Appendix D
Scoping Meeting Materials and Photographs

GREAT PLAINS WIND ENERGY
Environmental Impact Statement | Habitat Conservation Plan

AGENCY & PUBLIC MEETING PHOTOGRAPHS

Great Plains Wind Energy Habitat Conservation Plan EIS Scoping

Pueblo Convention Center, Pueblo, CO: August 9, 2011

Amarillo Civic Center, Amarillo, Texas: August 10, 2011

Amarillo Civic Center, Amarillo, Texas: August 10, 2011

Clovis Civic Center, Clovis, New Mexico: August 11, 2011

Clovis Civic Center, Clovis, New Mexico: August 11, 2011

Best Western Ramkota, Pierre, South Dakota: August 23, 2011

Bismarck Civic Center, Bismarck, North Dakota: August 24, 2011

Bismarck Civic Center, Bismarck, North Dakota: August 24, 2011

Dawson County Courthouse, Glendive, Montana: August 25, 2011

Dawson County Courthouse, Glendive, Montana: August 25, 2011

Holiday Inn, Kearney, Nebraska: August 30, 2011

Holiday Inn, Kearney, Nebraska: August 30, 2011

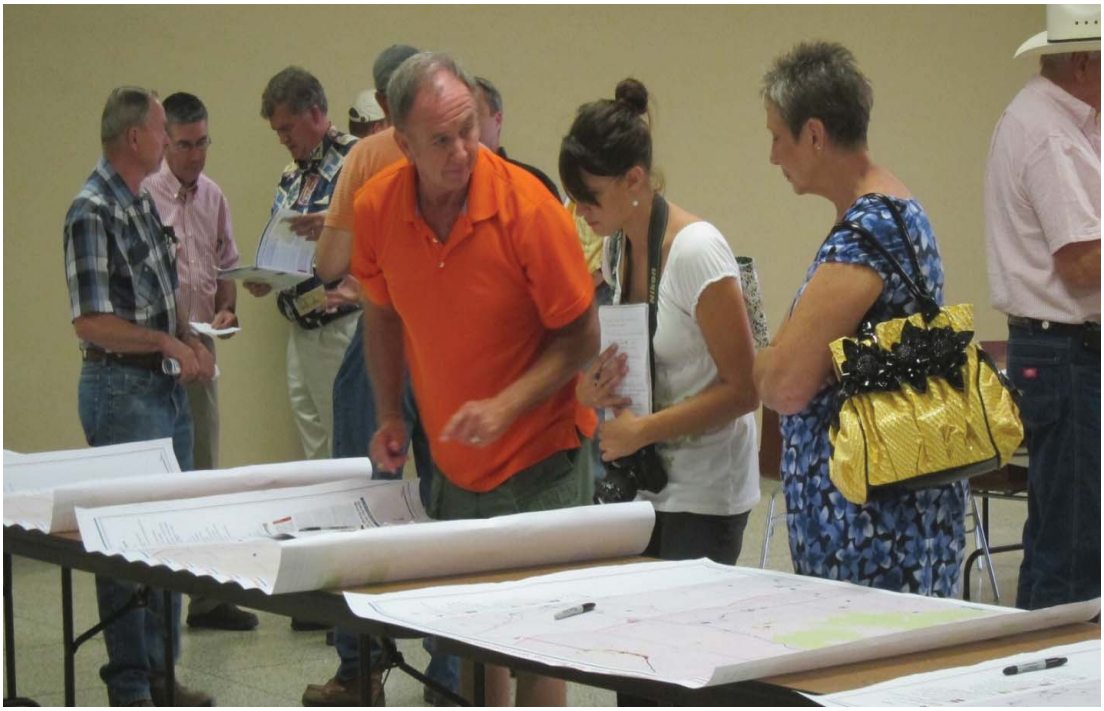
Highlands Hotel, Great Bend, Kansas: August 31, 2011

Highlands Hotel, Great Bend, Kansas: August 31, 2011

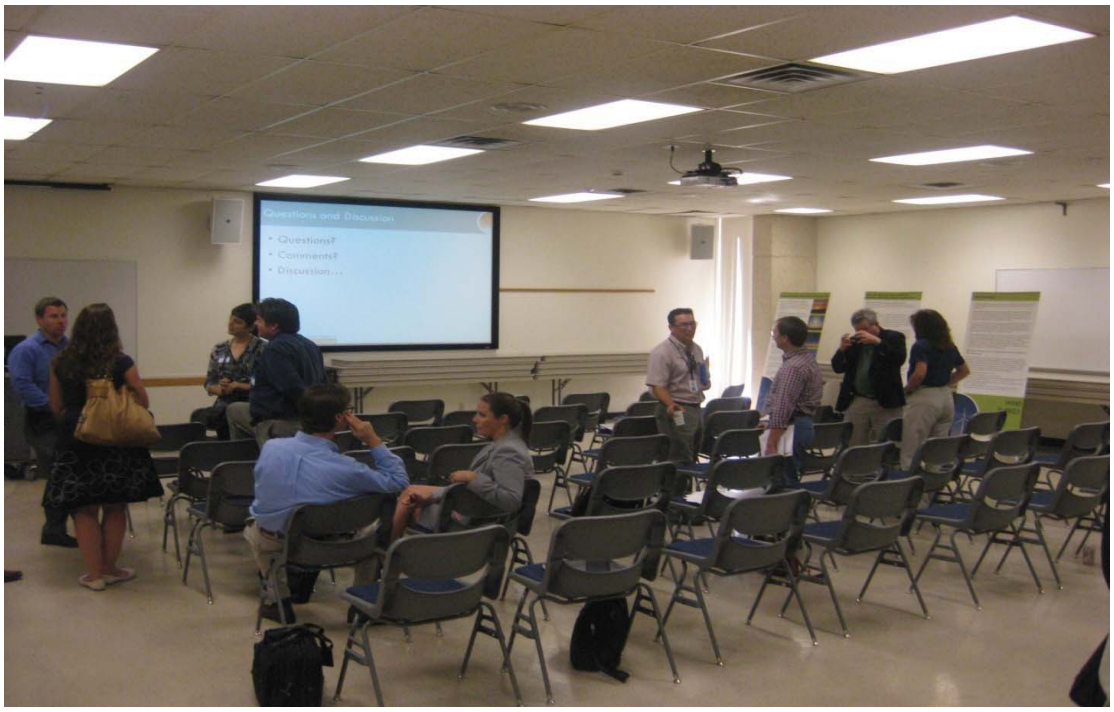
Highlands Hotel, Great Bend, Kansas: August 31, 2011

Pioneer Room, Woodward, Oklahoma: September 1, 2011

Pioneer Room, Woodward, Oklahoma: September 1, 2011



Pioneer Room, Woodward, Oklahoma: September 1, 2011



UT Thompson Conference Center, Austin, Texas: September 7, 2011

UT Thompson Conference Center, Austin, Texas: September 7, 2011

American Bank Center, Corpus Christi, Texas: September 8, 2011

American Bank Center, Corpus Christi, Texas: September 8, 2011

Obtaining an Incidental Take Permit

DEFINITION		PROCESS
What is an HCP? Section 10 of the Endangered Species Act (ESA) requires that WEWAG develop an HCP in order to apply for an Incidental Take Permit (ITP). An HCP is a document that describes, among other things, the steps the applicant will take to minimize and mitigate the impacts of the proposed taking to the maximum extent practicable.	**HCP** Habitat Conservation Plan	**The Wind Energy Whooping Crane Action Group (WEWAG) develops an HCP** **WEWAG submits the HCP and ITP application to the U.S. Fish and Wildlife Service (Service)**
What is an EIS? The National Environmental Policy Act (NEPA) requires the Service to prepare an EIS for any major Federal action significantly affecting the quality of the human environment. The EIS will incorporate public and agency comments and analyze the potential impacts resulting from the proposed HCP and ITP, as well as any reasonable alternatives.	**EIS** Environmental Impact Statement	**The Service prepares a draft EIS for public review on the impacts of issuing the ITP and implementing the HCP** **After a final EIS is published, the Service will prepare a Record of Decision (ROD), which is the final decision-making document**
What is an ITP? An ITP permits "incidental take" (see definition below) of listed species occurring in connection with otherwise lawful activities. Such take must be minimized and mitigated to the maximum extent practicable. An ITP holder is authorized for incidental take and will be allowed to legally proceed with an activity for the duration of the permit as long as they are compliant with the terms of the HCP and ITP.	**ITP** Incidental Take Permit	**If the Service determines that the HCP and other application materials meets the ESA section 10(a) issuance criteria (see below), the Service will issue the ITP.** **Participating companies would implement the HCP. The Service and the permittee(s) would monitor for compliance and long-term success.**

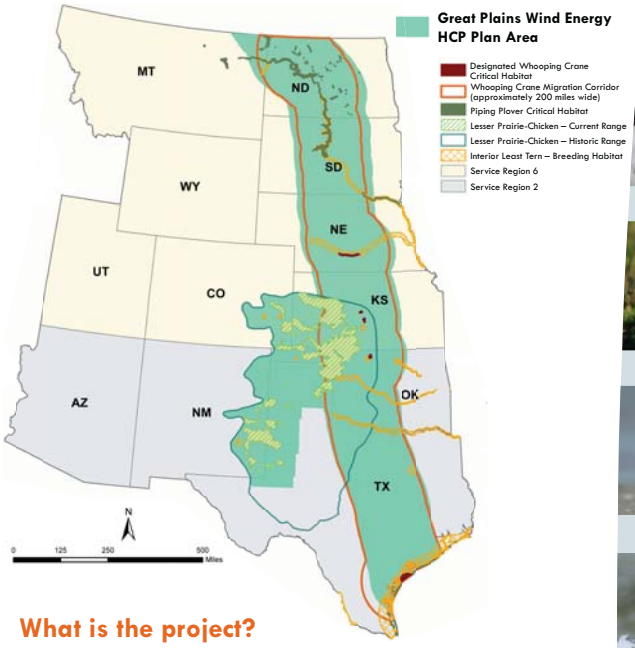
Definitions from Sections 9 and 10 of the Endangered Species Act (ESA)	
Take	To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any fish or wildlife species listed under ESA as endangered or threatened
Incidental Take	Take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity
Issuance Criteria	Upon receiving the permit application, the Service must consider the following issuance criteria [detailed in Section 10(a)(2)(B) or the ESA]: • The applicant is fully qualified per the general permit criteria. • The taking will be incidental. • The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking. • The applicant will ensure that adequate funding for the HCP will be provided. • The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild. • The applicant will ensure that other required measures will be provided. • The Service has received such other assurances as may be required that the HCP will be implemented.

KEY DEFINITIONS

GREAT PLAINS WIND ENERGY
Environmental Impact Statement | Habitat Conservation Plan

Great Plains Wind Energy Environmental Impact Statement

Study Area Map



What is the project?

The U.S. Fish and Wildlife Service (Service) is preparing an Environmental Impact Statement (EIS) for the Great Plains Wind Energy Habitat Conservation Plan (HCP). The goal of the HCP is to develop a consistent, systematic, and predictable approach for ESA compliance for wind energy development that will provide a conservation benefit for certain species.

The objectives of the EIS are to:

- **Evaluate potential impacts to the human environment** that would result from the proposed HCP and associated Incidental Take Permit (ITP) for regional-level development, construction, operation, and maintenance associated with multiple commercial wind energy facilities
- **Respond to the Incidental Take Permit (ITP) application** submitted by the Wind Energy Whooping Crane Action Group (WEWAG)
- **Ensure compliance** with NEPA, which includes the ESA and other relevant regulations and statutes

The EIS will assist the Service in making an informed decision about issuing the ITP. The NEPA process provides other agencies, stakeholders, and the public an active role in the scoping process. Input from these parties will help the Service consider concerns during the planning process and inform the decision on issuing the ITP.

