native grasslands and prairies to thrive. Significant threats to the LPC include habitat loss, modification, degradation, and fragmentation within its range. The vast majority (approximately 95 percent) of LPC habitat occurs on privately owned and operated lands across the five-state range. Therefore, the voluntary actions of private landowners are the key to maintaining, enhancing, restoring and reconnecting habitat for the species.

This Opinion contains the Service's analysis of the expected adverse, benign, and beneficial effects likely to result from implementation of all aspects of CRP on the LPC and its habitats, including the effects of returning lands enrolled in CRP to crop production after CRP contract expiration. Overall effective implementation of the CRP conservation practices and their associated conservation measures described in this Opinion are anticipated to result in a positive population response by the species by reducing or eliminating potential adverse effects. However, implementing CRP conservation plans through program practices, conservation practice standards and associated conservation measures may also result in short-term adverse

effects to individual birds in order to secure long-term benefits to the species as a whole. Targeting enrollment and re-enrollment of high quality CRP conservation cover in areas providing the greatest benefit for LPC is expected to outweigh the adverse effects of CRP participants choosing to return their enrolled lands to crop production after contract expiration.

If you have any questions, please contact Delfinia Montano, Fish and Wildlife Biologist, Ecological Services, at 505-248-6401; or Michelle Shaughnessy, Assistant Regional Director for Ecological Services, at 505-248-6671.

Sincerely,

/s/ Michelle Shaughnessy

Assistant Regional Director
Ecological Services

Enclosure

BIOLOGICAL OPINION

INTRODUCTION

Purpose

The purpose of this Opinion is to present the Service's analysis of the expected adverse, benign, and beneficial effects likely to result from implementation of all aspects of CRP on the LPC and its habitats as described in the Biological Assessment (BA) submitted to the Service by FSA (http://www.fws.gov/southwest/es/LPC.html).

Background on CRP and Description in LPC Range

The CRP is a voluntary conservation program that provides participants with annual rental payments and cost-share assistance to remove environmentally sensitive land from agricultural production and establish long-term, resource-conserving vegetative cover for the purpose of conserving and improving the soil, water and wildlife resources of the land. The CRP is administered by the USDA through the FSA and was authorized by Congress with the passage of the Food Security Act of 1985. Its original intent was to incentivize the establishment of permanent grass or tree cover on privately-owned, highly erodible croplands to reduce soil loss. Subsequent reauthorizations of the Farm Bill legislation led to policy changes that established conservation of wildlife habitat as a co-equal program purpose along with conserving soil and protecting water quality.

Approximately 5 million acres, or about 20 percent, of the CRP enrollment nationwide is found within the 85 counties across five states that contain the remaining occupied habitat of the LPC. While there is fluidity in CRP enrollment as individual properties are enrolled in CRP and others come out of the program at the end of 10 to 15-year contracts, the total acres enrolled in CRP throughout the LPC range has remained in excess of 5.0 million acres since 1998. In addition, since its inception in 1985, several policy changes to CRP have taken place to benefit wildlife in general and LPC in particular. These actions include:

- Offering additional Environmental Benefits Index (EBI) points under general signup and the development of continuous CRP initiatives that specifically focus on enhancing LPC habitat.

- Improving the quality of CRP covers for LPC habitat by providing incentives for landowners to establish native grass and other covers that provide greater habitat benefit for the LPC. Landowners who submit offers to establish these covers improve the likelihood their land will be accepted for enrollment. Further, mid-contract management activity has been required on CRP contracts enrolled since 2003 to ensure conservation cover is providing the resource benefits intended throughout the contract period.

Quality of vegetative covers established through CRP has improved over time. USDA responded to information provided by the Natural Resource Conservation Service (NRCS), the Service,

state fish and wildlife agencies, and conservation organizations indicating that native grass provided better wildlife habitat than introduced grasses. This information was used to construct an EBI that provided greater weight to diverse native grass covers. Between 1986 and 1991, 69 percent of grass covers established in the LPC states were native grass. The variation among states at that time was considerable. Although over 90 percent of the grass established in Kansas and New Mexico was native, only 40 percent of the grass in Oklahoma and 57 percent in Texas were established in native grass between 1986 and 1991. Since 1991, when the EBI was established to rank offers, the proportion of new CRP grassland acres in native grass cover has increased. Currently, 93 percent of grass covers planted in the LPC states is native grass, ranging from a low of 87 percent in Oklahoma to a high of 98 percent in Kansas. In many cases, new native grass contracts replaced expiring contracts of introduced grasses, which resulted in new CRP enrollments providing better habitat for LPC.

Additionally, state and national conservation priority areas (CPAs) were established making additional agricultural land meeting cropping history requirements important for wildlife (or other environmental benefits) eligible for CRP. Land from these CPAs offered for enrollment receives additional EBI points increasing the likelihood these offers will be accepted. Each of the five States with LPC populations has established LPC CPAs. Conservation practices implemented and the cover mixes established should be consistent with and provide for the life history needs of the LPC and other species featured in designated CPAs.

As the benefits to wildlife from installing specific practices in critical locations have been documented, FSA has developed initiatives to encourage adaption of these practices in CRP. By including these practices within the continuous CRP, interested landowners can make offers for enrollment into the CRP at any time, and often are provided with additional incentives for their participation.

CRP lands provide important habitat for remaining LPC populations. Houts (2013) looked at the location of 1,318 lek points across the five-state region and found that 318 (24 percent) of them were located on or in close proximity (1000 feet) to lands enrolled in CRP. Another 284 (22 percent) were found between 1000 feet to one mile of CRP fields. 608 (46 percent) of the leks were between one and ten miles of CRP. One hundred and eight (8 percent) of the leks were more than ten miles from CRP.

Depending upon the type of conservation practice implemented, vegetative cover established, and performance of subsequent necessary maintenance and management activities occurring on them, CRP lands can meet seasonal (breeding, nesting, and brood rearing) and year round habitat requirements of the LPC. Land enrolled in CRP also provides habitat for other wildlife and can serve as a safety net for livestock producers in need of forage, particularly in times of drought.

Studies have shown that the location of Kansas CRP fields within the landscape may provide a model for acceptable LPC management. Fields (2004) showed that in a landscape mosaic of rangeland, CRP, and crop (Southwest Gove County, Kansas), that 70 percent of LPC nests in the area were located in CRP fields. Many of the brood locations were in rangeland adjacent to CRP. Broods in CRP were in areas established with a mix of native grasses and forbs. The highest

prairie chicken densities in Kansas are found throughout western Kansas in CRP mixed landscapes.

The Rocky Mountain Bird Observatory conducted a survey of 1,019 CRP fields representing more than 126,000 acres across the five-state range of LPC during the summer of 2007 (Ripper and VerCauteren 2007). The survey found that weeping lovegrass and old world bluestem dominated fields were common in New Mexico, Oklahoma, and Texas and could benefit from management to increase vegetation diversity, suggesting that CRP mid-contract management activities that may be beneficial to LPC include moderate grazing, prescribed burning, light disking, and inter-seeding with forbs and native grasses where appropriate.

In CRP grasslands planted to mixed, native warm season grasses, LPC nests are predominantly found in mid- and tall grasses such as little bluestem, big bluestem, switchgrass, and in some locations western wheatgrass where clumps of tall residual vegetation from the previous growing season are common (Fields, 2004). Nests have been found in CRP planted to old world bluestem and weeping lovegrass. Leks are generally located around good nesting habitat. Pitman et al. (2006) reported that the majority of LPC hens they monitored nested within one mile of a lek, but not necessarily the lek where they were originally captured.

Consultation History

On December 11, 2012, the Service published in the Federal Register (Volume 77, Number 238) a proposed rule to list the LPC as a threatened species under the ESA. Shortly after this notice was published, the FSA initiated contact with the Service and entered into voluntary conferencing with the Service to address the effects of CRP on the LPC and other federally listed species within the occupied range of the LPC so that ESA compliance and regulatory predictability could be offered to landowners and agricultural operators participating in the CRP should the species be listed.

On January 11, 2013, Matt Ponish and David Hoge of FSA met with Dave Walker (in person) of the Service and several Service staff from Region 2 and Region 6 (by telephone). Later in the month (January 29 and February 1), Dave Walker meet with David Hoge and Skip Hyberg, also of the FSA, to develop a draft outline for the BA. David Hoge met with Dave Walker and Drue DeBerry, also of the Service, on April 8, to begin discussions on informal review of the developing draft BA. Meetings between Dave Walker, Julie Moore of the Service, and Service Region 2 and 6 staff (via telephone) and David Hoge have continued on a monthly basis.

Throughout this process, David Hoge was in frequent contact with the FSA State Office Farm Program Chiefs from each of the five states (Ken Bingham-Colorado, Rod Winkler-Kansas, Andrew Ortiz-New Mexico, Rod Wanger-Oklahoma, and Micky Woodard-Texas).

FSA was also in periodic contact via meetings and phone calls with the USDA Natural Resources Conservation Service (NRCS) staff as well to ensure consistency of the developing draft BA with the Conference Opinion for the NRCS Lesser Prairie-Chicken Initiative (LPCI). Primary NRCS contacts have been Danielle Flynn, Jon Ungerer, Christian Hagen, and Martin Lowenfish.

The BA was approved by the FSA Administrator and submitted to the Service in a letter dated February 3, 2014.

DESCRIPTION OF THE PROPOSED ACTION

The action for the purposes of this Opinion includes activities conducted by CRP participants within the LPC Action Area to implement CRP conservation plans, program practices, and technical conservation practice standards in a manner that adheres to the conservation measures identified and described herein for the benefit of the LPC and federally listed species. The action also includes all technical assistance provided by USDA Natural Resources Conservation Service (NRCS) and Technical Service Providers (TSP) to support CRP participants implementing CRP contracts in accordance with this Opinion and those former CRP participants converting land formerly under CRP contract back to crop production in accordance with this Opinion, or retaining said land in conservation cover after CRP expiration in accordance with their CRP conservation plan.

The following program enrollment objectives and implementation activities, when conducted in accordance with the conservation measures described in this Opinion, are included in the proposed action:

- CRP planning and the development and modification of CRP conservation plans which include the required practices and associated conservation measures for the establishment of conservation covers on newly enrolled lands, and re-enrolled lands.

- CRP maintenance and management activities, including required maintenance for weed, insect, and pest control; mid-contract management practices; and permissive uses (recreational uses such as hunting, emergency haying and grazing, managed harvest, managed and routine grazing, incidental grazing, permissive grazing, prescribed grazing, and wind turbines).

- Conversion of CRP conservation covers back to crop production including early land preparation during the last year of the CRP contract, conversion after contract expiration, and development of associated conservation compliance plans in accordance with this Opinion.

- Maintain a minimum threshold level of CRP enrollment established in native grass, forbs and shrubs in each LPC ecoregion.

- Strategic enrollment of CRP in proximity to known populations of LPC, within identified focus areas, connectivity and expansion zones.

- Establish a CRP National Conservation Priority Area for Lesser Prairie Chicken

- Monitoring of CRP maintenance and management activities and permissive uses to evaluate compliance with conservation measures and effectiveness of those measures.

- Amending, as appropriate, CRP policy, national handbook provisions, program practices, and technical guides and specifications, to ensure that direction to State and County FSA offices is consistent with conservation of the LPC and federally listed species.

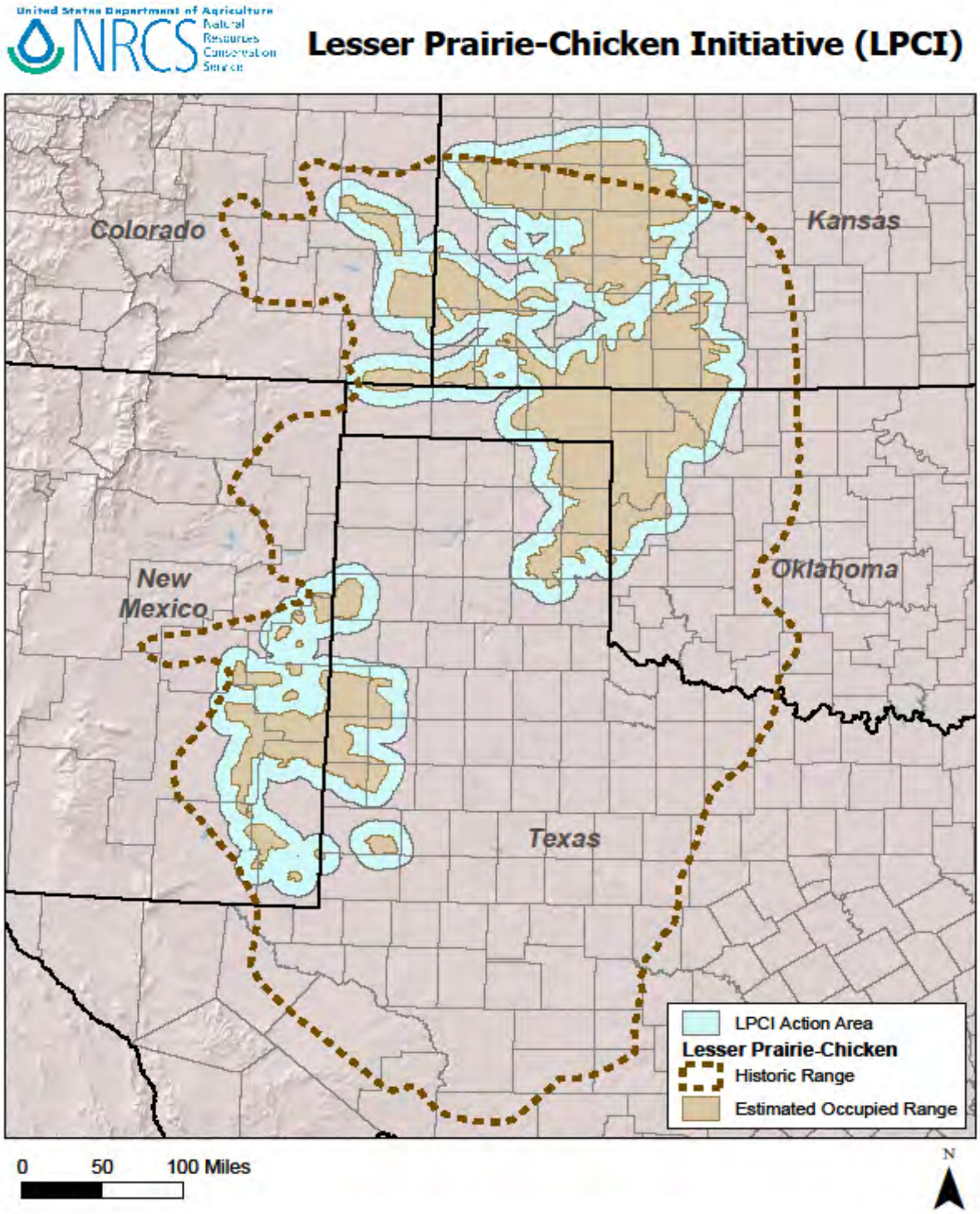
It is important to note that the proposed action does not involve the following elements or potential sources of adverse effects to LPC:

- Commercial scale energy development or associated infrastructure.
- Conversion of native prairie, rangeland or other LPC habitat that has not been enrolled in CRP to crop production or conversion of LPC habitat to development.
- Construction of new public roads or highways.
- Actions taken and programs administered by the USDA NRCS outside of the CRP except as noted above for development of required conservation compliance plans.

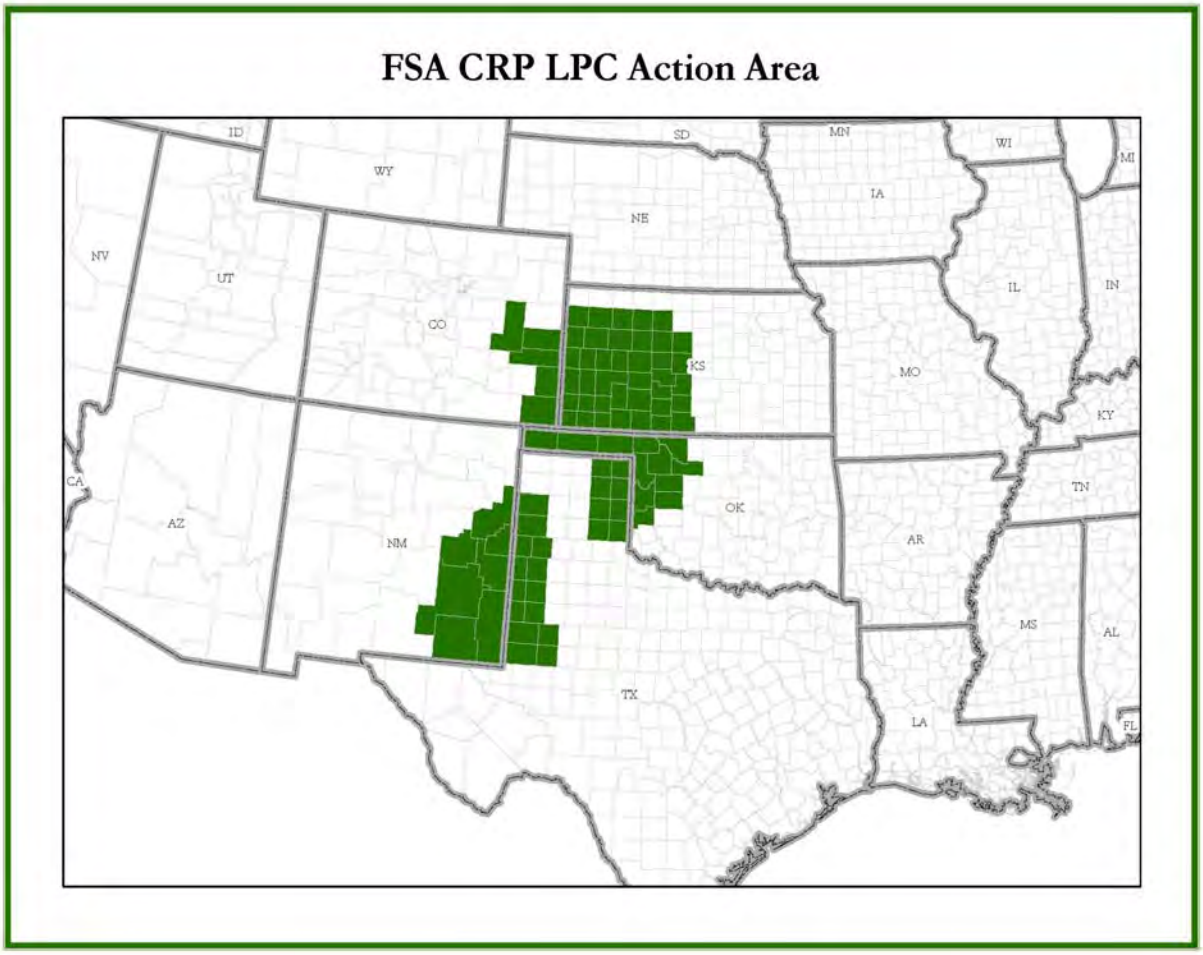
Action Area

The Action Area includes the 85 counties located in Colorado, Kansas, New Mexico, Oklahoma and Texas that encompass the current estimated occupied range of the LPC and a surrounding buffer of 16 km (see Map 1). The buffer was based on a comparison of natal dispersal and other extensive movements of adult prairie chickens (Copelin 1963, Hagen 2003) that suggested that 16 km (approximately 10 miles) represents the average long-distance movements of the LPC in fragmented landscapes. The counties included in the Action Area are shown in Map 2 and are listed in Appendix I.

Map 1. Estimated Occupied Range of lesser prairie-chicken with 10 mile buffer



Map 2 - Counties within CRP LPC Action Area



Implementation of CRP

General Program Description

The CRP is a voluntary, land and natural resource conservation program that provides participants with annual rental payments and cost-share assistance to remove environmentally sensitive land from agricultural production and establish long-term, resource-conserving vegetative cover. The purpose of CRP is to conserve and improve the soil, water and wildlife resources of the land and to address issues raised by State, regional and national conservation initiatives.

CRP was established with the passage of the Food Security Act of 1985. Periodic Farm Bills passed by Congress, usually on five-year intervals, establish new or amend existing CRP authorities. Congressional annual appropriations act language and CRP regulations found in

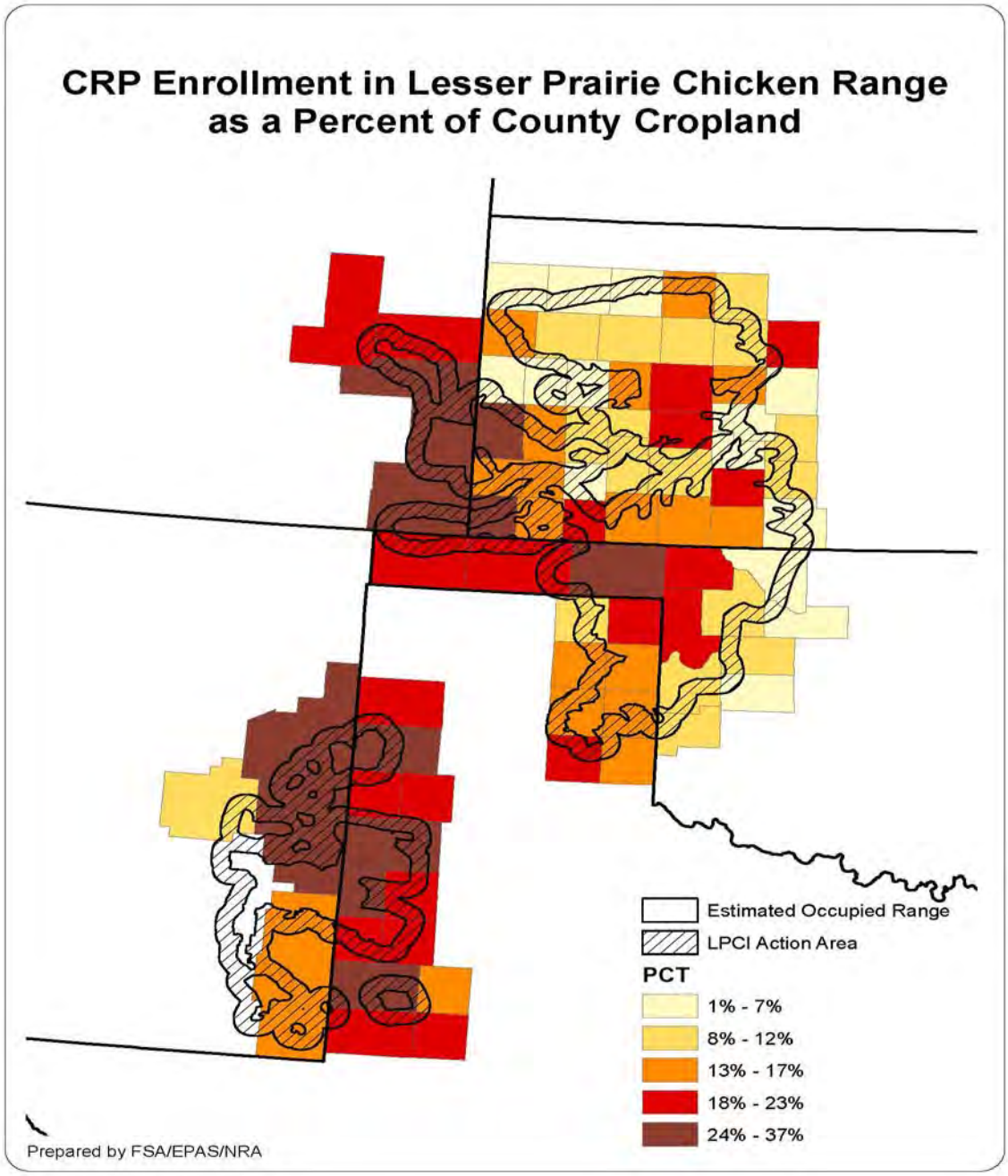
7 CFR Part 1410 provide additional program guidance. CRP is administered by FSA which currently operates about 2,300 county offices/field service centers nationwide. Additional CRP policy is found within the 2-CRP National Handbook prepared, revised and amended periodically by FSA.

Agricultural producers can make offers to enroll their land in CRP through general or continuous signup procedures. Under general CRP, agricultural producers can make offers only during designated signup periods. Agricultural producers wishing to enroll highly environmental sensitive land can make offers anytime for certain CRP practices under continuous signup provisions.

Contracts for land enrolled in CRP are 10-15 years in length. The Agriculture Act of 2014 (2014 Farm Bill) reduced CRP enrollment authority incrementally from 32 million acres nationally in 2013 to 27.5 million acres in 2014, 26 million acres in 2016, 25 million acres in 2016 and 24 million acres in 2017 and 2018. Approximately 25.6 million acres are currently enrolled as of December, 2013. The Food Security Act, as amended, requires that USDA not enroll more than 25 percent of the total cropland in a county in CRP. The Secretary of Agriculture may authorize a waiver to increase the limit above 25 percent if the action would not adversely affect the local economy of the county. Counties exceeding the 25 percent cropland limit within the LPC range are shown on Map 3.

Not all land is eligible to participate in the CRP. To be eligible, land must be either cropland planted or considered planted in four of the previous six crop years prior to the passage of the most current Farm Bill, in this case from 2008 to 2013, or marginal pastureland suitable for riparian or other buffers. In addition, cropland must be considered highly erodible (soils having been identified by NRCS with an Erodibility Index [EI] of 8 or greater), be expiring CRP acreage, or be located in a FSA-designated national or state CRP conservation priority area. The Erodibility Index is a simple measure of a particular soil to naturally erode. The higher EI number, the greater the soil's potential is to erode. The 2014 Farm Bill amended the Farm Bill to authorize enrollment of up to 2 million acres of working grassland. These grasslands do not require a cropping history and are eligible for enrollment if they contain forbs or shrubland (including improved rangeland and pastureland) for which grazing is the predominant use; are located in an area historically dominated by grasslands; and could provide habitat for animal and plant populations of significant ecological value if the land is retained in its current use or restored to a natural condition.

Map 3. CRP Enrollment in LPC Range and 25 percent County Cropland Acreage Limitation



Enrollment Process

General Signup

Because not all producers' offers to participate in CRP can be accepted, applicants compete nationally by submitting offers to enter eligible land into the CRP during designated signup periods. Under CRP's general signup, landowner offers are ranked according to an Environmental Benefits Index (EBI). EBI has been used by USDA to prioritize and rank CRP offers since General CRP Signup 10 in March 1991. FSA collects data and assigns points for each EBI factor based on the expected environmental benefits for the land and conservation practice offered. FSA will review EBI scoring parameters with interested agricultural producers and encourage the planting of new or maintaining existing cover types and conservation measures that will provide higher environmental benefits. FSA must notify potential applicants that submitting offers with annual rental payments less than the maximum payment rate will result in higher EBI scores. Also, those seeking to enroll land in practices of greater benefit to wildlife receive additional points, boosting their enrollment chances. Each eligible offer is ranked in comparison to all other offers and selections are made from that ranking.

The EBI considers the following factors:

- Wildlife habitat benefits resulting from conservation covers on contract acreage (N1);
- Water quality benefits from reduced erosion, runoff, and leaching (N2);
- On-farm benefits from reduced erosion (N3);
- Benefits that will likely endure beyond the contract period (N4);
- Air quality benefits from reduced wind erosion (N5); and
- Cost (N6)

EBI provides a relative ranking of estimated environmental benefits and cost for land offered for CRP. The national EBI score of an offer is determined by adding the N1, N2, N3, N4, N5, and N6 scores together.

Under the N1 factor, there are three sub-factors – cover (N1a), enhancements (N1b), and priority zones (N1c) - which are to be considered. Scores of 10, 20, 30, 40 and 50 points are available under N1a. Scores of 0, 5, or 20 points are available under N1b. Scores of 0 or 30 points are available under N1c. Maximum total score for N1 is 100 points.

Under N1a sub-factor, offers receive higher scores if practice seeding mixes and management options provide habitat for important and declining species of national, regional, state, or local significance. FSA works with the Service, NRCS, state fish and wildlife agencies, and other conservation partners to develop and revise seeding mixes and management recommendations as appropriate. Species mixes to be established should to the maximum extent practicable be comprised of seed or plant materials native to the local area. The more diverse the seeding/planting mix the higher the EBI points awarded. Highest point values are awarded to diverse, native covers. Existing CRP covers on acreage being offered for re-enrollment may be upgraded to more diverse covers to provide better wildlife habitat and increase the N1a sub-factor score for the offer.

Under the N1b sub-factor, higher point values (score of 20) are assigned to the establishment of covers comprised of a diverse mix of native species over 51 percent of a field formerly in monoculture or for the establishment of pollinator habitat. Annual or permanent food plots not to exceed five acres per field receive 5 points under N1b.

Lastly, where the location of the offered land may contribute to the restoration of habitat of threatened or endangered species or important or declining species of national, regional, state, or local significance or of rare and declining native habitat, 30 points are available under the N1c sub-factor. Scores of 30 points under N1c should be consistent with specific conservation practices addressing species or habitat of concern.

Continuous CRP Provisions

Certain CRP practices are of such environmental importance that producer offers for such practices can be accepted on a continuous basis. Under Continuous CRP, environmentally desirable land devoted to certain conservation practices may be enrolled at any time. Specific eligibility requirements apply, but offers are not subject to competitive bidding. Additional incentives include a practice incentive payment (PIP) of 40 percent of the reimbursable cost associated with developing appropriate cover, and a one-time signing incentive payment (SIP) of $100 ($150 for certain wetland, upland bird buffer, and pollinator habitat practices) per acre may also be offered.

Continuous CRP practices used in the Action Area that benefit LPC are described in detail under the environmental baseline and include:

- CRP Wetland Restoration, Non-floodplain Initiative is designed to restore wetlands and playa lakes that are located outside the 100-year floodplain.

- CRP Habitat Buffer for Upland Birds Initiative is aimed at creating 500,000 acres of habitat for the northern bobwhite and other grassland dependent birds by creating early successional grass buffers along agricultural field borders.

- State Acres for Wildlife Enhancement (SAFE) is a continuous CRP initiative to improve habitat for high priority wildlife species throughout the United States.

- CRP Highly Erodible Land Initiative seeks to protect the nation's most environmentally sensitive lands by permitting landowners to enroll up to 750,000 acres of land with an Erodibility Index (EI) of 20 or greater in CRP.

- CRP Pollinator Habitat Initiative assists producers in establishing conservation covers that benefit honey bees and native pollinators throughout the growing season.

- The Conservation Reserve Enhancement Program (CREP) is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. The

program is a partnership among agricultural producers; tribal, state and federal governments; and in some cases private groups that provide funding, technical support and other in-kind services.

Financial Assistance

Financial assistance to CRP participants is available in the form of annual rental payments throughout 10 to 15-year CRP contracts, cost share for cover establishment and management activities, and other incentives. The annual rental payments are based on the agricultural rental value of the land and are provided through the Commodity Credit Corporation (CCC). Producers may offer land at these rates or may offer a lower rental rate to increase the likelihood that their offer to participate in CRP will be acceptable. CRP cost share is available to eligible participants in an amount not to exceed 50 percent of the eligible costs of establishing and managing the approved conservation practice on enrolled lands. Additional incentives, such as the PIP and SIP, are also available to encourage producer interest in continuous CRP.

Program Practices

CRP financial assistance has been made available to facilitate implementation of a total of 42 separate conservation practices designed to reduce soil erosion, protect water quantity and quality, and enhance wildlife habitat, throughout the 27-year history of the program. To be eligible for CRP cost share assistance, each of these conservation practices must improve environmental benefits to less than soil loss tolerance, prevent degradation of environmental benefits from occurring, be maintained for the life of the CRP contract, and be included in the approved conservation plan. Several of these conservation practices (CP) have been established throughout the historic range of the LPC:

CP1 Establishment of Permanent Introduced Grasses and Legumes
CP2 Establishment of Permanent Native Grasses
CP4 Permanent Wildlife Habitat
CP5 Field Windbreaks
CP8A Grass Waterways, Non-easement
CP10 Vegetative Cover – Grass – Already Established
CP12 Wildlife Food Plots
CP15 Contour Grass Strips
CP16 Shelterbelts
CP17 Living Snow Fences
CP18 Salinity Reducing Vegetation
CP21 Filter Strips
CP23 Wetland Restoration
CP23A Wetland Restoration, Non-Floodplain
CP24 Cross Wind Trap Strips
CP25 Rare and Declining Habitat
CP27 Farmable Wetlands Pilot Wetlands
CP28 Farmable Wetlands Pilot Buffer
CP33 Habitat Buffers for Upland Birds

CP38 State Acres for Wildlife Enhancement
CP42 Pollinator Habitat

Table 1. CRP Acres by State/Program Practice (FSA CRP Monthly Summary, 10/2013)

State	CP1	CP2	CP4	CP10	CP23A	CP25	CP33	CP38	CP42	Other	Total
Colorado	71,053	904,199	474,903	509,250	378	1,944	171	25,650	12,354	8,461	2,008,363
Kansas	13,417	776,316	325,593	225,020	4,269	780,170	40,503	65,164	1,768	58,931	2,291,151
New Mexico	41,615	292,367	140	94,677	0	0	0	2,600	754	5,305	437,458
Oklahoma	113,260	364,436	835	241,327	1,660	24,895	1,048	7,017	142	7,496	762,116
Texas	252,372	1,967,058	22,731	797,584	433	52	4,885	80,376	12,262	52,276	3,190,029
Subtotal	491,717	4,304,376	824,202	1,867,858	6,740	807,061	46,607	180,807	27,280	132,469	8,689,117
All Others	2,876,180	2,476,517	1,318,997	2,449,958	298,349	914,042	203,587	661,969	39,458	5,670,995	16,910,052
Total	3,367,897	6,780,893	2,143,199	4,317,816	305,089	1,721,103	250,194	842,776	66,738	5,803,464	25,599,169

Establishment of CRP conservation practices occurs immediately after crop production has ceased. CRP participants are generally required to establish the conservation practice within the first year of the CRP contract through implementation of the conservation practice may be delayed for as long as three years due to factors like climate, availability of seed, and access to vendors to do the work, beyond the control of the CRP participant.

CRP participants, according to compliance requirements contained within their CRP contracts, must perform periodic maintenance and management activities. These actions are required to protect or enhance the soil, water, and wildlife benefits provided by the vegetative cover established. An example of a maintenance activity might be mowing or chemical spraying to control invasive weeds. A management activity might be grazing, prescribed burning or disking to improve plant composition, diversity, and structure, to enhance wildlife habitat.

Technical Practices

A number of different technical practices with standards established and identified by the NRCS in Field Office Technical Guides, are authorized and are eligible for CRP cost share assistance under each CRP Conservation Practice. Technical recommendations provided in conservation plans made a part of the CRP contracts must be consistent with these guidelines. In order to receive cost share, the CRP participant must install technical practices according to the conservation plan recommendations and technical standards. Technical practices associated with the CRP program practices as described above that are likely to be used within the LPC occupied range include:

Table 2. Technical Practice Standard Description

Technical Practice #	Description
314	Brush Management
315	Herbaceous Weed Control
327	Conservation Cover
332	Contour Buffer Strips
338	Prescribed Burning
340	Cover Crop
342	Critical Area Planting
356	Dike
362	Diversion
380	Windbreak/Shelterbelt Establishment
382	Fence
386	Field Border
390	Riparian Herbaceous Cover
393	Filter Strip
394	Firebreak
412	Grassed Waterway
441	Irrigation System (Micro-irrigation)
484	Mulching
511	Forage Harvest Management
512	Forage and Biomass Planting
528	Prescribed Grazing
548	Grazing Land Mechanical Treatment
550	Range Planting
574	Spring Development
587	Structure for Water Control
589	Cross Wind Trap Strips
590	Nutrient Management
595	Pest Management
600	Terrace
610	Salinity and Sodic Soil Management
612	Tree/Shrub Establishment
614	Watering Facility
620	Underground Outlet
638	Water and Sediment Control Basin
643	Restoration and Management of Rare and Declining Habitats
644	Wetland Wildlife Habitat Management
645	Upland Wildlife Habitat Management
647	Early Successional Habitat Development/Management
657	Wetland Restoration
658	Wetland Creation
659	Wetland Enhancement

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Cover Establishment, Maintenance and Management

Establishing Approved Cover

CRP participants agree to establish approved practices according to the conservation plan. Practices included in the CRP conservation plan must cost-effectively achieve a reduction in soil erosion to maintain the productive capacity of the soil; improvement in water quality; protection of wetland or wildlife habitat, reduction of airborne wind particulate matter; protection of public wellheads; and other environmental benefit achievements. Where appropriate and practical, NRCS or TSP shall encourage the participant to:

- plant perennial seeding and plant material mixes adapted to ecological site conditions that achieve the highest environmental benefits for each CRP practice;
- use State-certified seed (use of hand-collected seed is not authorized for CRP unless verification of Percent Live Seed (PLS) factor, germination, and seed quality is provided);
- avoid the use of introduced species;
- use native legumes, forbs, shrubs, and plant mixes; and
- ensure that approved seedling mix does not include invasive and/or noxious weed species.

Cost share assistance is authorized for seedbed preparation, eligible seed and plant materials, tree tubes and temporary irrigation when trees are being established, temporary cover, minerals, herbicides, and insecticides, that are deemed necessary to establish permanent cover and provide permanent water sources for wildlife as described in the conservation plan.

The participant is eligible to receive cost share assistance after the CRP contract is approved and the permanent vegetative cover has been seeded or planted, or for approved water cover, required establishment activities, such as earth moving and blocking drains, have been completed. The approved permanent cover is to be seeded or planted within twelve months of the effective date of the CRP contract. The FSA County Committee or County Executive Director may, on a case-by-case basis and recorded in the conservation plan, provide up to an additional twelve months if the situation warrants an extension. Cost share is also available for temporary cover if the NRCS or TSP believes that seeding of the approved permanent cover should be delayed.

Approved Cover Mixes

Cover mixes are approved by FSA State Committees in consultation with State Technical Committees. Cover mixes are site specific and consistent with EBI 50 point scoring, 2-CRP National Handbook provisions, and NRCS Field Office Technical Guides. A 50 point wildlife habitat (N1a) mix under EBI generally requires at least five different native species, and legumes, forbs and shrubs usually make up less than 20 percent of the seed mix. Throughout the history of CRP there has been a gradual movement of approved cover mixes toward native species within the occupied range of the LPC. For conversion of existing grass, conservation plans require that at least 51 percent of the existing grass fields be converted to a native species mix. Appendix II contains detailed descriptions by state of the primary CRP practices being implemented in LPC range and associated cover mixes.

Maintaining Approved Cover

CRP cover maintenance is the participant's responsibility. Participants shall maintain practices according to the conservation plan without additional cost share assistance. NRCS or TSP shall work with participants to plan appropriate maintenance practices, such as mowing, spraying, or prescribed burning in a logical and practical manner. All practices necessary for the successful establishment and maintenance of the approved cover shall be included in the conservation plan and agreed to by the participant.

Maintenance generally consists of control of annual weeds and other competition in the year of establishment, with early and timely clipping before seed heads appear or timely application of herbicides. After cover establishment, control of noxious weeds and other undesirable plants, insects, and pests may be necessary to avoid an adverse impact on surrounding land and to the established cover by treating with chemicals or spot mowing before seed heads form. Participants shall ensure that:

- adequate vegetative cover is maintained to control erosion and provide wildlife habitat throughout the CRP contract period;
- compliance with State noxious weed laws;
- control of other weeds that are not considered noxious; and
- undesirable vegetation, weeds (including noxious weeds), insects and rodents that pose a threat to existing cover or adversely impact other landowners are controlled.

CRP participants are also responsible for fire protection of CRP acreage. Firebreaks should be established according to technical practice standard as appropriate to provide a barrier to the spread of wildfire and to control prescribed burns. Firebreaks should be installed so as to avoid creating an erosion hazard. Establishing firebreak to an appropriate vegetative mix can also improve wildlife habitat. Generally native plantings need management or disturbance on a periodic basis to prevent buildup of excessive litter and promote germination of legume species. All CRP maintenance activity, such as mowing, burning, and spraying, is to be conducted outside of the primary nesting or brood rearing season and according to the conservation plan. Birds nest primarily in last year's re-growth of bunch grasses, especially little bluestem. Spot treatments limited to affected areas of the CRP acreage may be allowed during the primary nesting or brood rearing season if the weeds, insects, or undesirable species would adversely impact the approved cover if left untreated. Beyond primary nesting season, occasionally mowing for control of weeds, insects, or pests is permissible if included in the conservation plan. Annual mowing of CRP for generic weed control is prohibited. Periodic mowing and mowing for cosmetic purposes is prohibited at all times. The CRP acreage may not be hayed or grazed unless previously authorized by FSA. The CRP acreage cannot be used for any commercial purpose or for roads, storage, or livestock and waste disposal.

Managing Approved Cover

CRP policy requires CRP participants to perform management activities as part of their approved conservation plan. These management activities are designed to ensure plant diversity and wildlife benefits while also protecting soil and water resources. Typically, mid-contract management activities are conducted after year four and before year 8 of the initial ten-year CRP contract; however on land with existing grass cover management such as CRP re-enrolled under a second CRP contract, management activities can occur as soon as technically feasible. For CRP practices with grasses, legumes, and forbs, research has shown that typically 3-4 years after establishment the site becomes dominated by thick growth of the grasses or undesirable broadleaf plants. Management activity breaks up stands that are too uniform and encourages the growth of desirable species.

