Appendix E

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Avian and Bat Protection Plan

Campbell County Wind Farm

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1.0 Introduction and Corporate Policy

Dakota Plains Energy (Dakota Plains) is planning to develop a wind energy facility in Campbell County, South Dakota (Campbell County Wind Farm (CCWF, Project). The proposed CCWF is located on private land in north-central South Dakota. Wenck Associates, Inc. (Wenck) was contracted by Fagen Engineering to conduct a variety of wildlife surveys associated with building and/or operating the proposed facility, and to write this Avian and Bat Protection Plan (ABPP).

Dakota Plains is committed to its responsibility to be a good steward of the environment and to adhere to federal, state, and local laws and ordinances. Dakota Plains' wind project policy calls for wind projects to be designed, constructed, and operated in an environmentally sensitive manner and, either avoid or minimize potential avian and bat impacts. Dakota Plains understands that even with diligent design, construction and operation activities, avian and bat fatalities may occur, including species that are protected under federal and state laws. As part of this commitment, Dakota Plains has developed an ABPP for the CCWF. The development and application of this ABPP will ensure that:

- All Project-related actions comply with federal and state regulations;
- All Project-related actions comply with permit conditions;
- Project-specific species concerns are included in the ABPP, including avoidance and minimization measures;
- Public and private organizations are included in programs and research that minimize detrimental effects of bird and bat interactions with wind projects.
- The procedures described in this ABPP are followed;
- The Dakota Plains' staff and all relevant subcontractors will receive the appropriate training pursuant to wildlife monitoring and reporting protocols; and,
- The documentation of bird and bat injuries and fatalities may provide the basis for future modifications to the ABPP.

This ABPP continues Dakota Plains' regulatory compliance concerning bird and bat interactions with its wind projects through a proactive approach to reducing risk to birds and bats and their habitats.

1.1 PROJECT DESCRIPTION

The U.S. Department of Energy, Western Area Power Administration's Upper Great Plains Regional Office (Western) received an interconnection request for system access in South Dakota from Dakota Plains Energy. Dakota Plains proposes to develop the Campbell County Wind Farm (CCWF, or Project) located on approximately 8,000 acres (ac; 32.4 square kilometers [km^2]; 12.5 square miles [mi^2]) of private land in western Campbell County, South Dakota (**Figures 1 and 2, Site Location Map and Site Detail Map**, respectively). The Project will have a total of 49 Vestas V100 2-megawatt (MW) turbines with a nameplate of 99 MW. Additional facilities would include a meteorological (met) tower, a collection substation, a switching yard, a construction laydown area, access roads, and electrical collection systems and cabling. All

collection lines would be underground. A 230 kilovolt (kV) overhead tie line would be constructed to connect the Project substation with an existing Western transmission line.

1.2 PROJECT SITING

The Project was sited in an area offering low risk for potential environmental impacts (i.e., place turbines in areas previously disturbed through extensive agricultural cultivation, Project situated above and outside of critical habitat of protected species), a good wind resource, close to available transmission capacity and in relatively close proximity to the load center of Minneapolis-St. Paul. This region has also been previously disturbed through extensive agricultural cultivation, minimizing potential negative wildlife impact and corresponding to direction provided by the US Fish and Wildlife Service (USFWS) and many other wildlife agencies (i.e., site projects in previously disturbed areas). Further, to minimize potential negative impacts to wildlife, the Project is situated higher in elevation and outside of critical habitat of protected species who live along the shores of Lake Oahe; collection lines will be buried, length of overhead transmission line ties will be minimized, and turbines will be placed in areas near previously disturbed areas of existing roads, thus minimizing fragmentation of wildlife habitat.

1.3 PROJECT LAYOUT AND ASSOCIATED FACILITIES

1.3.1 Wind Farm Construction Activities

Dakota Plain's proposed Project is anticipated to have a nameplate capacity of approximately 99 MW consisting of 49 Vestas V100 2.0 MW wind turbine generators. Additional facilities include a meteorological (met) tower, a Project collection substation, construction laydown area, access roads, and electrical collection systems with underground cabling. Overhead transmission would be limited to the approximately 1,320 feet of 230-kV overhead tie line to connect the proposed Project substation with an existing transmission line.

Several activities would need to be completed prior to the proposed commercial production date. The majority of the activity would relate to equipment ordering lead-time, as well as design and construction of the facility. Below is a preliminary chronological list of activities necessary to develop the proposed Project. Pre-construction, construction, and post-construction activities for the proposed Project would include:

- Ordering of all necessary components including towers, nacelles, blades, foundations, and transformers;
- Final turbine micrositing;
- Complete survey to microsite locations of structures and roadways;
- Soil borings, testing and analysis for proper foundation design and materials;
- Complete construction of access roads, to be used for construction and maintenance;
- Trenching of underground collection lines;
- Design and construction of the Project substation and 230-kV tie line;
- Design and construction of Western's substation and switching yard
- Installation of tower foundations;
- Installation of underground and aboveground cables and 230-kV tie line;
- Tower placement and wind turbine setting;
- Acceptance testing of facility; and
- Commencement of commercial production date.

The Project area encompasses approximately 12.5 square miles (8,000 acres) south of Pollock, and approximately 8 miles west of Herreid, South Dakota (**Figure 1, Site Location Map**). The proposed Project consists of an array of wind turbines, each with its associated transformer. The Project consists of up to 49 2.0-MW turbines. Each turbine generator will have a hub height of 262 feet and be up to 423 feet tall from the base of the tower to the tip of the upright blade. Turbines would begin operation at wind speeds of 3.0 meters per second (m/s, or 6.7 miles per hour [mph]) and reach their rated capacity (2.0 MW) at a wind speed of 12 m/s (26.8 mph).

The turbines would be connected to the Operations and Maintenance (O&M) facility by an underground fiber optic communication cable and to the collection substation by a power collection cable network. The Project layout includes approximately 24 miles of collection lines connecting turbine arrays to the collector substation located in the southeast corner of the Project area.

Turbine access roads would be built adjacent to the towers, allowing access to the turbines during and after construction. The proposed Project would include approximately 12 linear miles of new service roads. Service roads will be aggregate-surfaced and up to 16 feet wide. Temporary roads required to support crane access to turbines during operation would remain up to 40 feet wide; the Project also includes turbine access roads built 12 feet wide. The specific turbine placement would determine the extent of access roadway that would need to be constructed for the Project.

The collector substation would be connected to the Western Substation Line via approximately 1,320 feet of 230-kV overhead tie line. The Western Substation would be located between towers 79/4 and 80/1 on Western's existing 230 kV line.

A permanent met tower is proposed for the Project. The proposed met tower would be 80 meters (164 feet) high when installed. The tower pole would be 8–10 inches wide and would be secured with several guy wires anchored up to 165 feet away. The guy wires would be marked with diverter balls (for aircraft), which also serve as bird diverters.