Species under consideration for coverage in the ITP:

Courtesy of the Service

Whooping Crane

Courtesy of USDA, Marcus Miller

Lesser Prairie-Chicken

Courtesy of Greer Nieveen/the Service

Piping Plover

Courtesy of the Service

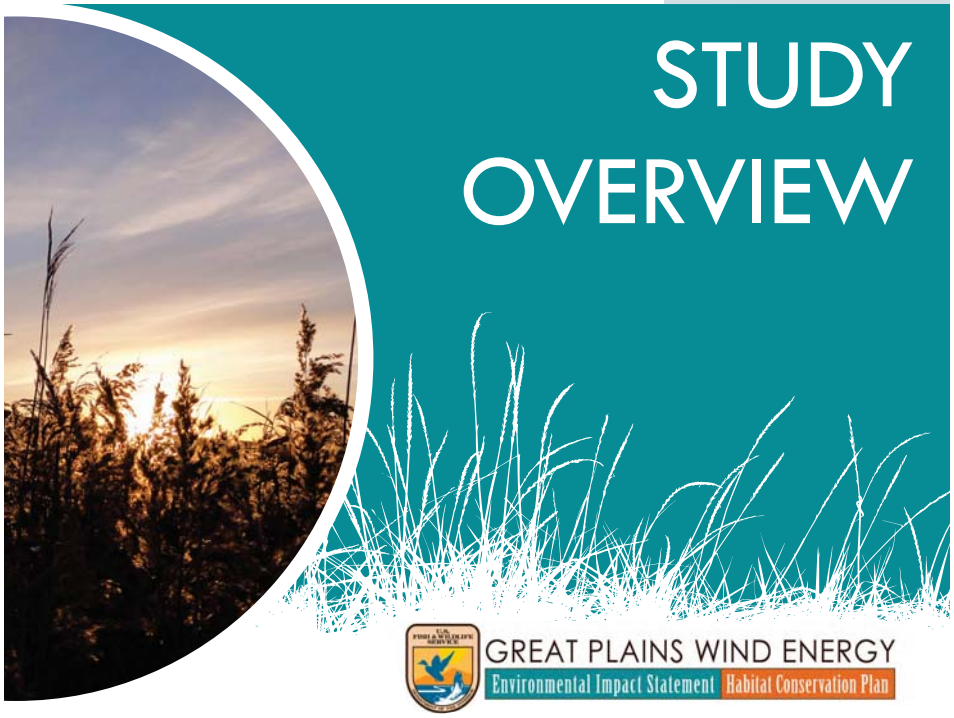
Interior Least Tern

Other species may be identified during scoping

Why are these species being considered?

WEWAG has identified species with the potential to be impacted in the course of wind energy development within the proposed Plan Area that are either listed as threatened and endangered or have the potential to become listed.

The final list of covered species may be modified based on information received during the scoping process and further analysis of the proposed action.



STUDY OVERVIEW

GREAT PLAINS WIND ENERGY
Environmental Impact Statement | Habitat Conservation Plan

The National Environmental Policy Act (NEPA)

What is NEPA?

The National Environmental Policy Act (NEPA) of 1969 established a national environmental policy with goals for the protection, maintenance, and enhancement of the environment. It also established a process for environmental impacts to be evaluated as an integral part of any major Federal action. Key goals of NEPA are to help Federal agency officials make well-informed decisions about agency actions and to provide a role for the public in the decision-making process.

The EIS process will comply with NEPA requirements, its implementing regulations (40 CFR 1500–1508), other applicable regulations, and the Service's procedures for compliance.

Why is The Service Preparing an Environmental Impact Statement (EIS)?

NEPA requires Federal agencies to examine the environmental impacts of a proposed action and provide opportunities for public participation. Based on the potential extent of impacts and the high level of interest in the proposed HCP, the Service has determined that an EIS is appropriate for this proposed action.

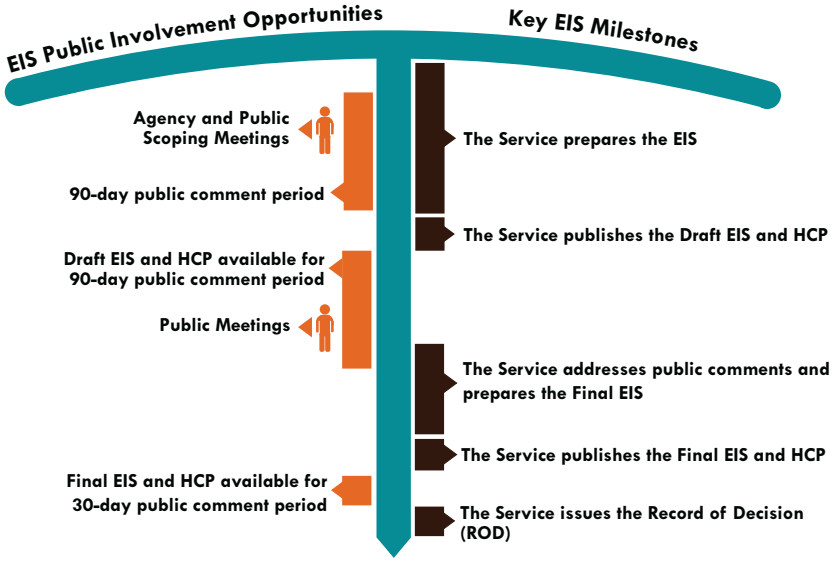
What will the EIS address?

- Potential impacts associated with the proposed HCP and the issuance of an ITP, including biological, physical, and/or social impacts on the environment
- Ways of reducing the potential impacts of the HCP/ITP
- Any reasonable alternatives to the proposed action

How can you participate?

The EIS process (outlined below) provides opportunities for the public, agencies, and stakeholders to participate and provide feedback throughout the process.

EIS TIMELINE



DEFINING THE NEPA PROCESS

GREAT PLAINS WIND ENERGY
Environmental Impact Statement | Habitat Conservation Plan

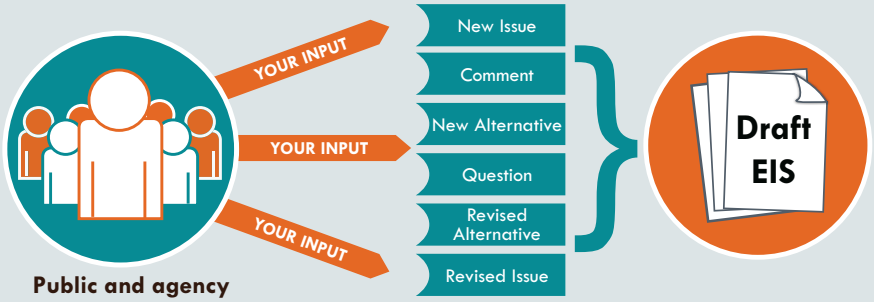
We Want Your Input!

What is EIS Scoping?

Established by NEPA, scoping is an early and open phase in the EIS process intended to provide interested or affected parties an opportunity to express concerns, ideas, and comments, which will help the Service identify and prioritize the issues and alternatives to be analyzed in the EIS.

How will your input be used?

The feedback we receive during the scoping process will be used to refine the scope of the EIS and highlight important issues to the public and federal, state, local, and tribal agencies.



Public and agency scoping meetings held in:

- Amarillo, TX
- Austin, TX
- Bismarck, ND
- Clovis, NM
- Corpus Christi, TX
- Glendive, MT
- Great Bend, KS
- Kearney, NE
- Pierre, SD
- Pueblo, CO
- Woodward, OK

How can you participate during and after scoping?

There are several opportunities to participate throughout the EIS process:

- Participate in public scoping meetings
- Provide written comments via mail, email, or fax
- Review and comment on the Draft EIS document when it is published
- Attend future public meetings
- Review and comment on the Final EIS document when it is published

All comments are due by October 12, 2011

HOW TO SUBMIT A COMMENT:

WindEnergyHCPComments@fws.gov

U.S. Fish and Wildlife Service
Attention: Laila Lienesch
P.O. Box 1306
Albuquerque, NM 87103-1306

1-800-815-8927
(toll-free message service)

505-248-6922
(Attention: Laila Lienesch)

Leave a comment at this meeting!

For more information, visit:
www.fws.gov/southwest

NEPA SCOPING PROCESS

GREAT PLAINS WIND ENERGY
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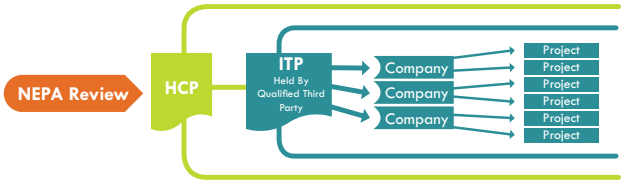
What alternatives will be considered in the EIS?

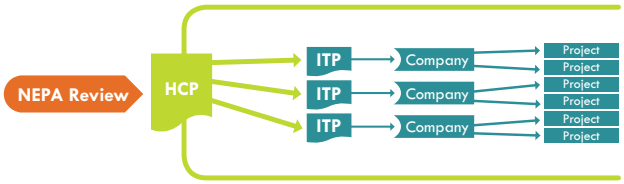
The "Proposed Action" Alternative

The "Proposed Action" alternative includes the issuance of an ITP (as supported by an HCP). Four options are currently being considered for the structure of the ITP. One of these options may be considered as part of the proposed action, while the other options may be considered as part of additional alternatives.

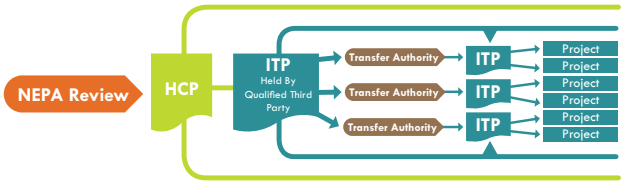
Programmatic HCP:
One HCP and one ITP (administered by a qualified third party) for multiple WEWAG companies and projects.



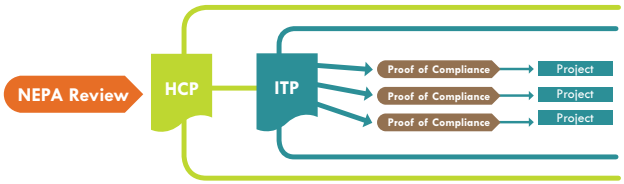
Umbrella HCP:
One HCP with a separate ITP issued to each WEWAG company. Each company-specific ITP would need to meet issuance criteria and be consistent with the Final EIS/ROD and Section 7 Consultation under ESA.



Primary Permit HCP:
One HCP with one initial ITP (held by a qualified third party) from which authorization is transferred to separate WEWAG project ITPs through review by both the third party and the Service. Each company-specific ITP would need to meet issuance criteria and be consistent with the Final EIS/ROD and Section 7 Consultation under ESA.



Co-Permittee HCP:
One HCP with one ITP under which all members of WEWAG are named co-permittees. Prior to initiating a project, a co-permittee must submit proof of compliance with the ITP to the Service.



The "No Action" Alternative

An ITP would <u>not</u> be issued under a Great Plains Wind Energy HCP.

A reasonable range of alternatives to be considered for analysis in the EIS may include:

- A modified list of species
- Differing land-coverage areas
- Variation of development activities
- Variation of conservation measures

What resources might be analyzed in the EIS?

We want your input on the issues and resources that should be addressed in the EIS.