Two of the most commonly recommended and applied practices within the range-wide distribution of LPC are prescribed burning and managed grazing. Bidwell (2002) suggested that the right combination of fire and grazing at the landscape level provides the best potential to reverse the decline of LPC. While these practices are compatible, liability concerns especially during periods of drought, significantly limit the application of prescribed burning across the LPC range. Because of this limitation, the importance of grazing is intensified.

Grazing is an important tool that can influence both nesting and brood rearing habitat. Grazing plans should be designed to produce optimum LPC habitat conditions, including restoring, enhancing, and maintaining vegetative structure providing appropriate nesting habitat, and providing an adequate cover of forbs and higher insect abundance associated with brood habitat. Other mid-contract management activities that could be required under the CRP contract and described in conservation plans approved by NRCS include re-seeding, inter-planting, disking, mowing, managed haying, brush management, and pest management.

All CRP participants with contracts originating from Signup 26 in May 2003 are required to perform at least one management activity as part of their approved conservation plan. Management activities are site specific and are used to enhance the wildlife benefits for the site. The management activity is to be conducted at an intensity and frequency appropriate to retain wildlife habitat quality. Management activities must be completed before the end of year 6 for 10-year CRP contracts, or before the end of year 9 for CRP contracts with a 15 year contract length. Additional management activities may occur up to year 8 for 10-year CRP contracts and year 13 for 15-year CRP contracts. In no case shall CRP cost share be expended for management activities occurring during the last three years of the CRP contract.

NRCS or TSP shall work with participants to plan appropriate management activities, such as light disking, inter-seeding with additional grasses/forbs, tree thinning, brush management, prescribed burning, upland wildlife habitat management, range planting, or other components applicable to the practice that will create plant diversity for the benefit of wildlife and enhancement of the permanent cover. Management activities, with the exception of customary forest management activities, must not be performed during the primary nesting or brood rearing season. All management activities will be conducted in a manner consistent with the 2-CRP National Handbook and NRCS standards and respective of site characteristics, soil, climate, range conditions, and other biotic and abiotic factors.

With respect to LPC, following cover establishment, some form of management activity usually follows at least once every five years until the end of the contract. Disking, inter-seeding, prescribed burning, and managed/routine grazing and managed haying (leaving sufficient stubble area for thermal cover through the fall and winter and nesting cover in the spring) are appropriate management activities.

Since 2003 over 190,000 acres of CRP have been treated with prescribed burning and nearly 470,000 acres have received upland wildlife habitat management in the LPC range. There are approximately 200,000 acres for both prescribed burning and upland wildlife habitat management practices scheduled to be done associated with approved CRP contracts/conservation plans within the range of the LPC.

The CRP participant may receive up to 50 percent cost share for management activities up to a maximum of $50 per acre per year not to exceed $100/acre for the life of a 10-year CRP contract, or $125/acre for the life of a CRP contract in excess of 10 years. Failure to perform planned management activities can result in non-compliance and contract termination.

The FSA State Committee, upon recommendation of the State Technical Committee, must approve or disapprove management activities for all CRP practices. The FSA State Committee does not have the authority to exempt practices from required management.

Modifying Approved Conservation Plans

A modification to an approved conservation plan must be in the best interest of CRP. Acceptable modifications are adding or modifying a CRP practice, or changing CRP practices. General CRP practices may be changed only when the EBI score for the new practice is equal to or greater than the EBI score of the existing practice. Changing continuous signup practices must be needed and feasible and address the resource concern.

Permissive and Restrictive Uses of Land under CRP Contract

No crops of any kind may be harvested from designated CRP acreage during the CRP contract period. Incidental harvest of natural products, including but not limited to wild game, fish, and native berries may be permitted if such activity does not increase feed for domestic animals, result in an economic benefit to the CRP participant, and there is no commercial use of the products.

Mechanical use of the CRP field borders shall be limited to turning or crossing activities associated with agricultural activities of adjoining cropland. CRP acreage shall not be used as a lane or road under any circumstances. Use of CRP fields during the length of the CRP contract should be minimal, especially during primary nesting or brood rearing season to avoid disturbing and causing addition stress on nesting hens, and hens with broods.

CRP contracts may include land that is underwater because of natural causes or the result of a flood control structure if: 1) the CRP participant agrees to replace the permanent vegetation cover on CRP acres if the water recedes, 2) not use the impounded water for irrigation for producing agricultural commodities, and 3) obtains a modified conservation plan from NRCS or TSP that includes eligible uses that can be made of the acres under water.

CRP contracts may continue without reduction in payment on land temporarily being used by public utilities for installing gas lines, pipes, cable, telephone poles, and associated infrastructure or materials associated with state or federally funded projects. NRCS or TSP must certify that the usage will have minimal effect on erosion, wildlife and wildlife habitat, and on water and air quality. The CRP participant must restore cover to disturbed land within established timeframes, and the FSA County Committee authorizes the use. If the NRCS or TSP determines that the public use will have an adverse impact on the CRP acreage, the affected acreage shall be terminated and refunds assessed.

CRP participants may sell carbon sequestration credits associated with land enrolled in CRP.

CRP participants may lease hunting rights, charge fees for access to hunters, or conduct similar hunting operations on CRP acreage if this activity occurs during the normal hunting season for

the pursuit of game that is normal to the area. Hunting is an authorized use of CRP acreage. Hunting must be conducted consistent with state laws and bag limits for the appropriate game species. Spring hunting activities should be cognizant of primary nesting and brood rearing concerns and limited to walk in access as warranted.

Periodic mowing and mowing of CRP for cosmetic purposes is prohibited at all times. Annual mowing of CRP for weed control is prohibited. Mowing of CRP cover, not to exceed 20 percent of the total CRP acres in a field is permitted. This activity must be included in the conservation plan, part of a state approved management plan for habitat maintenance and wildlife and land management, and conducted outside the primary nesting or brood rearing season. The location of the mowing should be changed from year to year.

Provided the conservation plan has been modified and the practice meets or exceeds the minimum standards of NRCS Field Office Technical Guides, animal waste, sludge or agricultural by-product can be applied on CRP acreage. The amount applied must be consistent with soil and waste test analyses and as specified in the conservation plan. The participant must agree to re-establish, at their own expense, the vegetative cover in the event of failure after application. The timing of each application shall minimize adverse impacts to air quality (including odor), water quality, wildlife, environment, and threatened and endangered species.

The installation of windmills, wind turbines, wind-monitoring towers, or other wind-powered generation equipment outside of the primary nesting or brood rearing season on CRP acreage can be permitted on a case by case basis. Local FSA county committees may approve up to five acres per CRP contract of wind turbines on CRP acreage provided the environmental impacts have been considered. The five acre threshold is a cumulative figure that is calculated by totaling the square footage of land area devoted to the footprint of the wind generating device and any firebreak installed around the footprint. Access roads, transformers, and other ancillary equipment will not be considered in calculating the 5 acre threshold. For cases over 5 acres, authority for approval rests with FSA National Headquarters.

Destroying CRP Cover before Contract Expiration

In the final year of a CRP contract, CRPs cover may be destroyed before contract expiration to prepare the seedbed for fall-seeded crops without payment reduction. CRP participants desiring to do so must first obtain an approved conservation plan for the destruction of the cover from the NRCS or TSP when the method of destruction could cause adverse environmental effects. After July 1 of the final CRP contract year, CRP participants are permitted to apply chemicals to prepare certain CRP acreage for spring-seeded crops, but seedbed preparation must not occur until after the CRP contract expires.

Early Land Preparation

In the final year of the CRP contract, CRP participants in arid areas (defined as west of the 100th Meridian receiving less than 25 inches of annual precipitation) may destroy CRP cover on certain acreage beginning May 1, if maintaining CRP cover through June 30 could inhibit normal planting of a fall-seeded crop. Such CRP participants must obtain an approved conservation plan

for the destruction of the cover from NRCS and/or TSP. CRP participants engaging in early land preparation will be assessed a penalty reduction consistent with the CRP contract addendum.

Managed Harvesting

Twelve months after establishment, CRP acreage devoted to CP1, CP2, CP4, CP10, CP18, and CP38, with the exception of those with useful life easements and within 120 feet of a stream or other permanent water body, may be eligible for managed harvesting. The 2014 Farm Bill established the frequency of managed harvesting, including harvesting for biomass, as at least every 5, but not more than once every 3 years. In certain circumstances, FSA State Committees in consultation with State Technical Committees may restrict the amount of acres that may be harvested. Managed harvesting is authorized for a single period up to 120 calendar days after the end of primary nesting season. The length of time established shall be included in the locally approved harvesting plan which is part of the conservation plan. The primary purpose of this plan must be to maintain vegetative cover, minimize soil erosion, protect water quality, and protect wildlife habitat. The harvesting plan must be site specific and reflect the local wildlife needs and concerns. CRP participants engaged in managed harvesting will be assessed a payment reduction equal to 25 percent of the annual rental payment based on the number of acres actually harvested. Managed harvesting is not authorized during primary nesting and brood rearing season. CRP participants who do not own or lease livestock, may harvest hay for sale to an eligible livestock producer or sell the hay for biomass. CRP participants who harvest CRP acreage without approval or fail to follow conservation plan/harvesting plan provisions are in non-compliance with their CRP contract and may be subject to contract termination.

Managed Grazing

Managed grazing applies only to those CRP contracts approved before July 28, 2010. Acreage devoted to CP1, CP2, CP4, CP10, CP18, and CP38 are eligible for managed grazing. The FSA State Committee in consultation with the State Technical Committee determines the appropriate beginning and ending dates for the primary nesting and brood rearing season and the duration and frequency of managed haying and grazing periods. Managed grazing of CRP is set at once every three years for Kansas, New Mexico, Oklahoma, and Texas; and once in every five years for Colorado. Managed grazing is authorized for a single period up to 120 days not to exceed September 30, or for two 60-calendar day periods, not to exceed September 30. The length of time established shall be included in the locally approved prescribed grazing plan, which is part of the conservation plan, and describes measures that must be taken to maintain vegetative cover, minimize soil erosion, protect water quality, and protect wildlife habitat. Managed grazing is not authorized during primary nesting and brood rearing season. Before grazing, CRP participants must request approval to graze and obtain a modified conservation plan including grazing requirements from NRCS or TSP. The grazing plan must be site specific and reflect local wildlife needs and concerns. CRP participants who engage in managed grazing incur a 25 percent reduction in annual payment on the acreage grazed. CRP participants who do not own or lease livestock may rent or lease the grazing privilege to an eligible livestock producer. CRP participants who graze CRP acreage without approval or fail to follow managed grazing provisions will be subject to noncompliance.

Managed Haying and Grazing Frequency

Managed haying and grazing frequencies are subject to the National Wildlife Federation (NWF) litigation settlement unless otherwise documented and established according to environmental assessments (EAs) and Finding of No Significant Impact (FONSI) prepared by FSA. The NWF settlement was signed on September 26, 2006, and mandated allowable frequencies for managed haying and grazing on CRP lands in some States and established Primary Nesting Season (PNS) dates during which no haying or grazing could occur. The settlement applied to new contracts, including re-enrollments, signed after September 25, 2006, or existing contracts that had not had any managed haying or grazing approved prior to that date. The settlement stipulated that if a state wanted to change these mandated terms, an EA would have to be developed to address potential impacts associated with managed haying and grazing.

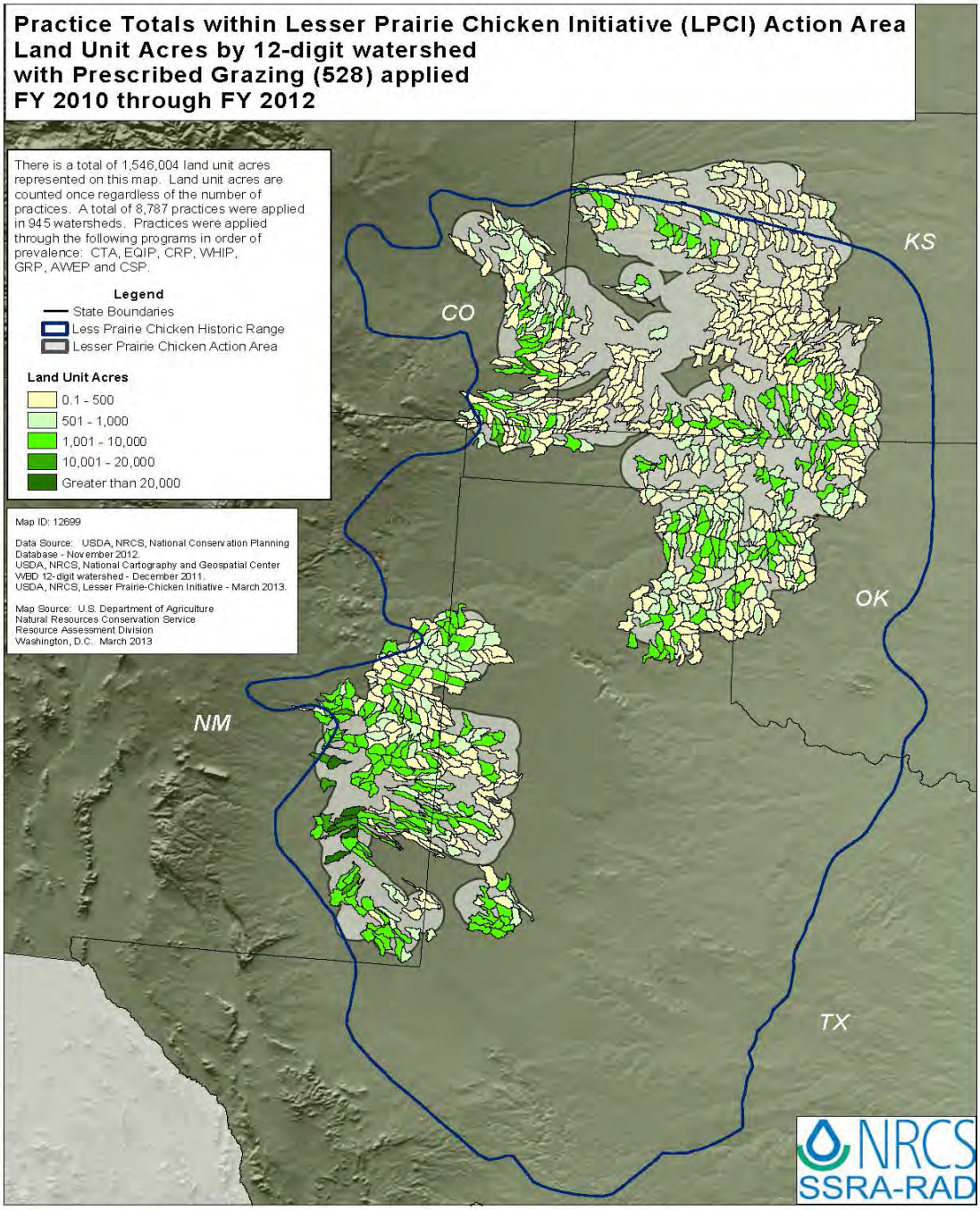
Originally, before the NWF settlement CRP contracts approved before September 26, 2006), the frequency of managed haying and grazing was no more than once in every three years for the States with LPC.

Following the NWF settlement, managed haying was limited to once out of every ten years; and managed grazing was limited to once in every five years in Colorado, Kansas, Oklahoma, and Texas, and once in every ten years in New Mexico.

Since the NWF settlement, EAs have been prepared for Kansas, New Mexico, Oklahoma and Texas. Under these EAs and FONSIs, CRP managed haying was set at once every three years in Kansas, Oklahoma, and Texas; and once every five years in New Mexico. The frequency of CRP managed grazing was set at once in every three years for Kansas, New Mexico, Oklahoma and Texas. In Colorado, the NWF settlement set the frequency for managed haying at once in every ten years; and for managed grazing, once in every five years. However, the 2014 Farm Bill established the frequency of managed harvest of at least once every five years, but not more than once every three years.

CRP Environmental Impact Statements and Environmental Assessments related to managed haying and grazing and emergency haying and grazing of CRP prepared since 2010 are referenced for a more thorough discussion of biological resources, water resources, soil resources and socio-economic factors that were evaluated by FSA. Other considerations of these documents included noise, air quality, transportation, wetlands, groundwater, coastal zones, human health and safety, prime and unique farmland, cultural resources, environmental justice, and recreation. This documentation pertaining to managed haying and grazing of certain CRP lands in Kansas, New Mexico, Oklahoma, and Texas, and other environmental documentation concerning CRP prepared by FSA is provided in Appendices VI, VIII, IX, X, XI, XII, and XII of the FSA Biological Assessment.

Map 4. Implementation of Technical Practice 528, Prescribed Grazing



Routine Grazing

The Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) added new authority for routine grazing. Routine grazing frequency and duration must be established and requires National Environmental Policy Act (NEPA) analysis if states want to use dates different from those established for managed grazing. FSA State Committees shall consult with State Technical Committees to determine and set routine grazing frequency and duration dates. Routine grazing, as authorized, consists of three activities: routine grazing, incidental grazing, and permissive grazing. NRCS or TSP shall use the NRCS technical practice standard No. 528, Prescribed Grazing, in developing routine grazing plans, which become part of the conservation plan. The primary purpose of the plan is to maintain vegetative cover, minimize soil erosion, protect water quality, and protect wildlife habitat. The routine grazing plan must be site specific and reflect local wildlife needs and concerns. CRP participants who do not own or lease livestock may rent or lease the grazing privilege to an eligible livestock producer. Routine grazing is not authorized during the primary nesting and brood rearing season. CRP participants engaged in routine grazing shall be assessed a 25 percent payment reduction. CRP participants who graze CRP acreage without approval or fail to follow routine grazing provisions will be subject to noncompliance.

Incidental Grazing

Incidental grazing is limited to CP8A, CP13C, CP15A, CP21, and CP33 acreage. These practices are primarily buffers or field borders within or around agricultural fields. Incidental grazing limiting to short-term grazing of CRP buffers in association with the harvesting of crops in the adjacent agricultural field(s). Incidental grazing authority is limited to 60 days. Incidental grazing shall not occur during primary nesting season and brood rearing season. CRP participants engaged in incidental grazing will incur a 25 percent payment reduction on the acreage grazed and must re-establish at their own expense any CRP cover destroyed or damaged as a result of the grazing.

Permissive Grazing

Permissive grazing is limited to the first year of the CRP contract on acreage that was devoted to an agricultural commodity before enrollment in CRP. Mechanical harvesting was not completed in time to glean the crop residue before the effective date of the CRP contract and grazing/gleaning the crop residue will not delay the establishment of the approved cover. Authorization is limited to 60 calendar days after the start of the grazing. There is no payment penalty associated with permissive grazing.

Prescribed Grazing

Prescribed grazing is authorized where invasive species have encroached on CRP acreage. Prescribed grazing must be conducted according to NRCS technical practice standard No. 528, not exceed 30 calendar days between May 1 and September 1, and not be done for more than a total of three consecutive years during the CRP contract. A penalty payment shall not be assessed with prescribed grazing.

Emergency Haying and Grazing

Emergency haying and grazing of CRP is not intended to be a convenience. Rather emergency haying and grazing is generally intended for periods of drought or excessive moisture of such magnitude that livestock producers nationally or across wide-ranging areas are faced with culling of herds or livestock losses. Eligibility for emergency haying and grazing is limited to those counties suffering from a forty percent or greater loss in normal hay or pasture production and either excessive drought or moisture conditions. For drought conditions, precipitation must be an average of forty percent or greater below normal levels for the four most recent months plus the days in the current month before the county makes the request. For excessive moisture conditions, precipitation must average 140 percent or greater above normal levels for the four most recent consecutive months, plus the days in the current month before the date of the request. During primary nesting and brood rearing season, county eligibility is determined nationally as FSA County Committees make requests through FSA State Committees for emergency haying and grazing authority.

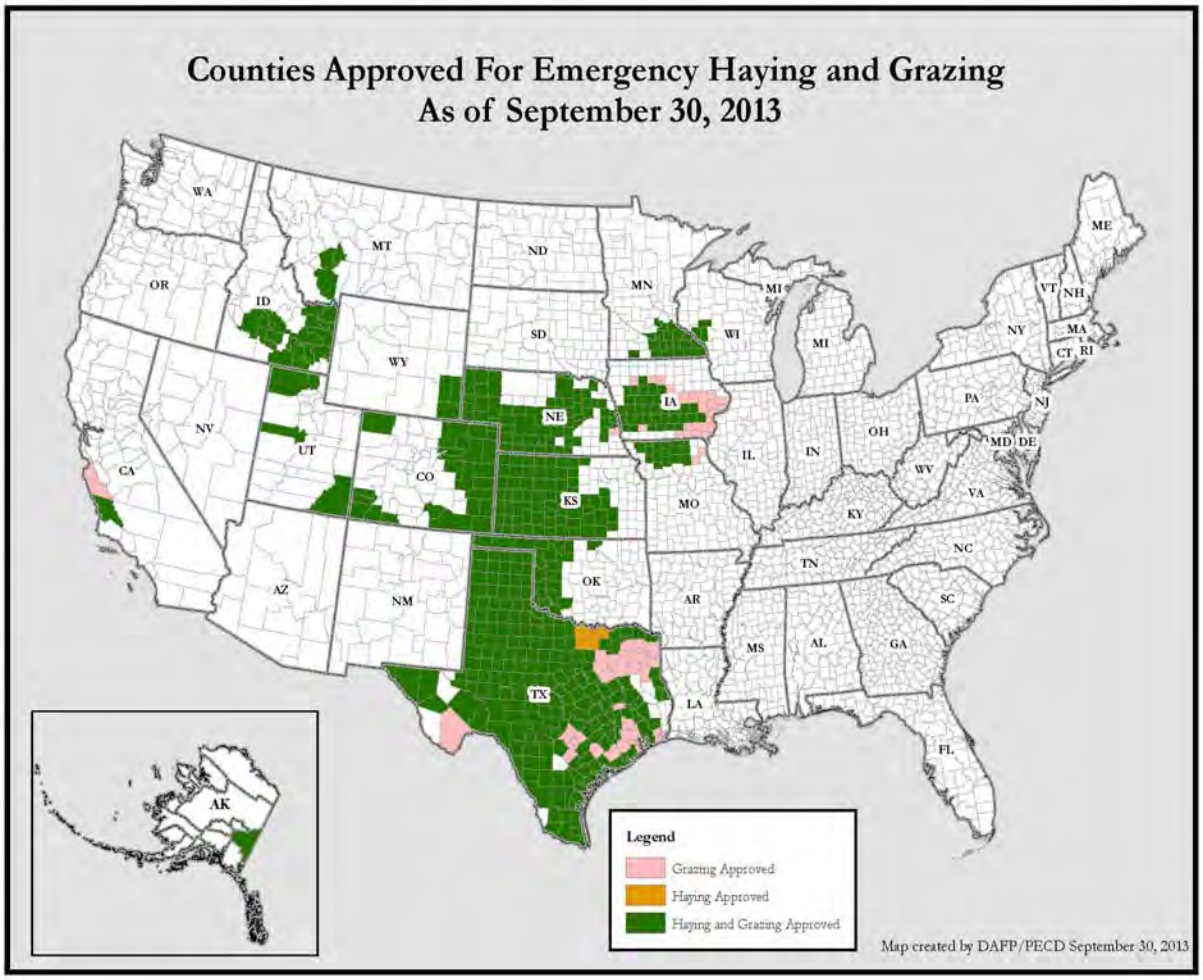
Outside of the primary nesting and brood rearing season, FSA State Committees can make emergency haying and grazing approvals based on the county being designated as D2 Drought – Severe or worse according to the U.S. Drought Monitor. FSA State Committees may designate emergency haying for up to 60 calendar days not to exceed August 31, and emergency grazing for up to 90 calendar days with one 30-day extension not to exceed September 30. Any other emergency haying and grazing authorities require national approval (Map 5).

Emergency haying and grazing authority is limited by the 2-CRP Handbook to CRP acreage devoted to CP1, CP2, CP4, CP10, CP18, and CP38. The FSA Deputy Administrator for Farm Programs (DAFP) can waive provisions of the 2-CRP Handbook due to extenuating circumstances consistent with legislative authorities and regulations. Given drought conditions throughout much of the country throughout 2011, 2012, and 2013, DAFP extended emergency haying and grazing authority in 2012 and 2013 to CP8A, CP23, CP23A, CP25, CP27, CP28, CP37, and CP41 under certain conditions. Emergency haying and grazing shall be confined to the acreage physically located within the boundary of the eligible county regardless of where the headquarters for the farm is located. An entire field, which is partially located in an ineligible county, may be hayed or grazed as part of an eligible county.

Before emergency haying or grazing, CRP participants must obtain a modified conservation plan to include emergency haying or grazing requirements as determined by NRCS and TSP. The emergency haying or grazing plan must be site specific and reflect the local wildlife needs and concerns. Requirements of all emergency haying and grazing plans include: at least 25 percent of each CRP field or contiguous fields will be left un-grazed for wildlife, or that CRP participants will graze not more than 75 percent of the stocking rate determined by NRCS or TSP; at least 50 percent of each field or contiguous fields are left un-hayed for wildlife; that emergency haying and grazing will not occur on the same acreage; and the CRP participant will not sell the hay. CRP participants engaged in emergency haying and grazing shall be assessed a 25 percent payment reduction (unless a lower assessment under certain conditions is set by DAFP) on acreage which is emergency hayed or grazed. CRP participants who do not own or

lease livestock may rent or lease the haying or grazing privilege to an eligible livestock producer. CRP participants who hay or graze CRP acreage without approval or fail to follow emergency haying or grazing provisions will be subject to noncompliance.

Map 5. Counties Approved for Emergency Haying or Emergency Grazing of CRP in 2013.



Haying and Grazing Summary

The CRP has always served as a forage safety net in times of drought or other emergencies. Haying and grazing is not permitted during the primary nesting and brood rearing season unless authorized through emergency declaration, haying requires that 50 percent of the field be left un-harvested, and grazing requirements restrict grazing intensity to 75 percent of carrying capacity or leaving 25 percent of the field un-grazed. Haying and grazing of CRP land is limited to certain CRP program practices. Haying and grazing considerations are to be incorporated into the NRCS-approved conservation plan, adherence to which is a requirement of CRP contract compliance. Haying and grazing activities must maintain vegetative cover, minimize soil erosion, and protect water quality and wildlife habitat. The total number of days allowed for

haying and grazing of CRP is limited. FSA County Committees shall spot check at least 10 percent of contracts approved for managed harvesting, managed haying, managed/routine grazing, and emergency haying and grazing. FSA estimates that managed haying and grazing activities take place on less than 5 percent of CRP acreage in Colorado, Kansas, New Mexico, Oklahoma and Texas annually based on data from 2003-2005 and 2007-2010.

During periods of extreme weather events, such as drought, when emergency haying and grazing activities are authorized, considerably more CRP acres are hayed or grazed. Emergency haying and grazing is generally intended for periods of drought or excessive moisture of such magnitude that livestock producers nationally or across wide-ranging areas are faced with culling herds or livestock losses. CRP participants that hay or graze are required to forego a portion of their annual rental payment, usually 25 percent, though due to extreme drought conditions, the amount of annual payment reduction was reduced to 10 percent in 2012 and 2013. According to FSA records for the period of 2010 through 2013, a total of 1,805,341 acres of CRP out of the 5,068,247 acres of CRP within the Action Area were hayed or grazed. On an annual basis, 53,799 acres were hayed or grazed in 2010; 814,341 acres were hayed or grazed in 2011; 622,820 acres were hayed or grazed in 2012; and 314,853; acres were hayed or grazed in 2013. Collectively emergency grazing made up 69 percent of the CRP acres that were hayed or grazed; emergency haying 16 percent; managed haying at 10 percent; managed grazing at 4 percent; and routine grazing at 1 percent.

Widespread haying and over-grazing of CRP under drought conditions may compromise the ability of these grasslands to provide year-round escape and thermal cover during the winter and nesting cover the following spring for LPC at least until the return of normal precipitation patterns. FSA will work closely with NRCS, state fish and wildlife agencies, and other conservation partners to minimize long term adverse impacts of emergency haying and grazing of CRP on LPC habitat. FSA intends that managed harvesting, managed/routine grazing, and emergency haying and grazing be properly utilized to produce a mosaic of vegetation structure and composition to benefit LPC.

Primary Nesting and Brood Rearing Season

The FSA State Committee shall consult with the State Technical Committee to develop one primary nesting season for managed harvesting, managed grazing, routine grazing, and emergency haying and grazing. The primary nesting and brood rearing seasons established for the 5 states encompassing the LPC range are identified in Table 3.

Table 3: Primary Nesting and Brood Rearing Seasons Established By State in LPC Range

State	Primary Nesting/Brood Rearing Season	Duration (in Days)
Colorado	March 15 – July 15	122
Kansas	April 15 – July 15	91
New Mexico	March 1 – July 1	122
Oklahoma	May 1 – July 1	61
Texas	March 1 – June 1 (Grazing) March 1 – July 1 (Haying)	92 122

Compliance

Conservation cover establishment, maintenance, and management practices described in conservation plans prepared by the NRCS or TSP become part of the CRP contract. Consistent with the 2-CRP National Handbook, FSA will provide appropriate oversight to ensure compliance with CRP contract provisions. Noncompliance cases shall be handled promptly before CRP payments are made. Depending on the violation, CRP participants may have their annual payments reduced or if the violation results in termination of the contract, the CRP participant shall refund payments. Examples of noncompliance include:

- approved cover has not been established in the time prescribed
- approved cover has been harvested, grazed, or other commercial use has been made of the forage
- a commodity crop has been planted on the CRP acreage
- CRP participant conducted an activity on CRP acreage without authorization
- CRP participant fails to control noxious weeds
- CRP cover has not been maintained according to the conservation plan
- CRP participant has not performed required management activities
- CRP participant fails to make a good faith effort to comply with the terms and conditions of the CRP contract.

In the case of noncompliance, all signatories to the CRP contract receiving CRP payments are jointly and severally liable.

Contract expiration

CRP contracts vary from 10 to 15 years in length. Peaks in terms of acres that will be expiring from the program as a result of contract termination coincide with periodic enrollment bubbles. In recent years, approximately 60-70 percent of the acres scheduled to expire are associated with contracts which are offered and accepted for re-enrollment. New enrollments coupled with re-enrollments helps to mitigate potential loss of LPC habitat associated with expired CRP acres. With the exception of 2017, less than 2,000,000 acres of CRP are scheduled to expire nationally per year over the foreseeable future (Table 4).

Table 4. Acres of CRP Scheduled to Expire by State/Year (CRP Monthly Summary, 10/13)

State	2014	2015	2016	2017	2018
Colorado	93,414	94,482	86,835	29,828	46,642
Kansas	120,274	112,040	97,253	140,954	107,285
New Mexico	6,162	1,738	2,363	122,223	8,362
Oklahoma	20,101	24,985	27,120	69,125	18,492
Texas	168,278	139,232	60,442	137,661	102,692
Subtotal	408,229	372,477	274,013	499,791	283,473
All Others	1,569,390	1,283,080	910,059	2,105,756	1,216,933
Nationally	1,977,619	1,655,557	1,184,072	2,605,547	1,500,406

Looking at 2013, approximately 367,000 acres under CRP contract were scheduled to expire on September 30, 2013. Considering new enrollments and re-enrollments, CRP enrollment within the occupied range of the LPC in October 2013 was approximately 160,000 acres less than it was prior to September 30, 2013,. Looking at the period 2013-2015, approximately 13 percent of the acres enrolled in CRP within the 85 counties of LPC occupied range will expire and exit the program unless re-enrolled through general or continuous CRP signups (Table 5). General CRP participants wishing to re-enroll back into the program may make offers during designated signups. Depending on EBI scores, existing grass covers may get back into the program. Applicants with introduced grass covers may want to upgrade to native species covers to obtain higher EBI points in order to increase the chances of their offer being accepted. Or if the timing is right and continuous CRP opportunities are available the applicant may make offer for one of the continuous CRP practices.

Table 5. Acres of Expiring CRP in LPC Occupied Range by Eco-Region

Ecoregion	Expiring Year			Total
	2013	2014	2015	
Mixed Grass	113,355	53,471	35,249	202,075
Sand Sagebrush	62,182	33,749	10,299	106,230
Shinnery Oak	133,057	59,496	31,477	224,029
Shortgrass	58,090	29,126	48,353	135,568
Total	366,683	175,842	125,377	667,902

CRP Contract Expirations and Retention of Conservation Cover

Expiring CRP acres are often retained in grassland. An evaluation of National Resource Inventory data conducted in 2007 across the five LPC States showed that land that was in CRP in 1992, but not in 2007, was still in grass on 60 percent of the acreage. New Mexico accounted for the largest percentage return (57 percent) to cropland production during this period, while Oklahoma accounted for the largest percentage of retention at 76 percent. Across the entire LPC range, a 2012 survey (USDA 2012) estimated that of CRP acreage that expired during the period of 2008 through 2011, that 73 percent of the acres in Colorado, 90 percent of the acres in Kansas, 97 percent of the acres in New Mexico, 90 percent of the acres in Oklahoma, and 80 percent of the acres in Texas, were still in grass. Former CRP fields in Kansas that had expired from the program prior to 2008 were compared to 2010 National Agriculture Imagery Program aerial imagery and 86 percent of the former CRP acreage was still in grass. Not only were these acres still in conservation cover, the native grass covers were located in areas identified as of significant conservation need for LPC.

Western Association of Fish and Wildlife Agencies - Range-wide Conservation Plan

In June 2012, Colorado, Kansas, New Mexico, Oklahoma, and Texas, began development of a range-wide conservation plan for LPC (RWP). In October 2013, the Service endorsed the RWP

as a comprehensive conservation program that reflects a sound conservation design and strategy that, when implemented, will provide a net conservation benefit to the LPC. The plan intends to apply a conservation strategy for the species across the range that when implemented will provide a net conservation benefit to the LPC. The Plan intends to address threats to the LPC throughout its range, establishes measurable biological goals and objectives for population and habitat, provides a framework to achieve those goals and objectives, demonstrates the administrative and financial mechanisms necessary for successful implementation, and includes adequate monitoring and adaptive management provisions.

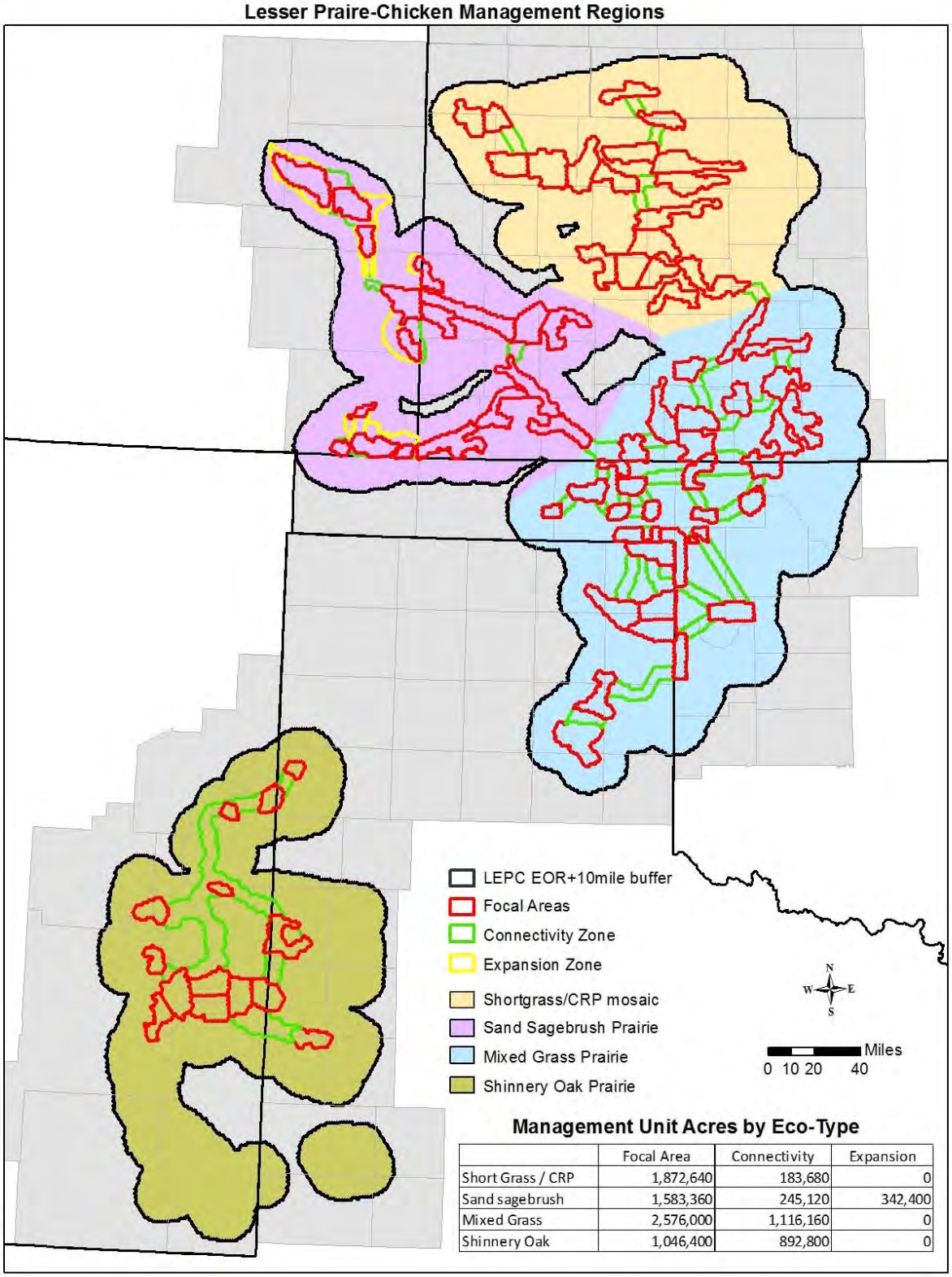
The RWP intends to engage a wide array of agencies, organizations, industries, and other stakeholders to minimize and mitigate impacts and funnel conservation efforts into areas most relevant to the LPC identified as focal areas and connectivity zones. FSA will utilize the RWP as foundation for conservation objectives identified in this Opinion. Conservation measures identified in the RWP are consistent with a Conference Opinion issued to NRCS for implementation of the Lesser Prairie-Chicken Conservation Initiative issued November 22, 2013. Collectively, the FSA, NRCS, and WAFWA strategies complement one another and provide for consistent implementation of USDA conservation programs within the occupied range of the LPC.

Within the estimated occupied range of the LPC, the RWP identifies approximately ten million acres within four designated eco-regions that include specific focal areas and connectivity/expansion zones. The RWP intends to focus conservation efforts such that 75 percent of an initial ten year population goal for the species of at least 67,000 birds will be accomplished in those identified areas.

While addressing the various threats affecting the species range-wide, a key component of the RWP is to concentrate limited resources on species conservation and minimize development within the identified focal areas. The plan also describes desired habitat conditions and conservation actions that will be emphasized to produce the habitat conditions required to achieve the plan's stated initial population goal and facilitate movement of LPC between focal areas through connectivity zones. The RWP also highlights ongoing programs and cooperative efforts to produce desired habitat conditions, the development of a framework for mitigation of potential development impacts to LPC, and monitoring and research needs.

The plan also calls for an improvement in habitat quality to accomplish the plan's stated goals. The Short-grass eco-region (37 percent) will be the biggest contributor to the RWP's desired population goal, but the plan calls for significant population increases within the Mixed Grass, Sand Sagebrush, and Sand Shinnery Oak eco-regions. The plan calls for the Mixed Grass eco-region to support 36 percent of the population goal, the Sand Sagebrush 15 percent, and the Sand Shinnery Oak 12 percent. To support the population increases identified in the plan, 70 percent of the habitat within LPC focal areas and connectivity/expansion zones (Map 6) must be of good to high quality, in terms of plant composition and structure. Given that the majority of LPC occur on private land throughout most of its range, the plan emphasizes increasing landowner incentives to facilitate habitat enhancement.

Map 6. LPC Focal Areas and Connectivity/Expansion Zones



Management Unit Acres by Eco-Type

	Focal Area	Connectivity	Expansion
Short Grass / CRP	1,872,640	183,680	0
Sand sagebrush	1,583,360	245,120	342,400
Mixed Grass	2,576,000	1,116,160	0
Shinnery Oak	1,046,400	892,800	0

CRP Objectives Relative to LPC Occupied Range, Focal Area and Connectivity Zones

As part of the proposed action, the FSA will be implementing a Natives First approach on newly enrolled CRP lands within the occupied range of the LPC by establishing conservation covers comprised of native grass, forbs, legumes, and shrub species mixes and maintaining and managing these native covers throughout the CRP contract. Establishment of newly enrolled CRP lands to species mixes of introduced grasses, forbs, legumes, and shrubs will be limited to only those sites where it is known that establishment of native mixes is unlikely given site and weather conditions.