During the construction phase, several types of light, medium and heavy-duty construction vehicles would travel to and from the site, as well as private vehicles used by construction personnel. Dakota Plains estimates that there would be approximately 50 additional trips per day in the area during peak construction periods. That volume would occur during the peak time when the majority of the road, foundation and tower assembly are taking place. At the completion of each construction phase this equipment would be removed from the site or reduced in number.

Construction is scheduled to begin in December 2013. Dakota Plains would anticipate testing and operation to begin in late fall of 2014, and commercial operation of the Project to begin producing energy by the end of 2014.

1.3.2 Operations and Maintenance

Once the wind farm is commercially operational, a crew consisting of two to five personnel will service and maintain the wind turbine generators. The primary responsibility of the operations crew is to perform troubleshooting and preventative maintenance. Service crews, consisting of two to three people, troubleshoot non-operational wind turbine generators. Depending on the

complexity of the issue, troubleshooting may require a few minutes or several days. Preventative maintenance will be conducted throughout the wind turbine generator lifespan at intervals of six months to a year.

1.4 REGULATORY FRAMEWORK AND SUMMARY OF AGENCY CONSULTATIONS

Avian, bat and raptor surveys were begun voluntarily at the beginning of the permitting process. All pre-construction avian and bat survey results were submitted to the USFWS and South Dakota Game, Fish and Parks Department (SDGFP). A Biological Assessment has recently been submitted and is awaiting concurrence.

This ABPP was ordered from Western as part of the permitting process for the Project. Specifically, Western's biologist stated "A completed ABPP was needed prior to a formal consultation" in an email to the applicant.

1.5 KEY AVIAN AND BAT REGULATIONS

1.5.1 Federal Endangered Species Act

The federal Endangered Species Act (ESA 1973) defines and lists species as "endangered" and "threatened" and provides regulatory protection for the listed species. The federal ESA provides a program for conservation and recovery of threatened and endangered species; it also ensures the conservation of designated critical habitat that the USFWS has determined is required for the survival and recovery of these listed species. Section 9 of the federal ESA prohibits the take of species listed by USFWS as threatened or endangered. Take is defined as follows: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." In recognition that take cannot always be avoided, Section 10(a) of the federal ESA includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Section 10(a)(1)(B) permits (Incidental Take Permits) may be issued if take is incidental and does not jeopardize the survival and recovery of the species.

Section 7(a)(2) of the federal ESA requires that all federal agencies, including the USFWS, evaluate projects with respect to any species proposed for listing or already listed as endangered or threatened and any proposed or designated critical habitat for the species. Federal agencies are prohibited from authorizing, funding, or carrying out any action that will jeopardize the continued existence of a listed species or destroy or modify its critical habitat. As defined in the federal ESA, individuals, organizations, states, local governments, and other non-federal entities are affected by the designation of critical habitat only if their actions occur on federal lands; require a federal permit, license, or other authorization, or involve federal funding (ESA 1973).

1.5.2 Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act of 1940 (BGEPA; 16 USC 668–668c, as amended) is administered by the USFWS and was enacted to protect bald and golden eagles, their nests, eggs, and parts (e.g., feathers or talons). The BGEPA states that no person shall take, possess, sell, purchase, barter, offer for sale, purchase or barter, transport, export, or import any bald or golden eagle alive or dead, or any part, nest or egg without a valid permit to do so (USFWS, n.d). The BGEPA also prohibits the take of bald and golden eagles unless

pursuant to regulations. Take is defined by the BGEPA as an action "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." Disturb is defined in the BGEPA as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (USFWS, n.d.). In addition to immediate impacts, this definition also covers impacts that result from human-caused alterations initiated around a previously used nest site during a time when eagles were not present. Permits are issued to Native Americans to possess eagle feathers for religious purposes, and salvaged eagle carcasses can be sent to the National Eagle Repository in Colorado where they are redistributed to Native Americans. This effort is coordinated by a local USFWS office. Although the bald eagle was removed from the Endangered Species List in June 2007, it is still federally protected under the BGEPA and Migratory Bird Treaty Act as described in the following section. In addition, the *National Bald Eagle Management Guidelines* were published in conjunction with delisting by the USFWS in May 2007 to provide provisions to continue to protect bald eagles from harmful actions and impacts.

Under the BGEPA, a final rule was published in May 2008, in the Federal Register (FR) that proposed authorization for take of bald eagles for those with existing authorization under the federal ESA where the bald eagle is covered in a Habitat Conservation Plan (HCP) or the golden eagle is covered as a non-listed species. The final rule also established a new permit category to provide expedited permits to entities authorized to take bald eagles through Section 7 incidental take permits. A proposed rule will later address authorization of take of (1) disturbance-type take of bald and golden eagles due to otherwise lawful activities and (2) eagle nests in rare cases where their location poses a risk to human safety or the eagles themselves.

In 2009, the USFWS issued a final rule on new permit regulations that would allow some disturbance of eagles "in the course of conducting lawful activities" (74 FR 46836–46879). USFWS's description of its 2009 rule suggests that physical take of an eagle will only be authorized if every avoidance measure has been exhausted. Removal of nests will still generally be permitted only in cases where the nest poses a threat to human health, or where the removal would protect eagles. Explanations of the rule on USFWS's website specify that take permits may be issued when "necessary for the protection of…other interests in any particular locality" (USFWS 2009). The discussion expands the definition of such public and private interests to include utility infrastructure development and maintenance. The website states that due to concerns about population declines, permits for take of golden eagles are likely to be restricted throughout the eagle's range (USFWS 2009). Considerations for issuing take permits include the health of the local and regional eagle populations, availability of suitable nesting and foraging habitat for any displaced eagles, and whether the take and associated mitigation provides a net benefit to eagles (74 FR 46836–46879, USFWS 2009). In April 2013, USFWS issued *Eagle Conservation Plan Guidance Module 1: Land-based Wind Energy (Version 2)* to address these new regulatory matters (USFWS 2013).

1.5.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, capture, kill, or possess any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and Russia (and other countries of the

former Soviet Union). Most birds (outside of introduced species and non-migratory game birds) within the US and the Project area are protected under the MBTA. The birds, occupied nests and the contents of the nest (eggs or chicks) within the Project property are afforded protection pursuant to the MBTA. Unlike ESA and BGEPA, no permits are available to authorize incidental take of birds under the MBTA. Due to the potential for resident and migratory birds within the Project, development of this ABPP was done to assist in complying with the MBTA.

