

**DRAFT ENVIRONMENTAL ASSESSMENT**  
**For Issuance Of An**  
**Endangered Species Act Section 10(a)(1)(A) Enhancement of Survival Permit**  
**Associated With A**  
**Candidate Conservation Agreement with Assurances**  
**For the Texas Parks and Wildlife Department**  
**to Conserve the Lesser Prairie-chicken in**  
**the State of Texas**

**U.S. Fish and Wildlife Service**  
**Arlington Ecological Services Field Office**  
**711 Stadium Drive**  
**Suite 252**  
**Arlington, Texas 76011**

**July 28, 2006**

## COVER SHEET

Title For Proposed Action: Draft environmental assessment for issuance of an Endangered Species Act section 10(a)(1)(A) Enhancement of Survival Permit associated with a Candidate Conservation Agreement with Assurances for the Texas Parks and Wildlife Department to conserve the lesser prairie-chicken (*Tympanuchus pallidicinctus*) in the state of Texas.

Unit of the U.S. Fish and Wildlife Service Proposing the Action: Regional Director, Region 2, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

Legal Mandate for the Proposed Action: Endangered Species Act of 1973, as amended, Section 10(a)(1)(A), as implemented by 50 CFR 17.22.

Permittee: Texas Parks and Wildlife Department

Permit Number: TE-132658-0

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Document Author: John P. Hughes, U.S. Fish and Wildlife Service, West Texas Suboffice, P.O. Box 713, Canadian, Texas 79014.

Administrators of this CCAA are:

TPWD:           The TPWD designates the following individual as the  
                    CCAA Administrator: Dr. Michael E. Berger  
                    Wildlife Division Director  
                    4200 Smith School Road, Austin TX, 78744-3291  
                    Phone: 512-389-8092  
                    Email: mike.berger@tpwd.state.tx.us

USFWS:          The USFWS designates the following individual as the  
                    CCAA Administrator: Tom Cloud  
                    Field Supervisor, Arlington Ecological Services Field Office  
                    711 Stadium Drive, Suite 252, Arlington, TX 76011  
                    Phone: 817-277-1100  
                    Email: tom\_cloud@fws.gov

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## 1.0 INTRODUCTION

The Texas Parks and Wildlife Department (TPWD) has applied to the Fish and Wildlife Service (FWS) for an enhancement of survival permit pursuant to section 10(a)(1)(A) of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.). The permit application includes a proposed Candidate Conservation Agreement with Assurances (CCAA) for the Lesser Prairie-chicken (LPC)(*Tympanuchus pallidicinctus*). TPWD intends to implement conservation measures for LPCs within the State of Texas by providing technical assistance through which cooperating private landowners can implement voluntary conservation measures to restore and/or maintain suitable habitat for LPCs on their properties.

Sections 2, 7, and 10 of the ESA allow the FWS to enter into this CCAA. Section 2 of the ESA states that encouraging interested parties, through federal financial assistance and a system of incentives, to develop and maintain conservation programs is key to safeguarding the Nation's heritage in fish, wildlife, and plants. Section 7 of the ESA requires the FWS to review programs that we administer and to utilize such programs in furtherance of the purposes of the ESA. Lastly, Section 10(a)(1)(A) of the ESA authorizes the issuance of permits to "enhance the survival" of a species through a CCAA.

The benefits of the conservation measures to be implemented by TPWD and the private landowners it enrolls in the CCAA through Certificates of Inclusion (CI), when combined with those with the potential to be implemented on "other necessary properties"<sup>1</sup>, are expected to preclude or remove the need to list the LPC under the ESA. In return, the FWS provides TPWD and its enrollees (participating landowners) assurances that, for the duration of the CCAA and its associated Section 10(a)(1)(A) Enhancement of Survival Permit (Permit), no additional conservation measures or additional land, water, or resource use restrictions beyond those voluntarily agreed to and described in a TPWD and FWS-approved Wildlife Management Plan (WMP), will be required by the FWS for the LPC should it become listed in the future.

## 2.0 PURPOSE AND NEED FOR ACTION

The federal action associated with this CCAA is: approval of the CCAA as proposed and issuance of a Permit that would become effective on the date of the final rule, should the LPC become listed at some time in the future, approval of the CCAA as further conditioned and issuance of a Permit, or not approve the CCAA and deny the request for a Permit. To issue a Permit, the FWS must find that: 1) any take will be incidental to an otherwise lawful activity and will be in accordance with the terms of the CCAA; 2) the CCAA complies with the requirements of the CCAA policy; 3) the probable direct and indirect effects of any authorized take will not appreciably reduce the likelihood of survival and recovery in the wild of any species; 4) implementation of the terms of the CCAA is consistent with applicable federal, State, municipal,

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<sup>1</sup> As defined in the CCAA policy, "other necessary properties" are properties on which conservation measures would have to be implemented in order to preclude or remove any need to list the covered species.

and Tribal laws, rules, and regulations; 5) implementation of the terms of the CCAA will not be in conflict with any ongoing conservation programs for species covered by the permit; and, 6) TPWD has shown capability for and commitment to implementing all of the terms of the CCAA.

The proposed CCAA encourages beneficial habitat management activities on a voluntary basis. The FWS believes there is a need for a CCAA since landowners currently have little legal or economic incentive to allow candidate and/or listed species on their property and actually have in some respects a disincentive to do so. The use of a landowner's land by a listed species brings with it a responsibility to avoid harming the species and its habitat. These responsibilities, depending upon the landowner's tract size and land management or land use objectives, can sometimes limit or modify land use alternatives. To minimize these responsibilities under the ESA, landowners have generally refrained from undertaking the types of actions that would benefit the species. Some landowners may in fact be taking actions designed to reduce the likelihood that their land will be used by the LPC in the future; however, other landowners may be willing to implement or allow another entity to implement conservation measures that would benefit the LPC on their property if the possibility of future land use limitations can be reduced or eliminated.

FWS needs and goals are: 1) to conserve/recover the LPC and its habitat during the implementation of the CCAA; 2) to facilitate and promote the management of the LPC on non-federal lands by providing assurances that no additional conservation measures or additional land, water, or resource use restrictions beyond those voluntarily agreed to and described in the CCAA, will be required for the LPC, should it become listed in the future; and, 3) to ensure compliance with the ESA, the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321)(NEPA), and other applicable federal laws and regulations.

### **3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT**

Currently, occupied range of the LPC in Texas is restricted to areas of a mixed sand sagebrush (*Artemisia filifolia*) — bluestem (*Andropogon* spp. and/or *Schizachyrium* spp.) plant community or mixed sand shinnery oak (*Quercus havardii*) — bluestem plant community in the southwestern and northeastern Texas panhandle (Oberholser 1974, Giesen 1998). For the purpose of this CCAA, the affected environment consists of the Texas counties of Dallam, Sherman, Hansford, Ochiltree, Lipscomb, Hartley, Moore, Hutchinson, Roberts, Hemphill, Oldham, Potter, Carson, Gray, Wheeler, Deaf Smith, Randall, Armstrong, Donley, Collingsworth, Parmer, Castro, Swisher, Briscoe, Hall, Childress, Bailey, Lamb, Hale, Floyd, Motley, Cottle, Cochran, Hockley, Lubbock, Crosby, Dickens, King, Knox, Yoakum, Terry, Lynn, Garza, Kent, Stonewall, Gaines, Dawson, Borden, Scurry, and Andrews.