Existing CRP native and introduced covers throughout the occupied range of the LPC will be maintained and managed as appropriate according to the CRP contracts, conservation plans, and conservation measures described. CRP participants wishing to convert introduced grass covers to native species mixes can make offers for doing so during designated general CRP signup periods or through continuous CRP.

Land enrolled in CRP accounts for approximately 25 percent of the acreage contained within the LPC occupied range and 32 percent of the designated LPC focal area/connectivity/expansion zones (Map 7). It is important to look at the quality and quantity of CRP cover relative to the known occupied range and proximity to leks and preferred seasonal habitats.

It is estimated that about 80 percent of the acres enrolled in CRP within the occupied range of LPC were originally established to or have since been converted through program re-enrollment to native covers. Looking at the CRP enrollment in native grass practices versus total CRP enrollment within the LPC occupied range can be used as a qualitative measure (Table 7 – Column 4). Approximately 76 percent of CRP enrollment in the Action Area is located within the NRCS LPCI boundary, 67 percent within the WAFWA identified LPC eco-regions, and 46 percent within priority LPC habitats identified according to the category designations in the

Southern Great Plains Crucial Habitat Assessment Tool (CHAT) as CHAT 1, CHAT 2, and CHAT 3 (Houts 2014). Appendix III describes these CHAT categories. Comparing CRP enrollment within the three CHAT categories against CRP enrollment within the LPC eco-regions derives a simple quantitative measure (Table 7 – Column 7).

Table 7: LPC Eco-region, Focal Area (includes Connectivity and Expansion Zones), and CRP Considerations.

Ecoregion	CRP Enrollment (Acres)	CRP Native Cover (Acres)	CRP Quality Measure	Focal Area (Acres)	CRP Enrollment in CHAT 1, CHAT 2, and CHAT 3 Categories (Acres)	Percent of CRP Enrollment in Proximity to Known Populations
Sand Shinnery Oak	1,713,610	1,137,573	0.66	1,939,200	915,164	0.53
Sand Sagebrush	1,515,673	1,420,799	0.94	2,170,880	530,428	0.35
Mixed Grass	980,653	676,333	0.69	3,692,160	524,497	0.55
Shortgrass	858,311	858,144	1.00	2,056,320	369,094	0.43
Total	5,068,247	4,092,849	0.81	9,858,560	2,339,183	0.46

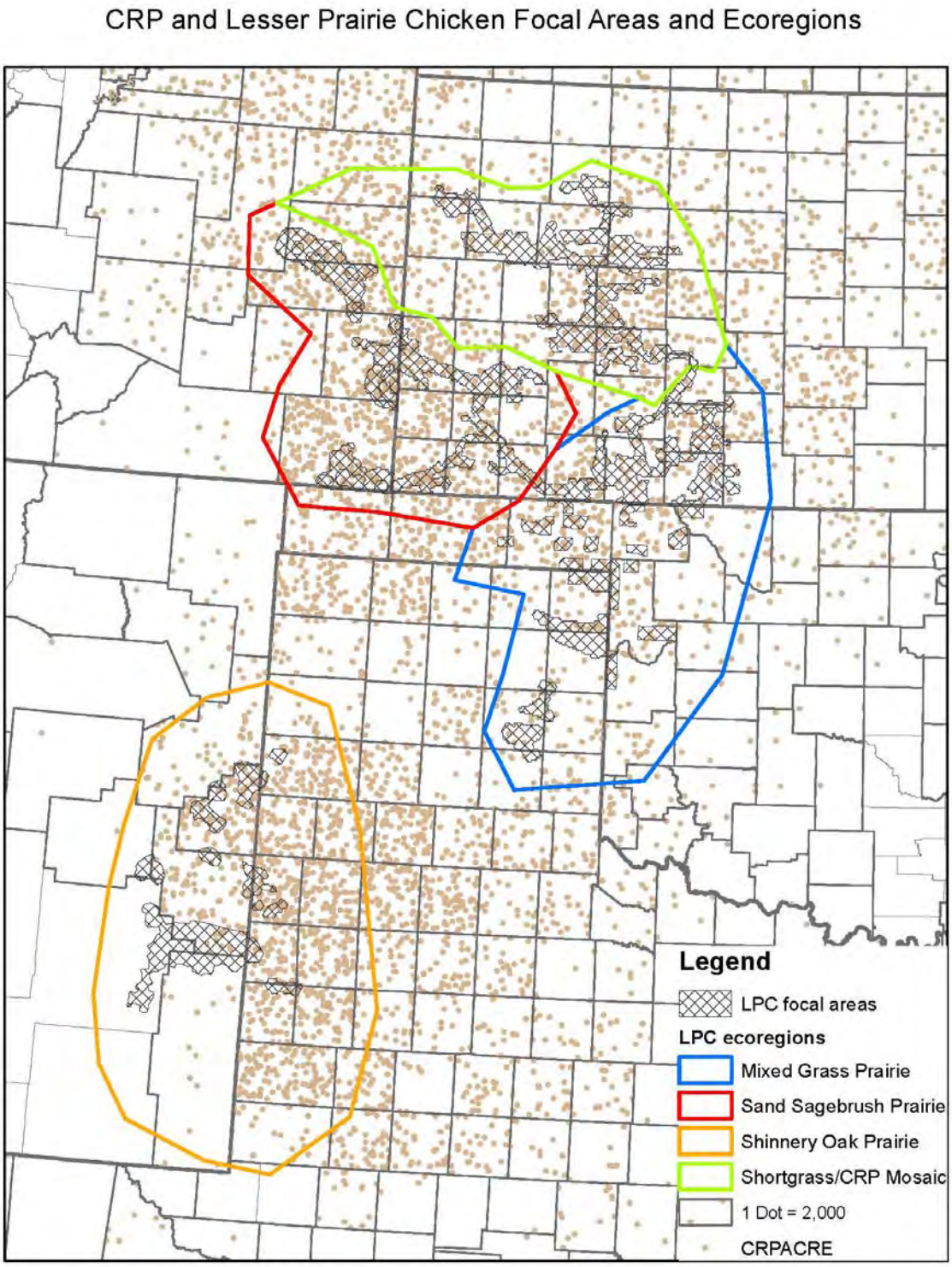
Establishing LPC Habitat Threshold Values

Current CRP enrollment across the occupied range is approximately five million acres of which an estimated 80 percent of the acres are in native grass, forbs, legume, and shrub covers. These four million acres of CRP established to native species mixes provide actual or potential good to high quality LPC habitat. Consistent with Congressional authorization, available appropriations, and willing applicants, FSA will strive to maintain a minimum of four million acres of CRP in native grass, forbs, legumes and shrubs across the LPC occupied range distributed among the identified eco-regions as follows:

Table 8. CRP Acre Threshold by LPC Ecoregion

LPC Ecoregion	CRP Enrollment in Native Cover (Acres)
Sand Shinnery Oak	1,130,000
Sand Sagebrush	1,330,000
Mixed Grass	680,000
Shortgrass	860,000
Total	4,000,000

Map 7. Current CRP Enrollment and Lesser Prairie-Chicken Focal Areas and Ecoregions



Beyond habitat quality, LPC preservation and recovery could be significantly increased if a larger percentage of CRP acres were located within identified LPC focal areas, and connectivity/expansion zones. As stated previously, approximately 46 percent of CRP acres located in the Action Area are within the CHAT 1, CHAT 2, and CHAT 3 category designations. FSA will attempt to increase this percentage, establishing a target of 75 percent, of CRP enrollment within the occupied range of LPC within identified LPC eco-regions and 60 percent of CRP enrollment within CHAT 1, CHAT 2, and CHAT 3 categories through additional focusing and targeted outreach. Forty six percent of the CRP acres currently located within the Action Area are within one mile of known LPC leks. FSA will also seek to locate a greater percentage of CRP enrollments in closer proximity to known LPC leks.

Conservation Measures

The intent of the conservation measures described in this Opinion is to avoid or minimize potential adverse impacts to LPC arising from CRP cover establishment, maintenance, and management activities, and utilization of lands enrolled in CRP. The conservation measures are also designed to conserve, restore, and/or enhance LPC habitat, thus benefitting and sustaining LPC populations range-wide. Establishing, maintaining, and protecting quality habitat in the identified focal areas, connectivity/expansion zones, and other habitat areas in proximity to known LPC populations, are integral components of the CRP conservation measures described. Cover establishment, maintenance, management activities, and permissive uses of CRP land shall be cognizant of the life history needs of the LPC.

Although all seasonal habitat requirements of LPC are necessary for their conservation and recovery, available data indicate that increasing breeding success is the key to increasing numbers and distribution of LPC (Hagen et.al. 2004). As a result, conservation measures focus on providing suitable nesting and brood-rearing habitat components and avoiding disturbance during the primary nesting and brood-rearing season. The conservation measures outlined are structured to first restore and then maintain native grasses and other suitable covers as nesting and brood-rearing habitat of LPC and many other short and mid-grass dependent species.

LPC habitat types are distributed in a mosaic over the agricultural and range-land landscapes where the LPC are found. Ideal habitat consists of large, contiguous blocks of native rangeland. Preferred habitats encompass successional stages that include mid-tall grasses and shrubs (nesting habitat) in proximity to more open grasslands supporting forbs (brood-rearing habitat) with areas of shorter grass and bare ground (breeding habitat). A greater variety of habitat types better supports LPC populations throughout the year. Large habitat blocks dominated by a single successional state or smaller blocks that are not in proximity to other habitat types may not be suitable for use by LPC. For example, nesting and brood-rearing habitat should always be near each other and known leks. The location of these habitats may be rotated throughout the farm, ranch, or management unit and/or the landscape but maintaining the pattern and proximity of the various habitat patches is both the challenge and key to LPC persistence. Another method to achieve patchiness on the landscape is through prescribed grazing and fire, the schedule of which would include considerations of forage quantity and location, livestock numbers, and drought. Grazing plans related to LPCs are intended to produce a variety of habitat types on the

landscape, and therefore must remain flexible to change. A grazing system that creates heterogeneity on the landscape by maintaining middle to late stages of plant succession interspersed with early successional stages is optimal for LPC (Hagen et al, 2004).

There are a number of management activities authorized under CRP designed to replicate natural disturbances such as periodic grazing and naturally occurring fires that helped shape grasslands and make them suitable habitat for LPC. These activities should be considered and incorporated as appropriate by NRCS and TSPs into comprehensive conservation plans written for CRP participants that meet landowner objectives and needs of the LPC. Adherence to the recommendations contained in conservation plans, mandatory mid-contract management activities, and other compliance requirements associated with lands under CRP contract and site conditions should be actively monitored. Environmental stressors, such as prolonged drought, should be considered and CRP management/emergency activities deferred until more favorable conditions are present if the planned management or emergency activity is likely to further degrade habitat conditions for LPC. Early land preparation and conversion back to agriculture production following CRP contract termination will be initiated outside of the primary nesting and brood-rearing season to avoid mortality of nesting hens, nest destruction, and brood mortality.

The following sections describe the required conservation measures for each of the activities and associated technical practices used to implement CRP in the Action Area. The conservation measures were developed to minimize or avoid negative impacts to the LPC and enhance beneficial impacts to LPC.

Conservation Measures Pertaining to Cover Establishment

Activity: Cover Establishment

General description and use in LPC habitat:
Native grassland restoration can include the conversion of marginal cropland, restoring other disturbed sites, or converting conservation covers comprised of introduced species to conservation covers made up of regionally appropriate mixtures of native grasses, forbs, legumes, and shrubs. Seeding with multiple native species helps re-create natural LPC habitat conditions and provides important diversity of vegetation heights and growth forms. Managed native grasslands should contain sufficient plant composition and structure, including at least some grass and shrub heights from 15 to 30 inches (Hagen et al., 2004), providing adequate food and cover to meet the life history needs of the LPC.

Conservation measures:

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover establishment practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC

2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover establishment are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.

3] Native species mixes will be used on all new CRP enrollments within LPC occupied range. The vegetative cover established must meet practice objectives with preference to grasses, forbs, legumes and shrubs preferred by the LPC and adapted to the specific ecological site to optimize LPC habitat needs. Seed mixes should be State-certified, meeting the appropriate State certification criteria as being free of state declared noxious and invasive vegetative material. Timing of planting and post-establishment vegetation management will be designed as per local site conditions to meet NRCS practice specifications. Use of introduced species for new enrollments will only be allowed when it is determined, after the coordination described in conservation measure 1, that site-specific conditions would make establishment of native mixes unlikely.

4] When non-native grasslands established under CRP are accepted for re-enrollment under a native species cover practice, seed mixes used will be beneficial to LPC and adapted to specific ecological site.

5] When converting existing vegetation to an improved cover there will likely be a need for activities to take place during the primary nesting season. Converting existing covers to a native species mix may necessitate an on-site evaluation to determine if nesting hens are present. If nesting hens are present, the initiation of conversion activity will be deferred until after nesting and brood-rearing season. Initial preparations such as disking, mowing, or burning may need to be completed prior to the breeding/nesting season to eliminate potential bird mortality.

6] Evaluate the site's potential for soil erosion and minimize soil and vegetative disturbances during cover establishment. Utilize soil erosion protection measures if potential for off-site soil erosion exists.
7] Monitor, evaluate and control State-listed invasive and noxious plants during practice planning, design and implementation.
8] Machinery associated with the practice should be clean and free of vegetative debris prior to use to prevent the spread of invasive plant species.
9] New CRP enrollments, re-enrollments, and restoration of disturbed sites will use more than one species if a temporary cover crop is needed to provide greater benefit to LPC.
10] The best scientific data available will guide the development of these CRP cover establishment practices to ensure effectiveness, adaptability and increased knowledge.
11] Utilize acceptable habitat evaluation tools and monitoring protocols to evaluate habitat conditions, on a regular basis, to ensure that conservation plans are adapted to meet the habitat needs for LPC and other wildlife.
12] Within the LPC Action Area, all practice 612 shrub species planted must be ecologically appropriate, arranged to minimize predator impacts, and beneficial to LPC. There may be circumstances when locating plots next to certain vertical structures will provide LPC habitat benefits which offset the negative effects associated with the vertical structure.
13] Within the LPC Action Area, all practice 612 shrub plantings shall be completed in coordination with the local biologist (Service, NRCS, Joint Farm Bill Biologists, or State Wildlife Agency) who will sign off on the planting as either providing LPC habitat or not negatively impacting LPCs.
14] In limited circumstances, when and where native food sources are not available, small plots planted in supplemental foods may be beneficial. In these situations, fallow disking to increase areas of native forbs is preferred, but cultivated areas of alfalfa, wheat, milo, grain sorghum, and oats may be considered as a means of providing food resources during fall and winter. Food plots should be planted within one mile of leks, in areas adjacent to native prairie, and only in those areas where cropland or patches of native annual forbs are unavailable. Plots should be approximately five acres in size and planted on the contour. Food plots alone will not increase LPC populations in the absence of adequate amounts of suitable LPC habitat.

<u>Implemented using NRCS technical practices:</u>

327: Conservation Cover
332: Contour Buffer Strips
340: Cover Crop
342: Critical Area Planting
386: Field Border
390: Riparian Herbaceous Cover
393: Filter Strip
412: Grassed Waterway
512: Forage and Biomass Planting
550: Rangeland Planting
589: Cross Wind Trap Strips
600: Terrace
612: Tree and Shrub Establishment
643: Restoration and Management of Rare and Declining Habitat
645: Upland Wildlife Habitat Management

Related Technical Practices
The Technical Practices listed below may occur when establishing CRP cover. Use of these Technical Practices is historically uncommon in the Action Area; as such, the listed practices will be subject to the following conservation measure:

1] FSA will coordinate with the NRCS, the Service, and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LPC individuals and habitat.

Technical Practices:
441: Irrigation System, Micro Irrigation
657: Wetland Restoration
658: Wetland Creation
659: Wetland Enhancement

Conservation Measures Pertaining to Cover Maintenance

Activity: Invasive Species Control

General description and use in LPC habitat:
Invasive species control involves appropriate removal or control of certain herbaceous species in order to maintain and manage shinnery oak, sand sage, mixed grass, shortgrass, and other habitats of benefit to LPC. Invasive, non-native plants, such as Bermudagrass, old world bluestems, Lehman's lovegrass, Russian olive, autumn olive, and other exotics are of no, or limited value, to the LPC, and as their abundance on the landscape increases, the value of the habitat for LPC diminishes. Additional brush species such as elms, cedars, junipers, mesquite, black locust and Osage orange can also be problematic requiring mechanical or chemical control (see brush control activity). Herbicides may also be used on shinnery oak to reduce its competition with native grasses, with the goal being not to kill the shinnery oak but to defoliate/control it to facilitate re-establishment of a native grass/shrub composition more beneficial to LPC. Beyond herbicides, prescribed fire and prescribed burning can be used for invasive species control (conservation measures for these practices are described under cover management).

Conservation Measures:
1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover maintenance practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover maintenance are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.
3] Implement practice outside of primary nesting and brood rearing season.
4] Herbicide application will follow natural landscape patterns and avoid large block or linear applications. Herbicides will be applied by licensed applicators.
5] Spot treatment rather than broadcast application should be utilized where practicable.

Implemented using NRCS technical practices:

315: Herbaceous Weed Control
338: Prescribed Burning*
528: Prescribed Grazing*

*Conservation measures for these practices are described under cover management.

Related Technical Practices

The Technical Practices listed below may occur when implementing invasive species control on CRP. Use of these Technical Practices is historically uncommon; as such an initial Conservation Measure for each of these practices is as follows:

1] FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LPC individuals and habitat.

Technical Practices:

595: Integrated Pest Management

Activity: Brush Management

General description and use in LPC habitat:

Native shrubs, not trees, are a component of high quality LPC habitat. However, extensive areas of shrubs with little or no interspersed native warm season bunch grasses provides limited habitat value for LPC. In such cases, brush management is a necessary management activity to maximize LPC habitat value. Brush management is a tool designed to remove or reduce woody species from prairie or grassland sites. Trees and similar forms of woody plants, such as eastern red cedar, black locust, osage orange, and mesquite are not native to grasslands used by LPC. Practices vary depending on landowner goals and constraints and the needs of the species. Management or removal of these species either through prescribed burning, manual/mechanical (chainsaws, feller bunchers, hydraulic shears, and masticators) or chemical means may be necessary to restore or enhance grasslands to desired conditions. Chaining is sometimes appropriate for areas in later successional stages of encroachment where sagebrush and other desired native shrubs, grasses, and forbs are greatly reduced or absent.

Conservation Measures:

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover maintenance practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover maintenance are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.

3] Implement practice outside of primary nesting and brood rearing season.
4] Evaluate the site's potential for soil erosion and invasion by undesirable plants during practice planning and design.
5] Minimize soil and vegetative disturbances during this maintenance activity. Avoid disturbing the soil on sensitive areas with a high potential for soil erosion.
6] On disturbed areas, use site specific reclamation strategies developed using ecological site descriptions with consideration to LPC habitat needs. Reseed disturbed areas as needed with multiple native species to help re-create natural LPC habitat conditions and provide important diversity of food, vegetation heights and growth forms.
7] Regularly monitor the site after implementation to ensure erosion and weed issues are addressed quickly.
8] The practice will be designed to minimize or avoid unintentional damage to non-target plants.
9] The implementation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of other at-risk species.
10] Large brush (>5 ft.) will be felled unless other considerations necessitate leaving them standing. Cut brush may be lopped-and-scattered, piled-and-burned, chipped, or hauled off.
11] Woody slash shall be treated if significant buildup of fuels occurs. Slash piles shall be burned when wildfire risk is low (usually when soils are frozen or saturated). Follow state forestry laws, when applicable, for treating slash to minimize wildfire risk.
12] Treated sites may be deferred from livestock grazing for a period of time determined to be adequate based on pre- and post-site conditions (i.e. brush densities, potential for erosion, potential for plant community to improve in health, vigor and cover). NRCS with input from the State Technical Committee and the State fish and wildlife agency will identify appropriate deferment periods.
13] Treatments will maintain scattered brush and/or mottes on the landscape if part of the ecological site description.
14] Herbicide application will follow natural landscape patterns and avoid large block or linear applications. Herbicides will be applied by licensed applicators.
15] Aerial application of chemicals may be appropriate if it is the most effective means to control heavy infestations of invasive brush.

Implemented using NRCS technical practices:

314: Brush Management
338: Prescribed Burning*
394: Firebreak*
528: Prescribed Grazing*

*Conservation measures for these practices are described under cover management.

Conservation Measures Pertaining to CRP Cover Management and Permissive Uses

Activity: Inter-seeding

General Description and use in LPC habitat:

Inter-seeding is used on sites dominated by monocultures to establish a more diverse plant community. Enhancing grasslands established under CRP by incorporating additional plant species to increase diversity, composition and structure of plant community to improve LPC habitat is usually done at re-enrollment to raise the EBI score.

Conservation measures:

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover management practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover management are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.
3] Implement practice outside of primary nesting and brood rearing season.
4] Timing of post-establishment vegetation management will be designed as per local site conditions to meet NRCS practice specifications.

Implemented using NRCS Technical Practices:

645: Upland Wildlife Habitat Management

Related Technical Practices

The Technical Practices listed below may occur when inter-seeding CRP. Use of these Technical Practices is historically uncommon; as such an initial Conservation Measure for each of these practices is as follows:

1] FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LPC individuals and habitat.

Technical Practices:

644: Wetland Wildlife Habitat Management

Activity: Forage Harvesting

General Description and use in LPC habitat:

The timely cutting, and removal of forages from the field as hay, green-chop, or ensilage to optimize economic yield of forage, maintain or improve wildlife habitat, promote vigorous plant re-growth, maintain life of the stand, use the forage plant biomass as a soil nutrient uptake tool, and to control insects, disease, and weeds.

In addition to the following conservation measures, other applicable restrictions on forage harvesting found in the 2-CRP National Handbook are listed under the related management activity or permitted use.

Conservation measures (apply to all management activities and permissive uses related to forage harvesting identified below)

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover management practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover management are prepared by persons with adequate training in the fields of natural resources, wildlife

management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.

3] Implement practice outside of primary nesting and brood rearing season.
4] Operate machinery in a manner that allows wildlife to flush and escape by methods such as starting operations in the middle of field and working outward, and/or by modifying equipment with flush bar attachments.
5] Leave corners, field borders, and odd areas un-harvested for supplemental cover and brood rearing habitat.
6] Leave at least 50 percent of each CRP field or contiguous CRP fields un-hayed.
7] As otherwise consistent with CRP policy, within LPC focal areas, connectivity /expansion zones, and other habitat areas in proximity of known populations, limit CRP managed harvesting or routine/managed grazing, emergency haying, and emergency grazing to one time in a three year period consistent with managed haying and managed grazing environmental assessments and National Wildlife Federation settlement.
8] Allow adequate time for sufficient re-growth following harvest in order to provide suitable winter and spring LPC habitat. The amount of forage removed or left will be in keeping with the specific LPC life cycle requirements (i.e. winter thermal, predatory, breeding, nesting and brood rearing), with residual stubble height dependent on site and climatic responsiveness to LPC habitat characteristics required for sustainability of the population (with an average of 10 inches across the CRP field suggested).
9] Haying must be completed by August 31 to allow cut plants to recover prior to first frost.

Management Activity Related to Forage Harvesting: Mowing

Restrictions: no more than once every three years in Kansas, Oklahoma, and Texas; once in ten years in Colorado; and once in five years in New Mexico;

Conservation measures:
1] Break up larger CRP field into sections as mowing part of the field in one year and other parts in successive years will create a diversity of cover structure.
2] Mow field from the inside to the outer perimeter to minimize mortality due to equipment or predation.

Implemented using NRCS Technical Practices:
511: Forage Harvest Management
645: Upland Wildlife Habitat Management
647: Early Successional Habitat Development/Management

Related Technical Practices
The Technical Practices listed below may occur when mowing CRP. Use of these Technical Practices is historically uncommon; as such an initial Conservation Measure for each of these practices is as follows:

1] FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LPC individuals and habitat.

Technical Practices:
644: Wetland Wildlife Habitat Management

Permissive Use Related to Forage Harvesting: Managed Harvesting/Haying

Restrictions: Implemented no more than once every three years in Kansas, Oklahoma, and Texas; and once every 5 years in New Mexico and Colorado (based on provisions of 2014 Farm Bill); for up to 120 days after the end of primary nesting and brood rearing season with 50 percent of CRP field left un-hayed

Conservation measures:
1] Harvest from the inside to the outer perimeter to minimize mortality.
2] Defer harvesting/haying as needed based on forage and habitat conditions

Implemented using NRCS Technical Practices:
511: Forage Harvest Management

Permissive Use Related to Forage Harvesting: Emergency Haying

Restrictions: Limited to counties or portions of counties that meet emergency conditions and after primary nesting and brood rearing season. Emergency haying limited to no more than 60 calendar days between the end of primary nesting and brood rearing season (July 1 in New Mexico, Oklahoma, and Texas; July 15 in Colorado and Kansas) and no later August 31 with 50 percent of CRP field left un-hayed.

Conservation measures:
1] As otherwise consistent with CRP policy, within LPC focal areas, connectivity/expansion zones and in other habitat areas in proximity to known populations, the combination of managed harvest, managed/routine grazing, and emergency haying and grazing of CRP will be limited to once in a three year period unless determined that site, forage, and climatic conditions will provide forage for livestock and suitable habitat conditions to meet LPC needs.

Implemented using NRCS Technical Practice:
511: Forage Harvest Management

Activity: Prescribed Grazing

General Description and use in LPC habitat:
Prescribed grazing is a widely used management practice to improve forage quality and enhance wildlife habitat. Prescribed grazing plans should include an inventory of forage, water, number of livestock, and fencing, and balance needs of and benefit to both livestock and wildlife. Use of the appropriate stocking rate combined with proper fire frequency will produce desired habitat conditions for all life stages and seasonal uses for LPC. These desired habitat conditions can be described as early, middle, and late successional states for any plant community. Fire and grazing are the main habitat management tools that affect habitat structure and pattern on native prairies and shrub lands. The frequency, size and pattern of burning and grazing, and their relationship must be considered and managed to meet year-round habitat requirements of the LPC. Stocking rate is defined as the number of grazing animals or animal units on a given amount of land over a certain period of time. In order to provide multiple plant successional states, stocking rates should vary between light to moderate. Multiple successive years of grazing too lightly or too heavily across a CRP field can reduce habitat quality for LPC and plant diversity.

In addition to the following conservation measures, other applicable restrictions on prescribed grazing found in the 2-CRP National Handbook are listed under the related management activity or permitted use.

Conservation Measures (apply to all management activities and permissive uses related to prescribed grazing identified below):

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover management practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover management are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species. Grazing plans developed by NRCS must address soil, water, and wildlife concerns.
3] Grazing frequency (occurrences in a given period of time), duration (days, weeks, or months), and intensity (number of livestock) will be designed to address limiting habitat factors identified by LPC habitat assessments and site conditions such as drought. Grazing recurrence will occur at a rate necessary to create or maintain desired habitat structure. Grazing systems will allow for adequate recovery time (non-grazed periods) to meet LPC habitat needs. Scheduled grazing periods will also be used to manipulate or create desired or targeted habitat conditions.
4] Grazing events will be scheduled when possible to avoid potential disturbance to known LPC lek sites. Except as described in this section for emergency grazing, prescribed grazing will take place outside of the primary nesting and brood-rearing season.
5] The amount of forage removed or left during any particular grazing period will be in keeping with the specific LPC life cycle requirements (i.e. winter thermal, predatory, breeding, nesting, brood rearing, etc.) with residual stubble height dependent on site and climate responsiveness to LPC habitat characteristics required for sustainability of the population (targeting a minimum average height of 10 inches for suitable LPC nesting habitat suggested).
6] As otherwise consistent with CRP policy, within LPC focal areas, connectivity /expansion zones, and other habitat areas in proximity of known populations, limit CRP managed harvesting or routine/managed grazing, emergency haying, and emergency grazing to one time in a three year period consistent with managed haying and managed grazing environmental assessments and National Wildlife Federation settlement.

Management Activity/Permissive use Related to Prescribed Grazing: Managed/Routine Grazing

Restrictions: Once out of every three years in Kansas, New Mexico, Oklahoma, and Texas; once every five years in Colorado; outside of primary nesting and brood rearing season for up to 120 days not to exceed September 30 with 25 percent of the CRP field left un-grazed or 75 percent stocking rate.

Implemented using NRCS Technical Practice:
528: Prescribed Grazing

Management Activity/Permissive Use Related to Prescribed Grazing: Incidental Grazing

Restrictions: Prior to CRP cover establishment for gleaning of crop residue following harvest not to exceed 60 days.

Implemented using NRCS Technical Practice:
528: Prescribed Grazing

Management Activity Related to Prescribed Grazing: Prescribed Grazing for Invasive Species Control

Restrictions: "Flash" grazing of CRP field to control invasive species not to exceed 30 days between May 1 and September 1 and no longer than for three consecutive years.

Implemented using NRCS Technical Practice:
528: Prescribed Grazing

Permissive Use Related to Prescribed Grazing: Permissive Grazing

Restrictions: Prior to CRP cover establishment for gleaning of crop residue where no harvest occurred. Not to exceed 60 days.

Implemented using NRCS Technical Practice:
528: Prescribed Grazing

Permissive Use Related to Prescribed Grazing: Emergency Grazing

Restrictions: Generally occurs after primary nesting and brood rearing season, but can occur during the established nesting and brood-rearing season (March 15 - July 15 in Colorado; April 15 – July 15 in Kansas; March 1 – July 1 in New Mexico; May 1 – July 1 in Oklahoma; March 1 – June 1 in Texas) with national approval; emergency grazing limited to 120 calendar days not to exceed September 30 with 25 percent of the CRP field left un-grazed or 75 percent stocking rate.

Conservation Measures:
1] As otherwise consistent with CRP policy, within LPC focal areas, connectivity/expansion zones and in other habitat areas in proximity to known populations, the combination of managed harvest, managed/routine grazing, and emergency haying and grazing of CRP will be limited to once in a three year period unless determined that site, forage, and climatic conditions will provide forage for livestock and suitable habitat conditions to meet LPC needs.

Implemented using NRCS Technical Practice:
528: Prescribed Grazing

Activity: Prescribed Burning

General Description and use in LPC habitat:
Prescribed burning is used to control invasive plants, remove decadent vegetation, stimulate new growth of grasses, forbs, legumes, and shrubs, and enrich the soil. Prescribed burning is most appropriate in late winter or early spring, though burns conducted in other seasons can provide habitat benefits. Increasing the abundance of invasive species if they are present in the CRP field or in adjoining areas can be an

issue, but unlike in other parts of the country, this doesn't seem to be a major resource concern in the Southern Great Plains. Patch burning will facilitate development of structural, compositional and spatial diversity of landscape habitat components

Conservation measures (apply to all management activities related to prescribed burning identified below):

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover management practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover management are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.
3] Implement practice outside of primary nesting and brood rearing season.
4] Avoid annual burning of large areas to conserve residual nesting cover. Burning 20 to 30 percent of a CRP field each year allows the entire field to be burned within the desired three to five year interval and still maintain plant diversity; while burning more than 50 percent of the CRP field may temporarily diminish habitat availability.
5] Disked firebreaks will be allowed to re-establish or be seeded to beneficial native grasses, forbs, and legumes to provide bugging or brood rearing habitat.
6] State-listed noxious and invasive plants will be identified and controlled following firebreak installation.

Management Activity Related to Prescribed Burning: Prescribed Burning/Firebreak

Implemented using NRCS Technical Practices:

338: Prescribed Burning
394: Firebreak
645: Upland Wildlife Habitat Management
647: Early Successional Habitat Development/Management

Related Technical Practices and Conservation Measures:
The Technical Practices listed below may occur when implementing prescribed burning/firebreaks on CRP. Use of these Technical Practices is historically uncommon; as such an initial Conservation Measure for each of these activities is as follows:

1] FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LEPC individuals and habitat.

Technical Practices:

644: Wetland Wildlife Habitat Management

Activity: Fallow Disking

General Description and use in LPC habitat:
Fallow disking promotes establishment of broad-leaved, seed-producing forbs and enhancement of "bugging" areas for LPC. Strip disking and similar light, small-scale, shallow forms of soil

disturbance can be used to stimulate growth of native foods for LPC. These types of disturbances should be scattered across the landscape and the types of plants produced will vary with soil type, rainfall patterns, and past history of the land.

Conservation Measures:

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover management practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.

2] NRCS shall ensure that conservation plans and specifications for CRP conservation cover management are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.

3] Implement outside of primary nesting and brood rearing season. Disking following dormancy and before initiation of primary nesting and brood rearing season is preferred.

4] Limit broadcast disking of the field to once in a three year period; disking field patches to create a diversity of plant composition and structure within the CRP field is preferred.

5] Operate machinery in a manner that allows wildlife to flush and escape by methods such as starting operations in the middle of field and working outward, and/or modifying equipment with flush bar attachments.

7] Avoid disking during periods of drought or at other times when site and climatic conditions are unfavorable to ensure preferred vegetative response.

Implemented using NRCS Technical Practices:

645: Upland Wildlife Habitat Management
647: Early Successional Habitat Development/Management

Related Technical Practices and Conservation Measures:

The Technical Practices listed below may occur when fallow disking CRP. Use of these Technical Practices is historically uncommon; as such an initial Conservation Measure for each of these practices is as follows:

1] FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LEPC individuals and habitat.

Technical Practices:

644: Wetland Wildlife Habitat Management

Other Conservation Measures Pertaining to CRP

Activity: Fence

General Description and use in LPC habitat:

Fences can be a valuable tool to facilitate improved grazing management and protect conservation covers during establishment, but fences have also been documented as a collision risk to LPC. Cost-share will not be provided to implement this practice unless required to exclude

livestock from CRP riparian plantings. As very few riparian plantings were implemented across the occupied range of LPC with CRP assistance, this activity is expected to be limited in the Action Area

Conservation Measures:

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of this practice and the area where practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2] NRCS shall ensure that conservation plans and specifications for CRP conservation practices are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.
3] Alternatives to fencing will be evaluated prior to fence installation (e.g., water placement, placement of minerals, prescribed burning) to achieve the desired outcome.
4] Machinery associated with the practice should be clean and free of vegetative debris prior to use to prevent the spread of invasive plant species.
5] Desirable shrub (sand shinnery oak, sand sagebrush, and sand plum) removal will only occur in a < 20 ft. wide swath where fences are being constructed.
6] Mark fences within 1/4 mile of a known lek when fences can't be avoided or relocated.
7] Limit permanent fencing to only what is absolutely necessary for livestock management.
8] The use and installation of fences will be coordinated with other practices such as water development and patch burning to achieve desired prescribed grazing goals and minimize potential impacts to LPC.
9] Any unneeded fences will be removed. Use of equipment to facilitate fence removal will be deferred until all breeding and nesting activities are completed.
10] Temporary electric fencing may be used in some cases to minimize potential collision fatalities.
11] Permanent exterior fencing must meet local fence laws and insurance liability clauses.
12] Reseed disturbed areas with approved LPC mixes as needed.

Activity: Water Development

General Description and use in LPC habitat:

Developing additional water resources may contribute to better livestock distribution. Additional water can also produce more diverse and abundant vegetation at overflow sites creating additional "bugging" opportunities for grassland birds.

Conservation Measures:

1] FSA shall coordinate with State Technical Committees, NRCS, State fish and wildlife agencies, and the Service to identify appropriate restrictions on the placement, extent, configuration, and timing of cover management practices and the area where these practice restrictions would apply so as to avoid and minimize adverse effects to the LPC.
2} NRCS shall ensure that conservation plans and specifications for CRP conservation practices are prepared by persons with adequate training in the fields of natural resources, wildlife management, biology, or range ecology. The conservation plan shall clearly identify any special resources that need to be avoided; such as riparian areas, wetlands/playas, leks, or habitat of threatened or endangered species.
3] Modify existing water infrastructure to reduce or eliminate potential adverse effects resulting from

those structures, including installation of wildlife escape and use ramps into and out of open water sources or in open trenches/pits.

4] Install ground level water sources protected from livestock use

5] Place water sources, wells and infrastructure as close as possible to existing structures and disturbed areas rather than creating new vertical structure in areas presently devoid of such features. These measures will reduce the presence of raptor perch sites and prevent habitat fragmentation by allowing continued use of suitable habitat.

6] Design the water well to minimize or avoid the loss of desirable shrubs during practice installation.

7] Reseed disturbed areas with approved LPC mixes as needed.

8] Install low profile pumping devices and housings and use solar pumps whenever practicable as the power source for wells rather than electric lines.

Implemented using NRCS Technical Practices:

574: Spring Development
614: Watering Facility
620: Underground Outlet

Activity: Energy Development

General Description and Use in LPC habitat:

Energy Development: Commercial oil and gas production and multi-turbine wind developments are incompatible with LPC conservation. Recent research has demonstrated that LPC exhibit a behavioral avoidance of many man-made structures, with the avoidance distance influenced by the type of development. Hagen et al (2004), Robel et al (2004), Chamberlain et al (2006), Pitman et al (2006), Wolfe et al (2007), and Pruett et al (2009) collectively found that anthropogenic features can negatively influence habitat use, acting as barriers to otherwise suitable habitat. Leddy et al (1999) in a Minnesota study of upland nesting birds in CRP grasslands with and without wind turbines, found that CRP grasslands without wind turbines supported significantly higher densities of grassland birds than those with turbines present. LPC populations typically avoid areas where wind turbine farms and associated infrastructure are present resulting in additional habitat fragmentation. Current CRP policy allows for consideration of the placement of wind turbines on land formerly within a CRP contract. Wind turbines and associated infrastructure can compromise CRP value as LPC habitat. Focus energy development on lands already altered and away from areas of intact and healthy grass and shrub lands.

Conservation Measures:

1] Minimize the impact to LPC habitat associated with CRP lands due to energy development, construction, infrastructure and access footprint within identified LPC focal areas, and connectivity/expansion zones.

2] New wind turbines will not be authorized on CRP acreage within LPC focal areas, connectivity zones, or areas within 1.25 miles of known leks.

3] Ensure that land use change brought about by a CRP contract modification associated with the removal of a portion of the CRP acreage from consideration under the modified contract due to energy development will not adversely affect use of the remaining CRP acreage by LPC. Select fragmented or degraded habitats for energy development over relatively intact LPC habitat areas, and select sites with lower LPC habitat potential over sites with greater habitat potential.

Activity: Early Land Preparation

General Description and use in LPC habitat:
Beginning July 1 in the final year of the CRP contract, CRP participants can destroy conservation covers on certain CRP acres before the CRP contract expires to prepare the seedbed for fall seeded crops without a payment reduction. Current CRP policy also allows for early land preparation in arid areas (west of the 100th Meridian) receiving less than 25 inches of annual precipitation during the final year of the CRP contract beginning May 1 if maintaining CRP cover through June 30 would inhibit normal planting of a fall seeded crop. CRP participants engaging in early land preparation are assessed a payment reduction consistent with a CRP contract addendum. Engaging in early land preparation or destroying CRP cover before contract expiration during the primary nesting and brood rearing season are inconsistent with LPC conservation.

Conservation Measures:
1] Early land preparation or destruction of CRP conservation covers during the final year of the CRP contract will be deferred until after the primary nesting and brood rearing season.

Uncommon Conservation Measures Pertaining to CRP:

The Technical Practices listed below may occur during implementation of a CRP contract. Use of these Technical Practices is historically uncommon; as such an initial conservation measure for each of these practices is as follows:

1] FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of the practices listed below to develop site specific measures which will avoid or minimize adverse effects to LEPC individuals and habitat.

Technical Practices:
- 356: Dike
- 362: Diversion
- 380: Windbreak/Shelterbelt Establishment
- 441: Irrigation System, Micro Irrigation
- 484: Mulching
- 548: Grazing Land Mechanical Treatment
- 587: Structure for Water Control
- 590: Nutrient Management
- 610: Salinity and Sodic Soil Management
- 638: Water and Sediment Control Basin
- 657: Wetland Restoration
- 658: Wetland Creation
- 659: Wetland Enhancement

Conservation Measures after Contract Expiration

General Description and use in LPC habitat:
Following CRP contract termination, CRP participants may choose to return the land to crop production. However, as described earlier in this Opinion, expiring CRP acres are often retained in grassland through re-enrollment in CRP or a decision by the producer not to convert the cover to some other use. Under this Opinion, landowners choosing to manage expired CRP acreage as if it were still under contract are provided regulatory predictability if the LPC is listed as a threatened or endangered species at some future time. Regulatory predictability will end at such time as the land is returned to agricultural production or no longer provides habitat benefits for LPC and associated wildlife species.

Conservation Measures:

1] Conversion of conservation cover back to agricultural production following CRP contract termination, including land and seedbed preparation activities will occur outside of primary nesting and brood rearing season and will be conducted in a manner consistent with the NRCS or TSP conservation plan.

The following paragraphs consider individual CRP technical practices likely to be implemented within the occupied range of the LPC and related resource, LPC, and TES concerns. Within each of the LPC and TES concerns, specific conservation measures are described.