1.5.4 State Threatened and Endangered Species Laws

According to several laws and regulations written by the South Dakota Legislature (2013), the SDGFP shall conduct investigation on nongame, endangered, or threatened wildlife to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary to ensure their perpetuation as viable components of their ecosystem and for human enjoyment. The SDGFP shall promulgate a list of those species of wildlife which are determined to be endangered or threatened within the state. The SDGFP shall make these determinations on the basis of the best scientific, commercial, and other data available to them and after consultation, as appropriate, with federal agencies, other interested state agencies, other states having a common interest in the species and interested persons and organizations. The SDGFP and the Department of Agriculture shall perform those acts necessary for the conservation, management, protection, restoration, and propagation of endangered, threatened, and nongame species of wildlife. No person may take, possess, transport, import, export, process, sell, or offer for sale, buy, or offer to buy, nor may a common or contract carrier transport or receive for shipment, any species of wildlife or plants appearing on the following lists: The list of wildlife and plants indigenous to the state determined to be endangered or threatened within the state, The US list of endangered or threatened native wildlife, The US list of endangered or threatened foreign wildlife, and The US list of endangered or threatened plants.

No bat species are listed on the threatened, endangered, and candidate species of South Dakota (SDGFP 2012). Several bird species are listed on the threatened, endangered, and candidate species list (SDGFP 2012). These species include the American dipper (*Cinclus mexicanus*, State Threatened), bald eagle (*Haliaeetus leucocephalus*, State Threatened), Eskimo curlew (*Numenius borealis*, Federal and State Endangered), Interior least tern (*Sterna antillarum athalassos*, Federal and State Endangered), osprey (*Pandion haliaetus*, State Threatened), peregrine falcon (*Falco peregrinus*, State Endangered), piping plover (*Charadrius melodus*, Federal and State Threatened), whooping crane (*Grus americana*, Federal and State Endangered), greater sage grouse (*Centrocercus urophasianus*, Federal Candidate), and Sprague's pipit (*Anthus spragueii*, Federal Candidate).

2.0 Pre-Construction Site Specific Wildlife Surveys and Risk Assessments

2.1 VEGETATION TYPES

The Project area studied for avian use, raptor nests, bat use is approximately 8,000 acres (**Figure 2, Site Detail Map**). The Project lies within two Level IV Ecoregions, Southern Missouri Coteau Slope and River Breaks (Bryce et al. 1996). The Southern Missouri Coteau Slope ecoregion differs from the Missouri Coteau Slope to the north; it has mesic soils rather than frigid soils and a substantial cap of rock-free loess. To the south, the coteau areas east of the Coteau Slope ecoregions become progressively narrower and more eroded. The levels to rolling uplands of the Southern Missouri Coteau Slope are planted in sunflowers, wheat, millet, and barley. Corn is a marginal crop that does well in wet years. The stream drainages tend to be grazed. Willows, green ash, and elm grow in the riparian areas. The River Breaks ecoregion form broken terraces and uplands that descend to the Missouri River and its major tributaries. They have formed particularly in soft, easily erodible strata, such as Pierre shale. The dissected topography, wooded draws, and uncultivated areas provide a haven for wildlife. Riparian gallery forests of cottonwood and green ash persist along major tributaries such as the Moreau and Cheyenne rivers, but they have largely been eliminated along the Missouri River by impoundments.

The approximately 8,000 acre CCWF is dominated by grassland and agricultural habitats (USDA 2008). See **Table 1, Vegetation Cover Types with the Campbell County Wind Farm and Figure 3, Land Cover Map**.

Table 1. Vegetation Cover Types within the Campbell County Wind Farm.

Land Cover Class	Area (acres)	Percent (%) of Project Area
Agriculture	2,890	36.13%
Forest	17	0.21%
Grassland	4,718	58.99%
Urban/Developed	359	4.49%
Wetlands	14	0.18%
Total	**7,998**	**100.00%**

Source: US Department of Agricultural Statistical Service (NASS) 2008 data coverage for landcover types.

2.2 AVIAN USE SURVEYS

Wenck Associates, Inc. was contracted by Fagen Engineering, LLC to conduct several avian and bat studies. The data from these studies were used to identify species, species groups or species of concern that are present in the project area and that may be at a higher risk of mortality and/or displacement. Passerine species have been the most abundant bird fatality at wind energy facilities outside California (Erickson et al. 2001 and Erickson et al. 2002), often comprising more than 80% of the bird fatalities. Both migrant and resident passerine fatalities

have been observed (Erickson et al. 2001 and Erickson et al. 2002). Data are presented in several categories, and highlight federally listed species, state listed species, and species of concern (See **Avian Surveys-Campbell County Wind Farm 2010 and 2012**, available at Fagen Engineering).

2.2.1 Diurnal Fixed-Point and Incidental Avian Use

Avian surveys focus on inventory and monitoring with specific objectives that include: 1) an inventory of bird species in a specific project area; 2) determining the relative abundance of species; and 3) monitoring seasonal changes in species composition and relative abundance (Whitworth et al. 2007). Diurnal fixed-point surveys are one of the most common methods used to determine avian composition and abundance. Point counts not only focus on visual cues but also on auditory cues to give the observer an advantage in rough terrain. For some species, vocal cues may be the only reliable means of detection (Whitworth et al. 2007).

Avian point count surveys were conducted weekly in the Spring 2010 (March 31-June 20) and Fall 2010 (August 17-November 2); and Winter 2011-2012 (December 2011 to February 2012), Spring 2012 (March 2012 to June 2012) and Fall 2012 (August 2012 to November 2012).

Survey data was used to evaluate avian use, behavior, and species composition during Spring and Fall migration and to determine Summer resident species at the CCWF.

Point counts were selected to capture a diverse range of habitats and at locations with the best possible viewshed. Sixteen PC locations were utilized in 2010 and seven were utilized in 2012 (**Figures 4 and 5, 2010 Project Area and Point Count Locations and 2012 Project Area and Point Count Locations**, respectively).

All observations within an 800-meter radius at each point count were recorded; any observations outside the 800-meter radius were considered incidental. Each PC survey lasted for 20 minutes; all audio and visual observations were recorded. Surveys were conducted by an experience ornithologist. Surveys were rotated to cover all daylight hours to ensure each PC was surveyed at various times of the day. Data recorded for each observation included species, number of individuals, time, height above ground, behavior, and flight direction. A range finder and topographic maps were used as references to determine bird distances to the observer and flight heights. Birds not easily identifiable due to low light conditions and distance were identified to the lowest taxonomic level possible.

Twenty-minute survey periods provide adequate time to detect both raptors and non-raptors. Double counting may occur during the 20-minute survey because individuals may appear and disappear from view. Double-counting of birds is not problematic for this type of survey because the objective is to document use in terms of number of birds noted per 20-minute survey, not number of distinct individual birds.