#### **3.1 VEGETATION**

The affected environment (hereafter, covered area) supports both a short-grass plant community and a mixed-grass plant community within the current range of the LPC.

Within the shortgrass plant community, dominant grasses include buffalograss (*Buchloe*



*dactyloides*) and blue grama (*Bouteloua gracilis*), with varying amounts of sideoats grama (*B. curtipendula*), threeawns (*Aristida* spp.), love grasses (*Eragrostis* spp.), sand dropseed (*Sporobolus cryptandrus*), tobosagrass (*Hilaria mutica*), galleta (*H. jamesii*), vine-mesquite (*Panicum obtusum*), bush muhly (*Muhlenbergia porteri*), and Arizona cottontop (*Digitaria californica*).

Forbs can be abundant during wet years, but are seldom a major component of the shortgrass prairie. Major forbs during wet years include common broomweed (*Amphiachyris dracunculoides*), false mesquite (*Hoffmanseggia densiflora*), western ragweed (*Ambrosia psilostachya*), horsetail conyza (*Conyza canadensis*), warty euphorbia (*Euphorbia spathulata*), silverleaf nightshade (*Solanum elaeagnifolium*), manystem evax (*Evax multicaulis*), woolly plantain (*Plantago patagonica*), Texas croton (*Croton texensis*), globemallow (*Sphaeralcea* spp.), and summercypress (*Kochia scoparia*).

Dominant woody plants are honey mesquite (*Prosopis glandulosa*), yucca (*Yucca* spp.), and fourwing saltbush (*Atriplex canescens*). Cactus (*Opuntia* spp.) are also abundant. The most prevalent species include plains pricklypear (*O. polyacantha*), brownspine pricklypear (*O. phaeacantha*), walking stick cholla (*O. imbricata*), and tasajillo (*O. leptocaulis*).

Within the mixed-grass plant community, dominant grasses include sideoats grama, little bluestem (*Schizachyrium scoparium*), sand bluestem (*Andropogon hallii*), indiagrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), Canada wildrye (*Elymus canadensis*), western wheatgrass (*Pascopyrum smithii*), buffalograss, and Texas wintergrass (*Stipa leucotricha*). Other grasses include vine-mesquite, sand dropseed, threeawns, plains bristlegrass (*Setaria leucopila*) and green sprangletop (*Leptochola dubia*).

Many annual and perennial forbs are abundant during wet winters. Common broomweed, camphorweed (*Heterotheca pilosa*), purple prairie clover (*Dalea purpurea*), queensdelight (*Stillingia sylvatica*), sand lily (*Mentzelia decapetala*), Texas croton, and western ragweed are the most prevalent species.

With fire suppression, honey mesquite and redberry juniper (*Juniperus pinchotii*) are rapidly increasing within the southern portion of the covered area. Sand shinnery oak, sand sagebrush, aromatic sumac (*Rhus aromatica*), Chickasaw plum (*Prunus angustifolia*), and Oklahoma plum (*P. gracilis*) are important shrubs on sandy range sites within the covered area.

### 3.2 WILDLIFE

A diverse array of both resident and migratory wildlife utilize the covered area. This includes species that are important from an economic, recreational, scientific, and ecological perspective. Due to the many and diverse habitats and the large covered area encompassed within the affected environment, a listing of all species within the covered area is not believed to be warranted. The species presented serve only as a representative

sample of wildlife typically found within the short-grass and mixed-grass plant communities.

Typical avian fauna found within the covered area include the ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), upland sandpiper (*Bartramia longicauda*), long-billed curlew (*Numenius americanus*), loggerhead shrike (*Lanius ludovicianus*), western meadowlark (*Sturnella neglecta*), Cassin's sparrow (*Aimophila cassinii*), lark bunting (*Calamospiza melanocorys*), grasshopper sparrow (*Ammodramus savannarum*), and burrowing owl (*Athene cunicularia*).

Reptiles and amphibians typically found within the covered area include the great plains toad (*Bufo cognatus*), western green toad (*B. debilis insidiosus*), Woodhouse's toad (*B. woodhouseii woodhouseii*), plains leopard frog (*Rana blairi*), barred tiger salamander (*Ambystoma tigrinum mavortium*), prairie rattlesnake (*Crotalus viridis viridis*), Texas horned lizard (*Phrynosoma cornutum*), and great plains skink (*Eumeces obsoletus*).

Mammalian fauna within the covered area include the thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), eastern spotted skunk (*Spilogale putorius*), opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), least shrew (*Cryptotis parva*), desert shrew (*Notiosorex crawfordi*), cave bat (*Myotis velifer*), western canyon bat (*Pipistrellus hesperus*), badger (*Taxidea taxus*), swift fox (*Vulpes velox*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), black-tailed prairie dog (*Cynomys ludovicianus*), plains pocket gopher (*Geomys bursarius*), hispid pocket mouse (*Perognathus hispidus*), deer mouse (*Peromyscus maniculatus*), Ord kangaroo rat (*Dipodomys ordii*), California jackrabbit (*Lepus californicus*), porcupine (*Erethizon dorsatum*), pronghorn (*Antilocapra americana*), and mule deer (*Odocoileus hemionus*),.

Aquatic fauna that may be found within the covered area include the Arkansas River shiner (*Notropis girardi*), plains minnow (*Hybognathus placitus*), flathead chub (*Hybopsis gracilis*), red shiner (*Cyprinella lutrensis*), channel catfish (*Ictalurus punctatus*), black bullhead (*Ameiurus melas*), plains killifish (*Fundulus zebrinus*), and green sunfish (*Lepomis cyanellus*).

### 3.3 LISTED, PROPOSED, AND CANDIDATE SPECIES

Federally endangered species that may occur in the covered area include: interior least tern (*Sterna antillarum*) and whooping crane (*Grus americana*).

Federally threatened species that may occur in the covered area include: bald eagle (*Haliaeetus leucocephalus*) and Arkansas River shiner (*Notropis girardi*).

No federally proposed species occur in the covered area at this time.

Candidate species that may occur in the covered area include: LPC and sand dune lizard (*Sceloporus arenicolus*).

### 3.4 WETLANDS

Wetlands are landscape features that are delineated on the basis of specific soil, vegetation, and hydrologic conditions. Wetlands are defined as areas typically flooded or saturated frequently enough, and long enough, with surface water or groundwater, that these areas support mostly vegetation adapted for growth in soils that are saturated under normal circumstances (40 CFR 230). Wetlands typically include swamps, marshes, bogs, and similar areas. Waters of the U.S. is a collective term for all areas subject to regulation by the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act. Areas subject to jurisdiction under Section 404 of the Clean Water Act include those areas that fall at or below the “plane of ordinary high water” of these waterways as defined by 33 CFR 323.2. Based on National Wetland Inventory (NWI) maps, numerous wetland areas lie within the covered area. These wetlands include temporarily flooded creeks or drainage areas, intermittent/seasonally flooded streambeds, numerous small, permanently flooded impoundments, several small lakes, playa lakes, and ephemeral (temporary) wetlands which are often too small to be identified on NWI maps, and may not be regulated by the COE.

### 3.5 SOILS/GEOLOGIC FORMATIONS

The dominant soils within the covered area are Ustolls. These soils are typically well drained and medium textured or moderately fine textured.. Other major soils found within the covered area include Argids and Ustalfs. Argids soils are deep and have a medium to fine texture, while Ustalfs soils are deep, fine, and medium textured and coarse textured. Other soils within the covered area include Usterts, Orthents, Orthids, and Psamments.