The EIS will include analysis of short-term, long-term, direct, indirect, and cumulative impacts of the Proposed Action and its reasonable alternatives. Impacts to the human environment may include evaluation of effects to the following resources:

- Air quality (including greenhouse gas emissions)
- Archaeology
- Architectural history
- Aviation/airspace
- Biological resources (including vegetation, wildlife, threatened and endangered species and their habitat)
- Hazardous materials and solid waste management
- Human health and safety
- Hydrology
- Infrastructure (including new wind transmission connections)
- Land use (including prime and unique farmland)
- Noise and vibration
- Physiography/topography (including geology)
- Recreation (including hunting)
- Sites of religious and cultural significance to tribes
- Socioeconomics and Environmental Justice
- Soils
- Special status species
- Surface waters and floodplains
- Transportation (including new access roads)
- Utilities
- Visual resources and aesthetics
- Water quality
- Wetlands and waters of the U.S.
- **Other issues and resources identified throughout the scoping period**

IDENTIFYING RESOURCES AND ISSUES

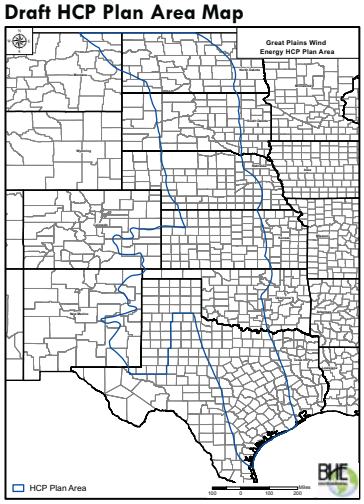
GREAT PLAINS WIND ENERGY
Environmental Impact Statement | Habitat Conservation Plan

Why is the wind energy industry preparing the Great Plains Wind Energy Habitat Conservation Plan?

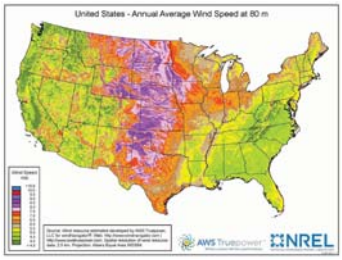
What will the Habitat Conservation Plan (HCP) address?

The HCP will address impacts of authorized and incidental taking of covered species that may result from construction and operation of some utility-scale wind energy development in the Plan Area.

Draft HCP Plan Area Map



U.S. Wind Resources



Where is the HCP Plan Area?

In this first regional, multi-species HCP to address impacts of wind energy development on a landscape scale, the Plan Area contains habitat for these species and includes the whooping crane's migratory corridor as well as lesser prairie-chicken habitat within the United States.

The HCP Plan Area also includes significant wind energy resources and encompasses the majority of states with the highest land-based wind resource potential. Therefore, the Plan Area is attractive to wind industry companies seeking to develop and operate utility-scale wind energy facilities.

Who is developing the HCP?

A group of 19 wind energy companies, the Wind Energy Whooping Crane Action Group (WEWAG), in coordination with the U.S. Fish and Wildlife Service (Service) and state wildlife agencies is developing an HCP. The participating wind companies are voluntarily developing this HCP under ESA section 10(a)(1)(B) in close coordination with the Service.

WEWAG Members:

- Acciona North America
- Allete
- Alternity Wind Power
- BP Wind Energy
- Clipper Wind Energy
- Competitive Power Ventures, Inc.
- Duke Energy Renewables
- Element Power
- enXco
- EDP Renewables North America
- Iberdrola Renewables
- Infinity Wind Power
- MAP Royalty
- NextEra Energy Resources
- Own Energy
- RES Americas
- Terra-Gen Power, LLC
- Trade Wind Energy
- Wind Capital Group

Conservation Benefits of the Great Plains Wind Energy HCP

How will the HCP promote conservation?

The wind energy industry has worked in partnership with wildlife agencies to promote species conservation and allow development of wind energy projects as the industry works towards meeting the nation's renewable energy policy goals in the Plan Area.

Development and implementation of a regional HCP will streamline permitting for both the Service and wind energy developers, allowing them to direct their resources towards a broad-scale conservation effort.

> The HCP will enhance wildlife conservation efforts and allow for more efficient permitting of projects as the industry works towards meeting the nation's renewable energy policy goals in the Plan Area.

What are the conservation benefits of the GPWE HCP?

Scientific rigor and the best available biological information are used to develop and maintain the conservation program. Both impacts and conservation measures are considered across a significant portion of the species' ranges.

Clearly stated, unambiguous biological goals and objectives developed by species experts and scientists can be supported by industry, agencies, and conservationists.

Results of the conservation program will be comprehensively evaluated and carefully monitored, and conservation measures will be adjusted to ensure ongoing effectiveness and compliance.

Conservation measures benefiting the species are supported by a long-term financial and legal commitment, ensuring they will be carried out.

Why Wind Energy?

Wind energy generation causes no air pollution, no water pollution, does not deplete fresh water resources, generates no hazardous waste, and requires no mining, transportation, refining of a feedstock or fuel.

Not only does wind power provide a clean source of electricity, it helps keep electric rates low, and provides a hedge against fossil fuel price volatility. Wind energy is now one of the most cost-effective sources of new electricity generation, especially in wind-rich regions. The wind energy industry has added more than a third of all new generating capacity to the U.S. grid since 2007–twice what coal and nuclear together have added.

Furthermore, the industry has been one of the few bright spots in the otherwise difficult economy. The wind energy industry currently employs 75,000 people in the U.S. In 2010, the industry installed 5,116 megawatts, representing $11.1 billion in investment. Average annual growth for the past five years was 35%. The industry has utility-scale wind energy projects operating in 38 states and more than 400 manufacturing facilities in 42 states.

Healthy wildlife populations can and do coexist with the expansion of wind power development. In fact, an increase of wind power development would help sustain healthy wildlife populations, in light of the potentially devastating consequences global warming, acid rain, habitat fragmentation, toxin bioaccumulation, and other fossil fuel-related impacts have on wildlife and the significant role wind power can play as a solution to those issues. WEWAG partners are working to provide clean renewable energy with minimal impact to our nation's natural resources, such as the whooping crane and the lesser prairie-chicken.

The wind energy industry has a history of proactively addressing wildlife issues.

While the wind energy industry's impacts on wildlife are minor, particularly when compared to the impact of other energy generation technologies, the industry has proactively taken action in multiple ways to address those impacts. The Great Plains Wind Energy HCP is the first regionally-focused effort that has developed in this context. Other nationally-focused, innovative efforts to address wildlife impacts of wind energy generation include the following initiatives. For more information on these innovative commitments by the wind energy industry to understand and respond to potential wildlife impacts, please visit the web sites provided below:

- American Wind Wildlife Institute (www.awwi.org)
- Bats & Wind Energy Cooperative (www.batsandwind.org)
- The National Wind Coordinating Collaborative Wildlife Workgroup (Proceedings from past NWCC wildlife research meetings are available at: www.nationalwind.org/events/past.htm)
- Grassland and Shrub Steppe Species Collaborative (www.nationalwind.org/workgroups/wildlife/GS3CfactsheetFINALrev04_2008.pdf)
- Sage Grouse Research Collaborative (www.nationalwind.org/sagegrouse.aspx; see also www.nationalwind.org/assets/sage_grouse/Sage_Grouse_Fact_Sheet_July_2010_v2.pdf)

Great Plains Wind Energy Environmental Impact Statement

Project Overview

The U.S. Fish and Wildlife Service (Service) is preparing an Environmental Impact Statement (EIS) for the Great Plains Wind Energy Habitat Conservation Plan (HCP) in accordance with the National Environmental Policy Act (NEPA). A primary goal of the HCP is to develop a consistent, systematic, and predictable approach for wind energy development while supporting the conservation of certain species. The objective of the EIS is to evaluate the potential impacts that would result from the proposed HCP and associated Incidental Take Permit (ITP) for potential species take associated with construction, operation, and maintenance activities associated with multiple commercial wind energy facilities within North Dakota, South Dakota, Montana, Colorado, Nebraska, Kansas, New Mexico, Oklahoma, and Texas.

ENVIRONMENTAL IMPACT STATEMENT (EIS): An EIS is prepared for any major Federal action significantly affecting the quality of the human environment. The EIS will incorporate public and agency comments and analyze the potential impacts resulting from the proposed Federal action, as well as any reasonable alternatives.

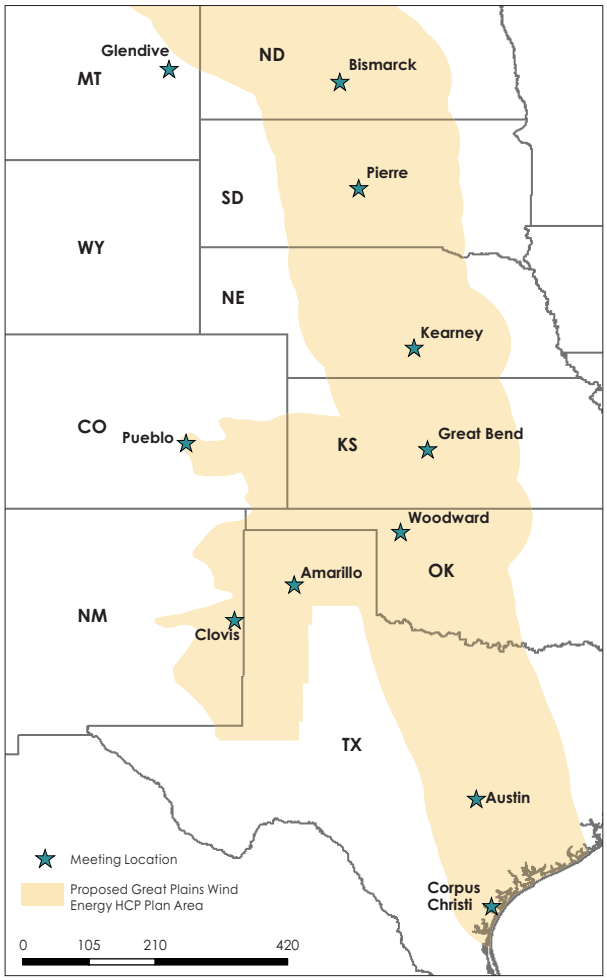
HABITAT CONSERVATION PLAN (HCP): A planning document that describes how the impacts of an incidental take will be minimized and mitigated to the maximum extent practicable to ensure the affected species will be conserved.

INCIDENTAL TAKE PERMIT (ITP): A permit that allows the incidental "take" of a listed species if it occurs during otherwise legal activities.

TAKE: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any fish or wildlife species listed under ESA as endangered or threatened.

Project Background

Development of utility-scale wind energy projects has become more complex over the past few years. Project stakeholders and natural resources agencies, such as the Service, are increasingly concerned about endangered species and their habitats. Of particular concern is the endangered whooping crane, whose migration corridor overlaps some of the richest wind energy resources in the United States. Recognizing the concerns, 19 wind developers have formed the Wind Energy Whooping Crane Action Group (WEWAG).



Proposed Plan Area Map

HCP and EIS

Development of the HCP by WEWAG was initiated in 2008 pursuant to section 10(a)(1)(B) of the federal Endangered Species Act (ESA). The HCP and any incidental take associated with the proposed implementation of the HCP for wind development must be evaluated and approved by the Service. The Service's issuance of an ITP is a federal action, which therefore must comply with NEPA. Due to the extent of potential impacts and the high level of public/stakeholder interest associated with a proposed decision to implement the HCP, the Service has determined that an EIS is the appropriate level of NEPA review because it gives the most opportunity for public and agency comments and has the most in-depth level of analysis.