Conservation Practice Standard 314: Brush Management

Definition: The management or removal of woody (non-herbaceous) plants that have encroached into shrublands and/or grasslands and degraded wildlife habitat. Methods include individual tree removal by manual or mechanical means, such as chainsaws, bulldozers, grubbers, feller bunchers, hydraulic sheers, or masticators, chaining (dragging an anchor chain across the site), or by chemical application. Chaining is usually done in stands in later successional stages of encroachment where preferred shrubs, grasses, and forbs are greatly reduced or absent (where trees are co-dominant or dominant with shrubs and herbs, and either the trees or all three layers influence ecological processes of the site). Chemical application typically includes the use of Tebuthiron. Use of Tebuthiron in combination with mowing can create a mosaic of small, irregular shaped grassy areas to increase diversity. Trees felled can be left in place, lopped-and-scattered, piled-and-burned, chipped, or hauled off-site.

Purpose: This practice can be applied to create the desired plant community consistent with the ecological site, to improve forage accessibility, quality, and quantity for livestock and wildlife.

Resource Concerns: It is important that brush management is used in conjunction with other maintenance activities in order to prevent brush removal alone from exacerbating the original encroachment. Short-term effects may result from visual and physical disturbance (including noise) during brush/tree removal. Temporary soil movement, vegetation disturbances and increased potential for invasive plants on disturbed areas may result from brush removal operations. Fire hazard from equipment during implementation or if slash remains on-site may be increased. There might also be an increased potential for soil erosion and potential for damage to non-target shrub species during implementation. Chemical brush control can result in direct and indirect elimination of wildlife food sources. When using

chemicals, spot treatments rather than broadcast application is preferred. Target species to be removed include eastern red cedar, black locust, Osage orange, hackberry, Russian olive, autumn olive, mesquite, Siberian elm, and lacebark elm. Creation of brush piles can serve as perches for raptors or shelter/attractant for other predators.

LPC Concerns: Habitat fragmentation and loss of suitable habitat for the LPC. Range sites comprised of monotypic stands of brush species limit the availability of understory vegetation, (forbs, legumes, and grasses) limiting both lesser prairie chicken habitat and livestock forage. In some areas, trees have expanded into shrub/grassland areas, increasing vertical structure on the landscape, causing lesser prairie chicken to avoid such areas and eventually resulting in loss of grasses, forbs, and shrubs which reduces habitat suitability. Increased trees on the landscape also increase the risk of predation by raptors and ravens. Creation of brush piles can serve as perches or shelter/attractant for predators. To reduce risk of direct mortality of individual birds caused by equipment operation and practice implementation, nest abandonment and predation, defer mechanical brush control until after primary nesting, and brood rearing season. Avoid or minimize creation of brush piles and burn any brush piles created as soon as possible consistent with minimizing wildfire risk. Retain desirable shrubs. In an analysis concerning incidental take by technical practice, it was determined that this technical practice is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement of this document.

TES Concerns: Avoid brush management activities during reproductive seasons and retain an undisturbed buffer between treatment areas and streams or other water bodies. Limit size of treatments within proximity of habitat associated with known populations of dunes sagebrush lizard. The control of mesquite encroachment should help to retain habitat conditions that benefit dunes sagebrush lizard. Brush management that maintains grassland communities supporting birds and small mammals, preferred prey of the northern aplomado falcon should provide benefit to the species. Brush management activities near known populations should be conducted in a manner that protects Kuenzler's hedgehog cactus. Spot treat problem areas and use specific as opposed to broad spectrum herbicides. Retain desirable shrubs.

Conservation Practice Standard 315: Herbaceous Weed Control

Definition: The chemical, biological, or mechanical removal or control of herbaceous weeds including invasive, noxious and prohibited plants.

Purpose: This practice may be applied to control or remove invasive and noxious weeds in order to restore native or desired plant communities and habitat for lesser prairie chicken consistent with the ecological site. It secondarily protects soils; controls erosion; and reduces fine-fuels fire hazards. Practice implementation removes or reduces invasive or other weed species that directly or indirectly limit habitat quality and productivity. Practice can beneficially influence the vigor and establishment of native or desirable vegetation required to provide habitat.

Resource Concerns: Invasive and noxious weeds degrade ecological sites by increasing competition with native and desirable plant species. This results in decreased sustainability and resiliency of the ecological sites and leads to reduced habitat quality and quantity for wildlife. Resource concerns include temporary physical disturbance (including noise), soil and vegetation disturbance and increased potential for invasive plants. Invasive and noxious weeds degrade ecological sites by increasing competition with native and desirable plant species, increasing soil erosion, reducing water quality, and increasing fire frequency. . Application of herbicides can reduce food supplies or cause toxicity if treated vegetation is consumed. In certain situations, when compared to mechanical treatments, the appropriate use of herbicides may provide greater benefits in terms of protecting soil and water resources while encouraging and/or maintaining native species.

LPC Concerns: Invasive or noxious weed density can increase to such a level that LPC habitat is threatened. Practice implementation can destroy nesting habitat and cause loss of nests and/or young when mechanical treatment coincides with nesting season. Herbicides can cause temporary reduction of forage and insects, an important food source especially for young birds. Buffers around aquatic systems should be left un-treated.. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Herbaceous weed control may adversely affect listed threatened and endangered species unless conservation measures designed to avoid or minimize the negative impact are implemented. Avoid herbaceous weed control activities during reproductive seasons and do not spray herbicides in proximity to springs, wetlands, and riparian areas to protect stream habitat of federally listed fish, crustaceans, snails, and mollusks. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 327: Conservation Cover

Definition: Establishing and maintaining permanent vegetative cover.

Purpose: This practice may be applied to reduce soil erosion and sedimentation; improve water quality; improve air quality; enhance wildlife habitat; improve soil quality; and/or manage plant pests. The practice is applied to agricultural lands to restore lesser prairie chicken habitat and reduce fragmentation. The practice can increase habitat quality for LPC through establishment/enhancement of diverse, permanent, native plant communities.

Resource Concerns: This practice is most commonly used to convert cropland fields to permanent vegetative cover to prevent soil loss; improve soil conditions; improve water quality and quantity and create habitat for wildlife. Planting activities (seedbed preparation, cover crop establishment and actual planting) may cause temporary soil and vegetation disturbance. Current grassland condition may not have desired plant species diversity, composition, and structure. Existing invasive or undesirable plants, which do not provide quality habitat, compete with desired plant species. Other practice implementation concerns include short-term and occasional physical disturbance (including noise) and increased potential for invasive plants.

LPC Concerns: Cropland sites typically provide inadequate food and cover for LPC and other grassland species. The presence of cropland can fragment lesser prairie chicken habitat. Vegetative covers which lack plant species diversity, composition and structure may not provide for the life history needs of the

lesser prairie chicken. Converting low quality vegetative covers to those of good to high quality cover during nesting season could cause direct mortality of individual birds, loss of nesting habitat and destruction of nests. Use only native grass mixtures in accordance with ecological site guidelines and incorporate shrubs and forbs when possible. Converting existing covers to a native species mix may necessitate an on-site evaluation to determine if nesting hens are present. If nesting hens are present, the initiation of conversion activity will be deferred until after nesting and brood-rearing season. Initial preparations such as disking, mowing, or burning may need to be completed prior to the breeding/nesting season to eliminate potential bird mortality. The maintenance or management of conservation covers may adversely affect LPC unless conservation measures which avoid or minimize the negative impacts are implemented. When conducted in accordance with related conservation measures described in this document, the implementation of this practice on cropland is not likely to adversely affect the LPC. In an analysis concerning incidental take by technical practice, it was determined that when this technical practice is implemented to convert introduced grass to native grass or enhance existing native grass it is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Avoid site preparation and conversion of introduced species covers to conservation covers comprised of native species mixes during breeding, nesting, and brood rearing seasons. The maintenance or management of conservation covers once established may adversely affect listed threatened and endangered species unless conservation measures which avoid or minimize the negative impacts are implemented. Avoid maintenance and management activities of conservation covers during reproductive seasons. Leave undisturbed vegetative buffers between stream and other water bodies and the area being site prepped for establishment of the conservation cover. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 332: Contour Buffer Strips

Definition: Narrow strips of permanent, herbaceous vegetative cover established around a hill slope and alternated down the slope with wider cropped strips that are farmed on the contour.

Purpose: This practice is applied to reduce sheet and rill erosion, movement of sediment and other water-borne contaminants down-slope, and increase water infiltration.

Resource Concerns: Planting activities (seedbed preparation, cover crop establishment and actual planting) may cause temporary soil and vegetation disturbance. Existing invasive or undesirable plants, which do not provide quality habitat, compete with desired plant species. Other practice implementation concerns include short-term and occasional physical disturbance (including noise) and increased potential for invasive plants.

LPC Concerns: When establishing contour buffer strips across agricultural fields, use of native species beneficial to LPC is preferred. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC. Reference NRCS practice standard for requirements.

TES Concerns: When establishing contour buffer strips across agricultural fields, use of native species beneficial to wildlife is preferred. Contour buffer strips which reduce erosion and prevent sediment and agricultural runoff from reaching waterways is likely to protect water quality and stream habitats for species such as Texas hornshell. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 338: Prescribed Burning

Definition: Controlled fire applied to a predetermined area.

Purpose: Fire, when properly used, facilitates control of non-desirable herbaceous vegetation and woody plants and can be applied to create a plant community beneficial to the LPC. Prescribed burning can create brood-rearing habitat by increasing forbs and legume production and ultimately increasing insect populations needed by the LPC. Prescribed burning is also important in maintaining or enhancing plant communities as described in ecological site descriptions. Prescribed burning used in conjunction with grazing can enhance plant communities to meet year round habitat needs of the LPC.

Resource Concerns: Plant productivity, health, and vigor can be reduced due to a lack of fire. Inappropriate fire return intervals can create a plant community less responsive to prescribed fire and can

allow invasion of undesirable species such as eastern red cedar and non-native grass species. Range sites comprised of monotypic stands of brushy species reduce the availability of understory vegetation (forbs, legumes and grasses) limiting wildlife habitat and livestock forage. When properly conducted, prescribed fire can stimulate growth and palatability of forage. Implementation of controlled burns can cause temporary habitat loss and may temporarily disturb breeding activities or cause wildlife to be displaced. Motorized vehicular activity may cause individual birds to be displaced or result in collisions. Using existing trails and roads as travel lanes and firebreaks facilitates practice implementation.

LPC Concerns: Lack of prescribed burning activities can result in ecological sites which depart from historic plant communities required by the LPC and large ungulates such as livestock. Implementation of prescribed burning can cause a temporary reduction of cover for LPC for one to three years, disturbance of current year breeding activities, and a short-term displacement of birds. Larger fields can be broken into smaller burn units with revolving burn frequencies to minimize this impact. Accidental injury or mortality of nesting hens, eggs, or brood may occur if the burn is conducted during the nesting or brood-rearing seasons. Prescribed burning conducted with motorized vehicles may also cause bird mortality through collisions. Implement practice outside of primary nesting and brood rearing season. In an analysis concerning incidental take by technical practice, it was determined that this technical practice is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Avoid prescribed burning during reproductive seasons. Avoid burning through springs, wetlands and riparian areas. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 340: Cover Crop

Definition: Crops including grasses, legumes and forbs established for seasonal cover and other conservation purposes.

Purpose: This practice may be applied to reduce soil erosion from wind and water, increase soil organic matter content, capture and recycle or redistribute nutrients in the soil profile, promote biological nitrogen fixation, increase biodiversity, suppress weeds, provide supplemental forage, manage soil moisture, reduce particulate emissions into the atmosphere, and minimize/reduce soil compaction. Multi-species cover crops planted on cropland adjacent to LPC nesting habitat for a full growing season or planted after small grain harvest can create and improve brood-rearing habitat.

Resource Concerns: The primary resource concerns addressed with establishment of cover crops is wind and water erosion between harvesting of the crop and planting of the permanent native grass cover. Cover crops planted until permanent vegetation is established can provide stability in the ecosystem by improving soil quality, preventing erosion, protecting water quality, and providing limited wildlife habitat. Short-term and occasional physical disturbance associated with practice implementation include noise, temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Changes in quality and quantity of LPC brood rearing habitat between site preparation and full establishment could affect brood survival. Lack of available cover can lead to habitat avoidance by lesser prairie chicken. Use of a cover crop composed of a preferred multiple species mix is likely to improve habitat conditions beneficial to the lesser prairie chicken. When conducted in accordance with related conservation measures described in this document, the implementation of this practice on cropland is not likely to adversely affect the LPC. In an analysis concerning incidental take by technical practice, it was determined that when this technical practice is implemented to convert introduced grass to native grass or enhance existing native grass it is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Lack of available cover can lead to increased predation and habitat avoidance by wildlife. Use of cover crop of preferred multiple species mix is likely to improve habitat conditions beneficial for many of the listed threatened and endangered species. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 342: Critical Area Planting

Definition: Establishing permanent vegetation on sites that 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.

Purpose: This practice may be applied to stabilize areas with high rates of soil erosion by water and wind, rehabilitate and re-vegetate degraded sites that cannot be stabilized through normal farming practices and stabilize coastal areas, such as sand dunes and riparian areas.

Resource Concerns: Un-vegetated, disturbed soil creates sites for invasive species to colonize, promotes increased soil erosion, and reduces wildlife habitat quality. Practice implementation activities can cause temporary soil and vegetation disturbances and physical disturbance (including noise) and increased potential for invasive plants. Establishment of permanent vegetation can provide stability in the ecosystem by improving soil quality, preventing erosion and providing limited wildlife habitat.

LPC Concerns: Practice will improve lesser prairie chicken habitat by establishing native species mixes in areas with disturbed soil from installation of other practices. Use only native grass mixtures in accordance with ecological site guidelines and incorporate shrubs and forbs beneficial to pollinators where possible. When conducted in accordance with related conservation measures described in this document, the implementation of this practice on cropland is not likely to adversely affect the LPC. In an analysis concerning incidental take by technical practice, it was determined that when this technical practice is implemented to convert introduced grass to native grass or enhance existing native grass it is

likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Practice will improve wildlife habitat by establishing native species mixes in areas with disturbed soil from installation of other practices. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 356: Dike

Definition: A barrier constructed of earth or manufactured materials.

Purpose: The purpose of this practice is to protect people and property from floods and to control water level in connection with crop production, fish and wildlife management, and/or wetland maintenance, enhancement or construction.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 362: Diversion

Definition: A channel generally constructed across the slope with a supporting ridge on the lower side.

Purpose: This practice may be applied to break up concentrations of water on long slopes, on undulating land surfaces, and on land that is generally considered too flat or irregular for terracing. Practice may be applied to collect or direct water for storage; water-spreading or water-harvesting systems; intercept surface and shallow subsurface flow; reduce runoff damages from upland runoff; or divert water away from active gullies or critically eroding areas.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service

and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 380: Windbreak/Shelterbelt Establishment

Definition: Linear plantings of single or multiple rows of trees or shrubs or sets of linear configurations. .

Purpose: This practice may be applied to reduce soil erosion from wind, protect plants from wind-related damage, alter the micro-environment for enhancing plant growth, manage snow deposition, provide shelter for structures, livestock and recreational areas, provide wildlife habitat travel corridors; provide living noise and visual screens, improve air quality, delineate property and field boundaries, improve irrigation efficiency, increase carbon sequestration and reduce energy use.

Resource Concerns: LPC avoid areas with vertical structure providing perches for avian predators. Species established must be adapted to the soils, climate, and site conditions. Species diversity, including use of native species, should be considered.

LPC Concerns: Planting tree windbreaks should be avoided given the general tendency of LPC to avoid areas with vertical structure providing perches for avian predators. Not a very often used practice (less than 10,000 acres enrolled throughout the entire five-State region where LPC habitat is found). FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 382: Fence

Definition: A constructed barrier to animals or people.

Purpose: This practice facilitates the accomplishment of conservation objectives by providing a constructed means to control movement of animals and people, including vehicles. The need and extent of this practice is determined based on the particular management practice it facilitates, such as prescribed

grazing or access control. This practice can be an effective tool for managing wild and domestic animal disturbance to LPC habitat, including reseeded or reclaimed sites. Fence is typically used to facilitate prescribed grazing or to protect areas targeted for creation of or management for specific habitat needs.

Resource Concerns: The concerns typically addressed by a constructed fence are plant health and vigor, soil erosion and condition, livestock health and vigor, and wildlife habitat needs. Construction of permanent fences may cause injury or death of individual birds due to collision. Fences also may facilitate predation by serving as travel lanes for predators. Fence posts may serve as raptor perches and facilitate hunting by avian predators. Noise and physical disturbance, influx of invasive plants, incidental damage or removal of desirable shrubs during fence construction/maintenance are also of concern.

LPC Concerns: Construction of permanent fence lines may cause injury or death to individual birds due to collision and indirectly may facilitate predation. Fence posts may serve as raptor perches and facilitate hunting by avian predators. Mark fences within 1/4 mile of a known lek when fences can't be avoided or relocated. Unnecessary fences should be removed. Established fence lines should be kept free of trees. Cost-share will not be provided to implement this practice unless required to exclude livestock from CRP riparian plantings. As very few riparian plantings were implemented across the occupied range of LPC with CRP assistance, direct mortality from fencing associated with CRP is judged to be discountable, and use of the practice is not likely to adversely affect the LPC.

TES Concerns: Construction of permanent fence lines may cause injury or death to individuals due to collision and indirectly may facilitate predation. Fences should be clearly marked to reduce bird collisions and constructed to facilitate wildlife crossing. Assure that fencing to exclude livestock from important riparian habitats of threatened and endangered species are properly located and marked to facilitate other wildlife access. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 386: Field Border

Definition: A strip of permanent vegetation established at the edge or around the perimeter of a field.

Purpose: This practice may be applied to reduce erosion from wind and water; protect soil and water quality; manage pest populations; provide wildlife food; cover and pollinator habitat; increase carbon storage; and improve air quality.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Lesser prairie chickens generally prefer larger blocks of contiguous habitat, but field borders may facilitate bird movement across predominantly agricultural landscapes. Field borders and pivot corners may provide loafing areas and cover from avian predators as birds move between habitat patches in agricultural landscapes. Maintenance and management of field borders should avoid primary nesting and brood rearing season. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 390: Riparian Herbaceous Cover

Definition: Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.

Purpose: This practice may be applied to provide food and cover for fish, wildlife and livestock; improve water quality; establish and maintain habitat corridors; increase water storage on floodplains; reduce erosion; improve stability to stream banks and shorelines; increase net carbon storage in the biomass and soil; enhance pollen, nectar, and nesting habitat for pollinators; enhance plant communities; dissipate stream energy; trap sediment; and enhance stream bank protection as part of stream bank soil bio-engineering practices.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Riparian habitats that lack important functional groups and contain limited plant diversity often provide reduced food and cover for lesser prairie chicken. Lesser prairie chickens tend to

avoid riparian areas dominated by a forested over-story. Use only native grass mixtures in accordance with ecological site guidelines and incorporate shrubs and forbs beneficial to pollinators when possible. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 393: Filter Strip

Definition: A strip of herbaceous vegetation that removes contaminants from overland flow.

Purpose: Establish filter strips to permanent vegetation to reduce suspended solids and associated contaminants in run-off; reduce dissolved contaminant loadings in run-off; and reduce suspended solids and associated contaminants in irrigation tail-water.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Lesser prairie chickens generally prefer larger blocks of contiguous habitat, but filter strips may facilitate bird movement across predominantly agricultural landscapes. Filter strips, field borders, and pivot corners may provide loafing areas and cover from avian predators as birds move between habitat patches in such landscapes. Maintenance and management of filter strips should avoid primary nesting and brood rearing seasons. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 394: Firebreak

Definition: A permanent or temporary strip of bare or vegetated land established to retard fire. Existing vegetation is removed or manipulated by mechanical means, such as mowing or disking, to reduce fuel loads and promote fire-resistant plants or bare ground.

Purpose: This practice may be applied to contain prescribed burns and reduce the spread of wildfire to prevent large scale lesser prairie chicken habitat loss. Firebreaks established to vegetation can also provide a food source for LPC.

Resource Concerns: The primary concerns that a firebreak addresses are the spread of fire beyond the targeted prescribed burn area and the spread of wildfires, resulting in large-scale, temporary alteration of the landscape. Disked or mowed firebreaks disturb soil, vegetation, and nesting birds, and result in a temporary reduction of cover over a small area. Soil disturbance may also allow invasive plants to move

into the disturbed area and alter the community structure. Practice may require seeding of fire-resistant plants.

LPC Concerns: Short-term physical disturbances associated with establishment and maintenance of firebreaks may disturb nesting birds and cause LPC to leave the area temporarily. Apply the practice outside the primary nesting and brood rearing season. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns:. Those threatened and endangered species requiring similar habitat and having similar life history needs as the LPC will be affected in a similar manner. Avoid installing the practice during nesting season. Make sure firebreaks protect the integrity of seeps, springs and riparian areas and associated habitats. Loss of spring fed habitat is a significant threat to Pecos gambusia. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 412: Grassed Waterway

Definition: A shaped or graded channel that is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet.

Purpose: This practice may be applied to convey run-off from terraces, diversions, or other water concentrations without causing erosion or flooding; reduce gully erosion; and to protect or improve water quality.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Lesser prairie chickens generally prefer larger blocks of contiguous habitat, but grassed waterways may facilitate bird movement across predominantly agricultural landscapes. Grassed waterways, filter strips, field borders, and pivot corners may provide loafing areas and cover from avian predators as birds move between habitat patches in such landscapes. Maintenance and management of grassed waterway will avoid primary nesting and brood rearing seasons. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 441: Irrigation System, Micro Irrigation

Definition: Drip irrigation system.

Purpose: This practice, applied as a part of a resource management system, can achieve improvements in water conservation, and can facilitate woody and herbaceous plantings for lesser prairie chicken.

Resource Concerns: Insufficient infrastructure can lead to unproductive and improper mix of vegetation, leading to poor lesser prairie chicken habitat.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 484: Mulching

Definition: Applying plant residues or other suitable materials produced off-site to the land surface.

Purpose: This practice is applied to conserve soil moisture; reduce energy use associated with irrigation; moderate soil temperature; provide erosion control; suppress weed growth; facilitate the establishment of vegetative cover; improve soil quality; and reduce airborne particulates.

Resource Concerns: Mulch materials should consist of natural or artificial materials that are environmentally safe such as plant residues, wood bark or chips, gravel, rice hulls, or other equivalent material of sufficient dimension (depth and thickness) and durability to achieve the intended purpose for the required amount of time. Mulch material should be free of disease, pesticides, chemicals, noxious weed seeds, seeds of introduced species, and other pests and pathogens.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 511: Forage Harvest Management

Definition: The timely cutting and removal of forages from the field as hay, green-chop, or ensilage.

Purpose: This practice applies to all land uses where machine harvested forage crops are grown. Forage will be harvested at a frequency and height that optimizes the desired forage stand, plant community, and stand life. Harvest forage at the stage of maturity that provides the desired quality and quantity without compromising plant vigor and stand longevity. Harvesting methods and techniques that allow LPCs to escape haying operations will also be incorporated into this practice. Finally, the practice can be used to maintain desirable plant composition and structure for food production, nesting cover, and brood rearing habitat.

Resource Concerns: Yield and quality of forage, plant vigor, timing of harvest, insects, diseases and weeds are typical concerns addressed by this practice. Forage harvesting or haying may temporarily remove habitat, destroy nests, and cause vegetation disturbance causing temporary harm and harassment to nesting birds. Cut forage plants at a height that will promote the vigor and health of the desired species. The practice can also be used to designate areas that will annually remain un-harvested and to retain site specific minimum heights of residual vegetation for wildlife habitat. Cutting heights should provide adequate residual leaf area; adequate numbers of terminal, basal, or auxiliary tillers or buds; insulation from extreme heat or cold; and adequate food reserves needed for full, vigorous forage recovery. Plan specifications must include as a minimum; goals; objectives and specific purpose of forage harvest operations; forage species to be harvested; method of harvest, stage of maturity; optimal harvest moisture content; length of cut; residual stubble height; harvest interval and contaminant avoidance recommendations. Schedule harvest periods to control disease, insect, and weed infestations. Time and conduct harvest in such a manner to benefit desired wildlife species.

LPC Concerns: Forage harvest will temporarily alter nesting and brood rearing habitat and disturb birds. Adverse impacts may result from cutting and harvesting forage during reproductive and nesting periods. The impacts may include disturbance of breeding activities on lek sites and nesting hens; destruction of nests; and injury or mortality of hens, young brood, and eggs. Defer this practice to outside the primary nesting and brood rearing season. When the CRP fields are cut the forage will be harvested from the inside out to the perimeter of the field. In an analysis concerning incidental take by technical practice, it was determined that this technical practice is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Ensure hay fields and forages used by listed species are not cut, harvested, or otherwise disturbed during reproductive periods. When the CRP fields are cut the forage will be harvested from the inside out to the perimeter of the field. Leave buffers between harvested fields and adjoining wetlands and riparian areas to protect the integrity of those wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 512: Forage & Biomass Planting

Definition: Establishing forage plant species adapted to ecological site.

Purpose: This practice may be applied to establish adapted and compatible species, varieties, or cultivars for forage production to improve or maintain livestock nutrition and/or health; balance forage supply and demand during periods of low forage production; reduce soil erosion; improve water quality; and increase

carbon sequestration. In lesser prairie chicken habitats, this practice is typically used to seed former croplands with perennial grass/legume mixes to meet seasonal needs of livestock and lessen grazing demands on native rangeland habitats. Many of these plantings can provide good quality nesting and brood-rearing habitat if haying and grazing are properly managed. The corresponding increase in available forage for livestock can also remove grazing pressure on existing native rangelands and lead to improved range condition.

Resource Concerns: This practice is most commonly used to convert cropland fields to permanent vegetative cover to prevent soil loss; improve soil conditions; improve wildlife cover; and improve water quality and quantity. Forage demand for livestock often exceeds sustainable forage production on native rangelands. Use only native grass mixes in accordance with ecological site guidance, incorporating shrubs and forbs when possible.

LPC Concerns: Spring and fall forage is often limited in supply on native rangelands. Overuse of native rangelands during these critical times of year leads to decreased residual cover, decreased range health, and may limit residual cover important for successful lesser prairie chicken nesting. Short-term adverse impacts may result from installing the practice during reproductive and nesting periods. If nesting hens are present, the implementation of this practice will be deferred until after nesting and brood-rearing season. When conducted in accordance with related conservation measures described in this document, the implementation of this practice on cropland is not likely to adversely affect the LPC. In an analysis concerning incidental take by technical practice, it was determined that when this technical practice is implemented to convert introduced grass to native grass or enhance existing native grass it is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 528: Prescribed Grazing

Definition: Managing the harvest of vegetation with grazing and/or browsing animals.

Purpose: This practice may be applied to improve or maintain desired species composition and vigor of plant communities; improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity; improve or maintain surface and/or subsurface water quality and quantity; improve or maintain riparian and watershed function; reduce accelerated soil erosion; maintain or improve soil condition; improve or maintain the quantity and quality of food and/or cover available for wildlife; and manage fine fuel loads to achieve desired conditions. In lesser prairie chicken habitat, this practice can help ensure rangelands are managed sustainably to provide habitat requirements for all life stages of the lesser prairie chicken.

Practice assures that stocking rate is in balance with forage supply, season of use is rotated to ensure plants have adequate reproduction opportunity, and range land condition is monitored and livestock pulled off-site as appropriate. Practice is applied so that rangelands are managed sustainably to provide continued ecological processes, forage for livestock and wildlife, and habitat for wildlife, including LPC. Planned grazing systems are expected to increase residual cover of perennial grasses and forbs to improve LPC nesting cover and success. Rotational grazing can also decrease the time anyone pasture is exposed to grazing animals and people reducing the overall disturbance to individual birds.

Resource Concerns: Resource concerns addressed by this practice are lack of diverse species composition and vigor of plant communities; low quantity and quality of forage for grazing and browsing animals; water quality and quantity; soil erosion; quantity and quality of food and/or cover available for wildlife; and economic stability for continued livestock production. Livestock may trample nests or cause nesting birds to flush. Livestock may cause disruption of breeding and display activities. Unrestricted livestock grazing can remove desired vegetation and change plant communities from desired ecological states to undesirable states where invasive and other undesirable plant species can predominate. Improper placement of salt and mineral supplements may cause habitat degradation. Physical disturbance may be realized from livestock feeding, grazing, or herding and forage removal (short-term negative grazing impacts may temporarily cause wildlife to leave the immediate area or reduce availability of nesting cover).

LPC Concerns: Identification of limiting biological and habitat conditions for the LPC should be addressed during the creation of a suitable grazing management system. Unrestricted grazing may lead to overharvest of plant resources, decreased residual cover, decreased plant litter on the soil surface, increased bare ground, accelerated soil erosion rates, decreased water quality, and reduced overall habitat quality for wildlife, including lesser prairie chicken. Grazing systems should balance livestock needs with the life history needs of the lesser prairie chicken.

Avoid grazing during the primary nesting and brood rearing season. Limit grazing to once in a three year cycle to allow forage to recover and provide nesting and brood rearing habitat. Improper placement of watering facilities and salt licks may cause habitat degradation. Co-locate salt and mineral supplements in areas of other disturbance or in proximity to structures that LPC tend to avoid. Minimize pasture visits, particularly near leks during breeding and nesting seasons. Homogenous use of vegetation and lack of bare ground and open areas between grass clumps should also be avoided as dense low level vegetation prevents chick movement and provides little overhead cover from predators. Ideally a pasture with a mixture of heavy, moderate and light use areas may provide more habitat for LPCs as this mix provides, brood rearing habitat and nesting cover for the LPC. In an analysis concerning incidental take by technical practice, it was determined that this technical practice is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Exclude livestock from important spring, wetland, and riparian habitats via fencing and development of alternative water sources. Proper grazing can retain grassland conditions that benefit certain birds and small mammals that are preferred prey of the northern aplomado falcon. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 548: Grazing Land Mechanical Treatment

Definition: Modifying physical soil and/or plant conditions with mechanical tools by treatments such as pitting, contour furrowing, ripping, chiseling, or sub-soiling.

Purpose: This practice establishes conditions where the desired plant community phase, consistent with the ecological site description, can re-establish on a degraded ecological site. Benefits from this practice may include; fracturing compacted soil layers to improve soil permeability; reducing water runoff and increasing infiltration; breaking up sod-bound conditions and thatch to increase plant vigor; and stimulating the soil and plant community to provide greater productivity and yield.

Resource Concerns: Degraded ecological sites that have restrictive soil and vegetation layers prevent natural re-colonization of the desired plant community. This results in reduced amounts of understory vegetation (forbs, legumes, grasses) that are drivers for ecological processes habitat for the LPC, and livestock forage.

LPC Concerns: Defer installation of the practice until after nesting and brood rearing season. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Avoid implementation of this practice during reproductive season. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 550: Rangeland Planting

Definition: Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees.

Purpose: This practice may be applied to restore a plant community; improve forages for livestock, improve forage, browse or cover for wildlife; reduce erosion by wind and/or water; improve water quality

and quantity; and increase carbon sequestration. This practice can be used to restore range conditions that meet all habitat requirements for lesser prairie chicken. Practice increases habitat quality for LPC and restores diverse, permanent, native plant communities.

Resource Concerns: This practice is most commonly used to convert cropland fields to permanent vegetative cover to prevent soil loss; improve soil conditions; improve water quality and quantity and create habitat for wildlife. Other concerns include short-term and occasional physical disturbance (including noise); temporary soil and vegetation disturbances; and increased potential for invasive plants. Use only native grass mixtures in accordance with ecological site guidance, incorporating shrubs and forbs when possible.

LPC Concerns: Cropland sites typically provide inadequate food and cover for LPC and other grassland species. Cropland can fragment LPC habitat and may not have desired species composition or structure beneficial to lesser prairie chicken. Invasive or undesirable plants may not provide needed lesser prairie chicken habitat. Native prairie should not be converted to an introduced plant species mix. Only use native species adapted to the ecological site when establishing range-land plantings. If nesting hens are present, implementation of this practice should be deferred until after the nesting and brood-rearing season. When conducted in accordance with related conservation measures described in this document, the implementation of this practice on cropland is not likely to adversely affect the LPC. In an analysis concerning incidental take by technical practice, it was determined that when this technical practice is implemented to convert introduced grass to native grass or enhance existing native grass it is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Native prairie should not be converted to an introduced plant species mix. Only use native species adapted to the ecological site when establishing range-land plantings. Avoid site preparation and establishment during reproductive seasons. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 574: Spring Development

Definition: Collection of water from springs or seeps to provide water for a conservation need.

Purpose: Natural springs are commonly developed to provide a clean source of water for livestock. In addition to providing water for livestock, the development of springs protects the spring source from degradation caused by unrestricted livestock use. The actual development of the spring includes installation of a "spring box" to filter and collect water to be delivered via pipeline to livestock. Pipeline flow is achieved by gravity or pumping conditions. This practice may facilitate improved livestock grazing management; allow for creation, enhancement or maintenance of nesting and brood-rearing habitat for LPC; and provide improved water quality and water availability for other wildlife.

Resource Concerns: The inability to provide adequate water supplies and to properly locate water supplies throughout grazing units can reduce the opportunity to manage livestock grazing distribution. As a result, forage may be over or under-utilized resulting in negative impacts to range health, livestock production and associated wildlife habitat. Livestock may be disproportionately concentrated near a water source and overgraze the surrounding area to the point where food producing forbs and legumes are eliminated; residual grasses are inadequate for nesting cover; and protective cover provided by shrubs is

reduced. Conversely, areas more distant from a water supply may be underutilized. In the absence of disturbance, the health and vigor of grasses for livestock grazing and the value of the habitat for wildlife may be diminished through plant succession.

Insufficient infrastructure (livestock water) limits grazing rotation options resulting in limited livestock distribution and over/under utilization of forage and decreased range health. These conditions may concentrate livestock on important wildlife habitats. Limited stock water can greatly restrict the ability of land managers to manage livestock in a way that promotes rangeland sustainability and improved wildlife and lesser prairie chicken habitat. Temporary noise and minimal physical disturbance may occur during construction along with short-term reduction of cover that can result in invasive species and erosion problems. The affected area is usually less than 1/8 acre.

LPC Concerns: This practice will be applied to improve the quantity and/or quality of water for livestock, wildlife or other agricultural uses. This may include an improvement in mesic habitat quality for lesser prairie chickens and broods. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Ensure that spring development maintains groundwater level and stream flow to protect the integrity of riparian and wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 587: Structure for Water Control

Definition: A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water.

Purpose: This practice may be applied as a component of a water management system to control the stage, discharge, distribution, delivery or direction of water flow.

Resource Concerns: Altered hydrology in mesic sites often results in reduced water tables, reduced vegetative production, reduced forbs and legume abundance, and subsequent reduction in insect production. Direct mortality of wildlife as a result of drowning is anticipated to be extremely rare.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Ensure that any structures for water control maintains groundwater level and stream flow to protect the integrity of seep, spring, riparian and wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 589: Cross Wind Trap Strips

Definition: Herbaceous cover resistant to wind erosion established in one or more strips across prevailing wind erosion direction.

Purpose: This practice is applied to reduce soil erosion from wind; induce deposition and reduce transport of wind-borne sediment and sediment-borne contaminants down-wind; protect growing crops from damage from wind-borne soil particles; and provide food and cover for wildlife.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Lesser prairie chickens generally prefer larger blocks of contiguous habitat, but cross wind trap strips may facilitate bird movement across predominantly agricultural landscapes. Vegetation established should include native grass and legumes adapted to the site; that are erect during wind erosion periods, tolerant to sediment deposition, able to withstand snow drifting, and compatible with secondary purposes such as providing wildlife food and cover. Minimum width should be 30 feet and height for wildlife benefit should be 1.5 feet. Cross wind trap strips, filter strips, field borders, and pivot corners may provide loafing areas and cover from avian predators as birds move between habitat patches in fragmented landscapes Maintenance and management of cross wind trap strips should avoid primary nesting and brood rearing seasons. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 590: Nutrient Management

Definition: Managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments.

Purpose: This practice addresses the application and budgeting of nutrients for plant production. All nutrient sources, including soil reserves, commercial fertilizer, manure, organic byproducts, legume crops, and crop residues shall be accounted for and properly utilized.

Resource Concerns: Minimize entry of nutrients into groundwater and surface water and volatilization into the atmosphere. Protect physical, chemical and biological conditions of the soil.

LPC Concerns: Avoid equipment operations and spreading of nutrients during nesting and brood rearing seasons. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 595: Integrated Pest Management

Definition: A site specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies.

Purpose: This practice prevents or mitigates cultural, mechanical, and biological pest suppression risks to soil, water, air, animals and humans.

Resource Concerns: This practice should help keep pest populations below economically damaging levels and minimizing pest resistance while preventing unnecessary risks to natural resources and humans. For noxious weed and invasive species control, the minimum level of pest suppression to meet natural resource objectives should be used. Application of herbicides or insecticides to control undesirable vegetation and pests can reduce wildlife food supplies and possibly result in indirect toxicity of birds. Apply herbicides, pesticides, and insecticides according to authorized uses only.

LPC Concerns: Follow label instructions on all herbicides, pesticides, and insecticides applied. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Avoid pest management treatments during reproductive seasons. Follow label instructions on all herbicides, pesticides, and insecticides applied. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 600: Terrace

Definition: An earthen embankment, or combination ridge and channel, constructed across the field slope.

Purpose: This practice is applied as part of a resource management system to reduce erosion by reducing slope length and retaining run-off for moisture conservation.

Resource Concerns: Installation of the practice can result in short-term physical disturbance (including noise), temporary soil and vegetation disturbances, and increased potential for invasive plants.

LPC Concerns: Lesser prairie chickens generally prefer larger blocks of contiguous habitat, but terraces may facilitate bird movement across predominantly agricultural landscapes. Terraces, filter strips, and field borders may provide loafing areas and cover from avian predators as birds move between habitat patches in such landscapes. Maintenance and management of filter strips should avoid primary nesting and brood rearing seasons. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Ensure that any terraces established maintain groundwater level and stream flow to protect the integrity of riparian and wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will

coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 610: Salinity and Sodic Soil Management

Definition: Management of land, water and plants to reduce accumulation of salts or sodium on the soil surface and in the crop root zone.

Purpose: This practice improves soil health by reducing salt concentration in the root zone; problems of crusting, permeability, or soil structure on sodium affected soils; and soil salinization and discharge of saline water tables at or near the soil surface down slope from the saline seep recharge areas.

Resource Concerns: Establish adapted, high water use, deep-rooted, long season species in the recharge watershed area to utilize soil moisture and limit ground water movement to the seep area.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 612: Tree and Shrub Establishment

Definition: Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration.

Purpose: This practice may be used to establish woody plants for wildlife habitat and improve or restore natural diversity. While implementation of this practice may cause limited short term adverse impacts, the long term benefits achieved will exceed short term detriments associated with this practice. The practice will ameliorate a limiting habitat factor and create desired or targeted habitat conditions as recommended by the State fish and wildlife agency. Benefits of this practice include increased availability of food during heavy snowfall events, diversity of cover beneficial for thermal regulation in winter and summer, and enhanced pollinator habitat, which will increase available food potential for broods.

Resource Concerns: Trees and shrubs can be established to protect riparian areas, serve as living snow fences, shelterbelts, or windbreaks, or for wildlife habitat providing increased winter food, vegetative structure, and thermal cover. Short-term effects may result from visual and physical disturbance (including noise) during implementation. Temporary soil and vegetation disturbances resulting from implementation increase potential for invasive plants.

LPC Concerns: Inadequate food and cover for the lesser prairie chicken may result when sagebrush quantity or quality is lacking. An increased potential for soil erosion or accidental bird mortality may occur during implementation from overland vehicle travel. LPC typically avoid areas where trees become established. Tree or shrub establishment should be limited to planting small mottes of ecologically site appropriate, low growing shrub species such as sand sagebrush and sand plum. The

implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Tree or shrub establishment should be limited to planting small mottes of ecologically site appropriate, low growing shrub species such as sand sagebrush, sand plum, and shinnery oak. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 614: Watering Facility

Definition: A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.

Purpose: This practice will be applied to facilitate livestock grazing management and provide access to drinking water for livestock and/or wildlife in order to meet daily water requirements and improve animal distribution. Commonly used watering facilities are constructed from concrete, fiberglass, metal, or rubber tires. Each tank is typically fed by a pipeline and also contains an overflow for excess water. Winter tanks are routinely buried or covered to prevent freezing and have small drinking areas exposed. Wooden cross-fence is often implemented to prevent livestock entry into tanks and to protect the plumbing associated with the facility. Use of this practice can facilitate prescribed grazing by livestock and can provide water for some wildlife species, including LPC. This benefit may be pronounced during drought conditions.

Resource Concerns: Insufficient infrastructure (livestock water) limits grazing rotation options resulting in limited livestock distribution. The inability to provide adequate water supplies and to properly locate water supplies throughout grazing units can reduce the opportunity to manage livestock grazing distribution. As a result, forage may be over or under-utilized with resulting impacts on range health, livestock production and associated wildlife habitat. Livestock may be disproportionately concentrated near a water source and overgraze the surrounding area to the point where food producing forbs and legumes are eliminated, residual grasses are inadequate for nesting cover, and protective cover provided by shrubs is reduced due to heavy browsing. Conversely, areas more distant from a water supply may be underutilized and in the absence of disturbance, the health and vigor of grasses for livestock grazing and the value of the habitat for wildlife may be diminished through plant succession. Other concerns include short-term and occasional physical disturbance (including noise) and temporary soil and vegetation disturbance during installation. There could also be an increased potential for invasive plants in the disturbed soil post installation.