### 3.6 LAND USE

Approximately 90% of the covered area is in private land ownership. Of the land in private ownership, approximately 45% is in rangeland utilized by livestock and approximately 40% is in crop production. For that portion of the covered area in crop production, cotton, winter wheat, grain sorghum, and other small grains are the predominant crops being farmed without irrigation. In the covered area where irrigation water is available, locally important crops include cotton, grain sorghum, corn, alfalfa, and soybeans. The remaining covered area is either urbanized, in petroleum production, in confined animal feeding operations, or other uses.

### 3.7 WATER RESOURCES

The covered area has moderately low (average annual total slightly less than 20 inches) and erratic precipitation. This precipitation is the source of water for non-irrigated crops and for rangeland within the covered area.

The Ogallala or High Plains Aquifer is the single major source of water for the covered

area. Approximately 90% of the water pumped from the aquifer is used for irrigation, and withdrawals are currently exceeding recharge. Although certain underground water conservation districts in Texas have shown stabilized groundwater levels within their districts or have shown that average depletions over the past several years have been reduced, these statistics are not indicative of the entire covered area.

The Canadian and Red rivers are the largest river basins in the covered area. Some of these basins, along with their larger tributaries, provide limited water for irrigation along their valleys.

Surface water in the form of playa lakes is scattered throughout the covered area. These lakes, ranging from 0.25 acres to 10 acres in size and depths of up to 4 feet, are a major source of water for both livestock and wildlife. It has been estimated that as many as 19,000 of these lakes are found in the covered area.

### 3.8 AIR QUALITY

The air quality throughout much of the United States is unknown. Only limited monitoring data exists for most pollutants outside urban areas. It is anticipated that in the undeveloped regions of the covered area, ambient pollutant levels are expected to be near or below measurable limits. Air quality within the covered area would primarily be related to agricultural sources. Air quality concerns may include dust from wind erosion, airborne chemical drift from ground or aerial applications of liquid chemicals, smoke from prescribed fire application, chemical and nutrient volatilization in agricultural fields, and odors associated with animal confinement facilities.

### 3.9 WATER QUALITY

The covered area is predominantly agricultural, both livestock and crop production, and limited petroleum production. Water quality is directly associated with type of discharge and the amount of discharge associated with these industries, as well as natural conditions occurring within the affected environment.

### 3.10 CULTURAL RESOURCES

Within the covered area, the properties of those non-federal landowners that may participate within the scope of this CCAA are likely to have “no adverse effect” on properties listed in or eligible for inclusion in the National Register of Historic Places. There are likely unrecorded archaeological or paleontological sites within the covered area; however, the conservation measures to be implemented as part of this CCAA are not anticipated to adversely affect the sites. TPWD and FWS will administer and implement this CCAA to insure compliance with NEPA, the National Historical Preservation Act of 1966, as amended (16 U.S.C. 470-270t, 110), the Archeological and Historical Preservation Act of 1974 (16 U.S.C. 469-469c), and the Native American Graves Protection and Repatriation

Act of 1990 (25 U.S.C. 3001-3013).

### 3.11 SOCIOECONOMIC

According to 2005 U.S. Census figures, approximately 849,000 people live within the covered area. This area is largely rural, with agriculture being critical to the local and regional economy. Agricultural production consists predominantly of livestock and crop production. Non-irrigated crops include cotton, winter wheat, grain sorghum, and other small grains. Irrigated crops include cotton, grain sorghum, corn, alfalfa, and soybeans.

In Texas, approximately 33% of residents participated in wildlife-associated recreation in 1996 (U. S. Department of Interior and U. S. Department of Commerce 1997). The dollars spent by those who seek the LPC are a measure of their willingness to pay for their outdoor experiences. Those dollars represent the enjoyment, challenge, camaraderie, adventure, and enhanced physical and mental health achieved through hunting or watching LPCs. Due to the decline in LPC numbers, the recreational value of hunting LPCs has been curtailed in Texas.

## 4.0 ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

### 4.1 ALTERNATIVE 1 — PREFERRED ALTERNATIVE

The preferred alternative is to authorize the issuance of a Permit pursuant to section 10(a)(1)(a) of the ESA based on the CCAA as proposed. The Permit will be assigned permit number TE-132658-0.

As previously stated, the FWS believes there is a need for a CCAA since landowners currently have little legal or economic incentive to allow candidate and/or endangered species on their property and actually have in some respects a disincentive to do so. The use of a landowner's land by a declining species, such as the LPC, may bring with it a responsibility to avoid harming the species and its habitat. These responsibilities, depending upon the landowner's tract size and land management or land use objectives, can sometimes limit or modify land use alternatives. To minimize these responsibilities under the ESA, landowners have generally refrained from undertaking the types of actions that would benefit the species. Some landowners may in fact be taking actions designed to reduce the likelihood that their land will be used by the LPC in the future; however, other landowners may voluntarily implement or allow another entity to implement conservation measures that would benefit the LPC on their property if the possibility of future land use limitations can be reduced or eliminated.

The preferred alternative will provide regulatory assurances to TPWD and the private landowners it enrolls in the CCAA through individual CIs. Should a non-federal landowner desire to voluntarily join with TPWD to implement conservation measures to restore and/or

maintain suitable habitat for LPCs on their property, TPWD personnel (and/or a designee of TPWD) will document, through a comprehensive on-site inventory, existing and baseline habitat conditions, including the status of the species on the landowner's property. This inventory will establish existing soil and vegetative conditions, stocking rates, and species status on the enrolled covered area at the time of development and implementation of the CCAA, and will be reviewed by FWS personnel before a CI is issued.

The conservation measures prescribed will be those deemed necessary by TPWD to address the habitat components that most limit LPC recovery potential on the enrolled lands. Although all seasonal habitat requirements of LPC are necessary for their conservation and recovery, available data indicate that increasing breeding success (i.e., nest success, recruitment) is the primary key to increasing numbers of LPC (and perhaps therefore, distribution) (Hagen et al. 2004). As a result, conservation measures implemented to improve, recover, and/or enhance LPC habitat should focus on providing adequate nesting and brood-rearing habitat components. The conservation practices listed below are structured to restore and then maintain native prairie habitats as nesting and brood-rearing habitat, and will also meet the habitat needs of many other short and midgrass-dependent species as well.

LPC habitat types (e.g., nesting, foraging, and brood-rearing habitats) should be distributed in a mosaic over large, contiguous blocks of rangeland habitat. For example, nesting habitat (tall grass approximately 18 inches in height) and brood-rearing habitat (forbs, sparsely distributed tall grass, patches of bare ground) should always be available within 1 mile of known leks. The locations of these patches may be rotated throughout the ranch or management unit, but planning to maintain this pattern and still provide necessary patchiness of all habitat components, is the challenge and key to LPC management. Another method to achieve patchiness on the landscape is through prescribed grazing, the schedule of which would include considerations of forage quantity and location, livestock numbers, and drought. In addition, grazing plans related to LPCs are intended to produce a shifting mosaic of several habitat types on the landscape, and therefore must remain flexible to change. A grazing system that creates heterogeneity (i.e., patchiness) on the landscape (or within the management unit) by maintaining middle to late stages of plant succession interspersed with early seral stages, is optimal for LPC (Hagen et al. 2004).