The ability to detect all species within the 800-meter survey radius varies among species and potentially not all individuals within the survey area are counted. This variation in detectability results in an overestimate of mean use in conspicuous species and an underestimate of mean use in reclusive species (Thompson 2002).

Incidental avian surveys are used to obtain bird distribution and composition information between point count locations. Larger birds, such as game birds, raptors, and waterfowl, large

flocks of smaller birds, and birds that are a rarity in the area are typically recorded during incidental surveys.

Incidental observations included observations that occurred while traveling between PC locations, pre-and post-PC survey time period, and outside the 800-meter radius circular plot. These observations were recorded but not used in the formal analysis.

Flight behavior was evaluated by calculating the proportion of flying birds that were observed flying below, within, or above the turbine RSA. Fagen Engineering is proposing turbines with a hub height of 80 meters with a 77 meter diameter RSA. Therefore, an RSA between 41.5 and 118.5 meters above the ground was used.

The encounter rate is the rate in which a species was observed flying through the RSA during the avian point count surveys at the CCWF project area and suggests potential mortality risk from flight behavior.

To estimate the rate at which a species flies through the RSA, the following equation was applied to every species observed in the CCWF:
Encounter Rate = A*P*f*P*t*

- A is the mean use of birds/20 minutes for a given species
- P*f* is the proportion of all activity observations for a given species that were flying
- P*t* is the proportion of flying observations that were within the turbine RSA

The encounter rate index is relative to the observations of species during the surveys and within the study area and cannot be extrapolated to the species that may use the CCWF in the future. The encounter rate index from this study does not take into consideration behavior (e.g. foraging, courtship), habitat use, and turbine avoidance differences between species.

Raptor Use and Encounter Rate – 2010

During the Spring 2010 survey, 135 individual raptors were observed for a mean use of 0.70 raptors/20 min, compared to the Fall 2010 survey where 77 raptor observations were made for a mean use of 0.40 raptors/20 min.

The raptor annual mean use rate at CCWF of 0.55 raptors/20 min (combining Spring and Fall values) was compared with 37 other wind energy facilities that implemented similar protocols. The raptor annual mean use at these wind-energy facilities ranged from 0.09 to 2.34 raptors/20 min survey. Based on the results from these wind energy facilities, as summarized by Derby et al. 2010, a ranking of seasonal raptor mean use was developed: low (0-0.5 raptors/20 min. survey); low to moderate (0.5-1.0 raptors/20 min); moderate (1.0-2.0 raptors/20 min); high (2.0-3.0 raptors/20 min); and very high (> 3.0 raptors/20 min). Under this ranking, mean raptor use at the CCWF is considered to be low to moderate. The annual raptor use at CCWF would rank 11th compared to 37 other wind-energy facilities (Derby et al. 2010).

Raptor encounter rates of 0.29 individuals flying within the RSA/20 min during the Spring 2010 survey and 0.21 individuals flying within the RSA/20 min during the Fall 2010 survey was low at CCWF. Fifty-three (53) percent of all raptor observations were within the RSA. The Spring and Fall 2010 surveys altogether, had an annual raptor encounter rate of 0.25 flying within the RSA/20 min. The highest raptor encounter rate was red-tailed hawk with 0.16 individuals (Spring) flying within the RSA/20 min. Turkey vultures were second with an encounter rate of

0.05 individuals (Spring and Fall) flying within the RSA/20 min. The Spring and Fall and annual raptor encounter rate calculated is relatively low, however the percentage of raptor observations within the RSA during the spring and fall surveys and the low to moderate annual mean use rate (raptors/20 minutes) shows potential for mortality at CCWF.

High numbers of raptor fatalities have been documented at wind-energy facilities (e.g. Alamont Pass), however other studies at wind-energy facilities in the United States suggest that 3.2% of the total casualties were raptors (Erickson et al. 2001). Results from Alamont Pass in California suggest that species mortality is not all related to abundance (Orloff and Flanery 1992). Golden eagles, red-tailed hawks and American kestrels were casualties more often than predicted based on abundance. Based on species occurrence/abundance within CCWF, red-tailed hawk and turkey vultures may constitute the highest proportion of raptor fatalities at CCWF.

At CCWF, the raptor species with the highest encounter rate indices were red-tailed hawk and turkey vulture.

Non-raptor Use and Encounter Rate – 2010

Passerines make up a large proportion of the birds observed during the Spring and Fall 2010 avian surveys at CCWF and would be expected to make up the largest proportion of fatalities at the CCWF. Encounter rate indices for both spring and fall PC surveys indicate that unidentified blackbirds and Franklin's gulls are likely to be exposed to collisions from wind turbines at CCWF. There were other passerine and waterfowl species that flew through the RSA during Spring and Fall PC surveys, but encounter rates are not high enough to warrant significant collision exposure.

Raptor Use and Encounter Rate – 2012

Avian point count (PC) surveys were conducted in Winter 2011-2012 (December 2011 to February 2012), Spring 2012 (March 2012 to June 2012) and Fall 2012 (August 2012 to November 2012) to capture migrating and resident species at the CCWF. Diurnal fixed-point count surveys were conducted at seven circular plots.

During the Winter 2011-2012 survey, 18 individual raptors were observed for a mean use of 0.43 raptors/20 min; during the Spring 2012 survey 86 individual raptors were observed for a mean use of 0.95 raptors/20 min; and during the Fall 2012 survey 56 individual raptor observations were made for a mean use of 0.62 raptors/20 min.

The overall raptor mean use rate at the CCWF was 0.71 raptors/20 min (Winter 2011-2012, Spring 2012 and Fall 2012). This rate was compared to a study of 37 other wind energy facilities that implemented similar protocols. The raptor annual mean use at these wind-energy facilities ranged from 0.09 to 2.34 raptors/20 min survey. Based on the results from these wind energy facilities, as summarized by Derby et al. (2010), a ranking of seasonal raptor mean use was developed: low (0-0.5 raptors/20 min. survey); low to moderate (0.5-1.0 raptors/20 min); moderate (1.0-2.0 raptors/20 min); high (2.0-3.0 raptors/20 min); and very high (> 3.0 raptors/20 min). Under this ranking, mean raptor use at the CCWF is considered to be low to moderate.

Encounter rate analysis may also suggest which species may be at risk to become turbine casualties. The encounter rate is an index and only considers probability of exposure based on

abundance, number of individuals flying, and flight height of each species within the rotor sweet area (RSA) for turbines to be used at the wind-energy facility.