Great Plains Wind Energy Environmental Impact Statement

Species being considered for inclusion in the HCP include certain species listed as federally threatened or endangered or as having the potential to become listed during the life of the HCP and having some likelihood of being taken from within the proposed Plan Area. Species currently considered for inclusion in the ITP application are the: whooping crane (*Grus americana*), endangered; interior least tern (*Sterna antillarum athalassos*), endangered; piping plover (*Charadrius melodus*), threatened; and lesser prairie-chicken (*Tympanuchus pallidicinctus*), candidate for listing. In addition, WEWAG is evaluating the potential impacts on numerous other species which includes development of Species Take Avoidance Measures (STAMs). In the event that STAMS can not be developed, the species may be covered species in the HCP.

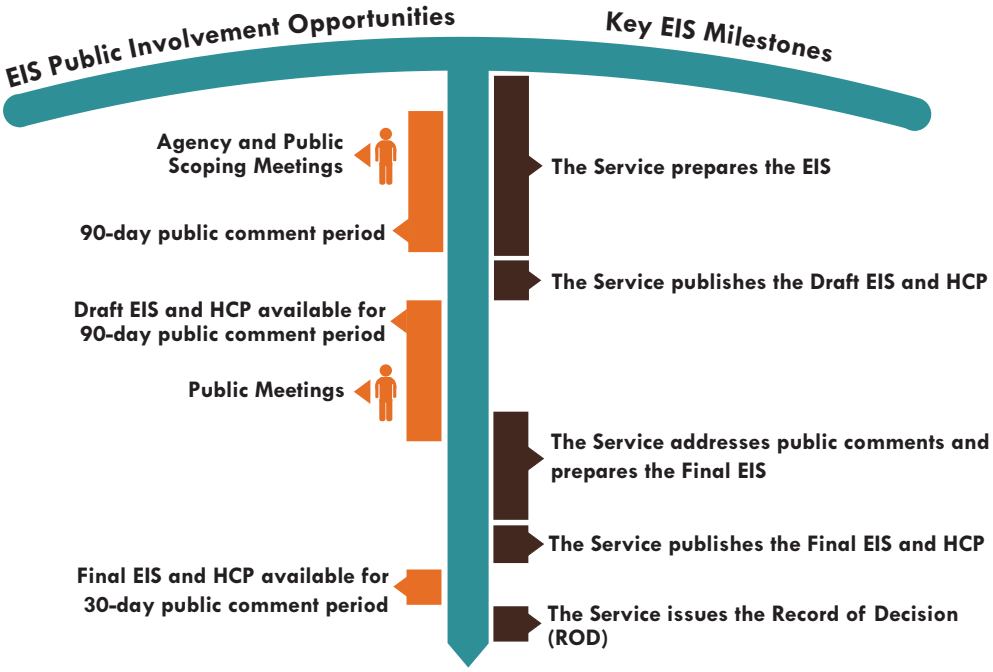
Alternatives

The EIS will consider several alternatives, including the Proposed Action (issuance of an ITP, as supported by an HCP), No-Action (no ITP issuance), and additional alternatives that accomplish the purpose and need of the EIS. Alternatives may include, but are not limited to, variations of covered species lists, different land-coverage areas, and activities that may be covered.

The Great Plains Wind Energy HCP is intended to:

- **Promote species conservation**
- **Determine measures that would minimize incidental take**
- **Facilitate responsible wind energy development**

EIS TIMELINE



For more information, please visit the project website at: www.fws.gov/southwest/

Ways to submit comments:

- **E-mail:** WindEnergyHCPComments@fws.gov
- **Toll-Free Message Service:** 800-815-8927
- **U.S. Mail:** U.S. Fish and Wildlife Service | Attention: Laila Lienesch, P.O. Box 1306 Albuquerque, NM 87103-1306
- **Fax:** 505-248-6922 (Attention: Laila Lienesch)
- **Leave a comment at this meeting!**

Proposed Action

The proposed action is the Service's issuance of an ITP(s), which authorizes incidental take associated with utility-scale wind power development within the nine-state region, including portions of Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, New Mexico, and Colorado. The proposed action would require that the HCP and associated development, construction, and operation of utility-scale wind power within the Plan Area meet all the permit issuance criteria, pursuant to Section 10 of the ESA. The anticipated permit duration is 45 years.

Proposed Plan Area

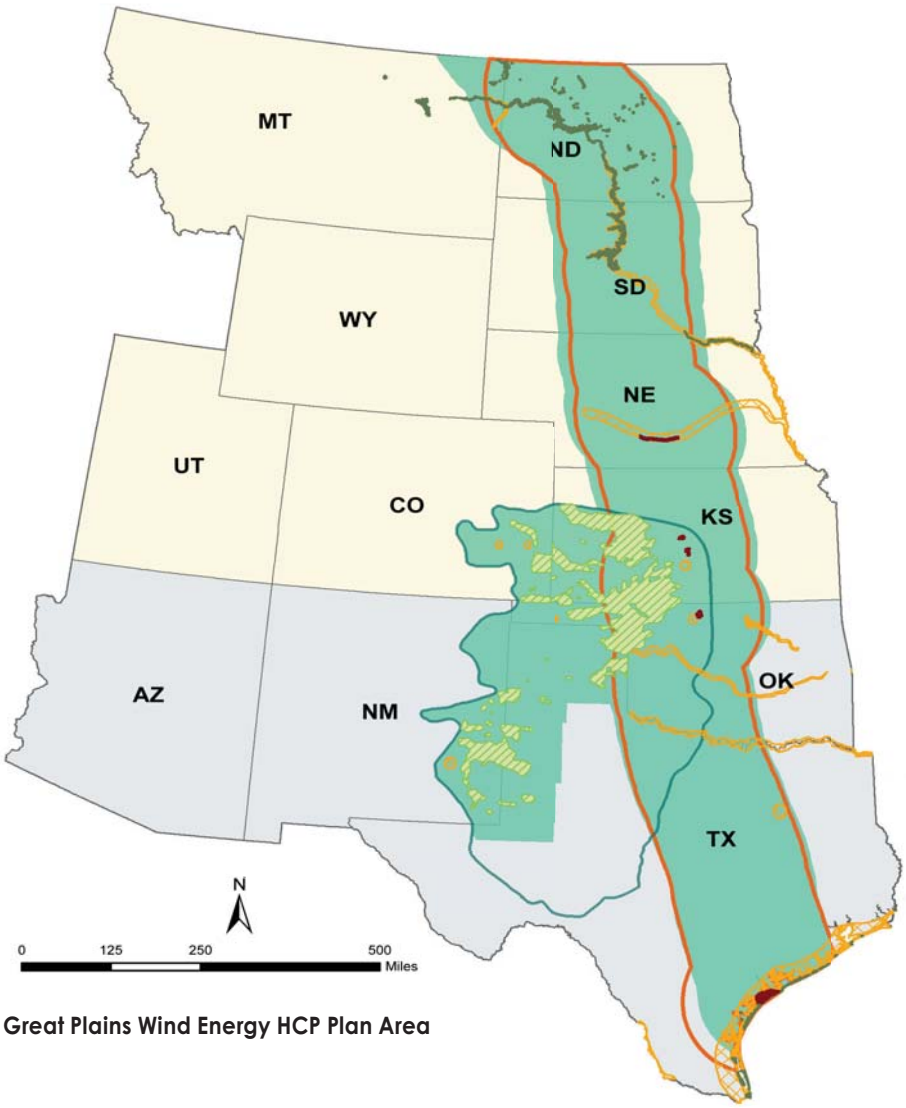
The Plan Area for the Great Plains Wind Energy HCP is proposed to include non-federal lands within: 1) 100 miles on each side of the center line of the whooping crane migration corridor, extending from the Gulf Coast of Texas to the Canadian border, and 2) portions of the historic range of the lesser prairie-chicken, with the boundary extending into parts of Kansas, Colorado, Oklahoma, New Mexico, and Texas.

Species included in the Great Plains Wind Energy Habitat Conservation Plan

Species being considered for inclusion in the Great Plains Wind Energy Habitat Conservation Plan (HCP) include certain species listed as federally threatened or endangered—or having the potential to become listed during the life of the HCP—and having some likelihood of occurring within the proposed Plan Area. Species currently considered for take coverage include the following: **whooping crane** (*Grus americana*), endangered; **interior least tern** (*Sterna antillarum athalassos*), endangered; **piping plover** (*Charadrius melodus*), threatened; and **lesser prairie-chicken** (*Tympanuchus pallidicinctus*), candidate for listing.

The Plan Area for the Great Plains Wind Energy HCP is proposed to include non-federal lands within: 1) 100 miles on each side of the center line of the whooping crane migration corridor, extending from the Gulf Coast of Texas to the Canadian border, and 2) portions of the historic range of the lesser prairie-chicken, with the boundary extending into parts of Kansas, Colorado, Oklahoma, New Mexico, and Texas.

Additionally, Species Take Avoidance Measures (STAMs) are being developed for many other species. Species which may have STAMs are listed in the panel on the last page of the fact sheet. By fully implementing STAMs, it is anticipated that incidental take of these species during the life of a specific wind energy facility would be avoided.



Great Plains Wind Energy HCP Plan Area

ENDANGERED: an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range

THREATENED: an animal or plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range

CANDIDATE: Plants and animals that have been studied and the Service has concluded that they should be proposed for addition to the Federal endangered and threatened species list

Great Plains Wind Energy HCP Plan Area

- Designated Whooping Crane Critical Habitat
- Whooping Crane Migration Corridor (approximately 200 miles wide)
- Piping Plover Critical Habitat
- Lesser Prairie Chicken – Current Range
- Lesser Prairie Chicken – Historic Range
- Interior Least Tern – Breeding Habitat
- Service Region 6
- Service Region 2

Whooping Crane *(Grus Americana)*

Status: Endangered

Description: The whooping crane is the tallest North American bird. Males, which may approach 5 feet in height, are larger than females. Adults are snowy white except for black primary feathers on the wings and a bare red face and crown. The bill is a dark olive-gray, which becomes lighter during the breeding season. The eyes are yellow and the legs and feet are gray-black. Immature cranes are a reddish cinnamon color that results in a mottled appearance as the white feather bases extend. The juvenile plumage is gradually replaced through the winter months and becomes predominantly white by the following spring as the dark red crown and face appear. Yearlings achieve the typical adult appearance by late in their second summer or fall. The life span is estimated to be 22 to 24 years in the wild. Whooping cranes are omnivorous feeders. They feed on insects, frogs, rodents, small birds, minnows, and berries in the summer. In the winter, they focus predominantly on animal foods, especially blue crabs and clams. They also forage for acorns, snails, crayfish, and insects in upland areas.

Range and Population: The historic range of the whooping crane once extended from the Arctic coast south to central Mexico, and from Utah east to New Jersey, into South Carolina, Georgia, and Florida. A separate non-migratory breeding population occurred in southwestern Louisiana. The current nesting range of the self-sustaining natural wild population is restricted to Wood Buffalo National Park in Saskatchewan, Canada, and the current wintering grounds of this population are restricted to the Texas Gulf Coast at Aransas National Wildlife Refuge and vicinity. A major traditional migratory stopover is at Salt Plains National Wildlife Refuge in Oklahoma.

The whooping crane population, estimated at 500 to 700 individuals in 1870, declined to only 16 individuals in the migratory population by 1941 as a consequence of hunting and specimen collection, human disturbance, and conversion of the primary nesting habitat to hay, pastureland, and grain production. The main threat to whooping cranes in the wild is the potential of a hurricane or contaminant spill to destroying their wintering habitat on the Texas coast. Collisions with power lines and fences are also known hazards to wild whooping cranes. In January, 2000, there were 187 individuals in the flock, including 51 nesting pairs.