The following are recommended conservation measures for LPC habitat conservation, restoration, and/or enhancement within the covered area. The list is organized by general habitat management techniques for ease of use. Flexibility exists within all techniques at the discretion of those involved in the TPWD-approved WMP process. Although not included in the list, it is important to state that in addition to the listed techniques, an enrolled property that already has suitable LPC habitat and would be best managed "as is" or be further improved would also constitute an approved conservation measure within this CCAA. Sources for the list of habitat conservation measures include Litton et al. (1994), Mote et al. (1998), NRCS and WHMI (1999), Miller and Brown (2000), NRCS (2001), Jamison et al. (2002), Bidwell et al. (2003), Bidwell and Peoples (2004), Hagen et al.

(2004), and Riley (2004). Background information and additional detail can be found within these resources. It should be noted that the following list of conservation measures is a synthesis of available information, and reflects our current understanding of LPC habitat requirements and population responses to available habitat. The monitoring component of the CCAA is an important part of delivery of conservation measures in order for continued refinement of practices; it is strongly recommended that participating property owners and technical assistance providers evaluate and monitor LPC population responses to implemented practices using the principles of adaptive resource management (Walters and Holling 1990).

### Prescribed Grazing

- a. Duration and intensity of grazing must be balanced to increase or maintain good nesting and brood-rearing habitats, in addition to creating planned patterns of patchiness on the landscape. Therefore, a long-term (5-10 year) prescribed grazing plan (or schedule) must be prepared for all pastures.
- b. Light to moderate grazing in deferred (i.e., grazing postponed until grassland plants have matured) and/or rest-rotation (i.e., system of multiple pastures through which livestock are rotated) grazing systems (i.e., those systems intended to create habitat patchiness on the landscape) will create suitable interspersion of different vegetation heights and composition, hence providing an interspersion of nesting and brood-rearing habitats (Hagen et al. 2004). By providing pasture rest periods for vegetational response, prairie chicken food species (forbs), and nesting cover (mid-tall grasses) are enhanced (Litton et al. 1994).
- c. A grazing plan that includes light to moderate grazing to ensure 40-60% of mid to tall grass species will be available as residual nesting and brood-rearing habitats. This vegetative response and pattern on the landscape can be maintained using patch-burning methods in which 20-30% of an area is burned annually (within the prescribed grazing and fire schedules and plans for the property)(Hagen et al. 2004).
- d. A grazing schedule and stocking rate in sand shinnery oak habitat that produces greater than 65% vertical screening cover in the first foot above ground level and 50% overhead cover will benefit LPC nesting habitat (Litton et al. 1994).
- e. Under certain circumstances, large pastures and fewer livestock water sources used in combination with patch burning, will result in a diversity of grazing pressures (and therefore a diversity of habitat patches) on the landscape.
- f. Under certain circumstances, production of native food (i.e., forbs) for LPCs may be achieved through employing the “flash grazing” technique on areas on upland clay loam sites (i.e., tight ground) during the February-March period. During this period, cattle are concentrated for a short duration (dependent upon the site, moisture conditions, and how long before noticeable soil disturbance occurs). The purpose of this concentrated cattle presence is to effect soil disturbance during winter months with cattle hoof action; if these feed grounds have been stimulated sufficiently and appropriately by cattle during flash grazing, native forbs will respond during the growing season. This technique calls for careful management on a site-specific basis (Litton et al. 1994).

### Prescribed Burning

- a. Late winter-early spring burns are the preferred timing for LPC and many other nesting grassland birds. Ecological and landscape-level theory of late winter-early spring burns is that the burn year's burn unit (or patch) is lush green "right away" brood range (clean bare ground, then insects, and then high-nutrient green leaf material), the following year (or 2) the patch is then nesting habitat, and finally it is then fuel load again for a subsequent burn (considering a 4-5 year burn cycle). Under certain circumstances, it may be appropriate to conduct summer burns.
- b. Conduct planned prescribed burns from late winter through early spring every 4-5 years to increase green forage and insect availability in subsequent spring and summer seasons. Avoid annual burning of large areas to conserve residual nesting cover. In addition, care should be taken to ensure that residual nesting cover is available every breeding season within 1 mile of each known lek.
- c. Implement patch burning techniques to provide structural, compositional, and spatial diversity of habitat requirements on the landscape (Bidwell et al. 2003).
- d. The size of burn units is scale-dependent; approximately 20-35% of combined property rangeland and Conservation Reserve Program (CRP) should be burned each year in order to preserve residual nesting cover (Mote et al. 1998).
- e. Include deferment in the grazing management plan in order to build fine fuel in burn units. Fire guards should be placed to protect unique habitats and control fire spread; fire guards in LPC ecological sites will likely consist of disked firebreaks, shredded areas, and/or drilled wheat for "green" fire guards.
- f. In shinnery oak-midgrass systems, care must be taken to conserve shinnery oak motts, sand dunes, and other unique habitats. Burn flat inter-dunal areas, and leave sand dunes with shinnery, in order to delineate size and shape of patches on the landscape. Burns should be conducted in early spring to increase the coverage of warm-season bunchgrasses, and grazing deferment during the previous growing season may be required to provide sufficient fine fuel loads. In instances where shinnery oak canopy coverage exceeds 50%, herbicides such as 2,4-D or tebuthiuron may need to be applied at sub-lethal rates prior to burning to improve treatment success.

### Brush Management

#### *Sand sagebrush and shinnery oak*

- a. Eliminate the regular use of broadcast herbicides; use of herbicides should be limited to those areas where site recovery through the reduction of brush is required and planned, and a long-term plan for maintenance of site processes through the use of prescribed grazing and fire is in place. If grazing management is appropriate for the productivity of the land, and fire is periodically used to direct grazing and maintain/balance brush canopy and density, then herbicides should only be necessary (after initial application to restore the site) to maintain and control brush species (Bidwell et al. 2003).



- b. Any brush management should result in a mosaic of treated and untreated areas distributed over the landscape to provide an interspersed of vegetative structures and composition dominated by grasses and shrubs for nesting cover, and areas with a diversity of vegetation for brood-rearing, foraging, and winter cover (NRCS 2001, Hagen et al. 2004). After management activities are complete, brush (sand shinnery oak and sand sagebrush) should be maintained in small low-stature patches to provide food and cover for LPCs (Bidwell and Peoples 2004).
- c. Brush control treatments should not reduce sand sagebrush or shinnery oak to less than 25-30% canopy within one year after treatment (Hagen et al. 2004). Brush control treatments are appropriate in areas with greater than 40-50% canopy.
- d. During sand sagebrush control, care should be taken to protect sand plum thickets and areas of aromatic sumac (NRCS 2001). During shinnery oak control, care should be taken to protect sand dune areas (only flat inter-dunal areas should be treated) and small 3-5 acre patches of shinnery oak that will produce mast crops.
- e. Suppression, rather than eradication, should be the goal of brush management in most cases. In addition to application rate, pattern of application is also important. Care should be taken to create mosaics of vegetative structure, to avoid unique areas (e.g., sand dunes, plum thickets, small shinnery oak motts), and to create patterns that provide suitable interspersed of nesting and brood-rearing habitat while reducing wind erosion potential in sandy soils (Hagen et al. 2004).

*Mesquite*

- f. Mesquite should be eliminated using mechanical and/or herbicidal treatments, as applicable. Treatment of other woody vegetation greater than 10 feet in height should be considered.

Conservation Cover

- a. Convert cropland, introduced grasses and other forages, as well as other disturbed sites (e.g., caliche roads and well pads) into native warm season grasses and forbs, based upon site-specific recommendations (based on ecological site descriptions, USDA-NRCS Ecological Site Guides, historic plant community, and LPC habitat needs) included in the TPWD-approved WMP for the enrolled property. Do not convert these sites to a monoculture of grasses or use non-native species.