Raptor encounter rates at the CCWF are considered low, with 0.07 individuals flying within the RSA/20 min during the Winter 2011-2012 survey, 0.00 individuals flying within the RSA/20 min during the Spring 2012 survey and 0.04 individuals flying within the RSA/20 min during the Spring 2012 survey. Approximately 6.4 percent of all raptor observations were within the RSA. The highest raptor encounter rate was golden eagle with 0.05 individuals flying within the RSA/20 min during the Winter 2011-2012 survey. Red-tailed hawk was second with an encounter rate of 0.04 individuals flying within the RSA/20 min during the Fall 2012 survey. The Winter 2011-2012, Spring 2012, Fall 2012 and annual raptor encounter rate is relatively low, and the percentage of raptor observations within the RSA during the surveys and the low to moderate annual mean use rate (raptors/20 minutes) indicates a low potential for mortality at the CCWF.

Golden eagles, red-tailed hawks and American kestrels were casualties more often than predicted based on abundance. Based on species occurrence/abundance within the CCWF, golden eagles and red-tailed hawks may constitute the highest proportion of potential raptor fatalities.

Few raptor species that have been identified as nesting at wind energy facilities have been observed as fatalities at wind energy facilities (Derby et al. 2010); therefore, the relationship is low between the number of collision fatalities and raptor nests within or near project facilities. However, it is assumed that raptors nesting close to turbines would likely have a greater chance of being impacted from collision with turbines, though the data is not available at this time to determine the impact (Derby et al. 2010).

Non-raptor Use and Encounter Rate – 2012

Passerines make up a large proportion of the birds observed during the avian surveys at the CCWF and would be expected to make up the largest proportion of fatalities. Encounter rate indices for both Winter 2011-2012 and Spring 2012 PC surveys indicate that the Lapland longspur is likely to be exposed to collisions from wind turbines at the CCWF. There were other species that flew through the RSA during the PC surveys, but encounter rates were not high enough to warrant significant collision exposure.

Sensitive Species

A total of 11 sensitive species were recorded during the Spring and Fall 2010 PC and incidental surveys. This included a state endangered species, peregrine falcon (*Falco peregrinis;* one individual), and a state threatened species, bald eagle (one individual). Nine (9) state sensitive species were also observed at the CCWF, bobolink (*Dolichonyx orysivorus;*199 individuals), marbled godwit (*Limosa fedoa;* 23 individuals), Swainson's hawk (11 individuals), burrowing owl (nine individuals), dicksissel (*Spiza americana;* six individuals), golden eagle (three individuals), Loggerhead shrike (*Lanius ludovicianus;* two individuals), and long-billed curlew (*Numenius americanus;* two individuals).

A total of 12 sensitive avian species of concern for South Dakota were recorded during the Winter 2011-2012, Spring 2012 and Fall 2012 PC and incidental surveys. This included the great blue heron (*Ardea herodias*) (12 individuals), bufflehead (*Bucephala albeola*) (8 individuals),

hooded merganser (*Lophodytes cucullatus*) (1 individual), bald eagle (*Haliaeetus leucocephalus*) (2 individuals), sharp-shinned hawk (*Accipiter striatus*) (1 individual), Cooper's hawk (*Accipiter cooperii*) (2 individuals), broad-winged hawk (*Buteo platypterus*) (3 individuals), Swainson's hawk (*Buteo swainsoni*) (19 individuals), Ferruginous hawk (*Buteo regalis*) (8 individuals), golden eagle (*Aquila chrysaetos*) (5 individuals), merlin (*Falco columbarius*) (2 individuals) and prairie falcon (*Falco mexicanus*) (2 individuals).

2.2.2 Raptor Nest Surveys

Raptors spend much of their time hunting and soaring within elevation ranges that correspond to the wind turbine rotor-sweep-area (RSA), making them susceptible to turbine blades (Erickson et al. 2002). Because raptors are long-lived species with low reproduction rates, potential population impacts from collision-related mortality are of concern (Erickson et al. 2002). Although specific studies are lacking, adults and recently fledged young could be at particular risk of collision with turbines because of their higher use of areas near nest sites. Adult raptors often fly near nest sites during the breeding season to attend to young and deliver prey. After young raptors fledge, fledglings often spend significant amounts of time flying and roosting near nest locations until they become capable flyers and hunters. Additionally, construction activities near active nests during the breeding season may potentially result in disturbance or abandonment of nest sites.

Few raptor species that have been identified as nesting at wind energy facilities have been observed as fatalities at wind-energy facilities (Derby et al. 2010), therefore, the relationship is very low between the number of collision fatalities and raptor nests within or near project facilities. However, it is assumed that raptors nesting close to turbines would likely have a greater chance of being impacted from collision with turbines, but the data is not available at this time to determine the impact (Derby et al. 2010).

A raptor nest survey was conducted to locate raptor nests and determine nest activity status and the species using those nests. The initial surveys were conducted in early April 2010 and 2012, before trees leafed out, to locate nests and to identify early breeding species. The project area and a 1-mile buffer area were surveyed from a vehicle using binoculars and spotting scopes. All raptor nest locations were documented with Global Positioning System (GPS) coordinates. Raptor species, height of nest, nest activity status, nest condition, substrate, and other relevant data were recorded for each nest. An additional visit was conducted in May 2012 to document the activity status of nests located during the initial survey and to identify nesting attempts by late nesting raptors such as Swainson's hawks. Raptors may use nests intermittently among years as well as re-nest after a nest failure; therefore, early and late-season nest surveys allow for a more accurate summary of breeding raptors.

Seventeen (17) raptor nests were observed and mapped within CCWF in 2010. Fifteen of the nests were red-tailed hawk (eleven active, four inactive), one unknown (inactive) and one active Swainson's hawk nest. Eleven raptor nests were located within the survey area in 2012. Two species of nesting raptors were identified: red-tailed hawk and Swainson's hawk. Nesting substrates were limited to trees or bushes associated with unoccupied and occupied farm yards. No cliff or bluff nesting substrate exists in the survey area. Prey base habitat appeared limited because of the fragmented landscape which consists mostly of agricultural land.

Raptor nest density within CCWF and within one mile of the boundary of CCWF was 0.54 nests per square mile during the 2010 surveys. Raptor nest density within the CCWF and within one mile of the project boundary was one nest per 4.0 square miles during the 2012 surveys.

2.2.3 Sharp-tailed Grouse Lek Surveys

The sharp-tailed grouse inhabits steppe, grassland and mixed grass habitats. Sharp-tailed grouse require grasslands with residual cover for nesting and utilize agricultural areas seasonally for food. Males congregate on communal display grounds called leks, which are often located on a knoll or ridge, beginning in early spring and extending into June. Sharp-tailed grouse serve as indicators of grassland ecosystem health and provide recreational and aesthetic value.