LPC Concerns: Current water sources may concentrate livestock on important wildlife habitats, reducing habitat quality. Limited stock water greatly restricts the ability of land managers to manage livestock in a way that promotes rangeland sustainability and improved wildlife and lesser prairie chicken habitat. Use of elevated structures or electrical infrastructure may cause birds to avoid the area. Consider use of solar powered equipment to replace windmills and or associated power lines. Place suitable entry and escape ramps into water sources. The implementation of this practice, when conducted in accordance with related conservation measures described in this document, is not likely to adversely affect the LPC.

TES Concerns: Use of elevated structures or electrical infrastructure may cause wildlife to avoid the area. Consider use of solar powered equipment to replace windmills and or associated power lines. Place

suitable entry and escape ramps into water sources. Ensure that any watering facility established maintains groundwater level and stream flow to protect the integrity of riparian and wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 620: Underground Outlet

Definition: A conduit or system of conduits installed beneath the surface of the ground to convey surface water to a suitable outlet.

Purpose: The purpose of this practice is to carry water to a suitable outlet from terraces, water and sediment control basins, diversions, waterways, surface drains, and other similar practices or flow concentrations without causing damage by erosion or flooding.

Resource Concerns: The design capacity of the underground outlet is based on requirements of the structure or practice it serves. Seasonal water sources can be very important for migratory waterfowl and other wildlife. The use of a water control structure, on the inlet of the under-ground outlet during non-cropping times of the year, can allow water to pond in the structure to provide water for wildlife.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Ensure that any underground outlet established maintains groundwater level and stream flow to protect the integrity of riparian and wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 638: Water and Sediment Control Basin

Definition: An earth embankment or a combination ridge and channel constructed across the slope of minor watercourses to catch sediment and a water detention basin with a stable outlet.

Purpose: This practice may be applied to reduce watercourse and gully erosion, trap sediment, and reduce and manage onsite and downstream runoff.

Resource Concerns: Excessive sediment in surface water may lead to degraded irrigation water, which in turn, leads to decreased hay and insect production on the fields where the water is applied. Habitat may also be degraded from gully erosion.

LPC Concerns: FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat

TES Concerns: Ensure that any water and sediment control basin established maintains groundwater level and stream flow to protect the integrity of riparian and wetland habitats. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 643: Restoration and Management of Rare and Declining Habitats

Definition: Restoring and managing rare and declining habitats and their associated wildlife species to conserve biodiversity.

Purpose: This practice can be applied to provide and manage habitat for rare and declining species, including lesser prairie chicken. This practice will help to ensure a diversity of native habitat types/components, such as native grasses, forbs, and shrubs.

Resource Concerns: Primary resource concerns are the loss or degradation of rare or declining native habitats. Other concerns include short-term and occasional physical disturbance (including noise); temporary soil and vegetation disturbances; and increased potential for invasive plants. Use only native grass mixes in accordance with ecological site guidance incorporating shrubs and forbs when possible.

LPC Concerns: Cropland fragments lesser prairie chicken habitat. Degraded rangeland condition may not meet habitat requirements of the LPC. Invasive or undesirable plants may not provide needed lesser prairie chicken habitat according to ecological site potential. Established plant species may not reach their potential to provide lesser prairie chicken habitat. When conducted in accordance with related conservation measures described in this document, the implementation of this practice on cropland is not likely to adversely affect the LPC. In an analysis concerning incidental take by technical practice, it was determined that when this technical practice is implemented to convert introduced grass to native grass or enhance existing native grass it is likely to result in adverse effects to the LPC. Please refer to the Incidental Take Statement in this document.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects. Maintenance and management activities should be done outside of primary nesting and brood rearing season.

Conservation Practice Standard 644: Wetland Wildlife Habitat Management

Definition: Retaining, developing or managing wetland habitat.

Purpose: This practice may be applied to maintain, develop, or improve wetland habitat for associated flora and fauna.

Resource Concerns: Primary resource concerns include maintaining a sufficient buffer to protect wetland wildlife habitat being managed from agricultural run-off.

LPC Concerns: When implementing this practice address factors that reduce habitat quality or otherwise limit LPC population growth. Maintenance and management activities should be done outside of primary nesting and brood rearing season. Use only native grass mixes in accordance with ecological site guidance, incorporating shrubs and forbs when possible. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Maintenance and management activities should be done outside of primary reproductive seasons. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 645: Upland Wildlife Habitat Management

Definition: Provide and manage upland habitats and connectivity within the landscape for wildlife, including lesser prairie chicken.

Purpose: Application of this practice shall remove or reduce limiting factor(s) in their order of significance as indicated by a habitat evaluation. This conservation practice will be used to restore, enhance or create, and manage suitable habitat (including food plots) for wildlife; to improve habitat conditions for all life cycles, including breeding, nesting, brood-rearing, and over-wintering; provide adequate food, cover and shelter; and address the effects of habitat fragmentation by creating, maintaining, or restoring landscape connectivity.

Resource Concerns: Primary resource concerns should address factors that reduce habitat quality or otherwise limit population growth of the targeted species. Use only native grass mixes in accordance with ecological site guidance, incorporating shrubs and forbs beneficial to pollinators when possible. When applied and managed to the established standards and specification, this practice should not result in adverse conditions to the LPC or associated wildlife species.

LPC Concerns: This practice will be applied to treat and manage upland lesser prairie chicken habitat concerns identified during the conservation planning process Benefits to the LPC include providing shelter, cover, and food at locations and times to sustain the lesser prairie chicken during all or a portion of its life cycle. When conducted in accordance with related conservation measures described in this document, the implementation of this practice is not likely to adversely affect the LPC.

TES Concerns: Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects. Maintenance and management activities should be done outside of primary reproductive seasons.

Conservation Practice Standard 647: Early Successional Habitat Development/Management

Definition: Manage plant succession to develop and maintain early successional habitat to benefit desired wildlife and/or natural communities.

Purpose: This practice should provide habitat for species requiring early successional habitat for all or part of their life cycle.

Resource Concerns: Management activity will be designed to achieve the desired plant community composition, structure, and density to minimize negative impacts to wildlife.

LPC Concerns: This practice will be applied to treat and manage upland lesser prairie chicken habitat concerns identified during the conservation planning process. Benefits to the LPC include providing shelter, cover, and food at appropriate locations and times to sustain lesser prairie chicken during all or a portion of its life cycle Maintenance and management activities should be done outside of primary nesting and brood rearing season. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Maintenance and management activities should be done outside of primary reproductive seasons. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 657: Wetland Restoration

Definition: The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.

Purpose: to the purpose of this practice is to restore wetland function, value, habitat, diversity, and capacity by restoring hydric soil conditions, wetland hydrology and native hydrophytic vegetation.

Resource Concerns: This practice is applicable only where the natural hydrological conditions can be approximated by actions such as modifying drainage, restoring stream/floodplain connectivity, removing diversions, dikes, and levees, and/or using a natural or artificial water source to provide conditions similar to the original, natural conditions.

LPC Concerns: Factors that reduce habitat quality or otherwise limit LPC population growth should be addressed. Restoration, maintenance and management activities should be done outside of primary nesting and brood rearing season. Buffers established to protect wetland values should be established with native species mixes. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Restoration, maintenance and management activities should be done outside of primary reproductive seasons. Buffers established to protect wetland values should be established with native species mixes. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 658: Wetland Creation

Definition: The creation of a wetland on a site location that was historically non-wetland.

Purpose: The purpose of this practice is to establish wetland hydrology, vegetation, and wildlife habitat functions on soils capable of supporting those functions.

Resource Concerns: Resource concerns include soils, hydrology, vegetative conditions existing on the site, the adjacent landscape, and the contributing watershed. Created wetlands must be located in landscape positions and soil types capable of supporting the planned wetland functions.

LPC Concerns: Factors that reduce habitat quality or otherwise limit LPC population growth should be addressed. Wetland creation, maintenance and management activities should be done outside of primary nesting and brood rearing season. Buffers established to protect wetland values should be established with native species mixes. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Wetland creation, maintenance and management activities should be done outside of primary reproductive seasons. Buffers established to protect wetland values should be established with native species mixes. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Conservation Practice Standard 659: Wetland Enhancement

Definition: The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site.

Purpose: To increase the capacity of certain wetland functions by enhancing hydric soil functions, hydrology, vegetation, and plant and animal habitats.

Resource Concerns: Resource concerns include soils, hydrology, vegetative conditions existing on the site, the adjacent landscape, the contributing watershed, and potential impacts on existing non-degraded wetland functions and/or values.

LPC Concerns: Factors that reduce habitat quality or otherwise limit LPC population growth should be addressed. Enhancement, maintenance and management activities should be done outside of the primary nesting and brood rearing season. Buffers established to protect wetland values should be established with native species mixes. FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife

Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects to the LPC and its habitat.

TES Concerns: Enhancement, maintenance and management activities should be done outside of primary reproductive seasons. Buffers established to protect wetland values should be established with native species mixes. Conservation measures for federally listed species known to occur in the Action Area are described in Appendix VI. If other federally listed threatened or endangered species or their associated habitats not found in Appendix VI are found in the area, FSA will coordinate with the NRCS, the Service and the State Fish and Wildlife Agencies on each proposed use of this practice to develop site specific measures which will avoid or minimize adverse effects.

Monitoring and Evaluation

FSA will be responsible for reporting the implementation of the conservation measures described in this Opinion and reporting the findings to the Service on an annual basis. Information contained in the annual reports will include, but not be limited to a summary of the acres enrolled in CRP by program practice during the reporting year within the occupied range of the LPC by eco-region and a description of habitat condition and habitat management activities that occurred on lands enrolled in CRP. FSA will submit a national report following collection of pertinent data from the individual State FSA Offices in Colorado, Kansas, New Mexico, Oklahoma, and Texas, to the Service by December 31 for the previous federal fiscal year.

FSA will consider engaging with third parties, such as the Western Association of Fish and Wildlife Agencies, Playa Lakes Joint Venture, Rocky Mountain Bird Observatory, or similar entities, to conduct field evaluations and assessments of conservation practice and measures implementation to facilitate development of annual performance reports regarding FSA LPC conservation activities consistent with the provisions of this Opinion. In addition FSA will enhance its periodic review processes of FSA State and County Offices to facilitate information sharing and consistency of program delivery. Review teams should consist of FSA, the Service, State fish and wildlife agency, and other cooperators as appropriate.

Ongoing detailed research conducted by independent scientists will be evaluating the effectiveness of these practices with the use of radio-marked birds. Any mortality or nest loss of radio-marked birds associated with these CRP practices will assist in further informing these extrapolated mortality estimates. Finally, as FSA, NRCS, and technical service providers conduct compliance checks and other field assessments of CRP contracts within the occupied range of the LPC, landowners will be asked if they have observed any mortality or nest loss while implementing the practices and measures as described.

FSA is currently supporting a project to document landscape changes through time and LPC populations in response to CRP occurrence. The project is being conducted by Beth Ross and David Haukos of the Kansas Cooperative Fish and Wildlife Research Unit at Kansas State University. The main objectives of the project are to develop an occupancy model for LPC lek surveys; combine radio and satellite telemetry data, nest success data, and lek count data to create an integrated population model; and assess how the juxtaposition of high and low quality habitat influences LPC (Haukos and Ross 2013).

The goal of the occupancy study is to determine how rates of occupancy and abundance have changed since 1964; assess how changes in habitat quality are affecting the occupancy dynamics of LPC in their primary range; and forecast how changes in habitat and climate may impact LPC in the future. The integrated population model will enhance our ability to predict how changes in land use and climate will cause shifts in LPC demographic parameters and ultimately impact abundance.

Contemporary data will consist of a variety of data streams, but concentrate on movements, locations, and habitat use by satellite- and VHF-tagged LPCs in Kansas and Colorado. Such data will allow for the determination of habitat use and selection at multiple spatial scales- point, eco-region, and range-wide, and a determination of how LPC use a landscape and on the relative influence of landscape and environmental variables on LPC population survival, nesting success, and recruitment. Vegetation composition and structure are being characterized at nest sites, brood location, and telemetry points to be compared to random locations to evaluate selection at the individual point scale. Study sites in three of the LPC eco-regions have been delineated- Shortgrass, Mixed Grass, and Sand Sagebrush. Within each eco-region, habitat patches, many of which are associated with CRP, have been identified. Overlaying nest locations and telemetry points will allow for an assessment of the role of CRP in the ecology of the LPC. Within CRP patches identified, the study is also categorizing habitat type and management. For example two study sites in Colorado have CRP with disked strips recommended for mid-contract management. Bird locations will be used to compare disked versus non-disked use. In northwestern Kansas, the interaction of drought and emergency haying and grazing provide for a variety of habitat conditions. In addition there is opportunity to assess impacts associated with expired versus newly enrolled CRP and LPC use and movements. Finally, it is anticipated that a dynamic spatial model that considers the influence in size and location of CRP throughout typical landscapes will help determine optimal locations and management of CRP to benefit LPC.

FSA will continue to cooperate and coordinate with NRCS, the Service, state fish and wildlife agencies, and other partners, to ensure that CRP technical practices and conservation measures are developed and implemented in a scientifically sound manner and that monitoring and evaluation is done in an appropriately valid manner. NRCS is developing a number of evaluation tools to better monitor LPC habitat conditions and population responses. NRCS, state fish and wildlife agencies, and partners will conduct these assessments to measure the biological response of LPC populations, monitor the effectiveness of implementing technical practices and conservation measures, and adaptively improve program delivery. Implementation of technical practices will be tracked in terms of acres, linear feet, or number of units, and recorded by eco-regions. The five state fish and wildlife agencies will continue to conduct LPC population surveys and track lek sites. Changes in the number and distribution of leks and lek attendance (male abundance) are key parameters of population response used to assess the effects of conservation measures. Vegetation assessments will be conducted consistent with Lesser Prairie Chicken Initiative (LPCI) habitat protocols established by the NRCS. NRCS is seeking partners and funding sources to initiate the following studies:

- Delineate high priority LPC habitats across the species range;

- Evaluate the effects of prescribed grazing, prescribed burning, eastern red cedar control, brush management;
- Assess the mortality risk of fence collision and develop predictive models to identify hazardous fences;
- Assess the risk to LPC populations of loss of acres enrolled in CRP that are converted back to annual crop production and develop predictive models of population persistence as it pertains to changes in CRP acreages and landscape connectivity;
- Identify those landscapes most at risk of conversion from agricultural land use to other uses and evaluate benefits of easements to keep those lands in production; and
- Enhance compatibility and use of National Resource Inventory (NRI) and habitat assessment data.

Delivery of Technical Assistance

The technical assistance provided in connection with CRP to owners or operators, as approved by the CCC, includes expertise, information, and tools necessary for the conservation of natural resources on land; services provided directly to farmers, ranchers, and other eligible entities, such as conservation planning, consultation, and assistance with the design and implementation of conservation practices; and infrastructure, including activities, tools, and agency functions needed to support delivery of technical services, such as technical standards, resource inventories, training, data, technology, monitoring, and effects analyses.

NRCS, other conservation partners, and approved technical service providers (TSPs) provide technical assistance to landowners and agricultural producers interested in participating in CRP. Once a producer's CRP offer is made and accepted, NRCS determines if the conservation practices on the land being offered are needed and feasible. Technical recommendations as described in conservation plans meet NRCS Field Office Technical Guides quality criteria for each natural resource found on the land. These conservation plans become part of the CRP contract and shall include all the technical practices necessary for the successful establishment and maintenance of the vegetative cover on all of the acres enrolled in CRP. Conservation plans describe appropriate measures for establishing, restoring, maintaining, or enhancing conservation covers for soil, water and wildlife benefits and include a schedule for installing conservation practices to solve identified natural resource concerns, economic and social considerations, and environmental benefits to be derived.

A conservation plan may contain only information related specifically to CRP, or it may be a part of an overall total resource management system in which numerous conservation programs may be used to meet natural resource needs. While conservation plans are sometimes developed by the participants, most conservation plans are prepared by the NRCS or TSPs. NRCS and TSP are responsible for environmental evaluation during the conservation planning process, technical leadership for planning and implementation, technical concurrence on the conservation plans and revisions, and adherence to and compliance with NEPA, NHPA, ESA, and related laws, regulations, and executive orders. Appendix III outlines the FSA environmental review process and associated review forms. Conservation plans are required before a CRP contract associated with the offer can be approved by FSA.

The conservation plan should include, but not be limited to, the following elements:

- Cover establishment
    - site preparation
    - mineral rates, such as the amount of lime and fertilizer
    - herbicide rates to control herbaceous and woody competition
    - the seed mix and/or species of plant materials to be used
    - sowing rates or planting densities to be used
- Cover maintenance for weed, insect, and pest control
- Required management activities to enhance wildlife benefits of cover
- Managed harvesting, managed grazing, routine grazing, emergency haying and grazing considerations
- Permissive uses
- Compliance requirements
- Other essential information and activities required to meet federal and state legal requirements such as threatened and endangered species or cultural and historic resources protection.

NRCS also provides technical assistance for development of conservation plans required before highly erodible land can be placed into agricultural production under the highly erodible lands conservation provision of the Farm Bill. The proposed action only includes the technical assistance provided in development of conservation plans in accordance with this Opinion for returning land to crop production after expiration of a CRP contract

Funding

The CCC provides funding for the conservation programs administered by FSA, including CRP. The CCC borrows funds needed to finance these programs from the U.S. Treasury and repays the borrowings, with interest, from receipts and from appropriations provided by Congress. Congress has provided funding for CRP at approximately $2 billion annually since 2007. Funding for CRP enrollment at authorized levels is expected to continue. The Manager's Report for the Agricultural Act of 2014 states that "*The managers intend for CRP to be implemented at authorized levels using the statutory flexibility, and for the program to continue as one of USDA's key conservation programs in concert with working lands conservation efforts.*"

The Secretary of Agriculture makes the decision on whether and when to hold a general signup. Continuous signup is ongoing for eligible producers provided acres allocated for the particular continuous practice or initiative are available. The Administration's FY 2015 budget assumes a CRP signup of approximately 1.6 million acres in 2014 (700,000 acres general, 600,000 acres continuous, and 300,000 acres grassland), and 1.2 million acres in 2015 (200,000 acres general, 700,000 acres continuous, and 300,000 acres grassland).

Predictability for Program Participants

This Opinion authorizes incidental take of the species caused by the implementation, maintenance, and management of the conservation practices identified in a CRP participant's conservation plan as long as such conservation practices are consistent with this Opinion. The conservation measures associated with the actions covered in this Opinion were developed in partnership by the Service and FSA to benefit the LPC and its habitat and to be fully compatible with working lands. In order to receive the predictability provided by the incidental take exemption, a landowner is required to implement and maintain the CRP practices and associated conservation measures identified in their conservation plan exactly as detailed. CRP participants are encouraged to contact FSA and NRCS County offices to ensure that NRCS personnel or technical service providers update CRP conservation plans to incorporate LPC conservation measures. The offered predictability is attached to the land and is transferrable to any future owner(s) as long as they continue to maintain the species habitat using the conservation practices and associated conservation measures described in the CRP conservation plan. Should landowners or agricultural producers wish to return a field to agricultural production following CRP contract termination, such activities must occur outside the primary nesting and brood rearing season in order to be covered.

If a landowner or agricultural operator decides to change their land management, they are in no way bound to continue implementation of the conservation practices and measures. The predictability applies only and specifically to the conservation practices and associated conservation measures implemented in accordance with their CRP conservation plan. If a landowner wishes to make land management changes and keep the provided predictability, they should contact FSA and NRCS County offices to discuss the proposed changes and update their conservation plan.

Recognizing that continued implementation of CRP conservation plans by participating producers beyond the term of the CRP contract would advance the longer-term goals of both agencies missions, the Service is evaluating the effects of implementing CRP activities as described in this opinion over a 30-year period. Following CRP contract termination, the Service will extend regulatory predictability coverage if a landowner voluntarily chooses to continue implementing the practices as described in their conservation plans after their CRP contract ends. The Service coverage lasts for as long as the land continues to be managed as to provide habitat for LPC and threatened and endangered species described. Each landowner involved in CRP will have the sole discretion whether or not to continue implementing the conservation practices at the end of their contract with FSA. If a landowner chooses to continue implementing the conservation practices identified in their conservation plan, they will have predictability and confidence in knowing that any ESA issues associated with their implementation will have been addressed in full for a 30-year period from the issuance of this Opinion. By taking this step, the Service, in partnership with FSA, hopes to encourage the long-term implementation of the conservation practices and associated conservation measures. This coverage will end at the completion of activities associated with the land being returned to agricultural production or when the land ceases to provide wildlife habitat values of benefit to LPC and associated species.

The success of application of the CRP conservation practices over time will be assessed and information will be gained that will allow their refinement to improve results for the LPC,

landowners, FSA, and the Service. Any refinements to the conservation practices would be developed in full collaboration between FSA and the Service using information gained from on-the-ground implementation of the conservation practices.

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.

The Action Area includes 85 counties encompassing the estimated occupied range, with a 10 mile buffer, of the LPC within Colorado, Kansas, Texas, New Mexico, and Oklahoma (Map 1). We are including only a summary of the status of the species. 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 LPC as a Threatened species published in the Federal Register on December 11, 2012 (77FR73828) and the documents listed in the Literature Cited section.

Species Description and Life History

The LPC (*Tympanuchus pallidicinctus*) is a species of prairie grouse endemic to the southern high plains of the United States, commonly recognized for its feathered tarsi, 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; Sutton 1977, entire; Johnsgard 1983, p. 318). Female LPCs 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 LPC is native short- and mixed-grass prairies having a shrub component dominated by *Artemesia 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 LPC populations (Crawford and Bolen 1976, p. 102).

LPCs 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 2.5 km (1.5 mi) of a lek (Giesen 1994, 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 (1999, p. 418) observed that female LPCs are more likely to visit older, traditionally used lek sites than temporary, nontraditional lek sites (those used for no more than 2 years). In general, adults tend to spend much of their daily and seasonal activity within 4.8 km (3.0 mi) of a lek (Giesen 1994, p. 97; Riley *et al.* 1994, p. 185; Woodward *et al.* 2001, p. 263).

Leks are normally located on the tops of wind-swept ridges, exposed knolls, sparsely vegetated dunes, and similar features in areas having low vegetation height (10 cm (4 in) or less) or bare soil and enhanced visibility of the surrounding area (Copelin 1963, p. 26; Jones 1963a, p. 771; Taylor and Guthery 1980, 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).

LPCs 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).

LPCs 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). Average natural lifespan or generation time was calculated, based on work by Farner (1955, entire), to be 1.95 years (Van Pelt *et al*. 2013, p. 130). Pruett *et al*. (2011, p. 1209) also

estimated generation time in lesser prairie-chickens and found generation times were slightly lower in Oklahoma (1.92 years) than in New Mexico (2.66 years).

Historic and Current Distribution

Prior to description by Ridgeway in 1885, most observers did not differentiate between the LPC and the greater prairie-chicken. Consequently, estimating historical abundance and occupied range is difficult. Historically, the LPC 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 LPC 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 (1980, p. 1, based on Aldrich 1963, p. 537) estimated that, by the 1880s, the area occupied by LPC 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 (1980, 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 LPC is now thought to occupy about 34,479 sq km (13,312 sq mi). The approximate current occupied LPC range is 70,600 sq km (27,258 sq mi).

The overall distribution of LPC 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 LPC 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.

Reasons for Decline and Threats to Survival

The range of the LPC has been reduced by an estimated 84 percent primarily due to habitat fragmentation resulting from a variety of mechanisms that contribute to habitat loss and alteration, such as conversion of native prairie and grassland to cropland; improper grazing, haying, and herbicide spraying that reduces LPC 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.

This habitat loss is a significant threat to the LPC 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 LPC's resiliency to recover from adverse effects resulting from present and future impacts and persist in the long term is compromised.

Vertical structures such as power poles, transmission lines, etc. to accommodate energy transmission historically were not common in LPC habitat or on or near lek sites. The presence of those structures now provides perches for hawks and owls to sit, observe, and hunt LPCs 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 the scale it does today.

Grazing, haying and mowing can contribute to increased predation as well by reducing grass height LPCs 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.

Range-wide Survival and Recovery Needs

In order to address the long-term conservation of the LPC, the Service suggests implementation of four overarching management goals to address the three primary challenges facing the species. The four management goals are described in detail in a Service technical white paper (Appendix VI) and include establishing strongholds, ensuring connectivity, committing to implementation, and providing long-term certainty.

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 which 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..

The environmental baseline includes a general description of the conservation programs and plans in the Action Area including participation in CRP, the NRCS Lesser Prairie-Chicken Initiative, the WAFWA Range-wide plan and other conservation efforts affecting the LPC.

CRP Conservation Accomplishments

CRP Enrollment in the Action Area

Approximately 5 million acres are currently enrolled in CRP within the 85 county Action Area (Table 9) and 4 million of those acres were established as native covers (Table 10).

Land enrolled in CRP accounts for approximately 25 percent of the acreage contained within the LPC occupied range and 32 percent of the designated LPC focal area/connectivity/expansion zones. It is important to look at the quality and quantity of CRP cover relative to the known occupied range and proximity to leks and preferred seasonal habitats (Map 6)

It is estimated that about 80 percent of CRP enrollment within the occupied range of LPC were originally established to or have since been converted through program re-enrollment to native covers. Looking at the CRP enrollment in native grass practices versus total CRP enrollment within the LPC occupied range can be used as a qualitative measure. Comparing CRP enrollment within focal areas, connectivity, and expansion zones against CRP enrollment within the LPC eco-regions derives a simple quantitative measure. Approximately 67 percent of CRP enrollment within the occupied range of the LPC is located within designated eco-regions and 46 percent within CHAT 1, CHAT 2, and CHAT 3 category designations (Appendix III).

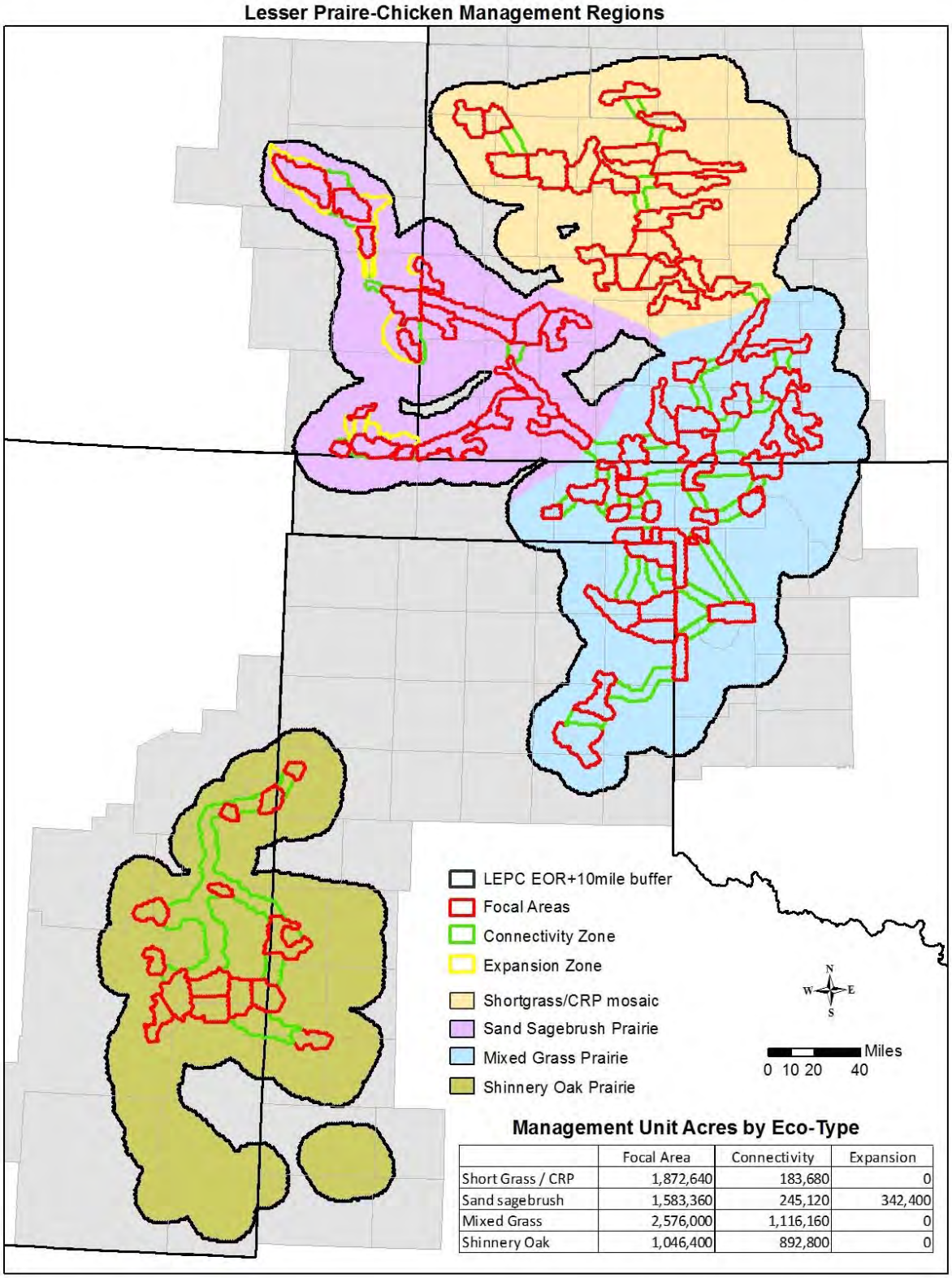
Table 9. CRP Enrollment by LPC Eco-regions, State and Practice (3/2013)

Ecoregion	Total Acres	CP1	CP2	CP4	CP10	CP23A	CP25	CP38	Other
Shinnery Oak	*1,713,610*	*183,892*	*1,056,685*	*303*	*392,023*	*28*	*0*	*72,311*	*8,246*
New Mexico	372,237	27,136	257,866	0	83,302	0	0	2,600	1,333
Texas	1,341,372	156,878	798,819	303	308,720	28	0	69,711	6,913
Sagebrush	*1,515,673*	*30,167*	*758,317*	*185,489*	*376,011*	*2,347*	*133,090*	*26,696*	*3,556*
Colorado	730,389	753	336,586	165,734	211,437	0	468	13,330	2,081
Kansas	600,920	5	333,913	19,336	99,867	986	132,623	13,341	849
Oklahoma	184,364	29,409	87,817	418	64,707	1,361	0	24	626
Mixed Grass	*980,653*	*87,174*	*468,569*	*76,186*	*280,225*	*1,180*	*43,794*	*16,187*	*7,338*
Kansas	322,615	160	135,701	73,123	63,078	1,019	37,318	7,193	5,022
Oklahoma	463,588	66,072	225,439	166	157,993	161	6,424	6,668	665
Texas	194,449	20,941	107,429	2,896	59,153	0	52	2,326	1,651
Short Grass	*858,311*	*167*	*183,731*	*196,150*	*59,071*	*1,273*	*367,108*	*30,553*	*20,258*
Colorado	123,448	0	28,435	57,407	36,891	0	280	157	278
Kansas	734,863	167	155,296	138,743	22,180	1,273	366,828	30,397	19,980
Total	*5,068,247*	*301,400*	*2,467,302*	*458,128*	*1,107,330*	*4,828*	*543,993*	*145,748*	*39,395*

Table 10: LPC Eco-region, Focal Area (includes Connectivity and Expansion Zones), and CRP Considerations.

Ecoregion	CRP Enrollment (Acres)	CRP Native Cover (Acres)	CRP Quality Measure	Focal Area (Acres)	CRP Enrollment in CHAT 1, CHAT 2, and CHAT 3 Categories Acres	Percent of CRP Enrollment in Proximity to Known Populations
Sand Shinnery Oak	1,713,610	1,137,573	0.66	1,939,200	915,164	0.53
Sand Sagebrush	1,515,673	1,420,799	0.94	2,170,880	530,428	0.35
Mixed Grass	980,653	676,333	0.69	3,692,160	524,497	0.55
Shortgrass	858,311	858,144	1.00	2,056,320	369,094	0.43
Total	5,068,247	4,092,849	0.81	9,858,560	2,339,183	0.46

Map 8. LPC Focal Areas and Connectivity/Expansion Zones



Management Unit Acres by Eco-Type

	Focal Area	Connectivity	Expansion
Short Grass / CRP	1,872,640	183,680	0
Sand sagebrush	1,583,360	245,120	342,400
Mixed Grass	2,576,000	1,116,160	0
Shinnery Oak	1,046,400	892,800	0

Continuous CRP Initiatives in Action Area

CRP Wetland Restoration, Non-floodplain Initiative (Announced in 2005) – Initiative is designed to restore wetlands and playa lakes that are located outside the 100-year floodplain. This 350,000 acre initiative provides habitat for many wildlife species, filters runoff, recharges groundwater supplies and sequesters carbon. Currently 225,676 acres across the country are under CRP contracts that include establishment of the CP23A Non-floodplain Wetland Restoration practice. Among the LPC States, Kansas and Oklahoma have the most participation in the CP23A practice, with Kansas having 4,150 acres enrolled and Oklahoma having 1,660 acres enrolled.

Habitat Buffer for Upland Birds Initiative (Announced in 2005) - Initiative is aimed at creating 500,000 acres of habitat for the northern bobwhite and other grassland dependent birds by creating early successional grass buffers along agricultural field borders. Planting such buffers will also benefit reptiles, amphibians, and upland birds, many of which are being considered for listing as threatened or endangered species. In addition, the initiative will reduce soil erosion and protect water quality by trapping field sediments and nutrients. Among the LPC States, Kansas, Texas, and Oklahoma have the most participation in the CP33 Upland Bird Habitat Buffer practice, with Kansas having 40,407 acres, Texas having 4,800 acres, and Oklahoma having 1,054 acres, enrolled.

State Acres for Wildlife Enhancement (SAFE) (Announced in 2007) – A continuous CRP initiative to improve habitat for high priority wildlife species throughout the United States. It is a locally-led, results-oriented cooperative conservation effort. State fish and wildlife agencies, non-profit organizations and other conservation partners work collaboratively with FSA to target CRP delivery to specific conservation practices and geographic areas where enrollment of eligible farm land in continuous CRP will provide important wildlife value. FSA in cooperation with appropriate state fish and wildlife agencies and other conservation partners monitor SAFE and manage available acres to ensure that CRP goals and objectives are being met. To encourage landowner participation in SAFE, new land entering CRP is offered additional financial incentives through SIP and PIP. Expiring general CRP acres with existing introduced grass cover re-enrolled into continuous CRP through SAFE and requiring cover upgrades are eligible for PIP. Currently there are 1,250,000 acres of CRP enrollment distributed among 97 projects nationwide allocated to SAFE. A total of 214,000 acres have been allocated among the five CP38 SAFE projects focused on LPC - Colorado (21,500 acres), Kansas (52,100 acres), New Mexico (2,600 acres), Oklahoma (15,100 acres), and Texas (122,700 acres). Acres offered to SAFE LPC projects as of October, 2013, included 20,515 acres in Colorado; 37,951 acres in Kansas; 2,600 acres in New Mexico; 7,813 acres in Oklahoma; and 103,157 acres in Texas. Out of the acres offered, actual acres under CRP contract as a result of SAFE LPC project participation stood at 13,488 acres (Colorado); 32,680 acres (Kansas); 2,600 acres (New Mexico); 6,965 acres (Oklahoma); and 78,565 acres (Texas) as of October, 2013. The difference between acres offered and acres under contract are those CRP offers which are currently being evaluated and processed. There can be several months between when an offer is made and a contract is actually approved and becomes active.

CRP Highly Erodible Land Initiative (Announced in February 2012) - seeks to protect the nation's most environmentally sensitive lands by permitting landowners to enroll up to 750,000 acres of land with an Erodibility Index (EI) of 20 or greater in CRP. Such land can be offered for enrollment in CRP on a continuous basis, however, no SIP or PIP is provided as additional financial assistance. Between general and continuous signups, a total of 475,300 acres of highly erodible cropland of EI of 20 or greater are currently enrolled in CRP and established to conservation cover (159,814 acres in Texas, 114,117 acres in New Mexico, 96,699 acres in Kansas, 67,993 acres in Oklahoma, and 36,678 acres in Colorado). Based on land cover and highly erodible land data, the Playa Lakes Joint Venture estimates that there are approximately 689,000 acres of land with an EI of 20 or greater still being cropped within the current estimated occupied range of the LPC (46 percent of which is estimated to be located within identified LPC focal areas and connectivity and expansion zones).

Table 11. Highly Erodible Land (EI of 20 or Greater) by LPC Eco-region (Focal Area includes Connectivity and Expansion Zones) Still Being Cropped.

Highly Erodible Lands of EI of 20 or Greater under Cultivation			
LEPC Eco-Region	Total # of Acres	percent Within Focal Areas	percent Outside of Focal Areas
Shinnery Oak	330,720	0.36	0.64
Sandsage	254,930	0.64	0.36
Mixed Grass	96,460	0.34	0.66
Shortgrass	6,890	0.36	0.64

Pollinator Habitat Initiative (Announced In 2012) - The CP42 Pollinator Habitat practice assists producers in establishing conservation covers that benefit honey bees and native pollinators throughout the growing season. Native pollinators include a wide range of insects including bees, beetles, butterflies, and moths, as well as birds. This 100,000 acre initiative seeks to encourage and support a diverse group of pollinators through the establishment of a diverse stand of native grasses and wildflowers. Among the LPC States, Texas, Colorado and Kansas have had the most interest in the CP42 practice, with Texas having 10,522 acres, Colorado having 10,215 acres, and Kansas having 1,389 acres, enrolled.

CRP Science Support Component

FSA is currently supporting a project to document landscape changes through time and LPC populations in response to CRP occurrence. The project is being conducted by Beth Ross and David Haukos of the Kansas Cooperative Fish and Wildlife Research Unit at Kansas State University. The main objectives of the project are to develop an occupancy model for LPC lek surveys; combine radio and satellite telemetry data, nest success data, and lek count data to create an integrated population model; and assess how the juxtaposition of high and low quality habitat influences LPC.

The goal of the occupancy study is to determine how rates of occupancy and abundance have changed since 1964; assess how changes in habitat quality are affecting the occupancy dynamics of LPC in their primary range; and forecast how changes in habitat and climate may impact LPC

in the future. The integrated population model will enhance our ability to predict how changes in land use and climate will cause shifts in LPC demographic parameters and ultimately impact abundance.

Contemporary data will consist of a variety of data streams, but concentrate on movements, locations, and habitat use by satellite- and VHF-tagged LPCs in Kansas and Colorado. Such data will allow for the determination of habitat use and selection at multiple spatial scales- point, eco-region, and range-wide, and a determination of how LPC use a landscape and on the relative influence of landscape and environmental variables on LPC population survival, nesting success, and recruitment.

NRCS LPCI Conservation Accomplishments

Healthy prairies and grasslands are the common goals of range managers and LPC biologists. Practices available through the LPCI can provide for the establishment and improvement of LPC habitat while also providing long term sustainability for the ranch operation. Since inception in 2010, LPCI has provided a number of positive benefits to LPC habitat. Some of these improvements, such as control of invasive woody species, are immediately visible on the landscape. Other improvements, such as prescribed grazing, are more subtle and may take years to be visible to anyone but the biologists or range conservationists assisting land managers on the ground. For a list of numbers of contracts, dollar amounts, and acres under contract for each state and total for the LPC Initiative over its first three years 2010, 2011, and 2012 see Table 2 in the NRCS Conference Opinion (page 29).

Control of invasive woody species provides an immediate impact by removing obstructions that may limit the use of the rangeland by LPC while also providing for increased herbaceous production over time. Removal of invasive woody species followed up by prescribed grazing will provide long term benefits to the herbaceous vegetation allowing for improved LPC habitat and a more sustainable grazing operation. Incorporating prescribed fire into the management will prevent further encroachment of invasive woody species while improving the herbaceous vegetation.

Table 3 in the NRCS Conference Opinion (page 30) shows the amounts of Brush Management, Prescribed Burning, and Prescribed Grazing implemented and yet to be implemented from the first three years of LPCI contracts. In addition, NRCS has been providing assistance through the general EQIP and WHIP programs. In fiscal years 2010 and 2011, brush management was applied on 379,258 acres within LPC range with NRCS assistance. In those same two fiscal years NRCS, assisted on over one million acres of Prescribed Grazing on rangeland within LPC range. This represents a large amount of acreage over the LPC range.

Other tools incorporated as a result of the LPCI will provide additional benefits to LPC. The Wildlife Habitat Evaluation Guides (WHEGs) developed for use through the LPCI have been adopted by the states and incorporated into their range-wide plan for use by State fish and wildlife agencies when assessing LPC habitat. These tools will provide a baseline on limiting factors and a basis for planning improvements.