*Conservation Reserve Program*

- b. Implement Farm Services Agency (FSA)-approved mid-contract management practices for CRP lands (which are mandatory for more recent signups, and allowed for earlier sign-ups with contract modification and NRCS technical assistance and FSA approval). Dependent upon whether CRP acreage is CP-1 or CP-2 practice, the management activities (e.g., prescribed burning, discing, interseeding with native grasses or perennial forbs) most beneficial to LPC will be site-specific, and tailored to the property through the FSA CRP contract administration, NRCS technical assistance, and the TPWD-approved WMP process.
- c. CRP grasslands of native grasses, forbs, and shrubs should range in height from approximately 13.5-30 inches (Hagen et al. 2004). The optimum CRP mixture would consist of warm season perennial bunch grasses, native legumes, forbs, and woody

shrub plantings (Litton et al. 1994). This multi-species seeding creates an important diversity of vegetation heights and growth-forms.

- d. Restore pastures with expired CRP contracts to a site-appropriate native plant community (based upon ecological site descriptions, historic plant community, USDA-NRCS Ecological Site Guides, and LPC habitat needs)(Bidwell et al. 2003).

#### *Range Planting*

- e. Seeding may be necessary to improve degraded rangeland or to convert other landuses to rangeland. Under these circumstances, seeding mixtures and techniques must be tailored to the ecological site. Avoid creation of monocultures of introduced species. Mixtures that include adapted forbs and legumes will enhance the mixture for LPC (NRCS 2001).
- f. Lands to be re-established in native species should use a selected mixture of native grasses, forbs, and shrubs that are warm season bunch varieties, deep-rooted, drought-resistant, responsive to management with grazing and prescribed fire, and adapted to the appropriate ecological site. For example, a mixture that would be appropriate to seed sandy loam sites would be a combination of switchgrass, little bluestem, sideoats grama, plains bristlegrass, Illinois bundleflower, and a shrub component (e.g., 4-wing saltbush, aromatic sumac, sand plum)(Litton et al. 1994).

### Upland Wildlife Habitat Management

#### *Cultivation and tillage practices*

- a. Minimum tillage farming practices with minimal pesticide use provide additional and supplemental food supplies for LPC (Litton et al. 1994). These tillage practices on cropland that leave stubble (12 inches or more in height) and waste grain on the soil surface during winter periods enhance food availability for the LPC (NRCS 2001). Plowing or burning these stubble fields during the fall and winter should be discouraged.

#### *Food plots*

- b. In certain areas, and under certain circumstances, where and when native food sources are not available, supplemental feed in the form of food plots may be beneficial. In these situations, cultivated areas of alfalfa, wheat, milo, grain sorghum, and oats may provide food resources during fall and winter. Food plots should be planted within 1 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 5 acres in size, oblong in shape, and planted on the contour. Domestic livestock should be excluded (Litton et al. 1994, NRCS 2001, Bidwell and Peoples 2004, Hagen et al. 2004).

#### *Other practices*

- c. Strip discing (fallow discing) will stimulate growth of native foods for LPC (Litton et al. 1994). The types of plants produced will vary with soil type, rainfall patterns, and past history of the land (Litton et al. 1994). Discing should be conducted near leks on a 2 to 3-year rotation. Discing for native food management may be done at any time during the dormant season; however, late March is generally best because soil disturbance during this period destroys a minimum of existing food and cover. If soil

- moisture is available, vegetative growth will quickly cover the disced area, reducing potential wind or water erosion problems.
- d. Clear overgrown vegetation on leks to enhance their value and use.
  - e. Permanent barbed-wire and some electric fences can be lethal to LPCs in flight; the use and installation of fences should be coordinated with other practices (e.g., water distribution, patch burning) to achieve prescribed grazing goals and minimize potential impacts to LPCs. Where feasible, barbed-wire fences should be marked to reduce potential collisions, and one-or two-wire electric fences should be substituted for barbed-wire fences if conditions permit.
  - f. Remove all upland trees from the LPC management area, including field windbreaks. LPCs do not require trees, and strongly avoid them (Bidwell et al. 2003).

#### Population Management

- a. Predator control may be appropriate under certain circumstances to improve the viability of small and isolated populations. This practice should not be undertaken without a complete understanding of LPC and predator population dynamics, and a clearly stated objective for the management action.
- b. Although not currently an accepted or proven population management practice, trapping and transplanting of wild or captive-reared LPCs in order to supplement or restore wild populations may be considered in the future.

TPWD will be responsible for annual monitoring through its WMP process and TPWD will be responsible for annual reporting requirements related to this CCAA. These annual monitoring and reporting activities by TPWD will fulfill the compliance and biological monitoring requirements of the CCAA. Information in annual reports will include, but not be limited to, the following: (1) summary and brief description of lands enrolled under the CCAA during the reporting year, including copies of completed CIs; (2) summary and brief description of habitat management activities and habitat conditions in the CCAA covered area, including all enrolled lands; (3) evaluation of effectiveness of habitat management activities implemented on enrolled lands during the reporting year at meeting the intended conservation benefits of the CCAA; (4) population surveys conducted during the reporting year on enrolled private lands; and (5) funds used for habitat conservation on enrolled private lands. Reports will be due January 31 of each year to the Administrators of this CCAA, and to any participating landowners.

During the term of the CCAA, the FWS anticipates that the conservation measures to be implemented by TPWD are unlikely to result in any take of the LPC. Activities associated with normal agricultural practices implemented by participating landowners may result in a minimal level of incidental take. However, since conservation measures would be in place during this period, take would be limited to minor disturbance from these agricultural practices.

#### 4.2 ALTERNATIVE 2 — MULTI-SPECIES CCAA

The purpose of this alternative is similar to the preferred alternative, but instead of LPC alone, the CCAA would include additional candidate species and other species of concern, including the sand dune lizard, black-tailed prairie dog, swift fox, burrowing owl, and mountain plover (*Charadrius montanus*). This alternative would include recommended conservation measures for each of these species, and would provide regulatory assurances to TPWD and participating landowners in the event that any of the species, candidate or otherwise, were listed under the ESA.

This alternative was rejected because TPWD and the FWS believe that including too many species in a CCAA would create confusion among potential participating landowners, and the administrative and monitoring burden imposed on both agencies would undermine the achievement of the CCAA standard of conservation measures to be implemented by a property owner under a CCAA, when combined with those benefits that would be achieved if the conservation measures were also to be implemented on other necessary properties, would preclude or remove any need to list the covered species. Since some of the species proposed for inclusion have very different (and sometimes conflicting) habitat requirements, TPWD and the FWS felt that landowner understanding of which conservation measures should be implemented on their property would be limited. This lack of understanding could preclude the implementation of recommended conservation measures, and would not serve to reduce the threats to covered species. Additionally, the increased administrative and monitoring burden imposed by including the additional species could limit the ability of TPWD to enroll significant numbers of landowners in the CCAA, and thus would reduce the CCAA's overall conservation benefit.

#### 4.3 ALTERNATIVE 3 — NO ACTION

Under the no-action alternative, TPWD would not enter into a CCAA with the FWS or issue CIs to non-federal landowners. Under this alternative, a Permit would not be issued and, therefore, non-federal landowners would not be provided with regulatory assurances for implementing conservation measures for LPCs. As a result, fewer landowners would be likely to restore and/or maintain habitat for the LPC. This lack of conservation effort devoted to the LPC could increase the likelihood of it being listed under the ESA.