Native prairie is used by sharp-tailed grouse for seasonal habitat needs such as lekking, nesting, brood rearing, and wintering. The area surrounding the lek site contains habitat for reproduction and year round survival of sharp-tailed grouse. Loss of native prairie may affect the availability of habitat for grouse lekking and reproduction. Concerns that sharp-tailed grouse may avoid nesting near human-made structures have heightened this issue for siting wind farms (Pittman et al. 2005). Establishing new roads in areas of native prairie increases habitat fragmentation and could provide better access for nesting predators such as skunks, raccoons, coyotes and feral cats. These animals are predators of sharp-tailed grouse nests and reproductive success could be reduced if native prairie areas are more accessible to predators.

Sharp-tailed grouse surveys were conducted in early April through early May 2010 and 2012, from ½-hour before sunrise to two hours after sunrise. Peak attendance by females on leks typically occurs from April 15 to 25, but these dates vary by up to a week depending on weather conditions (Schroeder and Robb 1993). Listening stops were made throughout the project area and within 1-mile from the project boundary to identify lek locations. Sharp-tailed grouse males may be heard at a distance of up to 0.5 mile. Listening stops were not conducted if winds exceeded 10 miles per hour (mph) or during precipitation events. After a lek was located, the birds were observed and the number of males and females were counted. Lek locations were documented using Global Positioning System (GPS) coordinates. Given the sensitive nature of this species, and the fact that females may be nesting near the lek, disturbance to breeding prairie grouse was kept to a minimum.

Three known sharp-tailed grouse leks were located within the surrounding area in 2010 and 2012; none of these leks were located within the project area (**Figures 6 and 7, 2010 Raptor Nest and Sharp-tailed Grouse Lek Locations and 2012 Raptor Nest and Sharp-tailed Grouse Lek Locations**, respectively).

2.2.4 Whooping Crane Surveys

The whooping crane (*Grus americana*) is a federally listed endangered species. Whooping crane injury or death caused by any wind energy project would be considered “take” under the Endangered Species Act. Avoidance of habitat by the cranes due to the construction and operation of turbines can be considered habitat loss and “take” under ESA.

It is unknown how whooping cranes would respond to the presence of wind turbines. Avoidance of wind farms by whooping cranes may reduce the probability of collision, but could amount to loss of stopover habitat. The construction and operation of wind turbines could

result in direct mortality from collision with the turbines or by avoidance of habitat in areas where turbines are located.

Power lines located in the vicinity of foraging or roosting habitat pose a threat to whooping cranes due to individual birds often flying at low altitudes (33 to 49 feet above ground) when moving among foraging and roosting sites (Canadian Wildlife Service and United States Fish and Wildlife Service 2005, Stehn and Wassenich 2006). Since 1956, at least 46 whooping cranes have been killed or seriously injured as a result of collisions with power lines (Stehn and Wassenich 2006).

The U.S. Fish & Wildlife Service (USFWS) has expressed concern over potential impacts to whooping cranes. The whooping crane migrates through South Dakota during spring and fall, within a corridor that is roughly 200-miles wide; the CCWF falls within the center of the corridor where 75% of South Dakota's whooping crane reported sittings have been recorded (**Figure 8, Whooping Crane Migration Corridor**).

Whooping crane stopover habitat in South Dakota is variable, but can be described as wetlands (roosting areas) that are greater than ¼ acre in size with water depths in the range of five to eight inches with minimal surrounding vegetation. Harvested cereal grain fields in close proximity to wetlands are used for foraging by whooping cranes; however cranes will also forage in wetlands and other crops such as alfalfa. See the "Avian Survey-Campbell County Wind Farm" submitted January of 2011 for the whooping crane attractiveness of the Campbell County Wind Farm and surrounding area.

The probability of whooping crane collisions with turbines on the CCWF is unknown. However, the sporadic nature of stopovers within the 2,500 mile long by 200-mile wide migration corridor, and the small size of the proposed CCWF, the probability of whooping crane collisions is presumed to be low.

Sandhill/Whooping crane surveys were conducted between early April and the end of April 2010 and again from early October to early November 2010 and between early April and late April 2012 and again from early October to early November 2012, when the highest numbers of cranes are expected to occur in the project area (USFWS 2007b). Sandhill/Whooping crane surveys were conducted by driving a vehicle along the roads within the project area. Stops were made at good vantage points and the biologist glassed and listened for the presence of cranes. On calm mornings sandhill cranes may be heard at a distance of 2.5 miles (Tacha et al. 1992). Each stop consisted of listening and using binoculars and/or spotting scopes to scan the surrounding terrain to visually identify sandhill and/or whooping cranes. Listening stops were conducted at, but not limited to, established avian point count locations. Stops were not conducted during excessively harsh weather conditions.

No whooping cranes were observed during the study, however several groups of sandhill cranes were observed during the Spring and Fall PC surveys.

2.3 ACOUSTIC BAT SURVEYS

Eco-Tech Consultants, Inc. (ETC) initiated surveys in August 2010 designed to assess bat use within the proposed Campbell County Wind Farm, South Dakota. Acoustic surveys for bats using Anabat® SD-2 ultrasonic detectors at two MET towers at 2 m and 45 m microphone heights were conducted from August 18 to October 24, 2010. The objective of the surveys was to

estimate the seasonal and spatial use of the study area by bats, as well as to estimate total bat activity, defined here as number of bat passes. In total, 379 bat passes were recorded during 264 detector nights. Averaging bat passes across locations, we detected a mean of 1.4 bat passes per detector-night, with a range of 0 to 59 total passes per night.

Total bat activity peaked in late August and no passes were recorded after October 11. Bat activity appears to have come predominately from low frequency (<30 kHz) bats (72% of passes). This species group is comprised of big brown bats, hoary bats and silver-haired bats. Bats with echolocation calls in the <30 kHz range, especially silver-haired and hoary bats, have comprised the majority of fatalities at other wind power projects. Passes by medium frequency (MF) and high-frequency (HF) bats totaled 11% and 16% respectively. Red bats, whose calls typically are 30-40 kHz, have predominated fatalities at some eastern wind energy projects. This species appears to have a limited presence within the project area.

The mean number of bat passes per detector per night was compared to existing data at other wind energy facilities from the region where both bat activity and mortality levels have been measured. The level of bat activity documented at the Campbell County Wind Farm was lower than all other published results. Assuming that the general relationship between bat activity and bat mortality observed at these sites is broadly applicable to other locations, we expect that levels of turbine-related bat mortality at the Campbell County Wind Farm will be on the lower end of the spectrum, and on par with others from the region. Assuming that activity patterns by bats are relatively consistent from year to year, we expect most fatalities to occur from mid- August to mid-September.

3.0 Construction Phase Wildlife Measures

3.1 CONSTRUCTION TIMING

Project construction will commence in Winter 2013-2014. Testing and operation will begin in late Fall 2014. Energy production will begin in late 2014. It is anticipated that the majority of the turbines will be placed in agricultural fields, thus minimizing or eliminating most construction related wildlife impacts. Starting construction activities during the Fall and Winter will help minimize potential direct and indirect impacts.