LPCI Science Support Component

NRCS and Kansas State University have initiated 3 research projects using Conservation Effects Assessment Project (CEAP) funding to examine the effects of LPCI conservation measures on LPC populations, focusing on prescribed grazing, cedar removal, and fence marking. These projects will take at least 3-5 years to complete and begin to understand the impacts of these practices.

NRCS is also using existing Natural Resource Inventory (NRI) data to provide a baseline of rangeland health and vegetation structure across LPC range.

GIS tools are being developed to quantify the extent of the threat of cedar and mesquite invasions into LPC habitats throughout the range. These tools will not only provide a rigorous quantification of the threat, but planning tool support, as well as monitoring change in the landscape overtime.

LPCI contracts are also implementing ranch level monitoring to assess changes in vegetation structure over the duration of the contract and perhaps beyond.

Two WHEGs have been developed for the sand shinnery oak eco-region and the remaining range to the north. The WHEGs provide a field level assessment that determines the limiting factor for LPCs on that particular project area. Once the limiting factor(s) has been identified, those become the focus of progressive planning to address all manageable threats to LPC on the planned acres. The tracking of the WHEG and the Habitat Threats Checklist enables NRCS to account for threat reduction across the LPCI.

WAFWA Range-wide Plan

Pursuant to a 4(d) special rule published with the final listing rule for the LPC (79FR20074), plan participants (impacters) may receive incidental take coverage for development activities, including oil and gas, wind, and transmission. Landowners may voluntarily enroll in the plan to benefit the LPC and generate credits of offset development activity impacts of plan participants. Enrolled landowners receive incidental take coverage for management practices that benefit the LPC including prescribed grazing, burning, and brush management.

Oil and Gas CCAA - tied to RWP

Oil and gas companies voluntarily enrolled to receive incidental take coverage to offset development impacts by funding conservation actions on their lands to benefit the LPC. If the enrolled participants continue to implement their conservation actions they will not be required to implement additional measures.

New Mexico CCA/CCAA

Oil and gas companies voluntarily enrolled to receive incidental take coverage to offset development impacts by funding conservation actions on their lands to benefit the LPC.

Landowners that voluntarily enrolled in the CCAA will receive incidental take coverage for agricultural practices by implementing conservation actions on their lands to benefit the LPC. If the enrolled participants continue to implement their conservation actions they will not be required to implement additional measures. Through a Conference Opinion on the CCA involving BLM, Oil and Gas participants will have incidental take coverage post-listing on their enrolled acres.

Texas CCAA

Landowners that voluntarily enrolled in the CCAA will receive incidental take coverage for agricultural practices by implementing conservation actions on their lands to benefit the LPC and as long as enrolled participants continue to implement their conservation actions, they will not be required to implement additional measures.

Oklahoma CCAA

Landowners that voluntarily enrolled in the CCAA will receive incidental take coverage for agricultural practices by implementing conservation actions on their lands to benefit the LPC and as long as the enrolled participants continue to implement their conservation actions, they will not be required to implement additional measures.

With regard to other programs that have been implemented that may also result in incidental take of LPCs, the following table (Table 12) represents a summary of available estimated incidental take for all known actions approved by the Service that may result in additive adverse effects to LPCs rangewide. Incidental take authorized by the rangewide oil and gas CCAA issued February 28, 2014, is contemplated by the WAFWA RWP estimate and therefore is compensatory and will not be included in the total tallied below. Some programs, although authorized for incidental take, did not provide an estimate of incidental take associated with the action due to limited information regarding the LPC and potential enrollment at the time the programs were approved. However, those programs are specifically tailored to result in benefits to the LPC e.g. New Mexico CCAA for oil and gas and agriculture, Texas CCAA for agriculture, etc., and are therefore unlikely to significantly affect the total estimate below.

Table 12. Estimate of Annual Authorized Incidental Take from all Service-approved actions

Plan	Annual Estimated Incidental Take	Service approval	Issued
Texas CCAA (Ag)	None provided	10(a)1(A) permit; Conference Opinion	November 2, 2006
New Mexico CCAA (oil and gas / Ag)	None provided	10(a)1(A) permit; Conference Opinion	December 5, 2008
WAFWA RWP	600 -700	Letter endorsement	October 23, 2013
NRCS-LPCI	282	Section 7 consultation; Conference Opinion	November 22, 2013
Range-wide oil and gas CCAA	284 - Incorporated in WAFWA RWP estimate and therefore not included in total below	10(a)1(A) permit; Conference Opinion	February 14, 2014
Oklahoma CCAA (Ag)	40 (and 20 nests)	10(a)1(A) permit; Conference Opinion	January 25, 2013; amended March 19, 2014
Total	**922 – 1,022**		

Conservation Actions Not Yet Implemented

The following conservation action proposals have not yet been completed and, if approved, would provide various means to obtain incidental take coverage. Each of the following actions will be subject to Section 7 consultation prior to implementation. Therefore, they are not part of the analysis for this Opinion.

Intra-Service Consultation Partners and Refuges Programs

Would provide participating landowners with incidental take coverage for covered actions through a Biological Opinion.

Common Ground Capitol Conservation Bank

Would provide a means to purchase permanent credits to offset incidental take that is already authorized through the 4(d) rule (the RWP), a section 7 Biological Opinion, or section 10 incidental take permit.

Great Plains Wind HCP

If approved this HCP would provide incidental take coverage for covered wind development activities. Covered species would include the whooping crane, LPC and potentially other listed species.

American Habitat Center HCP/CCAA

Would allow energy developers, agricultural operators, and other developers to voluntarily enroll and receive incidental take coverage through a section 10 permit issued by the Service to offset covered development impacts by funding conservation actions on private lands to benefit the LPC. Landowners would be able to voluntarily enroll in the plan to benefit the LPC and generate credits to offset covered development activity impacts of plan participants (impacters).

Federally Listed, Proposed, and Candidate Species within the Action Area

Table 13 lists Federally-listed, proposed and candidate species within the Action Area. The species on the list only include those that share habitat with the LPC and where the covered activities/conservation practices may create effects.

It is anticipated that the proposed action, including the conservation measures described in this Opinion, will have little or no effect on the other listed and candidate species within the Action Area and some CRP activities and conservation practices will benefit these other species. A summary of the potential effects of CRP activities and the conservation measures developed to avoid or minimize potential adverse effects is provided below. More complete descriptions of potential threats to these other species and species-specific conservation measures are found in Appendix V, while practice-specific resource concerns and conservation measures are included in the Conservation Measures section of this Opinion.

Many of these federally listed species are fishes, freshwater shrimp, or mollusks associated with wetlands, fresh-water springs and seeps, or caves and caverns associated with karst topography. The greatest threats facing these species are those that impair water quantity and quality, such as water diversion, groundwater pumping, drought, dams, and water contamination from development and oil and gas exploration. CRP activities are not likely to adversely affect these species as conservation measures applied will protect the integrity of wetlands, seeps, springs, and riparian areas. Permanent vegetative covers established through CRP will collect agricultural run-off and protect water quality.

Table 13. Federally Listed, Candidate, and Proposed Species within the Action Area

Common Name	Scientific Name	Federal Status	Critical Habitat
Arkansas darter	Etheostoma cragini	C	N/A
Arkansas River shiner	Notropis girardi	T	Yes
Black-footed ferret	Mustela nigripes	E/EXPN	No
Dune sagebrush lizard	Sceloporus arenicolus	NL	No
Gypsum wild buckwheat	Eriogonum gypsophilum	T	Yes
Interior least tern	Sterna antillarum athalassos	E	No
Koster's springsnail	Juturnia kosteri	E	Yes
Kuenzler's hedgehog cactus	Echinocereus fendleri var. kuenzleri	E	No
Noel's amphipod	Gammarus desperatus	E	Yes
Northern Aplomado falcon	Falco femoralis septentrionalis	E	No
Pecos assiminea	Assiminea pecos	E	Yes
Pecos bluntnose shiner	Notropis simus pecosensis	T	Yes
Pecos gambusia	Gambusia nobilis	E	Yes
Pecos sunflower	Helianthus paradoxus	T	Yes
Piping plover	Charadrius melodus	E, T	Yes
Rio Grande silvery minnow	Hybognathus amarus	E, EXPN	Yes
Roswell springsnail	Pyrgulopsis roswellensis	E	Yes
Southwestern willow flycatcher	Empidonax traillii extimus	E	Yes
Sprague's pipit	Anthus spragueii	C	N/A
Texas hornshell	Popenaias popeii	C	N/A
Whooping crane	Grus Americana	E	Yes
Wright's marsh thistle	Cirsium wrightii	C	N/A

E – Endangered species; T - Threatened species; PE - Proposed endangered species; C – Candidate species; NL – Not listed, but considered at-risk

CRP activities are also not likely to adversely affect migratory birds such as the interior least tern, piping plover, and whooping crane. In addition, waste grain, such as wheat, barely, and corn, associated with agricultural activities on farmlands not under CRP contract may be important food sources for migrating whooping cranes.

Maintenance and management activities associated with compliance requirements of CRP contracts, such as control of tree encroachment through brush management and prescribed burning, are likely to benefit black-footed ferret, dunes sagebrush lizard, and northern aplomado

falcon. Conservation measures during brush management activities will seek to protect Kuenzler's hedgehog cactus.

CRP conservation covers established on cropland will have beneficial effect on LPC and federally listed species within the occupied range of the LPC. Implementation of CRP maintenance and management practices as conditioned by the conservation measures are not likely to adversely affect federally listed species within the occupied range of the LPC.

Aquatic and Riparian Species

To avoid negative effects to aquatic, riparian, and species dependent upon aquifer-fed spring systems, avoid any practice that removes ground water or causes drying of surface water in the occupied habitat of the Arkansas darter, Arkansas River shiner, Foster's spring snail, Noels' amphipod, Pecos assiminea, Pecos gambusia, Roswell springsnail, Pecos sunflower, or Wright's marsh thistle.

Although unlikely to be directly affected, Rio Grande silvery minnow, Pecos bluntnose shiner, and Texas hornshell, which occupy continuous-flowing river reaches, and southwestern willow flycatcher, which occupies dense riparian habitats, could be indirectly affected by water related practices such as spring development. To avoid impacts to these species, ensure that water withdrawals will not reduce quality of aquatic or riparian habitat. Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by these species.

Conservation measures for Arkansas River shiners include protection and enhancement of riparian and stream habitat with riparian buffers, exclusion of livestock from streams, and control of salt cedar and other non-native vegetation. Avoid any practice that removes ground water or causes drying of surface water occupied by the species.

To provide conservation for Koster's springsnail, Noels' amphipod, Pecos assiminea, and Roswell springsnail, an additional buffer surrounding occupied habitat is needed to protect water quality and improve land management practices. Other measures include avoiding any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species; restricting access to occupied habitat; and avoiding the use of prescribed burning to control invasive vegetation. For the Texas hornshell an additional conservation measure would be to restrict access to Texas hornshell beds.

Mammals

Black-footed ferrets do not currently overlap with the current estimated occupied range of the LPC, except in Logan County, Kansas and possibly northeast New Mexico. Black-footed ferret recovery partners are working to develop measures that would facilitate private land black-footed ferret reintroductions. Habitat management, brush management, and good grazing practices may have beneficial effects to the black-footed ferret.

Birds

Interior least tern breeding and nesting sites within the range of the LPC are limited to the Red and Canadian Rivers and their major tributaries. Potential effects to interior least terns from

ground disturbing practices (e.g., fencing, pipelines, and grade stabilization) in the bed and banks of these areas could be avoided by not conducting these practices in known nesting streams, and/or seasonal avoidance of interior least tern breeding or nesting habitat.

Of greatest importance to conservation efforts for the Northern Aplomado falcon is protection and restoration of pesticide- and lead-free grassland and wetland communities and associated forest, woodland, and thorn scrub. Human intrusions can cause nest abandonment and make Aplomado falcons more susceptible to detection and harm from potential predators. Restrict access to known or suspected nesting areas. Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.

Piping plovers require relatively barren, unvegetated salt flats, river sandbars and islands for nesting and foraging. A combination of watershed, riparian and stream restoration may provide the best means for improving stream habitat and watershed integrity as a whole. Land use practices that may adversely affect stream flows, channel morphology, and sediment transport should be avoided. Conservation measures include protection and enhancement of riparian and stream habitat with riparian buffers, protection from human disturbance (off-road vehicle use, etc.) exclusion of livestock from streams, control of salt cedar and other non-native vegetation to help restore historic levels of base flows and to reduce perch sites and habitat for potential predators.

Because the southwestern willow flycatcher breeds only in dense, mesic riparian, conservation measures may include: remove cattle from the riparian areas to enhance riparian habitat and prevent destruction of nests (although some light to moderate grazing during the winter in riparian areas is acceptable); restrict human access, including controlling off-road vehicles, to habitat during the breeding season; pole-plant willows where soils and hydrology are suitable for flycatchers; and construction of artificial oxbows as a means to stabilize eroded banks.

To conserve whooping cranes, limit activity within 0.5-miles of wetlands suitable as stopover sites during spring and fall migration periods. Autumn migration normally begins in mid-September, with most birds arriving on the Texas wintering grounds between late October and mid-November. Spring migration departure dates are normally between March 25 and April 15, with the last birds usually leaving by May 1. To determine what suitable whooping crane habitat is, look for shallow wetlands in open, non-wooded areas free from human disturbance, such as nearby roads or buildings with at least some water area less than 18 inches deep. This will include marshes, small ponds, lake edges, or rivers. Avoid any practice that removes ground water or causes drying of surface water in the immediate area of possible stopover sites and that increases the risks posed by new structures on the landscape. Other LPCI practices that may be beneficial to the whooping crane include watering facilities to provide livestock with reliable water resources outside of stopover sites, planting, and pond development.

<u>Plants</u>
Protection of habitat and individual Kuntzler hedgehog cactus plants, especially on private lands is of the highest priority for the recovery of this species. Grazing control may help to prevent erosion.

The single most important conservation measure for gypsum wild buckwheat is access control to prevent damage to individual plants.

Conservation measures for the Pecos sunflower include managing groundwater use in the surrounding area to assure adequate spring flows, but water could be exported after it has passed through Pecos sunflower habitat. Livestock grazing can damage Pecos sunflower plants, however, removal of competing grass cover and soil disturbance by livestock may help the germination and establishment of sunflower seeds. The effects of grazing season, frequency, intensity and duration need further study to develop recommendations for best management practices.

To conserve Wright's marsh thistle, grazing exclosures could be built in riparian areas to support protection and expansion of extant populations. Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.

Other At-Risk Species within the Action Area

The dunes sagebrush lizard (DSL) is no longer a candidate for listing under the ESA, in large part due to the conservation actions that will be undertaken by landowners enrolled in two voluntary agreements, the Candidate Conservation Agreement for the Lesser Prairie Chicken and the Dunes Sagebrush Lizard in New Mexico signed in 2008, and the Texas Conservation Plan (TCP) for the Texas Dunes Sagebrush Lizard signed in June 2011. The DSL has a two state range and is currently restricted to five counties (Andrews, Crane, Gaines, Ward and Winkler) in western Texas and four counties (Chaves, Eddy, Lea and Roosevelt) in eastern New Mexico. Awareness of landowners who have voluntarily enrolled in these two CCAAs is essential to make sure that the implementation of the conservation measures designed to benefit the LPC do not impact the DSL and its particular shinnery oak prairie habitat.

The TCP area includes those portions of the following Texas counties which have suitable habitat for the DSL: Andrews, Cochran, Crane, Ector, Gaines, Ward, Winkler, and Yoakum. An additional six counties, including Bailey, Hale, Hockley, Lamb, Upton, and Terry contain shinnery sands ecoregion, which is not currently considered DSL Habitat, but is included in the Plan Area for further research and recovery activities. While DSLs have not been documented in all of these counties, the broader Plan Area is intended to allow flexibility for participants to undertake research and recovery activities in areas where appropriate.

The following recommendations were developed while the DSL was a candidate species and should be followed on properties where DSL habitat exists and where properties are enrolled in State CCAAs.

Conservation measures for the DSL include, but may not be limited to: allowing no surface occupancy within 200 meters of areas designated as occupied or suitable, unoccupied dune complexes or within delineated shinnery oak corridors. Areas should be determined at a landscape scale (dune complexes) rather than a dune-by-dune scale and should also delineate corridors for movement between occupied and suitable dune complexes; prohibiting Tebuthiron spraying within 500 m of suitable and occupied habitat (dune complexes) or within corridors that connect dune complexes that are within 2,000 m of each other; and removing brush (not shinnery

oak) that invades into the habitat preferred by DSLs. If dunes or dune complexes cannot be avoided, approved practices necessitating physical presence within dunes or dune complexes will avoid the critical period of March 1 to October 30 to avoid adverse effects to DSLs Avoid brush control treatments to large blocks or strips and no more than 50 percent of an individual management unit (pasture) will be treated during any two year period. Establish a grazing plan that ensures: stocking rates are in balance with the forage supply; season of use is rotated through pastures to ensure plants have adequate reproduction opportunity; and that the plan is implemented to increase residual cover of perennial grasses and forbs.

EFFECTS OF THE ACTION

We have evaluated the identified program activities, conservation practices, and technical practice standards used to implement CRP and their potential to produce beneficial and adverse effects to the LPC – at the individual, population, and landscape scales. The Service worked in collaboration with the FSA and NRCS to develop specific conservation measures pertaining to the establishment, maintenance, management, permissive use of CRP conservation cover and conversion of the cover after contract expiration. The Service believes that, as implemented, the conservation measures will result in ameliorating, minimizing, or eliminating potential adverse effects. However, full adherence to the conservation measures described will not guarantee that individual birds or nests will not be lost given inherent risks associated with certain conservation practices like managed harvesting of forage and prescribed burning. Nevertheless, the Service believes that the conservation measures, in concert with the identified conservation objectives of targeting enrollment of CRP acres in priority areas and maintaining quality conservation covers on enrolled lands, will result in an overall benefit to the LPC.

The Service also evaluated the potential impact that these program practices and conservation measures could have on federally threatened and endangered species found within the occupied range of the LPC. The Service believes that potential adverse impacts to those species having similar habitat and life history needs as the LPC can be avoided or minimized and beneficial impacts enhanced as well by the incorporation of the conservation measures described. In addition, impact to the threatened and endangered aquatic species described can be avoided or minimized by restricting the implementation of the program practices and conservation measures mentioned to the uplands adjoining an undisturbed riparian buffer designed to protect stream bank, stream bottom, and water characteristics providing habitat needed by the species.
The Section describing conservation measures provides a comprehensive narrative of each conservation practice standard covered in the Opinion, its purpose, the identification of any potential adverse effects and description of expected beneficial effects, and the identification of appropriate conservation measure(s).

Adverse Effect: Physical disturbance (including noise)

All of the covered CRP activities and associated conservation practice standards, either directly or indirectly have the potential to produce some additional level of physical disturbance because they involve the physical presence of humans, livestock, and/or associated equipment, vehicles or machinery. Further, future periodic disturbances have the potential to occur as maintenance and management of established CRP cover is needed over the length of the CRP contract.

Although effects are not quantitatively known, the literature suggests that some form of physical effects from presence and associated noise will create a disturbance response to individual birds. Most of this disturbance, however, will be localized to the immediate area where the work is occurring and is expected to be of limited duration and temporary in nature.

Of significant concern is physical disturbance during the LPC breeding, nesting and brood-rearing season (varies by state). The bird's response ("flushing"/escape behavior) may place individual birds at greater risk to predation when they leave cover. If the equipment and actions occur close to occupied nests, the female may abandon the nest for some indeterminate period or permanently. The net effect of the physical disturbance and associated noise may be a localized reduction of survival or productivity, avoidance of otherwise suitable habitat, and/or reduction of breeding frequency. The presence of livestock may also create physical disturbance to LPC. Adverse consequences of grazing include livestock trampling of LPC nests. Although the effect of trampling at a population level is unknown, outright nest destruction has been documented. For example, Pitman et al. (2006) quantified nest loss over 6 breeding seasons and identified 1.9 percent of nest loss (n = 161) to trampling by livestock. The presence of livestock potentially could cause LPC to abandon their nests, but has not been documented.

Disturbance of some individual LPC may occasionally occur from feeding, calving, and herding of livestock. These effects are expected to rarely occur and are not expected to produce significant changes in species distribution and abundance. However some small level of mortality is expected.

With respect to physical disturbance and associated noise, normal and routine use of equipment necessary to maintain ranching and farming operations is not considered by the Service to be a significant source of adverse effect to the species. Conservation measures were specifically developed to minimize physical disturbances to LPC during the critical breeding, nesting and brood-rearing season. One of the conservation measures establishes a non-disturbance period consistent with the state-specific PNS and in some cases distance from known leks. Another relevant conservation measure facilitates the creation of site-specific criteria as needed when the specific local and landscape conditions for a particular site require a local conservation strategy. State Fish and Wildlife Agencies, NRCS, the Service's Partners for Fish and Wildlife biologists, and other local experts along with the recommendations from the state technical committees, will assist FSA in establishing a local solution where needed.

The adverse effects of this concern are expected to be localized and temporary, and the use of the conservation measures will further reduce the risks of adverse effects at the scale upon which populations or the species will be negatively impacted. On balance, the anticipated benefits of establishing, maintaining and managing conservation cover through installation and application of a particular conservation practice standard under CRP are expected to exceed the temporary adverse effects created from their installation.

Adverse Effect: Temporary soil disturbance and vegetation removal and increased potential of introduction of invasive plants

Temporary soil disturbance and vegetation removal are expected from the implementation of most of the conservation practice standards. This disturbance may result in loss of cover and increase the potential for invasive plants. For purposes of this analysis, the Service is combining these two conservation issues into a single discussion of their potential adverse effects. Sources of the disturbance would include use of equipment (post-hole diggers, tractors, and other machinery) as well as practices that involve the planting or manipulation of vegetation (examples such as establishment or enhancement of conservation cover, brush management, shrub control, prescribed grazing and prescribed burning). Common potential adverse effects include degradation of habitat conditions and the potential for increased habitat fragmentation if the scale of the disturbance is large enough and the potential to create opportunities for colonization of these disturbed sites by invasive plants.

The application of the technical management practice Prescribed Grazing (528) for routine, emergency and other grazing uses of CRP has the potential to create conditions for temporary soil disturbance and vegetation removal and increased potential of introduction of invasive plants. Temporary adverse effects on individuals can include increased levels of stress hormones, increased recesses during incubation (i.e., may increase detection by predators and predation risk), or disturbance/flushing of young broods. The latter may increase predator detection and predation risk as chicks increase the frequency of calling in attempt to rejoin with their brood and hen. If these risks are realized, individual fitness is reduced and may have population level effects if disturbance is over a broad enough spatial or temporal scale. Improperly conducted emergency haying and grazing of lands enrolled in CRP can impair winter thermal, predator avoidance, and nesting habitat covers for LPC and other wildlife temporarily following the activity. Severity of the drought can reduce the ability of the plant species on-site to recover from the emergency haying or grazing activity in a timely manner and can result in less than favorable habitat conditions and increased LPC winter kill, loss to predators, and fewer nests and chicks the following spring.

Collectively, these adverse effects can produce impacts to individual birds as well as at the population level. The primary adverse effect is the potential for habitat degradation from unsustainable or unmanaged livestock grazing – specific to temporary loss of nesting and brood-rearing habitat. A secondary adverse effect is the opportunity created for invasion of undesirable plants during practice implementation.

To address potential adverse effects, a prescribed grazing plan will be designed and implemented in accordance with the identified conservation measures and recommendations. The measures relating to timing, frequency, intensity and duration, and the targeting of stocking rates which produce a desired vegetative response that, upon implementation, will insure that a diversity of plants and cover types, including shrubs, remain on the landscape. Under this Opinion, emergency haying and emergency grazing in conjunction with any other type of managed harvesting or managed or routine grazing, will be limited to once in a three year period unless forage conditions are determined to be such that it is practical for both livestock forage and wildlife habitat benefit.

CRP prescribed grazing plans will allow for all life requirements of the LPC to be present at the landscape level. It is recognized that dependent upon the grazing design that patch grazing will occur. Patch grazing will result in areas within individual units where the goal is to obtain nesting habitat and some areas for brood rearing which may lead to areas that provide for only one life history stage but combined across the landscape provide for the entire life history needs. The prescribed grazing plan allows for these diverse areas which will create a mosaic across smaller management units of necessary LPC habitat.

The outcome of a prescribed grazing plan will ensure livestock utilization levels leave sufficient cover in the spring to ensure that LPC nests are adequately concealed from predators, while also providing appropriate brood rearing habitat. Although some level of adverse effect is anticipated from livestock operations in the short-term, the long-term benefits will maintain or, after application, improve habitat and the expected species response will be positive.

The Southern Great Plains has a long fire history. When conducted properly, prescribed burns can increase bare ground and forbs density and maintain low-ground woody cover as well as native grass stands. Prescribed burning can alter habitat structure, removing standing vegetation, producing sparse, low growing grasses, and increasing visibility preferred by displaying males. Prescribed burning can also be used to increase forb production and density providing brood rearing habitat for up to two years following a burn. Improperly done, prescribed burning can adversely affect nesting habitat. Burning plans should be cognizant of vegetative types, fuel loads, topography, and climatic conditions and may call for portions of fields to be left unburned.

Herbicides are an effective, economical, and efficient method for controlling brush and weeds that encroach into LPC habitat. LPC habitat quality declines as trees and brush begin to dominate sites. Controlling eastern red cedar and honey mesquite helps to restore native plant communities by removing non-native, tall, vertical trees and shrubs. Removing the vertical structure increases grassland health and reduces predation. But removing trees and brush is sometimes difficult with the use of fire only, and chemical or mechanical treatment is sometime necessary, and can be costly.

The CRP activities analyzed by the Service that could produce these potential sources of adverse effect (temporary soil disturbance and vegetation removal and increased potential of introduction of invasive plants) will be implemented to establish, maintain and manage acres enrolled in CRP to meet the conservation needs of the LPC. The net effect will be that practice installation maintenance and management may result in short-term disturbance but produce long-term habitat restoration, maintenance and enhancement gains for the LPC.

That said, the use of the conservation measures are expected to minimize the short-term adverse effects of establishing, maintaining, and managing CRP conservation cover and the action of returning CRP acres to cropland. Conservation measures have been developed to manage the risk of soil erosion as well as the risk of invasive plants. A restoration strategy using native plants appropriate to the ecological site will be used to provide a temporary buffer in the establishment of native vegetation which will further ameliorate these potential adverse effects. Further, the Service believes that the long-term and landscape benefits of providing quality CRP

conservation cover in priority areas for LPC as conditioned by the conservation measures are expected to exceed any temporary adverse effects created from cover establishment and management.

Adverse Effect: Return to cropland cultivation

Adverse effects resulting from decisions by CRP participants to return enrolled acres to cropland after contract expiration will be minimized by having conversion activities, such as land and seedbed preparation, occur outside of primary nesting and brood rearing season (varies by state) and are conducted in a manner consistent with the NRCS or TSP conservation plan.

There are apprehensions that once CRP acres come off contract that they are immediately returned to agricultural production. This does not appear to be the case. An evaluation of National Resource Inventory data conducted in 2007 across the five LPC States showed that land that was in CRP in 1992, but not in 2007, was still in grass on 60 percent of the acreage. New Mexico accounted for the largest percentage return (57 percent) to cropland production during this period, while Oklahoma accounted for the largest percentage of retention at 76 percent. Across the entire LPC range, a 2012 survey estimated that of CRP acreage that expired during the period of 2008 through 2011, that 73 percent of the acres in Colorado, 90 percent of the acres in Kansas, 97 percent of the acres in New Mexico, 90 percent of the acres in Oklahoma, and 80 percent of the acres in Texas, were still in grass. Former CRP fields in Kansas that had expired from the program prior to 2008 were compared to 2010 National Agriculture Imagery Program aerial imagery and 86 percent of the former CRP acreage was still in grass. Not only were these acres still in conservation cover, the native grass covers were located in areas identified of significant conservation need for LPC.

Engaging in early land preparation or destroying CRP cover before contract expiration during the primary nesting and brood rearing season are inconsistent with LPC conservation. A conservation measure was developed to defer early land preparation or destruction of CRP conservation covers during the final year of the CRP contract until after the primary nesting and brood rearing season.

The temporary adverse effects of returning conservation covers to cropland on individual LPC can include increased levels of stress hormones, increased recesses during incubation (i.e., may increase detection by predators and predation risk), or disturbance/flushing of young broods. The latter may increase predator detection and predation risk as chicks increase the frequency of calling in attempt to rejoin with their brood and hen. If these risks are realized, individual fitness is reduced and may have population level effects if disturbance is over a broad enough spatial or temporal scale.

Long-term adverse effects from reduced habitat values for LPC (grassland returned to crop production) will depend on the location and type of CRP cover that is converted back to cropland and will be ameliorated by the targeted enrollment and re-enrollment of high quality CRP across the landscape as part of the proposed action.

Adverse Effect: Permanent Removal/loss of suitable habitat

This adverse effect is a result of permanent removal of habitat conditions and specific vegetative loss caused by the installation of the conservation practice standard or the expectation that, once implemented, permanent degradation of habitat conditions for the LPC will have resulted. Certain facilitating practices (e.g., firebreak, watering facility, spring development, and fence) covered in this Opinion have the potential to result in the permanent removal/loss of habitat for the LPC.

The primary adverse effect is the permanent loss of forage and nest habitat which can lead to a reduction of available habitat and subsequent decline in LPC populations. The Service believes that maintaining large areas of suitable habitat with appropriate connectivity is essential to LPC persistence (Giesen 1998, Bidwell et al. 2002, Hagen et al. 2004), and small scale removal of habitat will be insignificant if conservation measures are followed.

Habitat conversion to non-agricultural usage is one of the mechanisms identified in the listing proposal (77FR73828) as contributing to LPC habitat loss and alteration, but is not relevant to this analysis as it is not a covered action for this Opinion. Consequently, any permanent loss of habitat and increases in rate/extent of habitat fragmentation under the CRP activities and associated conservation practices implemented as described in the proposed action is expected to be localized and minor.

Most of the structural practices will produce localized losses which can be minimized using the identified recommended conservation measure(s). The conservation measure(s) focus on design and planning aspects of the practice so as to avoid large expanses of habitat loss especially from linear practices.

The long-term and cumulative benefits of installation and application of the particular activities and conservation practice standards as conditioned by the conservation measures are expected to exceed the temporary expected adverse effects created from their installation. Further, the use of the conservation measures will ensure that the species habitat is maintained or improved following application. Cumulatively, the expected species response is anticipated to be positive as the extent of adverse effects are not expected to occur at the scale necessary to adversely impact population trends or to result in significant additional habitat fragmentation effects. The conservation measures precluding wind turbine installation on CRP lands within focal areas, connectivity zones, or within 1.25 miles of known leks will minimize habitat loss and fragmentation

Adverse Effect: Increased potential of accidental mortality to individuals

Several conservation practice standards (e.g., Watering Facility, Forage Harvest Management, Cover Crop, and Fencing) may result in mortality or injury to individual birds. These include accidental mortality from drowning in livestock water tanks, striking a fence, or vehicle collision. Any mechanized equipment operating at intensive levels in LPC habitat has the potential to create harm to individual birds as a result of accidental collisions with birds.

Cost share will not be provided to install fence unless required to exclude livestock from CRP riparian plantings. As very few riparian plantings were implemented across the occupied range of LPC with CRP assistance, direct mortality from fencing associated with CRP is judged to be discountable.

The use of specific conservation measures focusing on design, timing, and method of operation of machinery and the placement and management of water features (such as the use of escape ramps and individual site selection for proper placement) to reduce mortality risk is expected to significantly reduce the potential adverse effects of these conservation practice standards. Cumulatively, the use of the recommended conservation measures is anticipated to provide a net positive conservation outcome to the species, created through removal of existing fences in essential habitat features such as leks, the installation of escape ramps, and modifications of the installations of the other affected conservation practice standards.

Adverse Effect: Increased potential for predation

Implementation of conservation measures will address the potential for predation to the species as direct or indirect consequence of implementation of the proposed action.
Certain conservation practice standards may increase the potential for predation on individual birds through the installation of structures or modifying existing habitat conditions. For example, some installed practices may create habitat for raptor perching. In addition, some practices will temporarily reduce available cover and food sources, making LPCs more vulnerable to predation. Finally, the presence of humans during practice installation can temporarily create an artificial food source for predators (i.e., trash attracts predators such as foxes, coyotes, badgers). The affected conservation practice standards include those that involve the creation or maintenance of infrastructure or habitat manipulations associated with establishment, maintenance and management of CRP lands.

The identified conservation measures suggest modifications to the design of fences, management of brush piles, and avoiding the use of tall structures in the species' habitat to the extent possible and practicable. Removing raptor perches such as trees, power poles, and fence posts is likely to lower predation risk more than any conventional predator removal methods (Wolfe et al. 2007). Conservation measures are anticipated to effectively reduce the risk of predation at the local and landscape scale to the extent that adverse effects, if any occur, would be insignificant or discountable.

Summary of Effects

Implementation of the proposed action is intended to eliminate or reduce the threats to the LPC and to improve its conservation status. The targeted benefit of this action is to enhance habitat and therefore improve the status of the species on private lands engaged in traditional farming and ranching operations and receiving CRP cost share and technical assistance. The proposed action including the use of the conservation measures is expected to benefit the LPC by maintaining, enhancing, and restoring populations and their habitats as well as by reducing the threats of direct mortality. Landowners who are interested in participating in the CRP within the occupied range of the LPC must agree to restore, manage and enhance conservation covers to

benefit LPC. Outreach and subsequent technical assistance will likely result in increased LPC conservation whether or not farmers or ranchers actually enroll in CRP. Technical and financial assistance will be directed towards priority areas (e.g., focal areas, connectivity and expansion zones). The strategic approach will also enhance the landscape level benefits of the proposed action.

The conservation measures are designed to maintain and enhance habitat and decrease fragmentation which is a significant threat to the LPC. Conservation measures also include commitments to reduce direct mortality and conserve the natural landscape attributes required by the species. CRP, along with the myriad of other public and private initiatives and related assistance, will encourage more willing farmers and ranchers to create, restore and manage habitat in the quantity and quality needed by the LPC. Because the species' persistence is dependent almost exclusively upon private lands, the additional targeting of the CRP as described is expected to magnify these conservation benefits.

Adverse effects to the species in the form of death, injury, or temporary harassment (via displacement) during CRP conservation practice establishment, maintenance, and management are expected to be minimal. The scale of the effect will be landscape specific, but will most likely involve mortality of certain adult birds, the destruction of a few nests, and loss of some eggs. CRP establishment involves converting agricultural land formerly in commodity production to longer-term conservation covers. Use of agricultural fields by LPC is by its nature limited and one would expect LPC mortality as a result of CRP conservation cover establishment to be limited as well. The establishment of CRP covers on marginal cropland acres is not likely to adversely affect LPC or threatened and endangered species found within the LPC occupied range. Indeed the vegetative covers being established through CRP in proximity to known populations of LPC or threatened and endangered species are likely to have a positive impact on the species and their respective populations as a result of the additional habitat created.

The vast majority of CRP maintenance and management activities are conducted outside of primary nesting and brood rearing season further reducing the likelihood of LPC mortality or injury. The likely positive population response to the enhanced habitat conditions created by the proposed action is expected to more than compensate for the limited mortality that may occur.

The implementation of the proposed action is anticipated to reduce threats, result in additional habitat under the appropriate management, and provide more information regarding the compatibility of sustainable farm and ranching operations with LPC conservation.

Perhaps the most relevant difference within the new CRP conservation measures being adopted for LPC habitat benefit compared to previous implementation of CRP concerns emergency haying and emergency grazing. Previously, emergency haying and emergency grazing of CRP fields could occur on an annual basis provided emergency conditions were met, unless forage condition was such that it was not practical. Under this Opinion, emergency haying and emergency grazing in conjunction with any other type of managed harvesting or managed or routine grazing, will be limited to once in a three year period unless forage conditions are determined to be such that it is practical for both livestock forage and wildlife habitat benefit. This once in a three year period is designed to allow vegetative cover to respond to the

harvesting/haying or grazing activity especially in times of drought and provide suitable winter, nesting, and brood rearing cover for LPC.

The LPC rely upon a landscape that is comprised of a mosaic of habitats rather than a single specific habitat to persist and the proposed action is an organized and strategic effort to support this level of focused conservation. That landscape objective can only be achieved by the cumulative results of individual actions occurring at the identified local, eco-region and range-wide scales. A primary aspect of ensuring the persistence of the species is FSA cooperating and coordinating with numerous public and private entities engaged in LPC conservation, especially the state fish and wildlife agencies in Colorado, Kansas, New Mexico, Oklahoma, and Texas. Working with other USDA agencies, such as the NRCS, and with the Service, in collaboration with the partners at the local, state, and regional level, FSA's implementation of CRP is reasonably certain that benefits to the species will occur.

Among the available CRP technical practices, fencing is limited primarily to excluding livestock from CRP riparian plantings and, as very few riparian plantings were implemented across the occupied range of LPC with CRP assistance, direct mortality from fencing associated with CRP is judged to be insignificant or discountable.

Direct mortality is highest when CRP lands exit the program and are converted back to agriculture, especially if the conversion activity occurs during the primary nesting and brood rearing seasons. Direct mortality is also significant if prescribed burning or emergency grazing occurs during primary nesting and brood rearing season. Emergency haying can also contribute to LPC mortality if done improperly. Practices used to convert introduced grass to native grass or to enhance existing native grass covers can result in adverse effects, especially if the conversion activity occurs during the primary nesting and brood rearing seasons.

Implementation of the conservation measures described will significantly lower the risk and likelihood of direct mortality. Avoiding practice implementation during nesting and brood rearing seasons and adhering to the other conservation measures described virtually eliminates the majority of mortality threats to LPC associated with CRP.

Cumulative Effects

Cumulative effects include the impacts of future State, local, or private actions that are reasonably certain to occur in the Action Area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Some future potential actions were briefly described above in **Conservation Actions Not Yet Implemented.**

Because most of the land (approximately 95 percent) in the occupied range of the LPC is in private ownership, future land use decisions by farmers and ranchers will have the greatest impact on LPC habitat. These private actions will be influenced by economic and climatic factors, including drought, fluctuating crop commodity prices, and oil, gas and wind energy development.

As described in this Opinion, farming and ranching practices can be compatible with LPC conservation efforts and produce beneficial effects to the species. However, the conversion of native prairie, rangeland or other non-CRP grassland habitat to cropland or development uses will have adverse cumulative effects on LPC. The 2014 Farm Bill includes a provision that is expected to reduce the economic incentive for conversion by linking conservation compliance to crop insurance subsidies.

Some areas of the Southern Great Plains have significant oil and natural gas deposits, which when developed have been reported to cause impacts to LPC. Concern continues that increased densities of wells in the area will result in further reduced LPC populations. Hunt (2004) found a higher number of abandoned leks near active well sites. Roads, power lines, pipelines, compressor stations, and other structures all add to the adverse cumulative effects of oil and gas development on LPC populations. However, there are several conservation planning efforts mentioned in the environmental baseline section of this Opinion that include measures aimed at reducing impacts of oil and gas development described above.

Known for its steady, and sometimes intense, winds, the Southern Great Plains are currently experiencing significant wind energy and associated infrastructure development. Wind developments include turbines to harness the energy, access roads, and transmission lines. Physical disturbance during construction and operation of wind turbines have the potential to disturb nesting LPC. Behavioral avoidance of such areas by LPC has the potential to further exacerbate habitat fragmentation concerns. Robel et al (2004) predicted that nesting and brood-rearing LPC hens will avoid wind turbines by at least a one mile radius. However, there are several conservation planning efforts mentioned in the environmental baseline that include measures aimed at reducing impacts of wind energy development described above.

Incidental take associated with actions not specific to this biological opinion is discussed further in the Environmental Baseline section of this Opinion.

Biological Opinion Conclusion

After assessing the current status of the LPC and federally listed species within the occupied range of the LPC, the effects of the proposed action, and the expected cumulative effects, it is the Service's Biological Opinion determination that the proposed action, which incorporates the planning processes, procedures, program activities, conservation practices, technical practice standards, and conservation measures identified herein, is not likely to jeopardize the continued existence of the LPC. We base our conclusion on the following:

- The implementation of CRP as conditioned by the conservation measures described will produce a net conservation benefit to the LPC and associated species, including those Federally listed threatened and endangered species found within the occupied range of the LPC, by improving and increasing available habitat;
- Lands exiting CRP and returning to cropland will have adverse effects on individual LPC, but the predictability provided to participating landowners and the targeted enrollment of new CRP acres as native cover in areas providing the greatest conservation

benefit for LPC are anticipated to result in a positive LPC population response over the long-term.

- The short-term adverse effects to individual LPC from implementation of CRP in the Action Area, along with estimated incidental take from related LPC conservation programs is anticipated to be more than offset by the long-term conservation benefits to LPC populations.

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.