This alternative was rejected because most landowners would be unwilling to undertake conservation measures that benefit the LPC without the regulatory certainty provided by a CCAA and its attendant Permit.

## 5.0 ENVIRONMENTAL CONSEQUENCES

### 5.1 ALTERNATIVE 1 — PREFERRED ALTERNATIVE

The preferred alternative is to authorize the issuance of an Enhancement of Survival Permit pursuant to section 10(a)(1)(a) of the ESA based on the CCAA as proposed.

### 5.1.1 On-site Impacts

5.1.1.1 Vegetation It is anticipated that the preferred alternative will result in non-federal landowners implementing conservation measures on enrolled lands directed at restoring and/or maintaining suitable habitat for LPCs, thus enhancing and restoring the function and integrity of the rangeland ecosystem that historically supported LPCs.

5.1.1.2 Wildlife The preferred alternative is expected to result in the implementation of on-the-ground conservation measures on enrolled lands directed at meeting the historical climax plant community of the short- and mixed-grass plant communities. Such measures (i.e., prescribed fire, grazing management, mechanical bush control) are necessary to maintain the species diversity, ecological processes, and genetic integrity of the plant communities that support short-grass and mixed-grass prairie wildlife.

5.1.1.3 Listed, Proposed, and Candidate Species The preferred alternative is not expected to result in any impacts to the federally endangered interior least tern and whooping crane and the federally threatened bald eagle and Arkansas River shiner.

The preferred alternative may impact the candidate LPC. However, the expectation underlying this proposed program is that the conservation measures to be undertaken on enrolled lands will result in a mixture of heavily, moderately, lightly grazed and ungrazed native rangelands, all of which are essential components of LPC habitat, and should occur in a mosaic pattern on a landscape scale. The evolutionary history of the short-grass and mixed-grass prairie resulted in the adaptation of endemic species such as the LPC to a mosaic of lightly to severely grazed areas (Bragg and Steuter 1996, Knopf and Samson 1997).

5.1.1.4 Wetlands The preferred alternative is not expected to result in any impacts to wetlands.

5.1.1.5 Soils/Geologic Formations The preferred alternative is not expected to result in any impacts to soils/geologic formations.

5.1.1.6 Land Use The preferred alternative is fully comparable and compatible with the current land use in the area.

5.1.1.7 Water Resources The preferred alternative is not expected to result in any impacts to water resources.

5.1.1.8 Air Quality Temporary impacts to air quality could occur with the use of prescribed fire as a conservation measure. However, the sequestration of atmospheric carbon, via plant production, may offset any temporary impacts resulting from the use of prescribed fire. Additionally, sequestration of carbon in terrestrial ecosystems offers a low-cost means of reducing net carbon emissions with significant collateral benefits: restored natural environments for plants and wildlife, reduced runoff, and increased domestic production of agriculture and forest products.

5.1.1.9 Water Quality Proper grazing of rangelands is essential in minimizing runoff within a watershed and improving its water quality. As range condition decreases through overutilization and/or overgrazing, rainwater infiltration decreases and runoff increases. High runoff causes a shortage of moisture needed for plant development, increases soil erosion and moves sediment into water resources. Plant growth must be increased to slow down runoff and increase infiltration by improving the soil structure.

Sediment in water has been recognized as a pollutant in the same context as industrial waste, sewage effluents, and other forms of pollution. Range management that controls erosion and sediment movement helps reach water quality goals.

Research shows that proper grazing will allow sufficient plant growth for adequate ground cover (Sedivec 1992). Additionally, stocking rates appear to be a consistently more important influence on infiltration rate than the type of grazing system. Well-managed grazing, stocked at proper rates, resulted in little to no increase in erosion compared to no grazing.

5.1.1.10 Cultural Resources TPWD and the non-federal landowners that may participate within the scope of this CCAA, are likely to have “no adverse effect” on properties listed in or eligible for inclusion in the National Register of Historic Places. The FWS will administer and implement this CCAA to insure compliance with NEPA, the National Historical Preservation Act, the Archeological and Historical Preservation Act, and the Native American Graves Protection and Repatriation Act.

5.1.1.11 Socioeconomic Environment The preferred alternative is not expected to result in any impacts to the socioeconomic environment.

## 5.1.2 Off-site Impacts

5.1.2.1 Vegetation Off-site impacts to vegetation are expected to occur only on lands owned (but not enrolled) by non-federal participants desiring to voluntarily join TPWD to implement LPC conservation measures as part of

the preferred alternative. Impacts to vegetation would be similar to those described in section 5.1.1.1.

- 5.1.2.2 Wildlife Off-site impacts to wildlife are expected to occur on lands owned (but not enrolled) by non-federal participants desiring to voluntarily join TPWD to implement LPC conservation measures as part of the preferred alternative. Additionally, an underlying expectation is that the proposed alternative may provide added conservation benefits to other associated wildlife species on lands not owned by landowners participating in this CCAA, but in close proximity to enrolled lands . It is anticipated that any off-site impacts to wildlife would be similar to those described in section 5.1.1.2.
- 5.1.2.3 Listed, Proposed, and Candidate Species Off-site impacts to listed, proposed, and candidate species are expected to occur on lands owned (but not enrolled) by non-federal landowners desiring to voluntarily join TPWD to implement LPC conservation measures as part of the preferred alternative. Additionally, an underlying expectation is that the proposed alternative may provide added conservation benefits to other associated wildlife species on lands not owned by landowners participating in this CCAA, but are in close proximity to enrolled lands. It is anticipated that any off-site impacts to listed, proposed, and candidate species would be similar to those described in section 5.1.1.3.
- 5.1.2.4 Wetlands No off-site impacts to wetlands are expected to occur as a result of implementation of the preferred alternative.
- 5.1.2.5 Soils/Geologic Formations No off-site impacts to soils/geological formations are expected to occur as a result of implementation of the preferred alternative.
- 5.1.2.6 Land Use No off-site change in land use is expected to occur as a result of implementation of the preferred alternative.
- 5.1.2.7 Water Resources No off-site impacts to water resources are expected to occur as a result of implementation of the preferred alternative.
- 5.1.2.8 Air Quality Off-site impacts to air quality would be similar to those described in section 5.1.1.8.
- 5.1.2.9 Water Quality Off-site impacts to water quality would be similar to those described in section 5.1.1.9.
- 5.1.2.10 Cultural Resources No off-site impacts to cultural resources are expected to

occur as a result of implementation of the preferred alternative.

5.1.2.11 Socioeconomic Environment The preferred alternative is not expected to result in any off-site impacts to the socioeconomic environment.

### 5.1.3 Cumulative Impacts Analysis

5.1.3.1 Vegetation The goal of the preferred alternative is to implement conservation measures, on participating non-federal participating landowners' properties and "other necessary properties", to restore and manage the historical climax plant community, thus precluding or removing the need to list the LPC under the ESA. Therefore, it is anticipated that cumulative implementation of conservation measures will enhance and restore the function and integrity of the rangeland ecosystem on a landscape level.

The premise in prairie conservation is that attitudes of individual landowners and the community as a whole play decisive roles in determining the eventual fate of grasslands and the wildlife communities which they support (Mack 1996). Programs must foster a climate favorable to grassland conservation as an integral component of agricultural land management (Dyson 1996), to the development of agreements to conserve, restore, enhance, and/or maintain grassland remnants (World Wildlife Fund Canada 1988), to cooperative conservation programs between private landowners and governmental entities (Bueseler 1996), and to the importance of science-based management (Johnson and Bouzaher 1996).