3.2 AVOIDANCE OF NATIVE LANDSCAPES

It is anticipated the majority of the Project will not be constructed in native landscapes (native prairie or wetlands); therefore minimal impacts to these habitats will incur.

3.2.1 Sharp-tailed Grouse

Although the SDGFP does not mandate specific distances turbines should be constructed from leks, they recommend a No Surface Occupancy (NSO) setback of 1.0 mile from leks in which no turbines should be constructed (**Figure 7, 2012 Raptor Nest and Sharp-tailed Grouse Lek Locations**). They also recommend a timing limitation from March 1st to June 30th, within a distance of 2.0 miles, in order to protect leks and nests. No activity/construction within this buffer during this time is recommended. It is also recommended to avoid placing wind developments in large, contiguous blocks of grassland. Blocks are considered fragmented by any human-derived feature (e.g., agricultural uses, fences, transmission lines, roads, burned areas) that subdivides them. Maintaining habitat connectivity between leks is important because both males and females use multiple leks throughout the breeding season. Setbacks from leks would help further minimize any potential displacement impacts to sharp-tailed grouse.

3.3 RAPTOR NEST AND EAGLE NEST SURVEYS

Concerns have been raised regarding potential impacts of construction activities on eagles as this Project is situated approximately two miles east of the Lake Oahe/Missouri River. Though there were no eagle nests that were observed during pre-construction avian surveys, a raptor and eagle nest survey will be conducted to locate raptor and eagle nests and determine nest activity status and the species using those nests. The initial surveys will be conducted as near February 15 and continue until leaf out, to locate nests and to identify early breeding species. The Project area and a 1-mile buffer area will be surveyed from a vehicle using binoculars and spotting scopes. All raptor and eagle nest locations will be documented with Global Positioning System (GPS) coordinates. Raptor species, height of nest, nest activity status, nest condition, substrate, and other relevant data will be recorded for each nest.

If an eagle nest is found, USFWS will be contacted immediately and construction activities will be halted until an agreement with USFWS can be attained as to when construction activities can resume.

Should eagle nests be identified, a biological monitor will survey the Project area if construction occurs between February 15 and August 15 for 2 days per week, 8 hours per day. Monitors will document flight paths, flight heights, flight directions, and record nesting activities.

In addition, if the biological monitor documents direct displacement of eagles by wind facility construction, the site manager will be immediately notified and construction will be halted until the birds return to their normal patterns. Construction will be halted until normal eagle behavior is observed again or for one day, whichever is longer. The USFWS will be contacted if disturbance is documented and construction is halted. A specific plan of action for shut down and restarting will be determined in consultation with the USFWS that considers the site characteristics and construction levels at the time of disturbances (i.e., if five pieces of machinery were being used and the eagles were disturbed, fewer machines may be used to lower the noise and other disturbance levels).

3.4 CONSTRUCTION PERSONNEL TRAINING

All construction personnel will be trained to identify potential wildlife conflict situations and conduct proper responses. This training will include sensitivity to nesting birds and other wildlife that may be encountered. For example, if an unknown raptor nest is encountered by construction personnel, they will be instructed to stop work in the area and contact the biological monitor. The biological monitor will assess the situation and work with construction personnel to implement a plan for continuing construction to avoid impact to the nest. If other wildlife resources are encountered, a similar course of action will be followed; construction will cease until the biological monitor can determine an appropriate plan to allow construction to continue without causing an impact.

A trained biologist will conduct the training and work with Dakota Plains to develop the communications plan. The training and communications plan will be developed prior to any construction activities.

If roosting, foraging, or in-flight whooping cranes are observed within one mile of the project site, construction/operation should cease until the U.S. Fish and Wildlife Service (USFWS) is contacted within 24 hours, or the next business day, whichever comes first, in order to evaluate the level of disturbance risk to the individuals present within the vicinity of the project area. The South Dakota USFWS can be contacted at (605) 224-8693. Following coordination with the USFWS, activities will resume if it is unlikely the birds will be disturbed by the continuation of the activities or after the bird(s) relocate to a new site beyond the disturbance area of the project site.

4.0 Operations Phase Wildlife Measures

Once the Project is constructed, monitoring will occur to determine direct impacts of the facility on birds and bats. Monitoring will be designed to determine if actual fatality rates are realized as predicted.

4.1 POST-CONSTRUCTION FATALITY MONITORING FOR BIRDS AND BATS

Post-construction fatality monitoring for avian and bat species will be conducted to determine impacts to species from the operation of the Project. These studies will provide data for development of an adaptive management strategy. Impacts to avian and bat species are anticipated to be similar to other Midwestern wind farms (National Wind Coordinating Collaborative, NWCC 2010). The overall purpose of the monitoring will be to determine if the avian or bat fatality rates are lower, similar to, or higher than other regional and national studies.

Qualified biologists will conduct the post-construction fatality surveys for one year following the commercial operations date. Parameters used for the studies will be consistent with avian and bat mortality monitoring studies completed at other wind farms. Study results will be compiled into a final report by biologists conducting the surveys and will be supplied to the wind farm owners, operators, USFWS, SDGFP and Western Area Power Administration (Western).

4.1.1 Monitoring Protocol

Final maps of wind turbine arrays will assist qualified biologists to select a subset (~13) of the 49 turbines to be sampled for mortality surveys, starting once CCWF is operational. The selected turbines to be sampled will be distributed across the CCWF in different habitats and viewsheds. Searches will be conducted every other week from March 1 through October 31 and once per month from November 1 through February 28. This schedule results in approximately 20 surveys for the one year following operation. An area extending 200 m square will be traversed on transects spaced every 10 m where accessible. In areas where portions of the survey square are inaccessible, a circle survey directly around the turbine and its access road will be surveyed for mortalities. Exact survey methods will be established prior to implementation of surveys but will follow guidance from other survey efforts from across the Midwest. Protocols for fatality monitoring will be provided to the USFWS, SDGFP and Western prior to implementing the monitoring efforts. Any additional fatality monitoring specific to eagles beyond the initial bird and bat monitoring will necessitate a change in methods. A monitoring effort specific to eagles will result in a decrease in survey timing and transect spacing as eagles are more persistent and larger.

4.1.2 Searcher Efficiency Trials

The objective of searcher efficiency trials is to determine the percentage of carcasses found by searchers. Results of these trials are used to adjust annual fatality rate estimates for detection bias. These trials will be conducted throughout the year. A minimum of 52 carcasses will be

used for each year of trials. Approximately 20 trials will be conducted to overlap with timing of the searcher efficiency trials. Thirteen of the 49 turbines will be sampled. Carcasses will be randomly placed on turbine plots. Placement of carcasses will be recorded with a handheld GPS unit and will be discretely marked (e.g., with thread tied around one leg) to ensure that the carcass can be identified as part of the efficiency trial. Carcasses will include large and small birds and bats to best represent species that may be encountered in the field.