In the analysis above, it was determined that although the proposed action may result in some adverse effects to the species, overall, the proposed action will not result in jeopardy to the species. Not all adverse effects reach the level of take. Many adverse effects will be in the form of short-term behavioral responses ranging from flushing, temporary changes in behavior, interruptions in feeding, stress, etc., resulting in effects that do not rise to the level of lethal take. However, some of those effects are likely to rise to the level of take in the form of harm. That harm also has a broad range, from the injurious effects of temporary impairment of breeding, feeding and sheltering behaviors, up to and including death from direct and indirect effects. Below we describe the method that Service and FSA used to estimate the number of birds that are likely to be taken by the proposed action.

We recognize that the method described results in a simple estimate that is based on many assumptions, including an assumption that the birds are evenly distributed across the habitat in an ecoregion and that all birds have an equal probability of being exposed to the various practices. In addition, we recognize that on occasion, activities may be sequential in such a way that the first action will be expected to result in the majority of the impacts with the latter action not resulting in take. However, we do not have a way to precisely estimate that overlap, so that remains as a factor that overestimates the take described below. Also, when evaluating a range of values we chose to use the numerical values that represent greater amount of effect. We recognize that all these assumptions will likely lead to an overestimate of potential effects to the species rather than an underestimate of effects. However, we know of no more reasonable method for arriving at an estimate. Also, regarding the probability of overestimating the impact -

this provides a cautious and reasonable "worst case" analysis for meta-population effects. If the likely overestimate is still compatible with survival and recovery of the LPC, then we can be satisfied that the actual impacts are compatible.

Approach to Estimating Exposure, Amount and Extent of Incidental Take

In a large-scale program with birds that can move easily around their varied habitat, it is very difficult to precisely estimate the number of birds that are likely to be exposed to impacts from the proposed action. In addition as explained above, not all birds exposed to the practices, will experience adverse effects that reach the level of take.

To approximate the number of birds that may be exposed to the impacts, we started with the bird density (per eco-region) as estimated from the upper 90 percent confidence interval of each eco-region identified in the range-wide plan via range-wide aerial surveys in 2012 (McDonald et al.). (The density figures for 2012 were used as a closer approximation of a normal year than those from the 2013 survey and provide a more conservative estimate). That produced a density (per acre) of LPC by Eco-Region (Table 13 column C). Then we used FSA's estimate of the number of acres affected annually for each CRP activity/practice by LPC Eco-Region (Table 13, column D). The acreage estimate used the highest number of acres treated annually in a given county in the last three years. This gave us the number of birds likely to be exposed to the CRP practice (Table 13, column E).

Injury and Mortality Rates

Though scientific studies are scant on the effects of the proposed practices, we have used the available information on rates of injury or mortality to inform our approximation of the number of birds taken incidentally by the proposed action. By multiplying those rates (if possible specific to the practice or similar impact) by the number of birds exposed to that practice, we can approximate the number of birds injured or harmed (Table 13, column G).

The estimated annual incidental take of LPC from the proposed action in the future using the assumptions identified above is 266 birds. Though this take will be monitored by ecoregion using acres affected annually by a CRP implementing activity/practice in Table 13 as a surrogate, if the total annual take estimated for all ecoregions and practices exceeds the numbers in Table 13, take may have been exceeded.

Table 13. Estimate of Annual LPC Injury and Mortality per CRP Implementing Activity or Practice

A Implementing Activity or Practice	B Ecoregion	C Density (Birds per Acre) per McDonald	D Practice (Acres)	E Number of Birds Exposed to Practice	F Rate of Injury or Mortality for Practice	G Estimated Total Number of Birds Injured or Killed/yr.	E Estimated Total Number of Birds Injured or Killed/30 yr. (rounded)
Converting Existing Introduced Covers to Native Species Mixes[1]	Mixed Grass	0.0017	6,333	10.76	0.0588	0.6330	19
	Shortgrass	0.0063	154	0.97	0.0588	0.0570	2
	Shinnery-oak	0.0016	149,365	238.98	0.0588	14.0523	422
	Sandsage	0.0015	53,662	80.48	0.0588	4.7321	142
Prescribed Burning	Mixed Grass	0.0017	15,174	25.80	0.0588	1.5168	46
	Shortgrass	0.0063	32,442	204.38	0.0588	12.0178	361
	Shinnery-oak	0.0016	0	0.00	0.0588	0.0000	0
	Sandsage	0.0015	7,946	11.92	0.0588	0.7008	21
Managed or Routine Grazing[2]	Mixed Grass	0.0017	27,464	46.69	0.0048	0.2241	7
	Shortgrass	0.0063	5,789	36.47	0.0048	0.1751	5
	Shinnery-oak	0.0016	28,915	46.26	0.0048	0.2221	7
	Sandsage	0.0015	17,116	25.67	0.0048	0.1232	4
Managed Harvesting[3]	Mixed Grass	0.0017	60,359	102.61	0.0148	1.5186	46
	Shortgrass	0.0063	35,058	220.86	0.0148	3.2687	98
	Shinnery-oak	0.0016	28,194	45.11	0.0148	0.6676	20
	Sandsage	0.0015	10,130	15.19	0.0148	0.2248	7
Emergency Grazing[2]	Mixed grass	0.0017	219,044	372.37	0.0191	7.1124	213
	Shortgrass	0.0063	159,229	1,003.14	0.0191	19.1600	575
	Shinnery-oak	0.0016	134,779	215.65	0.0191	4.1189	124
	Sandsage	0.0015	209,509	314.26	0.0191	6.0024	180
Emergency Haying[3]	Mixed Grass	0.0017	52,062	88.50	0.0588	5.2038	156

	Shortgrass	0.0063	78,135	492.25	0.0588	28.9443	868
	Shinnery-oak	0.0016	16,671	26.67	0.0588	1.5684	47
	Sandsage	0.0015	16,241	24.36	0.0588	1.4325	43
Brush Management	Mix Grass	0.0017	0	0.00	0.0048	0.0000	0
	Shortgrass	0.0063	591	3.72	0.0048	0.0179	1
	Shinnery-oak	0.0016	0	0.00	0.0048	0.0000	0
	Sandsage	0.0015	0	0.00	0.0048	0.0000	0
Exits Program Before Contract Termination	Mixed Grass	0.0017	6,865	11.67	0.2352	2.7449	82
	Shortgrass	0.0063	6,008	37.85	0.2352	8.9023	267
	Shinnery-oak	0.0016	11,995	19.19	0.2352	4.5134	135
	Sandsage	0.0015	10,610	15.92	0.2352	3.7432	112
Exits Program After Contract Termination-Remains in Conservation Cover	Mixed Grass	0.0017	34,213	58.16	0.0191	1.1109	33
	Shortgrass	0.0063	53,302	335.80	0.0191	6.4138	192
	Shinnery-oak	0.0016	118,461	189.54	0.0191	3.6202	109
	Sandsage	0.0015	82,633	123.95	0.0191	2.3674	71
Exits Program After Contract Termination-Converted Back to Cropland	Mixed Grass	0.0017	37,874	64.39	0.2352	15.1445	454
	Shortgrass	0.0063	35,535	223.87	0.2352	52.6542	1580
	Shinnery-oak	0.0016	78,974	126.36	0.2352	32.2471	967
	Sandsage	0.0015	55,088	82.63	0.2352	19.4346	583
Total By Ecoregion	Mixed Grass					35.209	1056
	Shortgrass					131.1611	3935
	Shinnery-oak					61.0100	1830
	Sandsage					38.7610	1163
TOTAL						266.1411	7,984

[1] Conversion of existing introduced covers to native species mixes can be implemented using several conservation technical practices, including Rangeland Planting (550), Conservation Cover (327), Cover Crop (340), Critical Area Planting (342), Forage and Biomass Planting (512), and Restoration and Management of Rare and Declining Habitats (643)
[2]Managed, routine and emergency grazing is implemented using Prescribed Grazing (548)
[3] Managed harvest and emergency haying is implemented using the technical practice of Forage Harvest Management (511)

Amount or Extent of Take

Based on current conditions, the estimated annual incidental take of LPC from the proposed action is 266 LPCs over the life of this Biological Opinion or 30 years. Our estimate of LPC density largely represents values that might be expected during optimum conditions. While such conditions are rarely expected to occur, basing our estimate of incidental take on optimum conditions provides a very conservative estimate of the take that might be expected during implementation of the proposed action. Under a worst-case scenario, 266 LPCs might be taken annually in the form of harm, harassment, injury or direct mortality. However, because the proposed action provides some level of conservation benefit to the LPC, we do not anticipate the worst-case scenario would ever occur. As the abundance of LPC increases in part due to other conservation programs, as is expected, an increase in the amount of authorized incidental take may be considered by the Service if formally requested by the FSA.

Monitoring Take

Take will be estimated using ongoing extrapolation per the calculations above as acreages of practices are implemented yearly and will be reported to the Service. Additionally, ongoing detailed research conducted by independent scientists will be evaluating the effectiveness of these practices with the use of radio-marked birds. Any mortality or nest loss of radio-marked birds associated with these practices will assist in further informing these extrapolated take estimates. Finally, as FSA, NRCS, and technical service providers conduct compliance checks and other field assessments of CRP contracts within the occupied range of the LPC, landowners will be asked if they have observed any mortality or nest loss while implementing the practices and measures as described in the FSA biological assessment and this Opinion.

Effect of the Take

In the accompanying Opinion, we have determined that the level of anticipated take is not likely to result in jeopardy to the LPC. The total number of acres affected annually under the actions evaluated in this Opinion is not expected to exceed 1.9 million in the Action Area. Using the existing bird densities and mortality/injury rates, we do not expect the total number of birds injured or killed to exceed 266 birds annually. Cumulatively, based on current population estimates, the total amount of take estimated annually for this and other programs, as represented in Table 12 in the Environmental Baseline section of this Opinion, constitutes approximately 6.7 – 7.3% of the estimated range-wide population of LPCs (1,188 / 17,615 – 1,288 / 17,615 take to annual population estimate ratios).

Important considerations regarding take estimates

As mentioned earlier, the Service recognizes the assumptions inherent in these calculations, and that it likely creates an overestimate of the number of birds adversely affected and birds taken. Also, take encompasses a broad range of effects from temporary impairment of essential behavioral patterns up to and including death. This is important to note, because as the programs are implemented, the expectation is that the improved habitat will increase the success of LPC. Thus, even though we have reviewed that estimate relative to the current condition of the species, in the future as we reach the extent of take estimated above, the status of species across its range should be improving, reducing the overall effect of that take to the species as a whole.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures and their implementing terms and conditions are necessary and appropriate for FSA to minimize impacts of incidental take of LPC. In order to be exempt from the prohibitions of Section 9 of the ESA, the FSA must ensure that implementation of the proposed action complies with the following terms and conditions which implement the Reasonable and Prudent Measures.

The Service believes that the following Reasonable and Prudent Measures are necessary and appropriate to minimize impacts of incidental take of LPC:

Reasonable and Prudent Measure 1 - The FSA shall report the estimated incidental take of LPC based on the acres subject to implementation of CRP activities and conservation practices annually within the Action Area.

Reasonable and Prudent Measure 2 - Annually, the FSA shall meet with the Service to evaluate the range-wide effects of the authorized incidental take on the LPC authorized by this Biological Opinion.

Reasonable and Prudent Measure 3 - The FSA shall report any observed mortality or nest loss resulting from implementation of the CRP activities and conservation practices described in this Biological Opinion.

Term and Condition 1 for Reasonable and Prudent Measure 1
The FSA shall conduct monitoring and reporting of incidental take as follows. By March 1 of each year for the term of the proposed action, the FSA shall submit a report to the Service describing estimated incidental take of LPC in the Action Area during the previous fiscal year by ecoregion and CRP activity or conservation practice using the format in Table 13. Information should include project implementation monitoring such as whether the project was implemented in accordance with conservation measures and best management practices and include relevant survey information, and any other pertinent information about the project's effects on the species. The report will be submitted to the Assistant Regional Director for Ecological Services in Albuquerque, NM.

Term and Condition 1 for Reasonable and Prudent Measure 2

Annually beginning in 2015, and every year thereafter through the life of this Biological Opinion, the FSA shall meet with the Service to evaluate current population estimates, incidental take that has occurred the previous year pursuant to this Biological Opinion, and incidental take estimated to occur for the subsequent year and assess potential effects based on current population estimates. The FSA shall provide these annual assessments to the Assistant Regional Director for Ecological Services in Albuquerque, NM.

Term and Condition 1 for Reasonable and Prudent Measure 3

Any observations or evidence of LPC mortality or nest loss resulting from implementation of the proposed action as reported by landowners, TSPs, NRCS, the Service and State agency field staff, or researchers shall be included with the monitoring report from Term and Condition 1 for Reasonable and Prudent Measure 1. Within 90 days of receiving the monitoring report from FSA, the Service will meet with FSA to determine if changes to the calculation of incidental take or the activities included in the calculation of incidental take are needed.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency actions. The Service offers the following conservation recommendations:

- Local and national representatives of FSA and the Service meet periodically, but at least once on an annual basis, to evaluate the progress, successes, and challenges of the CRP implementation consistent with this Opinion

- The Service assist FSA to develop an implementation process to ensure that local FSA, NRCS, and other cooperators have the appropriate level of training and understanding of the conservation measures, the use of the monitoring elements as proposed, and other operational components identified in this Opinion and the FSA Biological Assessment and that the Service will continue to closely coordinate with FSA to help facilitate implementation of LPC conservation efforts

- The Service shares information associated with this effort with a wide range and diverse collection of partners (State Fish and Wildlife Agencies, Association of Fish and Wildlife Agencies, Western Association of Fish and Wildlife Agencies, Western Governors Association, and others) to further enhance the LPC conservation outcomes

- The Service will continue to collaborate with partners and annually assess overall effects of authorized incidental take to the LPC population.

REINITIATION NOTICE

This concludes the Biological Opinion for the potential effects of the proposed action. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new

species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If the thresholds for enrollment of native covers by ecoregion are not met (Table 8), or the percentage of CRP enrollment in LPC priority areas across the LPC occupied range is not increasing, this may represent a trigger for reinitiation of consultation and requires coordination between the Service and FSA.

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4/14/14

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List of Acronyms

BA – Biological Assessment

CCC – Commodity Credit Corporation

CP – Conservation Practice

CCAA – Cooperative Conservation Agreement with Assurances

CEAP – Conservation Effects Assessment Project

CHAT – Crucial Habitat Assessment Tool

CRP – Conservation Reserve Program

DAFP – Deputy Administrator for Farm Programs

DSL – Dunes Sagebrush LizardEA – Environmental Assessment

EBI – Environmental Benefits Index

EI – Erodibility Index

EQIP –Environmental Quality Incentives Program

ESA – Endangered Species Act

FONSI – Finding of No Significant Impact

FSA - Farm Service Agency

GIS – Geographic Information System

LPC – Lesser Prairie-Chicken

LPCI – Lesser Prairie-Chicken Initiative

NEPA – National Environmental Policy Act

NGO – Non-Governmental Organization

NHPA – National Historic Preservation Act

NRCS – Natural Resources Conservation Service

NRI - Natural Resources Inventory

PNS – Primary Nesting Season

RMS – Resource Management System

RWP – Range-wide Plan

SAFE – State Acres for Wildlife Enhancement

TSP – Technical Service Provider

WHEG – Wildlife Habitat Evaluation Guide

WHIP – Wildlife Habitat Incentives Program

Appendices

Appendix I - Counties within LPC Occupied Range/FSA CRP LPC Action Area by State

Appendix II – Description of existing CRP practices and associated conservation cover

Appendix III– Description of Crucial Habitat Assessment Tool (CHAT) Categories

Appendix IV – FSA Environmental Review Requirements

Appendix V - USFWS Technical White Paper on Conservation Needs of the LPC

Appendix VI - Federally Listed, Proposed, and Candidate Species within the Action Area

APPENDICES

Appendix I - Counties within LPC Occupied Range/FSA CRP LPC Action Area by State.

State	County
Colorado	Baca
	Cheyenne
	Kiowa
	Lincoln
	Prowers
Kansas	Barber
	Barton
	Clark
	Comanche
	Edwards
	Ellis
	Finney
	Ford
	Gove
	Graham
	Grant
	Gray
	Greeley
	Hamilton
	Haskell
	Hodgeman
	Kearney
	Kiowa
	Lane
	Logan
	Meade
	Morton
	Ness
	Pawnee
	Pratt
	Rooks
	Rush
	Russell
	Scott
	Seward
	Sheridan
	Sherman
	Stafford
	Stanton
	Stevens
	Thomas
	Trego
	Wallace

	Wichita
New Mexico	Chaves
	Curry
	DeBaca
	Eddy
	Lea
	Quay
	Roosevelt
Oklahoma	Beaver
	Beckham
	Cimarron
	Custer
	Dewey
	Ellis
	Harper
	Major
	Roger Mills
	Texas
	Woods
	Woodward
Texas	Andrews
	Bailey
	Castro
	Cochran
	Collingsworth
	Dawson
	Deaf Smith
	Donley
	Gaines
	Gray
	Hemphill
	Hockley
	Lamb
	Lipscombe
	Martin
	Ochiltree
	Oldham
	Parmer
	Roberts
	Terry
	Wheeler
	Yoakum

Appendix II – Description of existing CRP practices and associated conservation cover

Colorado. The primary CRP practices being implemented in LPC range in Colorado are CP2 (Native Grass), CP4 (Permanent Wildlife Habitat), and CP38E (SAFE-Native Grass). Under CP2, grasses can be selected from among sideoats grama, little bluestem, western wheatgrass, blue grama, switchgrass, prairie sandreed, sand bluestem, needle and thread, Indian ricegrass, galleta grass, alkali sacaton, prairie cordgrass, green needlegrass, Canada wildrye, buffalograss, basin wildrye, tufted hairgrass, thickspike wheatgrass, bluebunch wheatgrass, streambank wheatgrass, and slender wheatgrass. Up to 20 percent of the seed mix can be legumes, forbs and shrubs including purple prairie clover, winterfat, fourwing saltbush, American vetch, Bessy sandcherry, Maximiliian sunflower, prairie coneflower, dryland alfalfa, Utah sweetvetch, and leadplant.

CP4B/D grasses include western wheatgrass, switchgrass, big bluestem, green needlegrass, sideoats grama, yellow Indiangrass, little bluestem, blue grama, sand bluestem, prairie sandreed, Arizona fescue, Idaho fescue, basin wildrye, thickspike wheatgrass, bluebunch wheatgrass, slender wheatgrass, Indian ricegrass, streambank wheatgrass, and galleta grass. Legumes, forbs, and shrubs can make up to 10 percent of the mix and are chosen from among purple prairieclover, prairie coneflower, leadplant, Bessy sandcherry, Cicer milkvetch, dryland alfalfa, small burnet, Maximillion sunflower, fourwing saltbush, winterfat, basin big sage, and black sage.

The CP38E practice is based on seed mixes associated with CP4B/D with the exception that up to 15 percent of the mix can include dryland alfalfa, white clover, flax, annual sunflower, prairie coneflower, Engelman's daisy, fourwing saltbush, winterfat, purple prairie clover, American vetch, leadplant, or other native shrub, forbs, or legume provided no single species accounts for more than 5 percent of the mix. Grasses can be selected from among green needlegrass, western wheatgrass, blue grama, sideoats grama, switchgrass, big bluestem, little bluestem, Indian ricegrass, sand dropseed, sand bluestem, prairie sandreed, needle and thread, yellow Indiangrass, sand lovegrass, and silver bluestem.

Kansas. In Kansas, approved cover mixes under the CRP Native Grass (CP2) program practice are determined by soil type and technical practice. For a twenty point N1a EBI score, the mix shall contain a minimum of three species; at least two native grasses and one forb or legume to meet CRP and NRCS requirements for Forage and Biomass Planting (512). For a fifty point N1a EBI, the mix shall contain a minimum of five species; at least three native grasses and one shrub, forb, or legume to meet CRP and NRCS requirements for Forage and Biomass Planting. Under Range Planting (550), for fifty points, the mix must have a minimum of five species with at least three native grasses and two perennial forbs or legumes.

For loamy, limy, and clay range sites, the approved mix for Forage and Biomass Planting may include big bluestem, indiangrass, switchgrass, sideoats grama, and western wheatgrass, with no single species accounting for over 50 percent of the mix. On similar sites for Range Planting, the mix may include big bluestem, little bluestem, indiangrass, switchgrass, sideoats grama, blue grama, buffalograss, and western wheatgrass.

On sandy sites, the Forage and Biomass Planting mix may include big bluestem, sand bluestem, indiangrass, switchgrass, sideouts grama, sand lovegrass, and prairie sandreed. On similar sites for Range Planting, the mix may include big bluestem, sand bluestem, little bluestem, indiangrass, switchgrass, sideoats grama, blue grama, sand lovegrass, prairie sandreed, and giant sandreed.

On saline range sites, the Forage and Biomass Planting mix may consist of indiangrass, switchgrass, sideoats grama, western wheatgrass, tall wheatgrass, and alkali sacaton. For Range Planting on similar sites, the mix may consist on indiangrass, switchgrass, sideoats grama, blue grama, buffalograss, western wheatgrass, tall wheatgrass, and alkali sacaton.

Under the CRP Rare and Declining Habitat (CP25) program practice, Kansas has identified five prairie cover mixes- mixed grass prairie, sand prairie, sandsage prairie, shortgrass prairie, and tallgrass prairie. In each mix a minimum of five grass species are required, though the number of forb or legume species varies from a minimum of four to ten species depending on the type of prairie being restored.

Mixed grass prairies shall be planted to a minimum of five native grass species and a mixture of ten native forbs and/or legumes. For mixed grass prairies, the grasses may include big bluestem, little bluestem, indiangrass, switchgrass, sideoats grama, blue grama, buffalograss, and western wheatgrass for the grasses and forbs/legumes chosen from among a list of thirty approved native species.

Sand prairies shall be planted to a minimum of five native grass species and five native forb/legume species. For sand prairie, the list of approved grasses includes big bluestem, sand bluestem, little bluestem, indiangrass, switchgrass, sand lovegrass, sideoats grama, blue grama, prairie sandreed, and giant sandreed. Forbs/legumes must be chosen from among sixteen approved species. Shrubs such as sandplum and golden currant can also be established on less than one percent of the acreage.

Sandsage prairie shall be planted to a minimum of five native grass species and four native forb/legume species. For sandsage prairie, the list of approved grasses includes big bluestem, sand bluestem, little bluestem, indiangrass, switchgrass, sand lovegrass, sideoats grama, blue grama, prairie sandreed, and giant sandreed. Forbs/legumes can be chosen from among nine approved species. Sand sagebrush is also approved for establishment.

Shortgrass prairies shall be planted to a minimum of five native grass species and four native forb/legume species. For shortgrass prairies, the grasses include big bluestem, little bluestem, sideoats grama, blue grama, buffalograss, switchgrass, and western wheatgrass. Forbs/legumes can be selected from among nine approved species.

Tallgrass prairies shall be planted to a minimum of five native grass species and ten native forb/legume species. For tallgrass prairies, the grasses include big bluestem, little bluestem, indiangrass, switchgrass, sideoats grama, blue grama, buffalograss, and western wheatgrass. Forbs/legumes can be chosen from among forty approved species.

New Mexico. CRP practices currently being implemented within LPC occupied range in New Mexico are CP2 and CP38E, consistent with NRCS Conservation Practice Standards 327 Conservation Cover and 550 Range Planting. CP2 is the predominant CRP practice currently being established in New Mexico.

Species established under CRP shall be adapted to soil, ecological sites, and climatic conditions, with seeding rates and methods adequate to accomplish the planned purpose. Planting dates, planting methods and care in handling and planting of the seed or planting stock shall ensure that the planted materials have an acceptable rate of survival. Grasses, forbs, shrubs, and/or legumes shall be planted in a diverse mix to promote biodiversity and meet needs of the targeted species of wildlife. Where pollinator and wildlife habitat are primary purposes, consider less dense seeding rates as long as soil loss is within tolerable soil loss limits. Use of native species is preferred provided species mix is appropriate for the identified resource concern and management objective.

Most CP1 practices still under CRP contract are existing monoculture stands of old world bluestem, weeping lovegrass, orchardgrass, perennial ryegrass, redtop, crested wheatgrass, and tall wheatgrass. CP1 contracts that are expiring and being offered for re-enrollment are being converted to CP2 contracts and established to native species mixes. Conversion of old world bluestem and weeping lovegrass has proven difficult. New Mexico recently received approval on a variance request to allow CRP participants to conduct establishment activities between March 1 and June 30 to facilitate conversion of introduced grass to native grass covers.

CP2 species include alkali muhly, alkali sacaton, Arizona fescue, Baltic rush, beardless wildrye, big bluegrass, big bluestem, big sacaton, blue grama, blue wildrye, bluebunch wheatgrass, bluejoint, bottlebrush squirreltail, buffalograss, bush muhly, California oatgrass, Canada wildrye, cane bluestem, common spikerush, deergrass, fringe brome, galleta, giant dropseed, hardstem bulrush, Idaho fescue, Indian ricegrass, Indiangrass, inland saltgrass, little bluestem, managrass, meadow barley, Nebraska sedge, needle and thread, nodding brome, Nuttall’s alkaligrass, perennial threeawn, plains lovegrass, prairie dropseed, prairie junegrass, rough bentgrass, sand bluestem, sand dropseed, sand lovegrass, scratchgrass, sideoats grama, slender wheatgrass, spike bentgrass, spike muhly, spike trisetum, streambank wheatgrass, switchgrass, tall dropseed, threadleaf sedge, Thurber’s needlegrass, timber oatgrass, tobosa, tufted hairgrass, vine mesquite, and western wheatgrass.

The CP38E practice is limited to Lea County. Species mix includes grasses such as little bluestem, sand dropseed, switchgrass, sideoats grama, Indiangrass, plains bristlegrass, sand lovegrass, and green sprangletop; forbs such as prairie coneflower, prairie clover, alfalfa, Maximillian sunflower, and narrowleaf penstemon; and shrubs such as sand sage, winterfet, sand plum and skunkbush sumac.

Oklahoma. Currently CP2 is the predominant CRP conservation practice being established in the Oklahoma portion of the LPC range. The configuration of CP1 planting standards basically eliminates new establishment of old world bluestem, weeping lovegrass, or Bermuda grass. Most CP1 practices still under CRP contract are existing monoculture stands of old world bluestem that have been under CRP contract since program inception. Other CRP practices available in

LPC range in Oklahoma are CP4B, CP10, CP12, CP23A, CP25, CP33, CP38E, and CP42. Plant species and varieties are those best adapted to the climate and the soils in the field being established to permanent vegetative cover.

CP1 practices still under contract were established according to NRCS specifications identified in Conservation Practice Standard 340, 512, 590, and 595 descriptions. Cool season species mix include two or more species selected from smooth brome, meadow brome, fescue, orchardgrass, tall wheatgrass, and intermediate wheatgrass. Warm season grass mixtures include yellow and Caucasian bluestem. Eligible forbs include alfalfa, red clover, birdsfoot trefoil, cicer milkvetch, sainfoin, white clover, arrowleaf clover, Austrian winter pea, cowpeas, crimson clover, hairy vetch, Korean lespedeza, rose clover, and sweetclover.

CP2 practices must be established according to NRCS specifications identified in Conservation Practice Standard 340, 512, 550, 590, and 595 descriptions. If offered acreage has an established monoculture cover of introduced grasses, it can be considered converted to CP2 practice if 51 percent of the field is established to a native mix that provide wildlife habitat benefits. At least three native grass species and one forbs or legume species must be established. Grasses to include in the mix can be chosen from among big bluestem, little bluestem, sand bluestem, eastern gamagrass, Indiangrass, Mason sandhill, alkali sacaton, sideoats grama, switchgrass, western wheatgrass, big sandreed, blue grama, buffalograss, green sprangletop, plains bristlegrass, sand dropseed, sand lovegrass, and tall dropseed. Legumes can be selected from leadplant, tephrosia, prairie clover, Illinois bundleflower, roundhead lespedeza, tickclover, trailing wildbean, western indigo, catclaw sensitivebriar, prairie acacia, partridge pea, and least snoutbean. Eligible forbs are Engelmanndaisy, pitcher’s sage, Maximilian sunflower, awnless bushsunflower, compass plant, gayfeather, black Sampson, pale echinacea, upright prairie coneflower, and plains coreopsis.

The conversion of old world bluestem and weeping lovegrass monocultures to a planting of native grasses has proven problematic. Old world bluestems and weeping lovegrass have the ability to regenerate from seed quite readily following land disturbance. Converting introduced grasses to native grass/forbs mixes can be an extensive process taking as long as three years. Year 1 includes prescribed burning in April, followed by tillage in June when the introduced grass is eight to twelve inches tall, and fertilizing and planting small grains (wheat) in September. In Year 2 in April kill the wheat with herbicides maintaining surface residue to control erosion, and in mid-summer till or use approved herbicides to control volunteer grasses, then in September prepare seedbed, fertilize and plant small grains again. The wheat is killed the following April (of Year 3) prior to boot or joint stage with herbicide, followed by planting permanent cover by the end of May.

CP4 practices must be established according to NRCS specifications identified in Conservation Practice Standard 340, 512, 550, 590, 595, 612, and 645 descriptions. CP4 mixes include all natives species identified as eligible under CP2 plus additional legumes alfalfa, birdsfoot trefoil, cicer milkvetch, red clover, sanfoin, white clover, arrowleaf clover, Austrian winter pea, cowpea, crimson clover, hairy vetch, Korean lespedeza, common lespedeza, rose clover, and sweet clover and shrubs American plum, skunkbush sumac, western white honeysuckle, leadplant, fourwing

saltbush, autumn olive, sand sagebrush, Chickasaw (sand) plum, chokecherry, bush lespedeza, indigobush, hawthorn, and deciduous holly.
CP10 practices must be maintained or enhanced according to NRCS specifications identified in Conservation Practice Standard 327 and 550 descriptions. Enhancement selections include the legumes leadplant, tephrosia, prairie clover, Illinois bundleflower, roundhead lespedeza, tickclover, trailing wildbean, western indigo, catclaw sensitivebriar, prairie acacia, partridge pea, and least snoutbean. Forbs for enhancement can be chosen from among Engelmanndaisy, pitcher's sage, Maximilian sunflower, awnless bushsunflower, compass plant, gayfeather, black Sampson, pale Echinacea, upright prairie coneflower, and plains coreopsis. Shrubs can be selected from among American plum, skunkbush sumac, western white honeysuckle, leadplant, four-winged saltbush, autumn olive, Chickasaw (sand) plum, chokecherry, bush lespedeza, indigobush, hawthorn, and deciduous holly.

Maximum food plot size is ten percent of the CRP field not to exceed five acres. Eligible species include annual and perennial, and cool and warm season plants. Eligible warm season annual plants include grain sorghum, corn, mung bean, soybean, cowpeas, oriental pea, proso millet, German millet, brown top millet, annual lespedeza, and annual sunflower. Appropriate cool season annuals are wheat, oats, annual rye, hairy vetch, Austrian winter peas, rye, vetch, and sweet clover. Authorized warm season perennials are Illinois bundleflower, roundhead lespedeza, tick clover, partridge pea, alfalfa, trailing wild bean, snout bean, Maximilian sunflower, and awnless bush sunflower. Cool season perennials that can be established in CRP food plots are red clover and white clover.

CP23A practices must be established according to NRCS specifications identified in Conservation Practice Standard 657 and 658 descriptions.

CP25 practices must be established according to NRCS specifications identified in Conservation Practice Standard 340, 550, 590, 595, 612 and 643. Species selected depending on area of adaptation can be chosen from among native grasses- alkali sacaton, big bluestem, big sandreed, blue grama, eastern grama grass, green sprangletop, Indian grass, little blue stem, plains bristle grass, sand bluestem, sand dropseed, sand lovegrass, sideoats grama, switchgrass, tall dropseed, and western wheatgrass; native legumes- leadplant, tephrosia, prairie clover, Illinois bundleflower, roundhead lespedeza, tick clover, trailing wildbean, western indigo, catclaw sensitive briar, prairie acacia, partridge pea, and least snout bean; and native forbs and shrubs- Engelmann daisy, pitcher's sage, Maximilian sunflower, awnless bush sunflower, compass plant, gayfeather, black Sampson, pale Echinacea, upright prairie coneflower, plains coreopsis, sand sagebrush, and four-winged saltbush.

The CP33 practice is designed to provide food and cover for quail and other upland birds in cropland areas. Secondary benefits include reducing soil erosion, and improving water quality. The practice is applied around field edges of eligible cropland that can re-vegetate naturally or be established to adapted species of native, warm season grasses, legumes, wildflowers, forbs, and limited tree and shrub plantings, of species composition such as those described in CP2 and CP25, according to an approved conservation plan developed according to NRCS Field Office Technical Guides and Technical Practice Standard 645 and 647 descriptions.

The CP38E practice must be established in a manner consistent with the CP25 practice but with at least one percent of the CRP acreage must be planted to sand plum on appropriate ecological sites.

CP42 practices shall be comprised of native plant species with the exception of alfalfa and sweetclover with each contributing up to five percent of the planting mixture. Species mix should include plants that flower throughout the spring and summer season. Examples of early flowerers are alfalfa, blue wild indigo, buttercup, Englemanndaisy, evening primrose, half shrub sundrop, Indian paintbrush, penstemon, plains coreopsis, tephrosia, thistle, yarrow, yellow wild indigo, blackberry, coral honeysuckle, golden currant, indigo bush, plum, and rough-leaf dogwood. Mid-season flowerers include alfalfa, ashy sunflower, awnless bush sunflower, Baldwin ironweed, basket flower, black-eyed susan, black Sampson, blazing star, blue wild indigo, boneset, butterfly milkweed, cardinal flower, compass plant, daisy fleabane, dotted gayfeather, Engelmanndaisy, evening primrose, half shrub sundrop, hemp dogbane, Illinois bundleflower, Indian blanket, Indian paintbrush, ironweed, leadplant, Leavenworth eryngo, lemon monarda, milkweed, oxe-eye daisy, pale echinacia, partridge pea, penstemon, pitcher's sage, plains coreopsis, prairie acacia, prairie coneflower, purple prairie clover, sweet clover, tephrosia, thistle, verbena, western indigo, yarrow, yellow wild indigo, blackberry, coral honeysuckle, golden currant, indigo bush, rough-leaf dogwood, and western soapberry. Late flowerers eligible for establishment under CP42 are alfalfa, ashy sunflower, awnless bush sunflower, aster, Baldwin ironweed, blazing star, boneset, butterfly milkweed, cardinal flower, compass plant, daisy fleabane, dotted gayfeather, evening primrose, goldenrod, Illinois bundleflower, ironweed, Leavenworth eryngo, Maximilian sunflower, milkweed, partridge pea, prairie acacia, purple prairie clover, rosinweed, sweet clover, and western indigo. If not planted over the entire field, block pollinator plantings are preferred over strip plantings, each with a minimum size of 0.5 acres.

Texas. Conservation, management, and restoration efforts for LPC and the short-grass and mixed grass prairie that they depend upon have been on-going in the Texas Panhandle and South Plains area for the past several decades. Most conservation efforts have been delivered on private lands, with efforts targeted at providing financial incentives to landowners to improve habitat for LPC and associated grassland-dependent species.

Primary practices still under CRP contract in the occupied range of the lesser prairie chicken in Texas are CP1, CP2, CP10, CP38 and CP42, with the majority being CP2 practices. All CRP plantings are implemented in accordance with the 2-CRP National Handbook and NRCS Field Office Technical Guide Conservation Practice Standard 327 Conservation Cover requirements. FSA county offices are required to meet the practice standards according to 2-CRP Exhibit 11. NRCS job sheets provide CRP participants with a detailed explanation for practice installation, maintenance, and management. Plantings may provide food, cover, and shelter for wildlife where forbs or legumes are included in the mix.

Introduced grasses established through the CP1 practice have been used primary to reduce soil erosion and sedimentation, improve water quality and quantity, and provide limited wildlife benefits. In Texas, CP1 covers include Bermuda grass, old world/yellow bluestem, smooth bromegrass, Johnson grass, tall fescue, Kleingrass, Lehman lovegrass, weeping lovegrass,

Wilman lovegrass, orchard grass, blue panicum, perennial ryegrass, sorghum almum, tall wheatgrass, and sainfoin. Old world bluestem CRP covers are found mainly in the panhandle of Texas. CRP land in the South Plains area of Texas was originally established to weeping lovegrass. Over the years, many of these former CP1 acres have been converted to native species mixes to enhance wildlife habitat benefits and increase EBI scores in order to remain in the program. Yoakum County is the only county in Texas where CP1 is the predominant approved cover on CRP land in LPC occupied range.

In addition to soil and water benefits, CP2, CP4D, CP33, CP38, and CP42 practices, also provide significant wildlife habitat, especially for lesser prairie chicken as a result of the native species being established. If offered acreage has an established monoculture cover of introduced grasses, it can be considered converted to CP2 practice if 51 percent of the field is established to a native mix that provide wildlife habitat benefits. Native species being established through CRP in Texas include alkali muhly, big bluestem, cane bluestem, little bluestem, sand bluestem, plains bristlegrass, buffalo grass, Arizona cottontop, giant dropseed, mesa dropseed, sand dropseed, spike dropseed, tall dropseed, eastern gamagrass, galleta grass, black grama, blue grama, sideouts grama, green sprangletop, yellow Indiangrass, sand lovegrass, alkali sacaton, switchgrass, Texas bluegrass, Texas wintergrass, vine-mesquite, western wheatgrass, hooded windmillgrass, shortspike windmillgrass, Canada wildrye, Virginia wildrye, aromatic sumac, awnless bushsunflower, black Sampson, black-eyed susan, Engelmanndaisy, fourwing saltbush, dotted gayfeather, greyhead coneflower, Illinois bundleflower, lead plant, Maximilian sunflower, orange zexmenia, pitcher sage, prairie acacia, purple prairieclover, roundhead lespedeza, scarlet globemallow, Drummond sesbania, velvet bundleflower, western ragweed, white prairie clover, and partridge pea.

Significant acres of CP10 existing grass is still under CRP contract in Texas. CP10 acreage should be managed according to the conservation plan to provide at least some seasonal habitat value for LPC. In the absence of higher quality habitat, LPC have been known to nest and rear broods in landscapes dominated by introduced grasses.

CP33 is a field buffer practice limited to crop field edges and circle corners if connected by a buffer strip. There is some evidence that LPC are using habitat patches provided by center pivot corners to cross agricultural landscapes and access larger blocks of higher quality habitat.

The appropriate seed mix for CP38E is further stipulated, depending on site location within LPC target complexes and soil texture, to include from among green sprangletop, switchgrass, little bluestem, Indiangrass, sand bluestem, sideoats grama, blue grama, buffalo grass, Illinois bundleflower, native sunflower, Maximilian sunflower, partridge pea, fourwing saltbrush, white prairie clover, and western ragweed. Additional native species may be added or substituted for increased diversity as approved by NRCS. Any substitutions must provide the same benefits of structure and growth season as the species that they replace. Dryland alfalfa is a required component in all planting mixes except on sites with a history of cotton root rot.

Appendix III– Description of Crucial Habitat Assessment Tool (CHAT) Categories

The CHAT is a geospatial tool (map) specifically designed for the LPC that prioritizes and categorizes habitat to focus conservation activities and provides a tool for developers to assess the landscape and guide the early planning stages of project development.

CHAT 1 – The CHAT category comprised of the focal areas for LPC conservation. These are areas of greatest importance to the LEPC where habitat enhancement, maintenance, conservation, and protection are focused. The focal areas were designated by teams in each state that prioritized and identified intact LEPC habitat. This category was defined using GIS layers such as landscape integrity models, aerial photos, soil maps, anthropogenic disturbances, land cover, and expert opinion.

CHAT 2 - The CHAT category comprised of the corridors/connectivity zones for LPC conservation that link focal areas to facilitate LEPC movement, and where habitat enhancement, maintenance, conservation, and protection are focused. The corridors/connectivity zones were designated by teams in each state that prioritized and identified intact LPC habitat. This category was defined using GIS layers such as landscape integrity models, aerial photos, soil maps, anthropogenic disturbances, land cover, and expert opinion.

CHAT 3 - The CHAT category comprised of predicted high-quality habitat from the lek Maxent models. Maxent is an abbreviation for maximum entropy classifier and is an ecological niche model used for describing available and potential habitat. The model uses base layers (e.g., lek, nests, Conservation Reserve Program (CRP), land cover, and abiotic site condition) to characterize that habitat on the landscape.

CHAT 4 – The CHAT category comprised of all additional lands in the estimated occupied range for the LEPC plus 10 miles which are not contained in CHAT 1, CHAT 2, or CHAT 3.

Appendix IV – FSA Environmental Review Requirements

Implementation of CRP must meet all applicable environmental and cultural resource review requirements. In accordance with the National Environmental Policy Act (NEPA), of 1969, as amended, and the National Historic Preservation Act (NHPA) of 1966, as amended, FSA must consider the environmental and cultural resource effects of each of its actions. FSA must also consider the requirements of numerous other environmental laws, regulations, and executive orders when implementing CRP. FSA's internal environmental/cultural resource regulations classify the agency's actions into various levels of environmental review: categorical exclusions, environmental assessments (EAs), findings of no significant impact (FONSIs), environmental impact statements (EISs), and records of decisions (RODs). FSA incorporates all of its environmental compliance activities, including NHPA and the ESA, under its NEPA review process. Each FSA State Office has a State Environmental Coordinator who provides oversight and direction in the implementation of FSA's environmental review responsibilities at the state and county levels.