5.1.3.2 Wildlife Cumulative impacts to wildlife would be similar to those described in section 5.1.1.2 and 5.1.3.1.

5.1.3.3 Listed, Proposed, and Candidate Species Conservation benefits for the LPC from implementing the proposed alternative are expected in the form of restoration and/or maintenance of LPC habitat that is intended to contribute to an increase and reestablishment of LPC populations in the covered area. Conservation of LPCs would be enhanced by improving and encouraging cooperative management efforts between federal agencies, state agencies, and private landowners (private landowners own and control most of the LPC habitat in Texas). Also, the proposed alternative is expected to provide added conservation benefits to other associated grassland species.

5.1.3.4 Wetlands The preferred alternative is not expected to result in any cumulative impacts to wetlands.



- 5.1.3.5 Soils/Geologic Formations The preferred alternative is not expected to result in any cumulative impacts to soil/geologic formations.
- 5.1.3.6 Land Use The preferred alternative is not expected to result in any cumulative change in land use.
- 5.1.3.7 Water Resources The preferred alternative is not expected to result in any cumulative impacts to water resources.
- 5.1.3.8 Air Quality The U.S. Environmental Protection Agency and U.S. Department of Agriculture (2001), along with the U.S. Department of Energy (1999), recognize that properly managed rangelands serve as natural carbon sequestration systems that reduce atmospheric carbon dioxide concentrations. It is anticipated that the cumulative implementation of the preferred alternative will enhance and restore the function and integrity of the rangeland ecosystem on a landscape level and contribute to the sequestration of atmospheric carbon.
- 5.1.3.9 Water Quality Proper grazing of rangelands is considered by the U.S. Environmental Protection Agency (2000) as a best management practice for improving water quality. Proper grazing use will maintain enough live vegetation and litter cover to protect the soil from erosion; will achieve riparian and other resource objectives; and will maintain or improve the quality, quantity, and age distribution of desirable vegetation. Like air quality, it is anticipated that the cumulative implementation of the preferred alternative will enhance and restore the function and integrity of the rangeland ecosystem on a landscape level and contribute to minimizing runoff within a watershed and improving its water quality.
- 5.1.3.10 Cultural Resources The preferred alternative is not expected to result in any cumulative impacts to cultural resources.
- 5.1.3.11 Socioeconomic Environment The preferred alternative is not expected to result in any cumulative impacts to the social environment.

## 5.2 ALTERNATIVE 2 — MULTI-SPECIES CCAA

The purpose of this alternative is similar to the preferred alternative, but instead of LPC alone, the CCAA would include additional candidate species and other species of concern, including the sand dune lizard, black-tailed prairie dog, swift fox, burrowing owl, and mountain plover and would provide regulatory assurances to TPWD and participating landowners in the event that any of the covered species is listed under the ESA. This alternative was rejected because TPWD and FWS

believed that including too many species in a CCAA would create confusion among potential participating landowners, and the administrative and monitoring burden imposed on both agencies would undermine the achievement of the CCAA net conservation benefit standard.

#### 5.2.1 On-site Impacts

- 5.2.1.1 Vegetation Impacts to vegetation on some participating landowners' properties would be similar to those described in section 5.1.1.1, but could vary depending on the species of concern and the conservation measures prescribed. Impacts could vary from the maintenance of climax range conditions suitable for the LPC to sub-climax range conditions suitable for the black-tailed prairie dog, swift fox, or mountain plover.
- 5.2.1.2 Wildlife Impacts to wildlife would be similar to those described in section 5.1.1.2, but could vary depending on the species of concern and the conservation measures prescribed.
- 5.2.1.3 Listed, Proposed, and Candidate Species Impacts to listed, proposed, and candidate species would be similar to those described in section 5.1.1.3, but could vary depending on the species of concern under consideration and the conservation measures prescribed .
- 5.2.1.4 Wetlands Impacts to wetlands would not be expected to occur as a result of implementation of alternative 2.
- 5.2.1.5 Soils/Geologic Formations Impacts to soils/geologic formations would not be expected to occur as a result of implementation of alternative 2.
- 5.2.1.6 Land Use Alternative 2 would be fully comparable and compatible with the current land use in the area.
- 5.2.1.7 Water Resources Impacts to water resources would not be expected to occur as a result of implementation of alternative 2.
- 5.2.1.8 Air Quality Impacts to air quality would be similar to those described in section 5.1.1.8.
- 5.2.1.9 Water Quality Impacts to water quality would be similar to those described in section 5.1.1.9.
- 5.2.1.10 Cultural Resources Impacts to cultural resources would be similar to those described in section 5.1.1.10.

5.2.1.11 Socioeconomic Environment Impacts to the socioeconomic environment would not be expected to occur as a result of the implementation of alternative 2.

## 5.2.2 Off-site Impacts

5.2.2.1 Vegetation Off-site impacts to vegetation are expected to occur only on lands owned (but not enrolled) by non-federal participants desiring to voluntarily join TPWD to implement LPC or other declining species conservation measures as part of alternative 2. Off-site impacts to vegetation would be similar to those described in 5.2.1.1.

5.2.2.2 Wildlife Off-site impacts to wildlife are expected to occur only on lands owned (but not enrolled) by non-federal participants desiring to voluntarily join TPWD to implement LPC or other declining species conservation measures as part of alternative 2. Additionally, an underlying expectation would be that added conservation benefits to other associated wildlife species may occur on lands not owned by landowners participating in this CCAA, but in close proximity to enrolled lands. It is anticipated that any off-site impacts to wildlife would be similar to those described in section 5.2.1.2.

5.2.2.3 Listed, Proposed, and Candidate Species Off-site impacts to listed, proposed, and candidate species would be expected to occur only on lands owned (but not enrolled) by non-federal participants desiring to voluntarily join TPWD to implement LPC or other declining species conservation measures on their properties as part of alternative 2. Additionally, an underlying expectation would be that added conservation benefits to other associated wildlife species may occur on lands not owned by landowners participating in this CCAA, but in close proximity to enrolled lands. It is anticipated that any off-site impacts to listed, proposed, and candidate species would be similar to those described in section 5.2.1.3.

5.2.2.4 Wetlands No off-site impacts to wetlands would be expected to occur as a result of implementation of alternative 2.

5.2.2.5 Soils/Geologic Formations No off-site impacts to soils/geologic formations would be expected to occur as a result of implementation of alternative 2.

5.2.2.6 Land Use No off-site change in land use would be expected to occur as a result of implementation of alternative 2.

5.2.2.7 Water Resources No off-site impacts to water resources would be expected to occur as a result of implementation of alternative 2.

5.2.2.8 Air Quality Off-site impacts to air quality would be similar to those described in section 5.1.1.8.

5.2.2.9 Water Quality Off-site impacts to water quality would be similar to those described in section 5.1.1.9.

5.2.2.10 Cultural Resources No off-site impacts to cultural resources would be expected to occur as a result of implementation of alternative 2.

5.2.2.11 Socioeconomic Environment Alternative 2 would not be expected to result in any off-site impacts to the socioeconomic environment.