Photo by USFWS

Whooping cranes in flight

Habitat: The nesting area in Wood Buffalo National Park is a poorly drained region interspersed with numerous potholes. Bulrush is the dominant emergent in the potholes used for nesting. On the wintering grounds at Aransas National Wildlife Refuge in Texas, whooping cranes use the salt marshes that are dominated by salt grass, saltwort, smooth cordgrass, glasswort, and sea ox-eye. They also forage in the interior portions of the refuge, which are gently rolling, sandy, and are characterized by oak brush, grassland, swales, and ponds. Typical plants include live oak, redbay, Bermuda grass, and bluestem.

Reproduction: Whooping cranes are monogamous and form life-long pair bonds but will remate following the death of a mate. Whooping cranes return to the same breeding territory in Wood Buffalo National Park, Canada, in April and nest in the same general area each year. Despite the fact that most pairs lay two eggs, seldom does more than one chick reach fledging. Autumn migration begins in mid-September, and most birds arrive on the wintering grounds of Aransas National Wildlife Refuge on the Texas Gulf Coast by late-October to mid-November. Whooping cranes migrate singly, in pairs, in family groups, or in small flocks, and are sometimes accompanied by sandhill cranes. They are diurnal migrants, stopping regularly to rest and feed, and use traditional migration staging areas. On the wintering grounds, pairs and family groups occupy and defend territories. Spring migration is preceded by dancing, unison calling, and frequent flying. Family groups and pairs are the first to leave the refuge in late-March to mid-April.

Only one out of four hatched chicks survive to reach the wintering grounds. Whooping cranes generally do not produce fertile eggs until age 4.

Source: USFWS, 2010 <www.fws.gov/northflorida/WhoopingCrane/whoopingcrane-fact-2001.htm>

Lesser prairie-chicken (*Tympanuchus pallidicinctus*)

Status: Candidate

Description: The Lesser prairie-chicken is a medium-sized, grayish brown grouse. The total length of adults is 14-16 inches. In adults, most of the body is barred with alternating dark and light bands. Dark bands on upperparts are complex, including black and cinnamon tones; light bands on upperparts range from buff to white. Upperparts are therefore darker and more richly colored than underparts. Their tails are short, rounded, and brownish black. Males display a bright yellow eye-comb above eye and dull red esophageal "air sacs" on the side of their necks during courtship. Males also have a tuft of elongated feathers (pinnae) on each side of neck; these are held erect during courtship display. Females have shorter pinnae. Immature birds are similar to adults but more richly colored, especially on throat. They feed on insects, seeds, acorns, vegetative material, and cultivated grains.

Range and Population: The historical range of the Lesser prairie-chicken extended from southeastern Colorado and southwestern Kansas southward through western Oklahoma to southeastern New Mexico and western Texas. Currently, the species is discontinuously distributed within a small portion of the historical range, including all five of these states. Formerly, the species ranged north to southwestern Nebraska, but there is no evidence of breeding in that state, and the species' ephemeral occurrence there may have been an artifact of post-settlement habitat changes. This species is regarded as non-migratory.

Habitat: Lesser prairie-chickens inhabit mixed grass-dwarf shrub communities that occur on sandy soils, principally the sand sagebrush association in Colorado, Kansas, and Oklahoma, and to a lesser extent, Texas and New Mexico; and the shinnery oak-bluestem association in Oklahoma, Texas, and New Mexico. Leks typically occur on knolls or ridges with relatively short and/or sparse vegetation. Lesser prairie-chicken leks may be on human-created open areas (e.g., oil well pads, roads, reverted cropland, cultivated fields, areas treated with herbicides, and recently burned areas).

Photo by USFWS

Male lesser prairie-chicken

Nesting sites are in sand sagebrush or shinnery oak grasslands with high canopy cover and moderate vertical and horizontal cover, primarily residual vegetation. Females prefer to nest in relatively tall, dense vegetation. Nests often are under sand sagebrush or shinnery oak shrub or amid tall bunchgrasses. The height and density of forbs and residual grasses are greater at nest sites than on adjacent rangeland.

Reproduction: In spring and fall, adults congregate on leks where males engage in communal courtship displays at sunrise and before sunset. Dominant males establish and defend territories in the central portion of the lek, whereas subordinant males are generally restricted to peripheral territories. The number of males attending a lek varies seasonally and annually and is influenced by habitat and population density. Females attend leks to copulate with males from late March through May. Nesting is initiated from mid-April through late May, and hatching peaks from late May through mid-June. One egg is laid per day, and incubation begins when the clutch is complete. Droughts and hot, dry weather during nesting season may negatively impact hatching success.

Source: USFWS, 2010 <ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0AZ>

SPECIES TO BE CONSIDERED WHEN IMPLEMENTING STAMs	
MAMMALS	**Black-footed ferret** (*Mustela nigripes*) – **E** **Gulf Coast jaguarundi** (*Herpailurus yagouaroundi cacomitli*) – **E** **Ocelot** (*Leopardus pardalis*) – **E** **Texas Kangaroo Rat** (*Dipodomys elator*) - **UR**
BIRDS	**Attwater's prairie chicken** (*Tympanuchus cupido attwateri*) – **E** **Black-capped vireo** (*Vireo atricapilla*) – **E** **Golden-cheeked warbler** (*Dendroica chrysoparia*) – **E** **Brown pelican** (*Pelecanus occidentalis*) – **E** **Eskimo curlew** (*Numenius borealis*) – **E** **Northern aplomado falcon** (*Falco femoralis*) – **E** **Red-cockaded woodpecker** (*Picoides borealis*) – **E** **Sprague's pipit** (*Anthus spragueii*) – **C**
REPTILES	**Concho water snake (CWS)** (*Nerodia paucimaculata*) – **T** **Dunes sagebrush lizard** (*Sceloporus arenicolus*) – **C**
AMPHIBIANS	**Houston toad** (*Bufo houstonensis*) – **E**
KARST INVERTEBRATES	**ground beetle, no common name** (*Rhadine exilis*) – **E** **ground beetle, no common name** (*Rhadine infernalis*) – **E** **Helotes mold beetle** (*Batrisodes venyivi*) – **E** **Cokendolpher cave harvestman** (*Texella cokendolpheri*) – **E** **Robber Baron Cave meshweaver** (*Cicurina baronia*) – **E** **Madla cave meshweaver** (*Cicurina madla*) – **E** **Bracken Bat Cave meshweaver** (*Cicurina venii*) – **E** **Government Canyon Bat Cave meshweaver** (*Cicurina vespera*) – **E** **Government Canyon Bat Cave spider** (*Neoleptoneta microps*) – **E** **Tooth Cave spider** (*Neoleptoneta myopica*) – **E** **Tooth Cave pseudoscorpion** (*Tartarocreagris texana*) – **E** **Bee Creek Cave harvestman** (*Texella reddelli*) – **E** **Kretschmarr Cave mold beetle** (*Texamaurops reddelli*) – **E** **Tooth Cave ground beetle** (*Rhadine persephone*) – **E** **Bone Cave harvestman** (*Texella reyesi*) – **E** **Coffin Cave mold beetle** (*Batrisodes texanus*) – **E**
INVERTEBRATES	**American burying beetle** (*Nicrophorus americanus*) – **E** **Scaleshell mussel** (*Leptodea leptodon*) – **E** **Higgins eye mussel** (*Lampsilis higginsii*) – **E** **Dakota skipper** (*Hesperis dacotae*) – **C**
FISH	**Arkansas River shiner** (*Notropis girardi*) – **T** **Fountain Darter** (*Etheostoma fonticola*) – **E** **Neosho Madtom** (*Noturus placidus*) – **T** **Pallid Sturgeon** (*Scaphirhynchus albus*) – **E** **Topeka shiner** (*Notropis topeka*) – **E** **Arkansas Darter** (*Etheostoma cragini*) – **C**
PLANTS	**Black lace cactus** (*Echinocereus reichenbachii* var. *albertii*) – **E** **Blowout penstemon** (*Penstemon haydenii S. Wats.*) – **E** **Large-Fruited Sand Verbena** (*Abronia macrocarpa*) – **E** **Navasota Ladies'-Tresses** (*Spiranthes parksii*) – **E** **Slender Rushpea** (*Hoffmannseggia tenella*) – **E** **South Texas Ambrosia** (*Ambrosia cheiranthifolia*) – **E** **Texas Prairie Dawn** (*Hymenoxys texana*) – **E** **Texas wild-rice** (*Zizania texana*) – **E** **Western prairie fringed orchid** (*Platanthera praeclara*) – **T**

T = Threatened E = Endangered C = Candidate Species
UR = Under Review

Interior Least Tern *(Sterna antillarum athalassos)*

Photo by USFWS

Status: Endangered

Description: These 8- to 9-inch birds have a black "crown" on their head, a snowy whiter underside and forehead, grayish back and wings, orange legs, and a yellow bill with a black tip. To feed, the terns hover over and dive into standing or flowing water to catch small fish.

Range: Interior least terns breed in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems. Their winter home is not known but probably includes coastal areas of Central and South America.

Habitat: From late April to August, terns use barren to sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines.

Reproduction: The terns nest in a shallow hole scraped in an open sandy area, gravelly patch, or exposed flat. They nest in small colonies. The chicks leave the nest only a few days after hatching, but the adults continue to care for them, leading them to shelter in nearby grasses and bringing them food.