NEPA requires all federal agencies to consider alternatives to and the effects of their activities on the human environment. FSA complies with NEPA by completing an environmental review, Form FSA-850 (see FSA Biological Assessment - Appendix V), prior to approving program projects. When completing environmental reviews of its program projects, FSA considers the effects of those projects on a wide range of natural resources as well as areas of special concern such as socio-economic effects and effects on minority or low income populations. Smaller projects that have little to no effect on the environment may be reviewed by the completion of an environmental worksheet and are categorically excluded from needing additional analysis under NEPA. Integral to their technical assistance role in support of CRP, NRCS and/ TSPs conduct environmental evaluations and document their findings on Form NRCS-CPA-52 (see FSA Biological Assessment – Appendix XV).

The environmental evaluation is a concurrent part of the planning process in which potential long-term and short term impacts of an action on people, their physical surroundings, and nature are evaluated and alternative actions explored. The form was designed to assist the conservation planner with compliance requirements for applicable federal laws, regulations, executive orders, and policy. If an environmental review determines that adverse effects may result from approval of a project, FSA must either develop an EA with mitigation measures to reduce the level of impact significance or complete an EIS. EISs are the highest level of NEPA environmental review. Most EISs and RODs completed by FSA occur at the national level for large programs and are considered a programmatic. The size and type of FSA's projects at the local and regional level typically do not warrant the completion of EISs and are usually addressed by completing EAs and FONSIs. For all EAs and EISs, FSA invites public participation.

In June of 2010, a Supplemental Environmental Impact Statement was completed to evaluate the environmental consequences of changes to CRP mandated by the Food, Conservation and Energy Act of 2008. Documenting their decision, FSA on behalf of the Commodity Credit Corporation (CCC) released a companion Record of Decision in July 2010.

Appendix V - USFWS Technical White Paper on Conservation Needs of the LPC

Conservation Needs of the Lesser Prairie-Chicken
U.S. Fish and Wildlife Service Technical White Paper
July 2012

Introduction

The lesser prairie-chicken (*Tympanuchus pallidicinctus*) became a candidate species on June 9, 1998. The species' preferred habitat consists of native short- and mixed-grass prairies with a shrub component dominated by sand sagebrush (*Artemesia filifolia*) or shinnery oak (*Quercus havardii*) (Taylor and Guthery 1980, p. 6; Giesen 1998, pp. 3-4). The species' range extends northward from western Texas and eastern New Mexico into western Oklahoma, eastern Colorado, and western Kansas. The overall distribution of lesser prairie-chickens within all states except Kansas has declined sharply, and the species is generally restricted to limited parcels of untilled native rangeland (Taylor and Guthery 1980, pp. 2-5) or areas with significant Conservation Reserve Program (CRP) enrollments that were initially seeded with native grasses (Rodgers and Hoffman 2005, pp. 122-123). Despite consistent findings that the species warrants listing under the Endangered Species Act, higher priority listing actions have precluded development of a proposed listing rule for the lesser prairie-chicken. Due to the magnitude and immediacy of the threats now faced by the species, the U.S. Fish and Wildlife Service (Service) is in the process of evaluating the current status of the species in preparation of a proposed listing rule with anticipated publication no later than September 2012.

The Service has drafted this white paper as a synopsis of our thoughts on long term conservation and recovery of the lesser prairie-chicken. We appreciate the past and on-going efforts of all stakeholders in lesser prairie-chicken conservation and have taken these into consideration. The Service, however, has the additional responsibility to look into the future and assess future threats to the species. Therefore, as a partner in the conservation of the lesser prairie-chicken, we present this forward-looking document to our partners for their consideration in the on-going development of conservation strategies.

Challenges to Lesser Prairie-Chicken Conservation

The Service has reviewed the available literature on the lesser prairie-chicken and identified three primary challenges to its long-term conservation. First, there are currently insufficient strongholds within the species' occupied and historical ranges to prevent further decline and to increase the chances for long-term survival of the lesser prairie-chicken. In general, the Service considers these strongholds to be important conservation areas within the species' native habitat that is managed or set aside for long-term lesser prairie-chicken conservation and of sufficient size to support a viable lesser prairie-chicken population (see additional description below).

Second, there is a high degree of habitat fragmentation within occupied habitat patches and across the entirety of the species' historical range. Habitat fragmentation occurs when some form of disturbance, usually habitat alteration or loss, results in the separation or splitting apart of larger, previously contiguous, functional components of habitat into smaller, often less valuable, non-contiguous parcels (Wilcove *et al.* 1986, p. 237; Johnson and Igl 2001, p. 25;

Franklin *et al*. 2002, entire). Lesser prairie-chickens are impacted by habitat fragmentation and this threat is expected to increase over time due to proposed energy developments coupled with potential agricultural conversion, incompatible livestock grazing, and other ongoing land uses.

Third, due to the species' small population size, low survival rates, and scattered distribution resulting from fragmentation, it does not appear to be resilient to stochastic events (e.g., drought, severe storms). The Service believes that these combined factors have likely reduced the reproductive success of lesser prairie-chickens, possibly resulting in a loss of genetic variation and diversity, making the issue of the species' resiliency of greater concern. Conservation of the lesser prairie-chicken requires that each of the challenges be addressed.

Management Recommendations for Lesser Prairie-Chicken Conservation

In order to address the long-term conservation of the lesser prairie-chicken, the Service suggests implementation of four management goals to address the three primary challenges facing the species. The four management goals are described in detail below and include establishing strongholds, ensuring connectivity, committing to implementation, and providing long-term certainty.

Strongholds

To address the challenge of inadequate strongholds for the lesser prairie-chicken, the Service recommends that efforts are taken to establish strongholds throughout the species' occupied range. The Service suggests that a minimum of four strongholds be established initially across the landscape in order to ameliorate effects from current and future fragmentation and to increase the chances for long-term survival of the lesser prairie-chicken. Cooperation of private landowners is crucial to conservation of the lesser prairie-chicken, especially in regards to stronghold establishment, because about 95 percent of the occupied range occurs on private land. Within the occupied range of the lesser prairie-chicken, precipitation varies from west to east, temperature varies from north to south, and vegetation type varies from both west to east and north to south. Due to this variability, the Service views the species' occupied range as a matrix comprised of four primary quadrants, each one exemplifying a unique combination of precipitation, temperature, and vegetation type variables. These four quadrants are separated from east to west by the boundary between Bird Conservation Regions 18 (shortgrass prairie) and 19 (central-mixed grass prairie) and from north to south by the Canadian River. To ensure redundancy, resiliency, and representation across the species' range, the Service recommends at least one lesser prairie-chicken stronghold be established and maintained in each quadrant; however, an undetermined number of additional strongholds will be necessary across the species' range in order to expand, connect, and/or re-connect local populations to ensure survival and long-term population viability, as informed by current and future spatial habitat modeling efforts. The distribution, location, and number of strongholds necessary for lesser prairie- chicken conservation must be informed by population goals.

What Constitutes a Lesser Prairie-Chicken Stronghold?

The components of a stronghold must be defined within the context of a short-term conservation strategy stipulating immediate needs. As stated above, the Service recommends the prompt establishment of at least four strongholds distributed across the landscape as informed by population goals in order to reduce the risk of extinction in the short term. The establishment of

lesser prairie-chicken strongholds requires spatial consideration, temporal consideration, adequate jurisdiction, biological security, and management certainty.

The Service suggests that, in order to provide for viable lesser prairie-chicken populations, potential stronghold sites are a minimum of 25,000 acres in size but may need to be up to 50,000 acres or more. For a stronghold to serve its biological function and foster reproductive success, the available literature suggests that a viable lesser prairie-chicken population may require at least six to ten leks and a minimum of six males per lek (Applegate and Riley 1998, p. 14). The size of a potential stronghold may vary according to the amount and distribution of non-habitat and otherwise suitable habitat; the habitat quality of the area; and the interactions between non-habitat, otherwise suitable habitat, and suitable habitat. Non-habitat is defined as areas entirely avoided by lesser prairie-chickens (e.g., irrigated croplands), whereas otherwise suitable habitat consists of areas that contain features causing an indirect loss of lesser prairie-chicken use (e.g., vertical structures). The Service believes that as the quality of habitat increases, the size of the stronghold can decrease toward the minimum size requirement. For example, a 25,000-acre patch would meet the definition of a stronghold only if the entire area consists of high-quality grassland and shrubland habitat. The diversity of native grasslands and shrublands as appropriately defined by the ecological site descriptions is another factor that contributes to habitat quality. Alternatively, factors that minimize habitat quality and necessitate a larger sized patch for a potential stronghold include the amount and type of agricultural lands (small grains, cotton, etc.), presence of vertical structures, and distribution of roads, for example. Specifically, patches consisting of less than 65 percent high-quality native grasslands may be incapable of supporting viable lesser prairie-chicken populations and would not meet the definition of a stronghold (Crawford and Bolen 1976, p. 102); therefore, the size of a particular stronghold should be influenced by the amount of non-habitat or otherwise suitable habitat encompassed by the potential stronghold, as mentioned above.

In addition to these size requirements, strongholds must have long-term protection in place to address the species' relatively short life span, low nest success, high annual mortality, low recruitment, and high juvenile mortality. In the context of the lesser prairie-chicken, 10 to 15 year timeframes may be too short a period due to the species' life-history traits. In Kansas, implementation of the CRP has resulted in favorable habitat conditions for the lesser prairie-chicken due to landscape scale planting of native grasses (and forbs) thereby allowing for lesser prairie-chicken expansion and reoccupation of 16 counties north of the Arkansas River (Service 2010). This management has been beneficial for the lesser prairie-chicken population as a whole, but long-term certainty regarding protection of native habitat strongholds is recommended in order to ensure future survival and conservation of the species. Furthermore, most "split estate" lands, where surface rights and mineral rights are in different ownership, will not meet the definition of a stronghold. Both surface and mineral rights as well as best management practices must be addressed appropriately in order to avoid future developments that could reduce the quality of the stronghold.

A stronghold must also be secure in its biological function due to the lesser prairie-chickens' lek mating system. Leks are characterized by sparse vegetation and are generally located on elevated features such as ridges or grassy knolls (Giesen 1998, p. 4). Giesen (1998, p. 9) reported that hens typically nest and rear broods within 3 km (1.7 mi) of leks and nest near a lek other than the one on which they mated. Therefore, a stronghold must provide a variety of

habitat components to serve its biological function. Lastly, an area will not constitute a stronghold unless there is a high level of certainty that the quantity and quality of the habitat within the site will be maintained or improved.

Connectivity

In addition to the Service's recommendation to establish strongholds that meet the criteria above, the Service also suggests that efforts be implemented to establish connectivity among strongholds in order to provide for lesser prairie-chicken conservation. Many grouse species are known to be relatively poor dispersers. Most seasonal movements of lesser prairie-chickens are less than 10 km (6.2 mi), but Jamison (2000, p. 107) thought that dispersal movements as large as 44 km (27.3 mi) might occur in fragmented landscapes. The species requires sufficient suitable habitat corridors to facilitate movement among strongholds and to allow for gene flow. The location of these connection corridors should be informed by spatial habitat modeling efforts.

Implementation

The third management component that would assist in lesser prairie-chicken conservation is a commitment to implementation of management strategies that avoid or reduce ongoing habitat fragmentation in conjunction with the establishment of strongholds and connective corridors. To accomplish this goal, the Service encourages all stakeholders to assist in the development of a collaborative system that would target and prioritize appropriate areas for the establishment of strongholds and connective corridors as previously discussed. In addition, the Service encourages industry to plan for new energy and transmission developments to occur outside of strongholds and connective corridors identified through the stakeholder collaborative targeting system. Within strongholds and connective corridors, the Service recommends that habitat improvement and restoration are a priority. Management strategies to accomplish this goal may include the removal of vertical structures causing structural fragmentation and the restoration of croplands to native grasslands to reduce spatial fragmentation. The Service suggests monitoring data of lesser prairie-chicken populations and species' habitat be used for an adaptive management framework as lesser prairie-chicken conservation efforts are implemented on the ground.

Certainty

A fourth management goal that would provide lesser prairie-chicken conservation is that a high level of certainty that mechanisms will be in place to achieve and sustain the necessary habitat for the creation, maintenance, and conservation of strongholds and connective areas in the long term. Two tools offered by the Service to accomplish this goal are Candidate Conservation Agreements (CCA) for Federal agencies and Candidate Conservation Agreements with Assurances (CCAA) for non-Federal entities including private landowners and/or operators on non-Federal lands. In addition, the NRCS through the Lesser Prairie-Chicken Initiative is working with landowners to enhance, restore, and protect habitat using voluntary conservation practices. Voluntary initiatives and agreements such as these provide landowners and developers with the opportunity to implement conservation practices along with assurances that, if the species is listed, they can continue to manage their land as outlined in their agreements with no additional requirements. The Service recommends implementation of all four management components in order to ensure the long-term conservation of lesser prairie-chickens. The Service

believes that combined implementation of these management strategies may assist in the establishment of viable lesser prairie-chicken populations, ensuring long-term survival.

Moving Forward with Lesser Prairie-Chicken Conservation

The Service recognizes the significant efforts of our partners over the years to conserve the lesser prairie-chicken; it is of upmost importance that these efforts and the momentum towards conservation continue. We also applaud the current effort to develop a range-wide conservation strategy. The Service greatly appreciates the opportunity to provide input on what we believe are the key strategies (strongholds, connectivity, implementation and certainty) for lesser prairie-chicken conservation.

With this in mind, we strongly recommend our partners consider and apply the suggested management strategies to ensure the ongoing conservation of the lesser prairie-chicken. As the understanding of lesser prairie-chickens continues to grow, the Service expects to refine these suggested management strategies. We urge our partners to incorporate these strategies in the current planning effort recognizing that refinements will be considered as new information becomes available. We stand ready to work in collaboration and cooperation with our Federal, state, and private partners in this ongoing effort to conserve the lesser prairie-chicken.

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Appendix VI - Federally Listed, Proposed, and Candidate Species within the Action Area

Many of the practices as described in this Opinion to benefit LPC when implemented will have little or no effect on the other federally listed and candidate species found within the Action Area. Certain practices will benefit at least some of these other species. There are multiple conservation measures for LPC and threatened and endangered species that CRP participants can implement to assist in the recovery of these species

Federally Listed, Candidate, and Proposed Species within the Action Area

Common Name	Scientific Name	Federal Status[a]	Critical Habitat
Arkansas darter	*Etheostoma cragini*	C	N/A
Arkansas River shiner	*Notropis girardi*	T	Yes
Black-footed ferret	*Mustela nigripes*	E/EXPN	No
Dune sagebrush lizard	*Sceloporus arenicolus*	NL	No
Gypsum wild buckwheat	*Eriogonum gypsophilum*	T	Yes
Interior least tern	*Sterna antillarum athalassos*	E	No
Koster's springsnail	*Juturnia kosteri*	E	Yes
Kuenzler's hedgehog cactus	*Echinocereus fendleri var. kuenzleri*	E	No
Noel's amphipod	*Gammarus desperatus*	E	Yes
Northern Aplomado falcon	*Falco femoralis septentrionalis*	E	No
Pecos assiminea	*Assiminea pecos*	E	Yes
Pecos bluntnose shiner	*Notropis simus pecosensis*	T	Yes
Pecos gambusia	*Gambusia nobilis*	E	Yes
Pecos sunflower	*Helianthus paradoxus*	T	Yes
Piping plover	*Charadrius melodus*	E, T	Yes
Rio Grande silvery minnow	*Hybognathus amarus*	E, EXPN	Yes
Roswell springsnail	*Pyrgulopsis roswellensis*	E	Yes
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	Yes
Sprague's pipit	*Anthus spragueii*	C	N/A
Texas hornshell	*Popenaias popeii*	C	N/A
Whooping crane	*Grus Americana*	E	Yes
Wright's marsh thistle	*Cirsium wrightii*	C	N/A

[a] E – Endangered species; T - Threatened species; PE - Proposed endangered species; C – Candidate species; NL – Not Listed, but considered at-risk

Taxon: Fishes
Common Name: Arkansas Darter
Scientific Name: *Etheostoma cragini*
Federal Status: Candidate
Threats: Water depletion from groundwater pumping, drying of spring-fed streams and marshes, and stream dewatering reduces available habitat. Groundwater depletion (irrigation) and water quality degradation are tied to agricultural practices, such as CAFOs. Water quality parameters include nutrient enrichment and turbidity, which decreases dissolved oxygen and increases water temperatures. Declining peak flows cause vegetation encroachment into formerly un-vegetated portions of the stream channel. Sedimentation from crop field runoff and over-grazing of riparian areas impacts spawning habitat and water quality. Rapid urban and suburban development affects hydrology, and increases sedimentation, chemical pollution, and physical habitat destruction. Dams and their resulting reservoirs act as barriers to emigration upstream and downstream through the reservoir pool. Increased or protracted drought related to climate change also could exacerbate these impacts.
Conservation Measures: (1) Assist in implementing salt cedar control programs. (2) Avoid any LPC practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife Service – Species Assessment and Listing Priority Form – Arkansas Darter – October 22, 2010

Taxon: Fishes
Common Name: Arkansas River Shiner
Scientific Name: *Notropis girardi*
Federal Status: Threatened
Threats: Some agricultural practices have contributed to water quality degradation because such practices contribute excess nutrients, sediments, chemicals, and other types of non-point source pollutants through runoff from range, pastureland, and/or tilled fields.
Conservation Measures: (1) Protect and enhance riparian and stream habitat with riparian buffers, exclusion of livestock from streams, and control of salt cedar and other non-native vegetation. (2) Avoid any practice that removes ground water or causes drying of surface water occupied by the species.
References: U.S. Fish and Wildlife Service – Spotlight Species Action Plan, August 6, 2009

Taxon: Mammals
Common Name: Black-footed Ferret
Scientific Name: *Mustela nigripes*
Federal Status: Endangered/ Endangered Experimental Population
Threats: Prairie dog occupied habitat is highly fragmented and repeatedly impacted by poisoning and/or disease, with few complexes of a size adequate to support black-footed ferrets. The quality of the remaining black-footed ferret habitat has been adversely impacted by the presence of disease, poisoning, and recreational prairie dog shooting resulting in the loss of prey

base. Additionally, several other diseases, including coccidiosis, cryptosporidiosis, and hemorrhagic syndrome sometimes affect captive populations. Climate change and the genetic fitness of black-footed ferrets are continuing threats.
Conservation Measure: (1) Avoid any vegetative management practices, such as planting, that would make the habitat potentially unsuitable for prairie dogs, and thus for black-footed ferrets. Note that habitat restoration, prescribed grazing, brush management, and access control may have beneficial effects to the black-footed ferret.
References: U.S. Fish and Wildlife Service – Black-footed Ferret (*Mustela nigripes*) 5-Year Status Review: Summary and Evaluation – November 2008

Taxon: Reptiles
Common Name: Dune sagebrush lizard
Scientific Name: *Sceloporus arenicolus*
Federal Status: At-Risk Species of special interest, as of 2012 it is no longer a Candidate species
Threats: Large-scale habitat destruction is the major threat to the continued existence of *S. arenicolus* in southeastern New Mexico (Painter 2004). Widespread uses of herbicide for shinnery oak control and activities associated with oil/gas extraction have the greatest potential to cause significant Sand Dune Lizard population extinction or reduction (Peterson and Boyd 1998, Painter 2004). The short-term effect of these activities is lizard population decline resulting from development of a grassland habitat that is unsuitable for the lizard (unless this new habitat retains large blowouts, in which case it is capable of supporting very small populations of *Sceloporus arenicolus* for at least ten years after treatment; e.g., see Snell et al. 1993, Gorum et. al., 1995). The long-term effect of these habitat modifications are unknown, but increased habitat fragmentation results in increased probability of extinction of individual populations (Painter 2004). In the mid-1990s, the BLM Roswell Resource Area placed a moratorium on chemical treatment of shinnery oak - sand dune habitat. However, the long-term future of this moratorium is uncertain. Other activities with the potential for habitat destruction (i.e., ORV use, livestock grazing, and fire) have been little studied or are considered of lesser importance (Painter 2004).

Conservation Measures: (1) Avoid implementation of conservation practices during the critical periods of March 1st through July 15th to avoid disturbances. (2) Avoid brush control treatments to large blocks or strips and no more than 50 percent of an individual management unit (pasture) will be treated during any two year period. (3) Establish a grazing plan that ensures: stocking rates are in balance with the forage supply; season of use is rotated through pastures to ensure plants have adequate reproduction opportunity; and that the plan is implemented to increase residual cover of perennial grasses and forbs.
References: Candidate Conservation Agreement for the Lesser Prairie Chicken and the Dunes Sagebrush Lizard in New Mexico 2008 and The Texas Conservation Plan for the Dunes Sagebrush Lizard 2011;
http://www.iucnredlist.org/apps/redlist/details/64087/0

Taxon: Plants
Common Name: Gypsum Wild Buckwheat
Scientific Name: *Eriogonum gypsophilum*
Federal Status: Threatened with Critical Habitat
Threats: *Eriogonum gypsophilum* was originally known from only one locality on BLM and BOR land (Seven River Hills, Eddy County). In 1988, two additional populations (Black River and Ben Slaughter Draw) were documented. Population abundance has remained stable since this species was first listed. Threats include off-road-vehicle (ORV) use, trampling and grazing by cattle, road improvements, oil and gas development, mineral extraction, and water level management in Brantley Reservoir.
Threats Citation: U.S Fish and Wildlife Service - Gypsum Wild Buckwheat (*Eriogonum gypsophilum*) Recovery Plan 1984
Conservation Measure: (1) Protection of habitat (gypsum soils and outcrops) and individual plants is the highest priority for the conservation of this species.
References: U.S. Fish and Wildlife Service - Gypsum Wild Buckwheat (Eriogonum gypsophilum) Recovery Plan 1984 and Gypsum Wild Buckwheat (*Eriogonum gypsophilum*) 5-Year Review: Summary and Evaluation 2007

Taxon: Birds
Common Name: Interior Least Tern
Scientific Name: *Sterna antillarum athalassos*
Federal Status: Endangered
Threats: Many nesting areas have been permanently flooded by reservoirs and channelization projects. Unpredictable water discharge patterns below dams flood nesting areas. Overgrowth of brush and trees also eliminates remaining habitat. This prevents terns from using these areas as nesting sites. The recreational use of sandbars by humans is a major threat to the tern's reproductive success.
Conservation Measures: (1) Protect and enhance riparian and stream habitat with riparian buffers, exclusion of livestock from streams, and control of salt cedar and other non-native vegetation. (2) Identify areas infested by saltcedar or Russian olive and assess which conservation measures would be the most practical and effective for restoring historic levels of base flows. (3) Reduce perching sites and habitat for potential predators.
References: Kevin Stubbs, Fish and Wildlife Biologist, U.S. Fish & Wildlife Service

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Taxon: Snails
Common Name: Koster's Springsnail
Scientific Name: *Juturnia kosteri*
Federal Status: Endangered
Threats: The loss or alteration of spring habitat continues to be the main threat with potential failure of spring flow due to excessive groundwater pumping or drought or both, which would result in total habitat loss for the species. Water contamination, particularly from oil and gas

operations, is a significant threat. Fire suppression is largely restricted to established roads due to the safety hazards of transporting equipment over karst terrain, which severely limits the ability to quickly suppress fires that threaten fragile aquatic habitats. Springsnails and amphipods are a food source for other aquatic animals, such as crayfish, fish, and aquatic snails. Seeps and springs currently occupied have been perennial, even during times of drought, suggesting that these springs are relatively resilient to drought. However, climate change may test that resiliency.
Conservation Measures: (1) Protect water quality and improve land management practices surrounding occupied habitat. (2) Restrict access to occupied habitat. (3) Avoid use of prescribed burning to control invasive vegetation in occupied habitat. (4) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife Service - Four Bitter Lake Invertebrates 5-Year Review, December 28, 2010

Taxon: Plants
Common Name: Kuenzler's Hedgehog Cactus
Scientific Name: *Echinocereus fendleri var. kuenzleri*
Federal Status: Endangered
Threats: *Echinocereus fendleri* var. *kuenzleri* was originally known from only two locations (Rio Hondo and Rio Penasco drainages) in Lincoln, Otero, and Chaves Counties. Threats include collecting for private and commercial use, road improvement and maintenance, and incompatible livestock grazing.
Conservation Measure: (1) Protection of habitat (pinon-juniper savanna) and individual plants is the highest priority for the conservation of this species.
References: U.S. Fish and Wildlife Service - Kuenzler's Hedgehog Cactus (*Echinocereus fendleri* var. *kuenzleri*) Recovery Plan 1985 and Kuenzler's Hedgehog Cactus (*Echinocereus fendleri* var. *kuenzleri*) 5-Year Review 2005

Taxon: Crustaceans
Common Name: Noel's Amphipod
Scientific Name: *Gammarus desperatus*
Federal Status: Endangered
Threats: The loss or alteration of spring habitat continues to be the main threat with potential failure of spring flow due to excessive groundwater pumping or drought or both, which would result in total habitat loss for the species. Fire suppression is largely restricted to established roads due to the safety hazards of transporting equipment over karst terrain, which severely limits the ability to quickly suppress fires that threaten fragile aquatic habitats. Springsnails and amphipods are a food source for other aquatic animals, such as crayfish, fish, and aquatic snails. Seeps and springs currently occupied have been perennial, even during times of drought, suggesting that these springs are relatively resilient to drought.

Conservation Measures: (1) Protect water quality and improve land management practices surrounding occupied habitat. (2) Restrict access to occupied habitat. (3) Avoid use of prescribed burning to control invasive vegetation in occupied habitat. (4) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife Service - Four Bitter Lake Invertebrates 5-Year Review, December 28, 2010

Taxon: Birds
Common Name: Northern Aplomado Falcon
Scientific Name: *Falco femoralis septentrionalis*
Federal Status: Endangered
Threats: Brush encroachment, catastrophic channelization of desert streams that would have provided wetland communities for avian prey species, pesticide contamination, and collecting were cited as reasons for decline in the Recovery Plan. Currently, long-term drought, shrub encroachment in areas of Chihuahuan Desert grasslands, and the increased presence of the great horned owl, which preys upon the falcon, may be limiting recovery of this subspecies.
Conservation Measures: (1) Protection and restoration of pesticide- and lead-free grassland and wetland communities and associated forest, woodland, and thorn scrub. (2) Restrict access to known or suspected nesting areas. (3) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife - Aplomado Falcon Recovery Plan 1990. Department of Defense and Department of Interior Fact Sheet: Northern Aplomado Falcon (*Falco femoralis septentrionalis*) July 2007. Keddy-Hector, Dean P. 2000. Aplomado Falcon (*Falco femoralis*), and The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/549

Taxon: Snails
Common Name: Assiminea *pecos*
Scientific Name: *Assiminea pecos*
Federal Status: Endangered
Threats: The loss or alteration of spring habitat continues to be the main threat with potential failure of spring flow due to excessive groundwater pumping or drought or both, which would result in total habitat loss for the species. Fire suppression is largely restricted to established roads due to the safety hazards of transporting equipment over karst terrain, which severely limits the ability to quickly suppress fires that threaten fragile aquatic habitats. Springsnails and amphipods are a food source for other aquatic animals, such as crayfish, fish, and aquatic snails. Seeps and springs currently occupied have been perennial, even during times of drought, suggesting that these springs are relatively resilient to drought. However, climate change may test that resiliency.
Conservation Measures: (1) Secure conservation on additional lands surrounding occupied habitat to protect water quality and improve land management practices. (2) Restrict access to

occupied habitat. (3) Avoid use of prescribed burning to control invasive vegetation. (4) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife Service - Four Bitter Lake Invertebrates 5-Year Review, December 28, 2010

Taxon: Fishes
Common Name: Pecos Bluntnose Shiner
Scientific Name: *Notropis simus pecosensis*
Federal Status: Threatened
Threats: Reduced flow and associated altered riparian habitats and hydrographs remain the primary threats to the species. Dams have many downstream effects, including habitat fragmentation, a reduction in lateral channel migration, channel scouring, blockage of fish passage, channel narrowing, changes in the riparian community, diminished peak flows, changes in the timing of high and low flows, and a loss of connectivity between the river and its flood plain. Aerial and terrestrial piscivores may also threaten the species. The spread golden algae, the increased potential for drought, salinization, and nutrient concentrations over time are reasons for concern.
Conservation Measure: (1) The highest priority to facilitate recovery for the Pecos bluntnose shiner is maintaining a continuous river flow from the confluence of Taiban Creek to Brantley Reservoir and to continue habitat restoration projects that create favorable habitat for Pecos bluntnose shiner.
References: U.S. Fish and Wildlife Service - Pecos Bluntnose Shiner (*Notropis simus pecosensis*) 5-Year Review Summary and Evaluation – May 2010

Taxon: Fishes
Common Name: Pecos Gambusia
Scientific Name: *Gambusia nobilis*
Federal Status: Endangered
Threats: The species is facing extinction because of one or both of two major threats: (1) Loss of habitat and (2) the inability to interact successfully with nonnative fish species, especially mosquitofish. The species has become confined to spring-fed areas because it cannot compete with fish species nonnative to its habitat. Loss of habitat has occurred through water withdrawals for irrigation and dam construction. A total of five major dams and at least three lesser dams are on the mainstream Pecos River.
Conservation Measure: (1) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife Service - Pecos Gambusia Recovery Plan 1983

Taxon: Plants
Common Name: Pecos Sunflower
Scientific Name: *Helianthus paradoxus*
Federal Status: Threatened
Threats: Loss and/or alteration of wetland habitat are the primary threat to Pecos sunflower, primarily by surface water diversion and wetland filling for agriculture and recreational uses, and groundwater pumping and aquifer depletion for municipal uses. In addition, the species is potentially out competed by nonnative invasive vegetation (tamarisk), and impacted by land management activities (unsuitable grazing systems, mowing, etc.).
Conservation Measures: (1) Groundwater use in the surrounding area should be managed in a way to assure adequate spring flows. (2) When developing a grazing system in occupied habitat, ensure grazing season, frequency, intensity and duration will provide the conservation of the species.
References: U.S. Fish and Wildlife Service - Pecos Sunflower (*Helianthus paradoxus*) September 2005. U.S. Fish and Wildlife Service - Pecos_Sunflower_FINAL_Recovery_Plan_Fact_Sheet.pdf

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Taxon: Birds
Common Name: Piping Plover
Scientific Name: *Charadrius melodus*
Federal Status: Endangered, Threatened
Threats: Reservoirs, channelization of rivers, and modification of river flows may result in reduction in sandbar riverine habitat, the flooding of remaining breeding habitat during the nesting season, and vegetation growth on sandbars that are rarely scoured by high flows. Other threats include commercial sand and gravel mining, freshening of alkali lakes, invasive exotics, particularly salt cedar, and even native species that are declining overall along channelized rivers, because flows are rarely sufficient to scour them from riverine islands. Oil spills in the wintering range may be a threat, but it does not address the potential impacts of oil and gas development on the breeding grounds. Oil development on the breeding grounds has increased dramatically since the 1988 and remains a threat today. The potential impacts of wind farms on piping plovers are unknown but may be significant. Impacts may occur through direct collision with turbines, or indirectly if plovers avoid previously used areas that now contain wind farms.
Conservation Measures: (1) Create, manage, or protect nesting and foraging habitats (relatively barren, unvegetated salt flats, river sandbars and islands). (2) Land use practices that may adversely affect stream flows, channel morphology, and sediment transport should be avoided. (3) Protect nesting and rearing habitats from human disturbance. (4) Exclude livestock from streams. (5) Control salt cedar and other non-native vegetation. (6) Identify areas infested by saltcedar or Russian olive and assess which conservation measures would be the most practical and effective for restoring historic levels of base flows. (6) Reduce perch sites and habitat for potential predators.
References: U.S. Fish and Wildlife Service - Piping Plover 5-Year Review, September 2009. Kevin Stubbs, Fish and Wildlife Biologist, US Fish & Wildlife Service, and Pompei V.D. and F.J. Cuthbert. 2007. Spring and Fall Distribution of Piping Plovers in North America:

Implications for Migration Stopover Conservation. University of Minnesota. St. Paul, Minnesota. 28 p.

Taxon: Fishes
Common Name: Rio Grande Silvery Minnow
Scientific Name: *Hybognathus amarus*
Federal Status: Endangered, Endangered Experimental Population
Threats: Silvery minnow's decline has been attributed to decreased and interrupted stream flows caused by impoundments, water diversion for agriculture, and stream channelization. It may also be affected by interactions with non-native fish and decreasing water quality in its native streams. It is believed that diversion dams on the middle Rio Grande act as barriers and prevent the silvery minnow from movement upstream of the diversion dams. Historically, after periods of low or no flow the silvery minnow may have been able to repopulate downstream habitat the following year by the drift of eggs from upstream populations. However, when the present-day middle Rio Grande dries and dams prevent upstream movement, the silvery minnow can become trapped in some areas and die in isolated pools before the river becomes wetted again. The inability of the population to find adequate refugia during prolonged periods of low or no flow and to repopulate extirpated reaches creates a very unstable population.
Conservation Measures: (1) Restore and protect the habitats used by the species. (2) Protect and expand existing populations by means of the following: strategic habitat modifications to provide proper habitat at low flows; new strategies to provide water needed by the species; habitat restoration activities; and a comprehensive program of propagation and augmentation. (3) Ensure that water withdrawals will not reduce quality of aquatic or riparian habitat.
References: U.S. Fish and Wildlife Service - Rio Grande Silvery Minnow Questions and Answers April 2002

Taxon: Snails
Common Name: Roswell Springsnail
Scientific Name: *Pyrgulopsis roswellensis*
Federal Status: Endangered
Threats: The loss or alteration of spring habitat continues to be the main threat with potential failure of spring flow due to excessive groundwater pumping or drought or both, which would result in total habitat loss for the species. Water contamination, particularly from oil and gas operations, is a significant threat. Fire suppression is largely restricted to established roads due to the safety hazards of transporting equipment over karst terrain, which severely limits the ability to quickly suppress fires that threaten fragile aquatic habitats. Springsnails and amphipods are a food source for other aquatic animals, such as crayfish, fish, and aquatic snails. Seeps and springs currently occupied have been perennial, even during times of drought, suggesting that these springs are relatively resilient to drought. However, climate change may test that resiliency.

Conservation Measures: (1) Secure conservation on additional lands surrounding occupied habitat to protect water quality and improve land management practices. (2) Restrict access to occupied habitat. (3) Avoid use of prescribed burning to control invasive vegetation. (4) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species.
References: U.S. Fish and Wildlife Service - Four Bitter Lake Invertebrates 5-Year Review, December 28, 2010

Taxon: Birds
Common Name: Southwestern Willow Flycatcher
Scientific Name: *Empidonax traillii extimus*
Federal Status: Endangered
Threats: The reasons for the decline of the southwestern willow flycatcher and current threats it faces are numerous, complex, and inter-related. Riparian ecosystems have declined from reductions in water flow, interruptions in natural hydrological events and cycles, physical modifications to streams, modification of native plant communities by invasion of exotic species, and direct removal of riparian vegetation. Habitat has been lost to fire, agricultural development, and urbanization. Unsuitable livestock grazing and recreation are also continuing threats (direct impacts to individuals as well as changes to habitat).
Conservation Measure: (1) Protection, manage and restore riparian habitat. (2) Remove livestock from the riparian areas to enhance riparian habitat and prevent destruction of nests (although some light to moderate grazing during the winter in riparian areas is acceptable) and (3) Restrict human access to habitat during the breeding season.
References: U.S. Fish and Wildlife Service -Final Recovery Plan Southwestern Willow Flycatcher (*Empidonax traillii extimus*) – August 2002

Taxon: Birds
Common Name: Sprague's pipit
Scientific Name: *Anthus spragueii*
Federal Status: Candidate
Threats: The Sprague's pipit both breeds and winters on the North American prairie. The breeding range includes parts of Montana, North Dakota, South Dakota and Minnesota in the United States. The species' wintering range includes parts of Arizona, Texas, southern Oklahoma, southern Arkansas, northwest Mississippi, southern Louisiana, and northern Mexico (Robbins and Dale 1999). The migration route occurs primarily through the central Great Plains and includes most of Oklahoma (Jones 2010). Sprague's pipits that occur in the action area are anticipated to be migrating Individuals. Sprague's pipits use grassland habitat almost exclusively throughout the year and require relatively large patches of prairie for nesting (estimated at between 170-776 acres; Davis 2004). They avoid non-prairie features in the landscape (e.g., an oil and gas well). Threats to this species include loss, fragmentation, and degradation of grassland habitat due to energy development, overgrazing and conversion to agriculture (Jones 2010, Robbins and Dale 1999).**Conclusion**
The proposed action is not anticipated to jeopardize the continued existence of this species for

the following reasons. The Sprague's pipit is a grassland bird species. The proposed action would consist of restoring and enhancing grassland habitat in Oklahoma. Migrating individuals may occur within the action area. However, because pipits are highly mobile, any individuals that do occur on enrolled lands during the implementation of conservation measures should be able to avoid any possible harm or injury that may occur as a result of those actions (e.g., pipits should be able to avoid the direct effects of smoke and heat from a prescribed fire).

Taxon: Clams
Common Name: Texas Hornshell
Scientific Name: *Popenaias popeii*
Federal Status: Candidate
Threats: The decline in freshwater mussel populations in New Mexico and Texas, including the Texas hornshell, can be directly attributed to human actions that modify physical conditions in streams, such as dams, water impoundment and diversion, certain flood control practices, water pollution, increased siltation and sedimentation, and climate change. The release of pollutants into streams from point and non-point sources has immediate impacts on water quality. Oil and gas industry operations (exploration, transfer, storage, and refining) are known to contaminate ground- and surface-waters. The potential effects of future climate change could reduce overall water availability and compound the threat of declining flows. Introduction of exotic bivalves and water soluble toxins produced by the invasive golden alga are also a threat.
Conservation Measures: (1) To avoid impacts to the species, ensure that water withdrawals will not reduce quality of aquatic or riparian habitat. (2) Restrict access to Texas hornshell beds.
References: U.S. Fish and Wildlife Service – Species Assessment and Listing Priority Form - Texas Hornshell – October 22, 2010

Taxon: Birds
Common Name: Whooping Crane
Scientific Name: *Grus americana*
Federal Status: Endangered
Threats: Ongoing and anticipated development of wind resources in the migration corridor of the AWBP is unprecedented and could place thousands more wind turbines, associated transmission lines, and other appurtenances in the Central Flyway path of the species in the coming decade. The whooping crane is a species with a low reproductive rate and limited genetic material derived from the 15 whooping cranes that remained in the 1940s. As more wind energy facilities are built, including turbines, transmission lines, power stations, and roads, it is incumbent on the industry, Federal action agencies, and U.S. Fish and Wildlife Service to provide the highest level of protection possible to whooping cranes, and to closely monitor the number of these birds killed and deterred from using preferred stopover locations. Other major threats to whooping cranes in the wild are the potential of a hurricane or contaminant spill destroying their wintering habitat on the Texas coast. The primary threats to captive birds are disease and parasites.
Conservation Measures: (1)To conserve whooping cranes, limit activity within 0.5-miles of wetlands suitable as stopover sites during spring and fall migration periods. To determine what suitable whooping crane habitat is, look for shallow wetlands in open, non-wooded areas free

from human disturbance, such as nearby roads or buildings with at least some water area less than 18 inches deep. This will include marshes, small ponds, lake edges, or rivers. (2) Avoid any practice that removes ground water or causes drying of surface water in the immediate area of possible stopover sites. Note: other LPC practices that may be beneficial to the whooping crane include watering facilities to provide livestock with reliable water resources outside of stopover sites, planting, and pond development.
References: Whooping Cranes and Wind Development – An Issue Paper – By Regions 2 and 6, U. S. Fish and Wildlife Service – December 2008. Also
http://www.fws.gov/northflorida/WhoopingCrane/whoopingcrane-fact-2001.htm

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Taxon: Plants
Common Name: Wright's Marsh Thistle
Scientific Name: *Cirsium wrightii*
Federal Status: Candidate
Threats: *Cirsium wrightii* faces threats primarily from natural and human-caused modifications of its habitat due to ground and surface water depletion, drought, invasion of *Phragmites australis*, and from the inadequacy of existing regulatory mechanisms. The species occupies relatively small areas of seeps, springs, and wetland habitat in an arid region plagued by drought and ongoing and future water withdrawals. The species' highly specific requirements of saturated soils with surface or subsurface water flow make it particularly vulnerable. Long-term drought, in combination with ground and surface water withdrawal, pose a current and future threat to *C. wrightii* and its habitat.
Conservation Measures: (1) To conserve this species, excluding livestock from priority riparian areas to support protection and expansion of extant populations. (2) Avoid any practice that removes ground water or causes drying of surface water in the immediate area occupied by the species particularly the springs and cienagas in southeastern New Mexico.
References:
http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/WrightsThistle/FR_12-month_Wright's_marsh_thistle.pdf