### 5.2.3 Cumulative Impacts Analysis

5.2.3.1 Vegetation The goal of alternative 2 would be to implement conservation measures, on participating non-federal participating landowners' properties and "other necessary properties", to restore and manage plant communities to the seral stage appropriate for the covered species of concern. Such activities would thus preclude or remove the need to list the chosen declining species under the ESA. Therefore, it is anticipated that cumulative implementation of the appropriate conservation measures will enhance and restore the function and integrity of the rangeland ecosystem on a landscape level, provided that the conservation measures selected would be appropriate for the habitat type in which they were implemented.

5.2.3.2 Wildlife Cumulative impacts to wildlife would be similar to those described in section 5.1.1.2, 5.1.3.1, and 5.2.3.1.

5.2.3.3 Listed, Proposed, and Candidate Species Cumulative impacts to listed, proposed, and candidate species would be similar to those described in section 5.1.3.3.

5.2.3.4 Wetlands Alternative 2 would not be expected to result in any cumulative impacts to wetlands.

5.2.3.5 Soils/Geologic Formations Alternative 2 would not be expected to result in any cumulative impacts to soil/geologic formations.

5.2.3.6 Land Use Alternative 2 would not be expected to result in any cumulative change in land use.

5.2.3.7 Water Resources Alternative 2 would not be expected to result in any cumulative impacts to water resources.

5.2.3.8 Air Quality Cumulative impacts to air quality would be similar to those described in section 5.1.3.8.

5.2.3.9 Water Quality Cumulative impacts to water quality would be similar to those described in section 5.1.3.9.

5.2.3.10 Cultural Resources Alternative 2 would not be expected to result in any cumulative impacts to cultural resources.

5.2.3.11 Socioeconomic Environment Alternative 2 would not be expected to result in any cumulative impacts to the social environment.

### 5.3 ALTERNATIVE 3 — NO ACTION

Under the no-action alternative, the FWS would not enter into any CCAAs with TPWD, and therefore would not provide any regulatory assurances to non-federal landowners to implement conservation measures directed at restoring and/or maintaining suitable habitat for LPCs. This alternative was rejected because many landowners would be unwilling to undertake conservation measures that benefit the LPC without the regulatory certainty provided by a CI. and its attendant Permit

#### 5.3.1 On-site Impacts

5.3.1.1 Vegetation Impacts to vegetation would not be expected to occur as a result of the no action alternative.

5.3.1.2 Wildlife The no action alternative would not result in on-the-ground conservation measures being implemented, directed at meeting the historical climax plant community of the short-grass and mixed-grass plant communities. Therefore, the conservation measures necessary to maintain the species diversity, ecological processes, and genetic integrity of the short-grass and mixed-grass prairie ecosystem would not occur.

5.3.1.3 Listed, Proposed, and Candidate Species Under the no action alternative, would be no expected impacts to the federally endangered interior least tern and whooping crane, or the federally threatened bald eagle and Arkansas River shiner. However, a Permit would not be issued and, as a result, fewer landowners would be likely to restore and/or maintain habitat for the LPC, thus making the possibility of a LPC listing imminent.

5.3.1.4 Wetlands Impacts to wetlands would not be expected to occur as a result of the no action alternative.

- 5.3.1.5 Soils/Geologic Formations Impacts to soils/geologic formations would not be expected to occur as a result of the no action alternative.
- 5.3.1.6 Land Use Changes Changes in land use would not be expected to occur as a result of the no action alternative.
- 5.3.1.7 Water Resources Impacts to water resources would not be expected to occur as a result of the no action alternative.
- 5.3.1.8 Air Quality Impacts to air quality would not be expected to occur as a result of the no action alternative.
- 5.3.1.9 Water Quality Impacts to water quality would not be expected to occur as a result of the no action alternative.
- 5.3.1.10 Cultural Resources Impacts to cultural resources would not be expected to occur as a result of the no action alternative.
- 5.3.1.11 Socioeconomic Environment Under the no action alternative, landowners may generally refrain from implementing or allowing another entity to implement conservation measures, the types of actions that would benefit the LPC and, in fact, may take actions designed to reduce the likelihood that their land will be used by the LPC in the future. Should the LPC be listed under the ESA, landowners may have to modify their land use objectives/alternatives to avoid harming the species and its habitat.

### 5.3.2 Off-site Impacts

- 5.3.2.1 Vegetation Off-site impacts to vegetation would not be expected to occur as a result of the no action alternative.
- 5.3.2.2 Wildlife Off-site impacts to wildlife would be similar to those described in section 5.3.1.2.
- 5.3.2.3 Listed, Proposed, and Candidate Species Off-site impacts to listed, proposed, and candidate species would be similar to those described in section 5.3.1.3.
- 5.3.2.4 Wetlands Off-site impacts to wetlands would not be expected to occur as a result of the no action alternative.
- 5.3.2.5 Soils/Geologic Formations Off-site impacts to soils/geologic formations would not be expected to occur as a result of the no action alternative.

- 5.3.2.6 Land Use Off-site changes in land use would not be expected to occur as a result of the no action alternative.
- 5.3.2.7 Water Resources Off-site impacts to water resources would not be expected to occur as a result of the no action alternative.
- 5.3.2.8 Air Quality Off-site impacts to air quality would not be expected to occur as a result of the no action alternative.
- 5.3.2.9 Water Quality Off-site impacts to water quality would not be expected to occur as a result of the no action alternative.
- 5.3.2.10 Cultural Resources Off-site impacts to cultural resources would not be expected to occur as a result of the no action alternative.
- 5.3.2.11 Socioeconomic Environment Off-site impacts to the socioeconomic environment would be similar to those described in section 5.3.1.11.

### 5.3.3 Cumulative Impacts Analysis

- 5.3.3.1 Vegetation The no action alternative would not be expected to result in any cumulative impacts to vegetation.
- 5.3.3.2 Wildlife Cumulative impacts to wildlife would be similar to those described in section 5.3.1.2.
- 5.3.3.3 Listed, Proposed, and Candidate Species Cumulative impacts to listed, proposed, and candidate species would be similar to those described in section 5.3.1.3.
- 5.3.3.4 Wetlands The no action alternative would not be expected to result in any cumulative impacts to wetlands.
- 5.3.3.5 Soils/Geologic Formations The no action alternative would not be expected to result in any cumulative impacts to soils/geologic formations.
- 5.3.3.6 Land Use The no action alternative would not be expected to result in any cumulative changes to land use.
- 5.3.3.7 Water Resources The no action alternative would not be expected to result in any cumulative impacts to water resources.
- 5.3.3.8 Air Quality The no action alternative would not be expected to result in any cumulative impacts to air quality.

5.3.3.9 Water Quality The no action alternative would not be expected to result in any cumulative impacts to water quality.

5.3.3.10 Cultural Resources The no action alternative would not be expected to result in any cumulative impacts to cultural resources.

5.3.3.11 Socioeconomic Environment Cumulative impacts to the socioeconomic environment would be similar to those described in section 5.3.1.11.

## 6.0 COORDINATION AND PREPARATION

The following individuals were coordinated and/or consulted with during the preparation of this draft environmental assessment:

Mr. Steve Arey  
Arlington Ecological Services Field Office  
U.S. Fish and Wildlife Service  
711 Stadium Drive, Suite #252  
Arlington, Texas 76011

Mr. Omar Bocanegra  
Arlington Ecological Services Field Office  
U.S. Fish and Wildlife Service  
711 Stadium Drive, Suite #252  
Arlington, Texas 76011

Public notification of the availability of this Draft Environmental Assessment and Candidate Conservation Agreement with Assurances will be published in the *Federal Register*. All concerned agencies and entities will be provided a copy on request for review and comment.

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