Source: USFWS, 2011 <www.fws.gov/midwest/endangered/birds/tern.html>

Piping Plover *(Charadrius melodus)*

Photo by USFWS

Status: Threatened

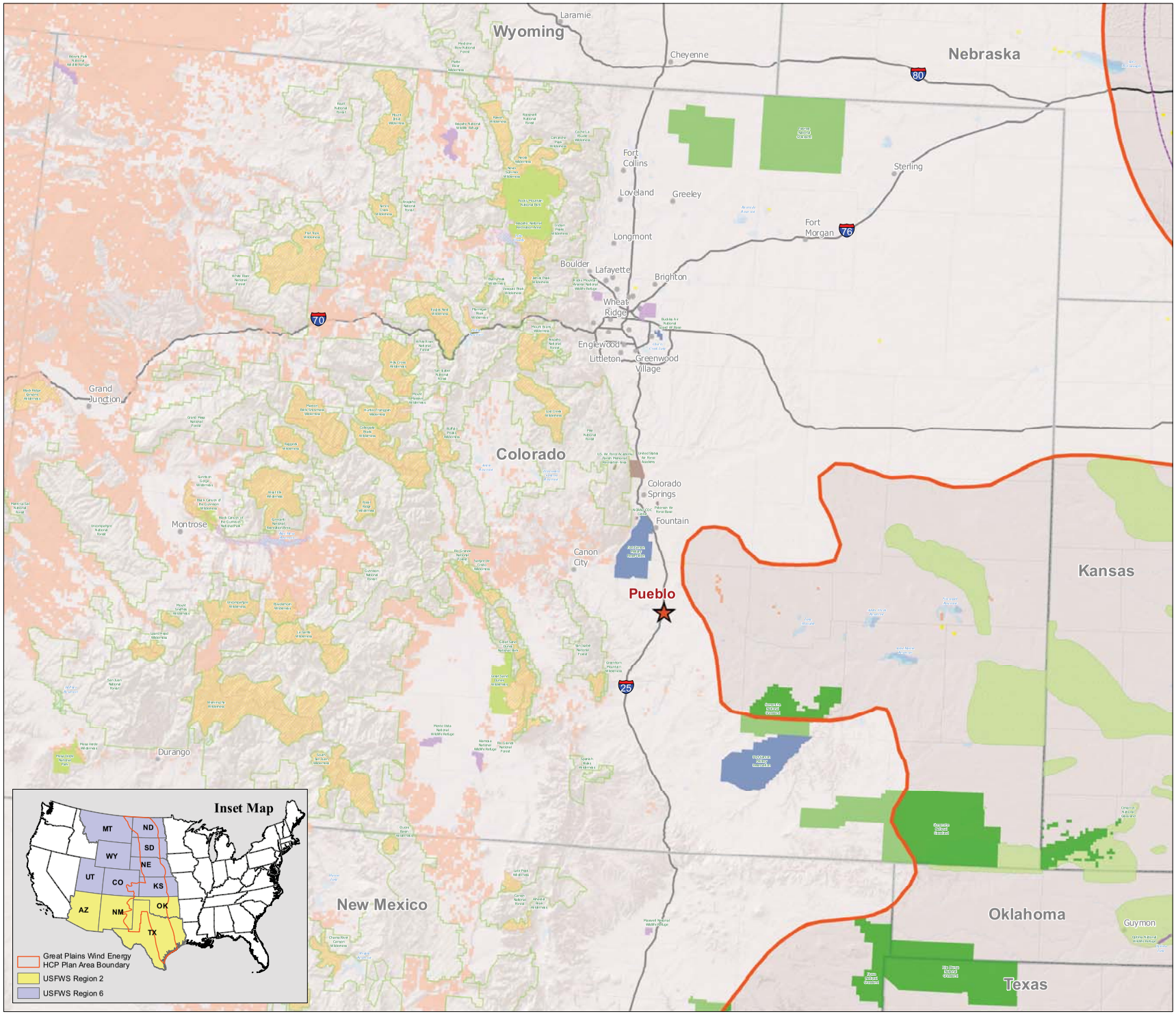
Description: These small, stocky shorebirds have a sand-colored upper body, a white underside, and orange legs. During the breeding season, adults have a black forehead, a black breast band, and an orange bill. The plovers eat insects, spiders, and crustaceans.

Range: Piping plovers are migratory birds. In the spring and summer they breed in northern United States and Canada. There are three locations where piping plovers nest in North America: the shorelines of the Great Lakes, the shores of rivers and lakes in the Northern Great Plains, and along the Atlantic Coast. Their nesting range has become smaller over the years, especially in the Great Lakes area. In the fall, plovers migrate south and winter along the coast of the Gulf of Mexico or other southern locations.

Habitat: Piping plovers use wide, flat, open, sandy beaches with very little grass or other vegetation. Nesting territories often include small creeks or wetlands.

Reproduction: The female lays four eggs in its small, shallow nest lined with pebbles or broken shells. Both parents care for the eggs and chicks. When the chicks hatch, they are able to run about and feed themselves within hours.

Source: USFWS, 2011 <www.fws.gov/midwest/endangered/pipingplover/pipingpl.html>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Great Plains Wind Energy HCP Plan Area Boundary
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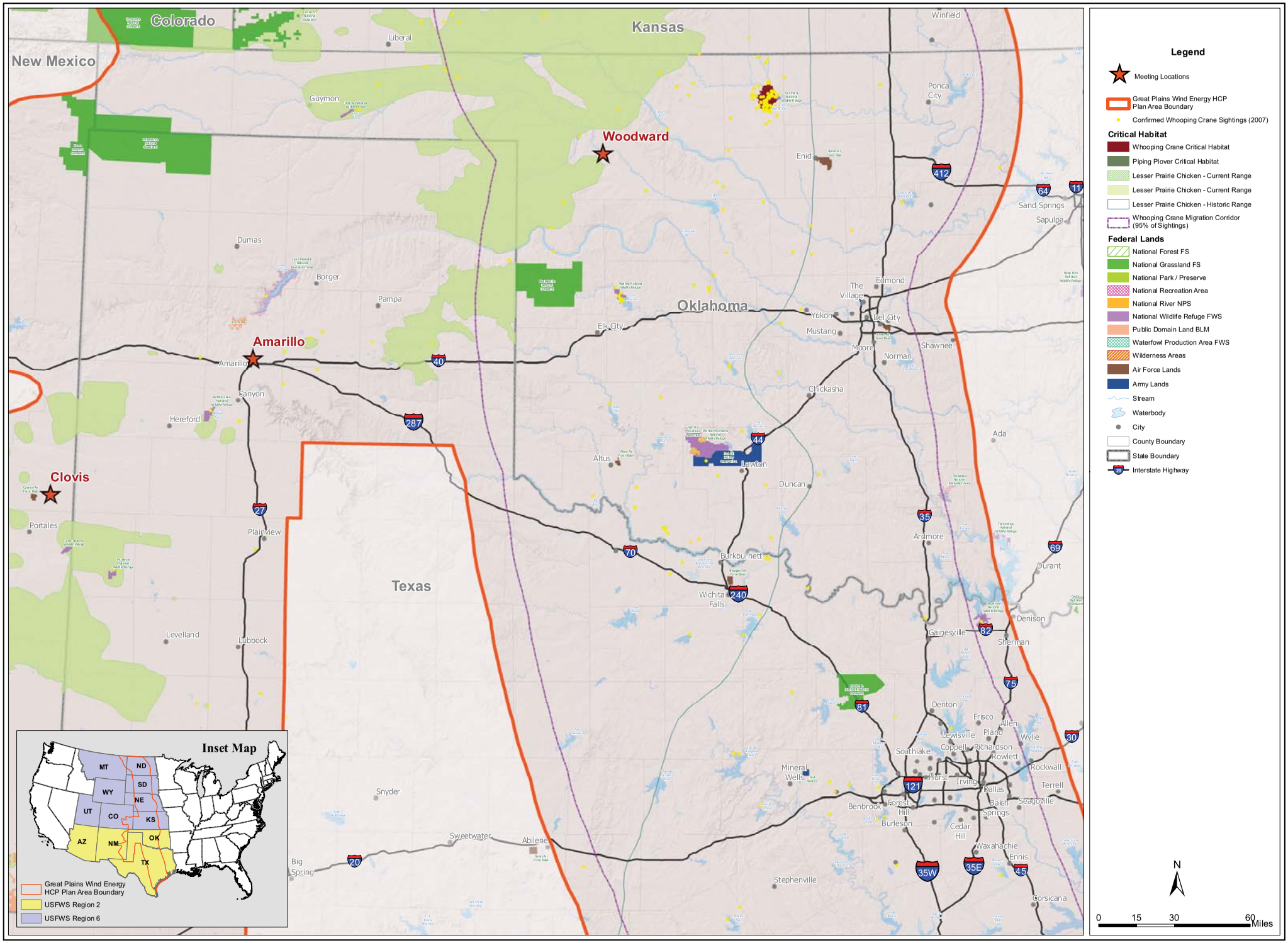
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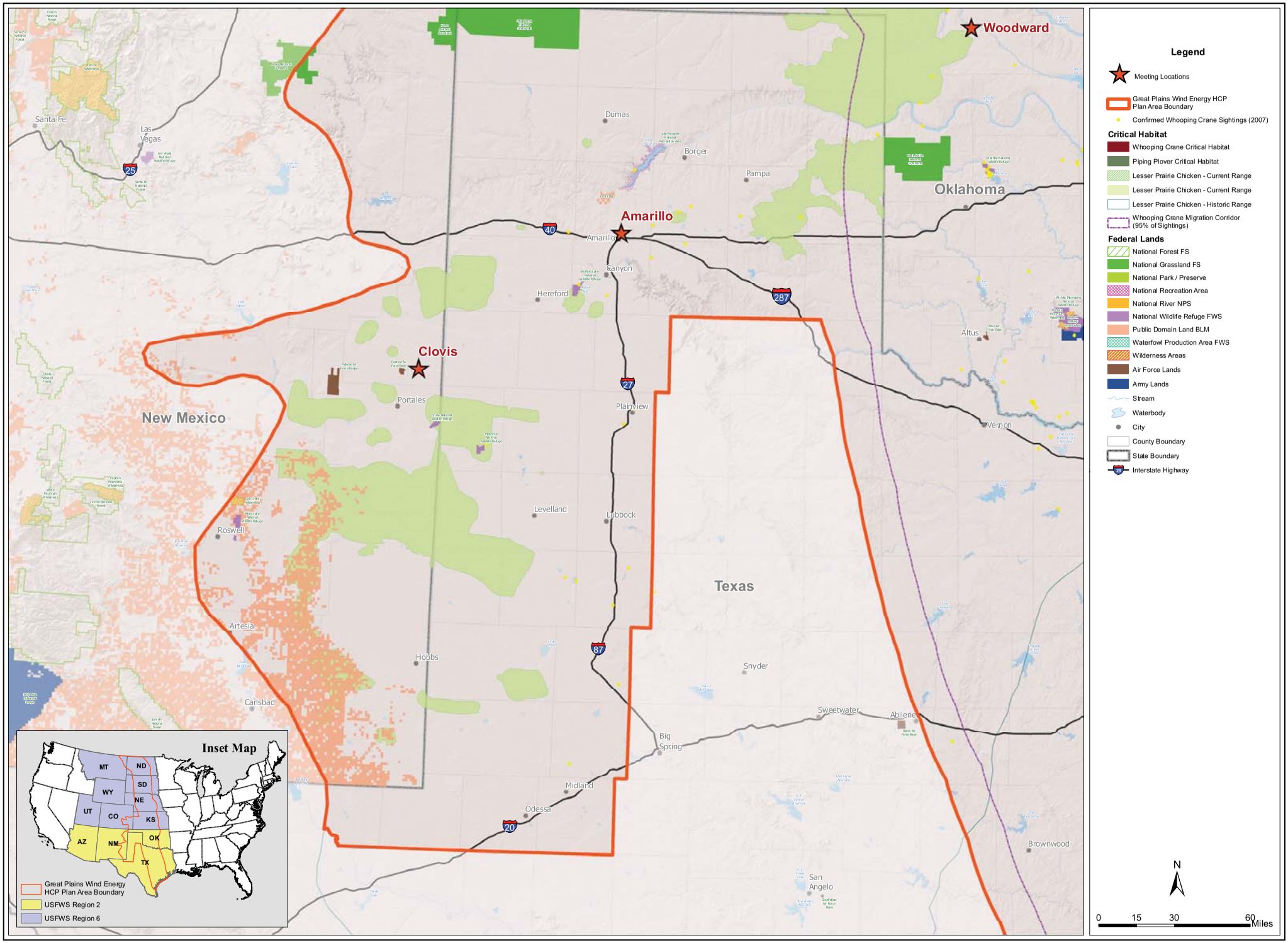
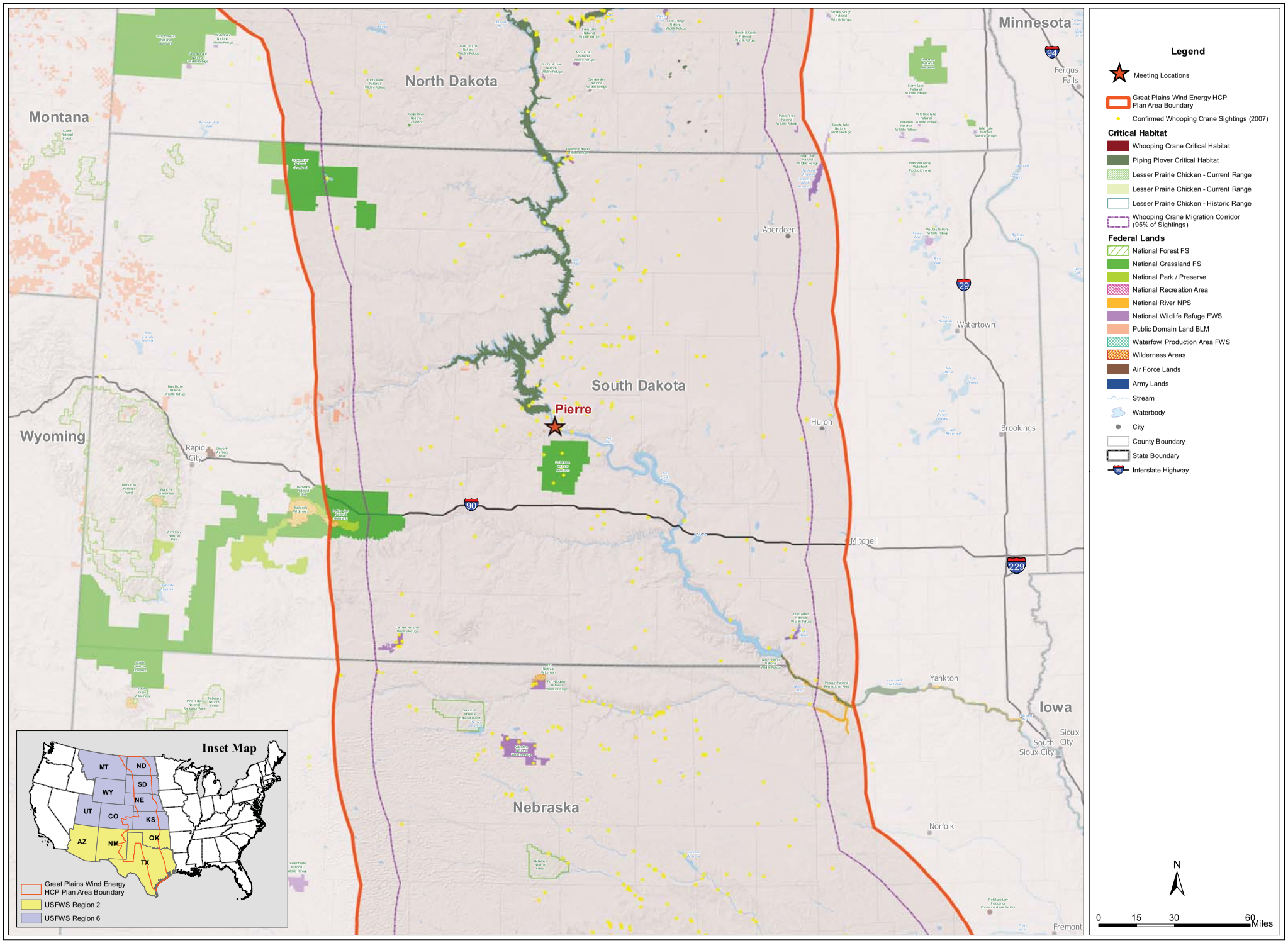
Environmental Impact Statement for the Great Plains Wind Energy Habitat Conservation Plan

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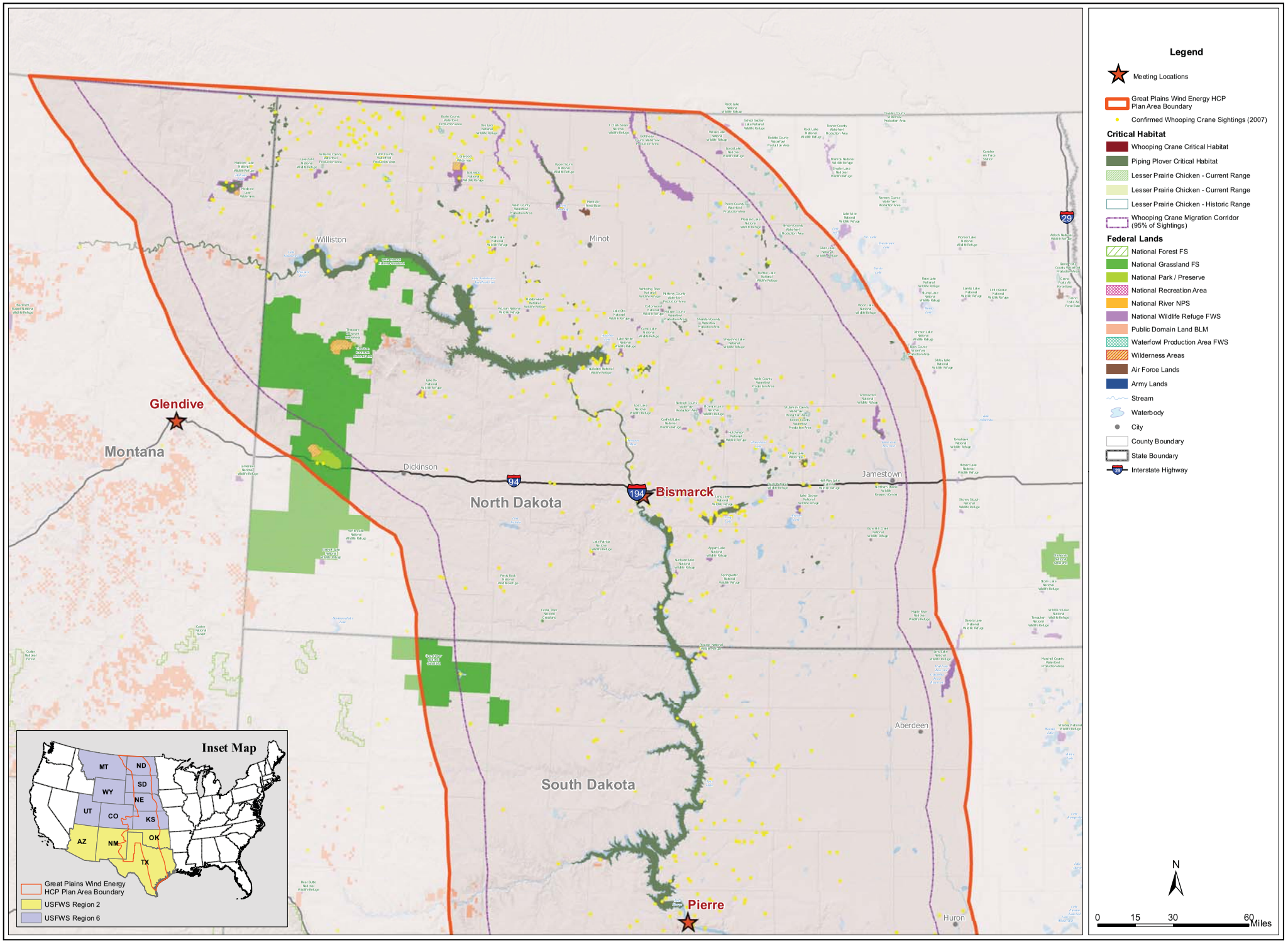
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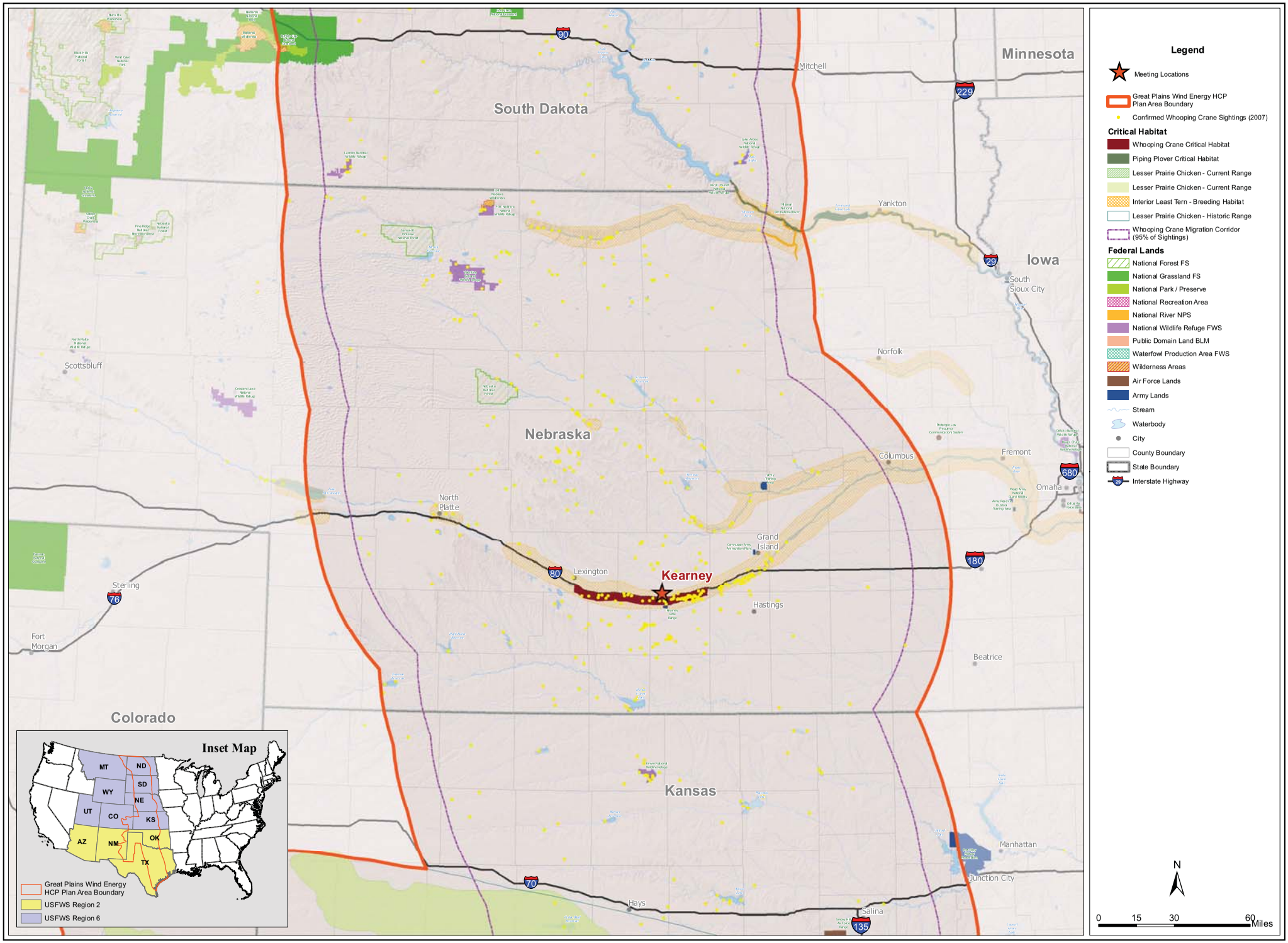

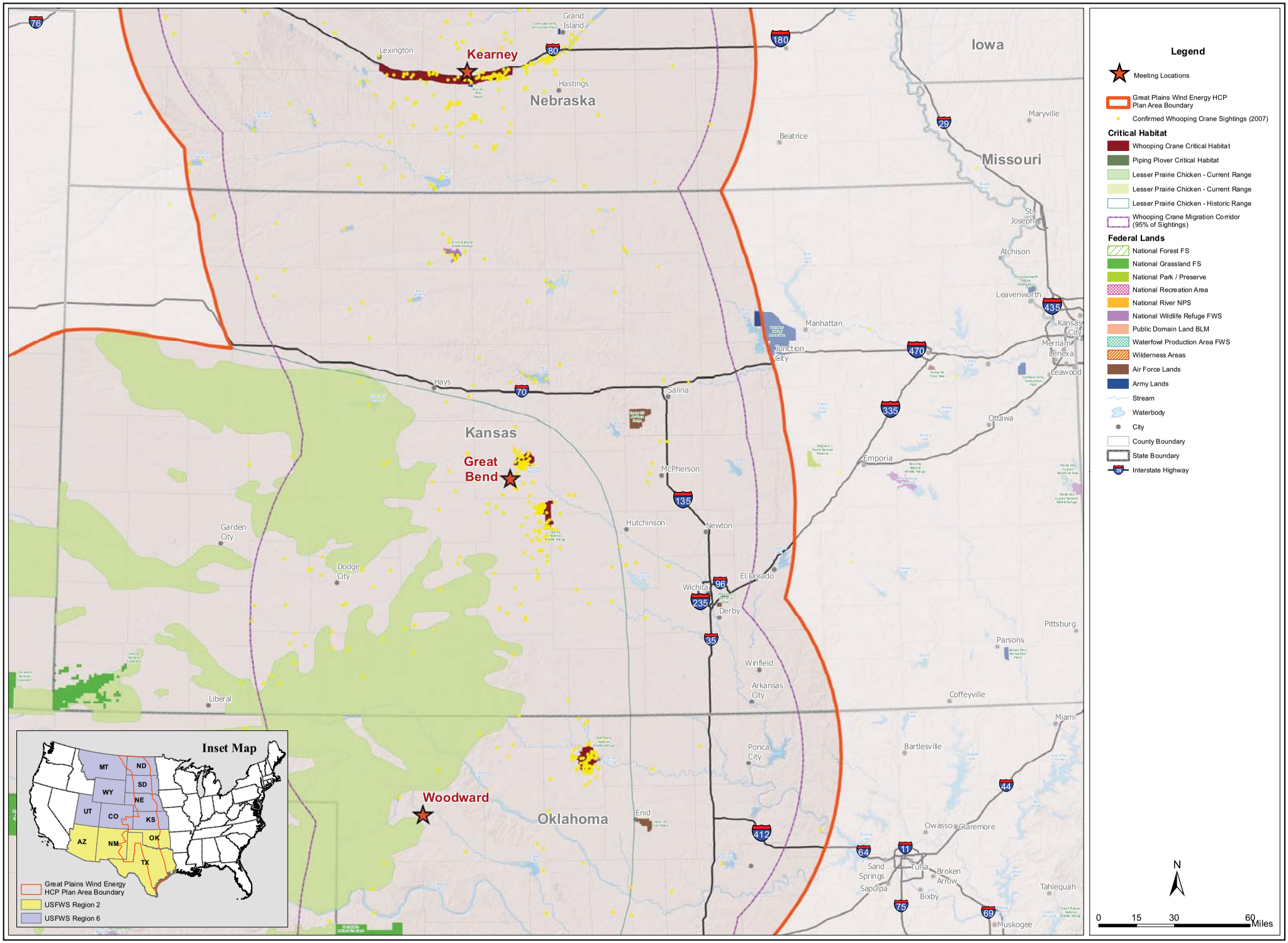
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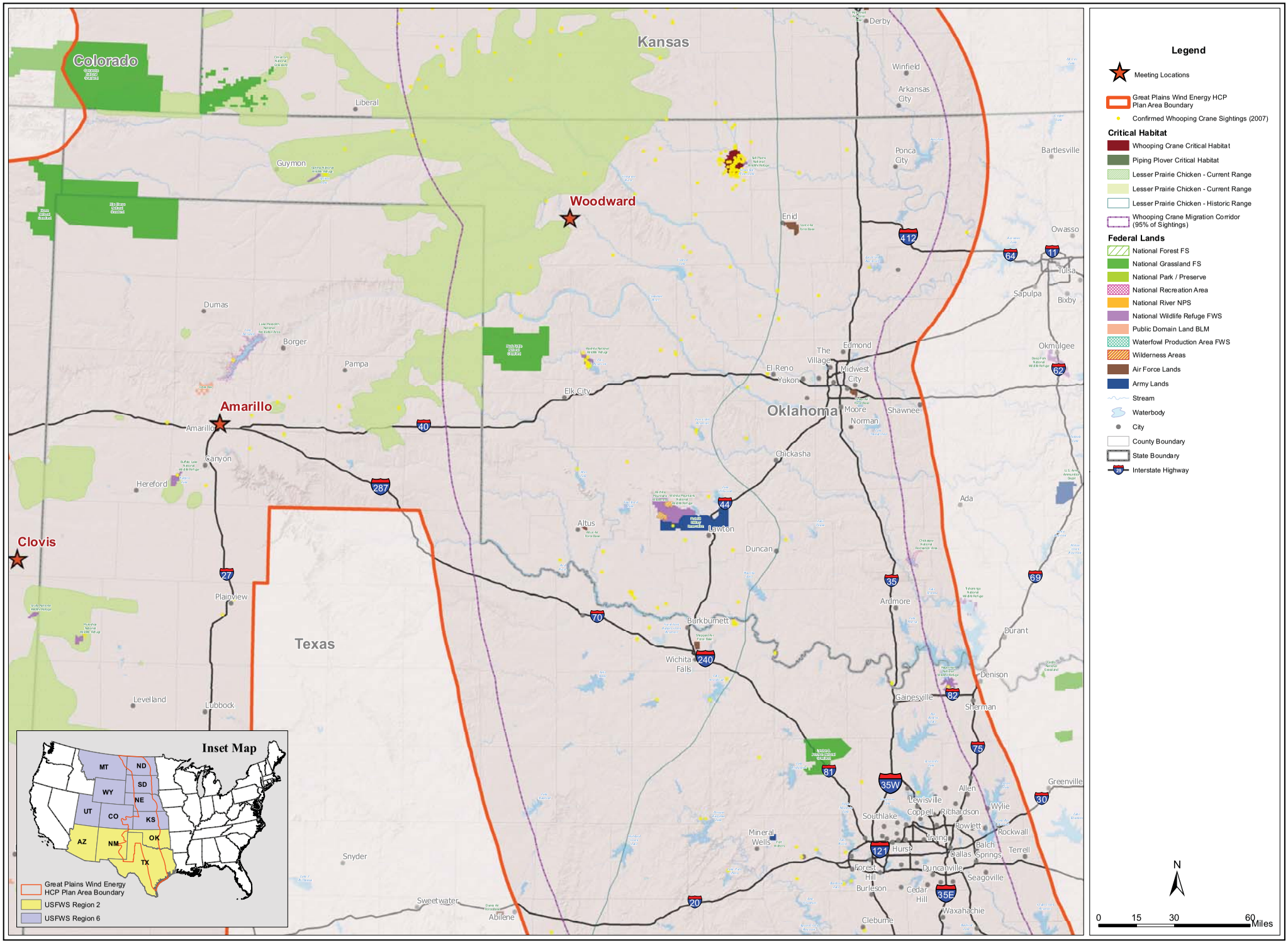
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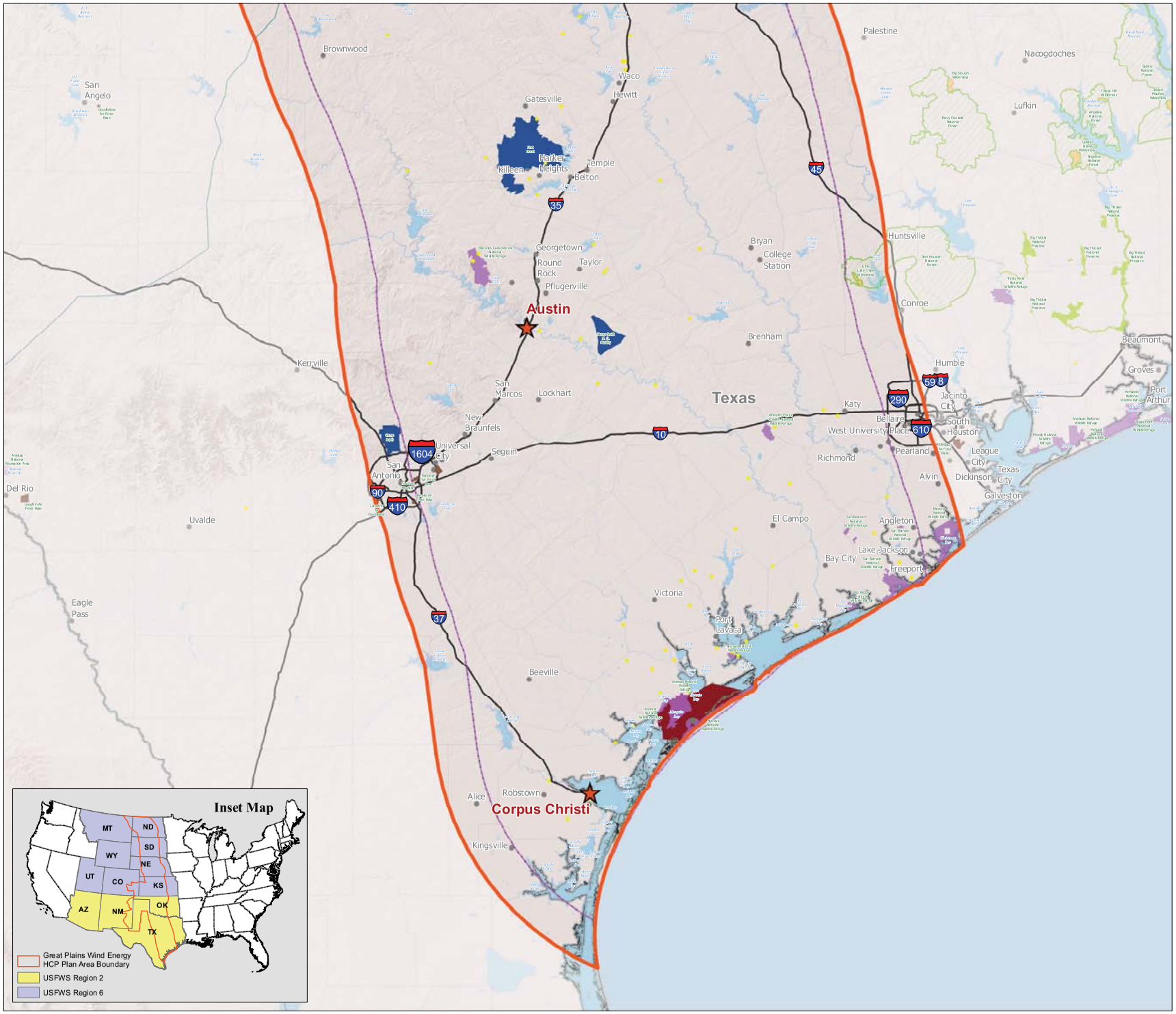
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Great Plains Wind Energy HCP Plan Area Boundary
Confirmed Whooping Crane Sightings (2007)
Critical Habitat
Whooping Crane Critical Habitat
Piping Plover Critical Habitat
Lesser Prairie Chicken - Current Range
Lesser Prairie Chicken - Current Range
Lesser Prairie Chicken - Historic Range
Whooping Crane Migration Corridor (95% of Sightings)
Federal Lands
National Forest FS
National Grassland FS
National Park / Preserve
National Recreation Area
National River NPS
National Wildlife Refuge FWS
Public Domain Land BLM
Waterfowl Production Area FWS
Wilderness Areas
Air Force Lands
Army Lands
Stream
Waterbody
City
County Boundary
State Boundary
Interstate Highway
N
0 15 30 60 Miles