4.1.3 Carcass Removal Trials

The objective of carcass removal trails is to estimate the average length of time a carcass remains in the study area and is available for detection. The results of these trials will be used to adjust estimates of annual fatality rates for removal bias. Removal trials will be conducted a total of three times (once during the Spring, Summer, and Fall seasons) throughout the year and a minimum of 52 bird and bat carcasses will be used during each monitoring year. Carcasses will be placed in random positions under turbines and checked on a daily basis for the first four days after placement then on day 7, 10, 14, 21, 30, and 40. At the end of each trial, all remains will be removed.

4.1.4 Reporting

Complete reporting of avian and bat fatality monitoring and estimated fatality rates will occur at the end of each monitoring year. The reports will include turbine specific information on found causalities along with an estimated fatality rate for birds and bats. Fatality estimates will be calculated for bats, all birds, small birds, large birds, and raptors. Seasonal estimates for both birds and bats will also be reported. Estimated fatality rates will be calculated using the total number of carcasses found along with data from searcher efficiency and carcass removal trials. Reports documenting the actual number of carcasses found will be submitted at the end of each month throughout the monitoring year.

In addition to one fatality monitoring report, Western, USFWS, and SDGFP will be notified within 24 hours of the discovery of any of the following:

(a) five or more dead or injured non-listed avian or bat species within a reporting period; or
(b) one or more dead or injured state threatened, endangered, or species of special concern; or
(c) one or more dead or injured federally listed species; or
(d) one or more dead or injured bald or golden eagles; or
(e) one or more dead or injured whooping cranes.

If roosting, foraging, or in-flight whooping cranes are observed within one mile of the project site, construction/operation should cease until the U.S. Fish and Wildlife Service (USFWS) is contacted within 24 hours, or the next business day, whichever comes first, in order to evaluate the level of disturbance risk to the individuals present within the vicinity of the project area. The South Dakota USFWS can be contacted at (605) 224-8693. Following coordination with the USFWS, activities will resume if it is unlikely the birds will be disturbed by the continuation of the activities or after the bird(s) relocate to a new site beyond the disturbance area of the project site.

4.2 POST-CONSTRUCTION EAGLE USE MONITORING

Eagle nest and use monitoring will occur for one year post construction utilizing third party contractor biologists. Monitoring efforts will occur throughout the Project and one mile buffer. Any eagle nest located will be monitored a minimum of 2 days per week, 8 hours per day, until a pattern is established for the adult flight and feeding schedule. Surveys will continue from the time an occupied nest is discovered until the chicks fledge. Data recorded will include flight paths, flight heights, times of observations, habitats used, number of chicks, etc. These data will track post-construction eagle use and help determine if they are using areas within the Project for foraging or other activities. If eagle use patterns significantly change so that they are utilizing areas within the wind farm itself, appropriate actions will be taken as outlined in Section 4.6.

After the one year of nest surveys and monitoring, operations personnel will continue to survey for eagle nests for the life of the CCWF. If a new eagle nest is located, appropriate monitoring and other actions will be implemented per the discussion in Section 4.6.

4.3 RAPTOR NEST SURVEYS

A raptor nest survey will be conducted to locate raptor nests and determine nest activity status and the species using those nests. The initial surveys will be conducted as near February 15 and continue until leaf out (approximately mid-May), to locate nests and to identify early breeding species. The Project area and a 1-mile buffer area will be surveyed from a vehicle using binoculars and spotting scopes. All raptor nest locations will be documented with Global Positioning System (GPS) coordinates. Raptor species, height of nest, nest activity status, nest condition, substrate, and other relevant data will be recorded for each nest.

4.4 WHOOPING CRANE MONITORING

To avoid impacts to whooping cranes during construction and operation of the CCWF, Dakota Plains will implement monitoring programs and curtail Project activities within one mile of any whooping crane sighting until the crane leaves the Project area.

During construction and the first year of operation, a whooping crane monitor will be on site during whooping crane Spring and Fall migration:

- Monitor will document whooping crane use of Project, and ensure rapid identification and response if a whooping crane is present.
- During construction, procedures will be established for shutting down construction activities within one mile of any whooping crane sighting.
- During operations, a Central Call Center will be established that will implement turbine shut-downs within one mile of any whooping crane sighting.
- The monitor or operations and maintenance staff will be instructed to notify the Central Call Center via radio or cell phone if whooping cranes are present within one mile of a turbine, so that specific turbines can be shut down rapidly.

- The necessary instruments and control systems will be incorporated into the turbine and electrical specifications to allow for rapid shut down of turbines.

If roosting, foraging, or in-flight whooping cranes are observed within one mile of the project site, construction/operation should cease until the U.S. Fish and Wildlife Service (USFWS) is contacted within 24 hours, or the next business day, whichever comes first, in order to evaluate the level of disturbance risk to the individuals present within the vicinity of the project area. The South Dakota USFWS can be contacted at (605) 224-8693. Following coordination with the USFWS, activities will resume if it is unlikely the birds will be disturbed by the continuation of the activities or after the bird(s) relocate to a new site beyond the disturbance area of the project site.

4.5 OPERATIONS PERSONNEL TRAINING

Similar to construction personnel, all operations personnel will be trained to identify potential wildlife conflicts and the proper response. This training will include sensitivity to birds and terrestrial wildlife. For operations, Dakota Plains will develop an incidental reporting process by which operations personnel document bird or bat casualties during routine maintenance work and at other times that they are within the Project. Incidentally found wildlife will be reported monthly to Western, USFWS and SDGFP.

In addition to the monthly reports, for the life of the CCWF, Western, USFWS, and SDGFP will be notified within 24 hours of the discovery of any of the following:

(a) five or more dead or injured non-listed avian or bat species within a reporting period;
or
(b) one or more dead or injured state threatened, endangered, or species of special concern; or
(c) one or more dead or injured federally listed species; or
(d) one or more dead or injured bald or golden eagle; or
(e) one or more dead or injured whooping cranes.

In addition to incidental fatality reporting, operations personnel will be trained to identify eagles and whooping cranes and to be sensitive to relative use rates of eagles and whooping cranes and to look for eagle and whooping crane casualties during driving between turbines and conducting turbine maintenance. This information will be used for the life of the CCWF to continually maintain a relative sense of eagle/crane use in the Project area so that modifications can be implemented as necessary (see Section 4.5).

4.6 ADAPTIVE MANAGEMENT – IDENTIFICATION & MINIMIZATION OF IMPACTS

Based on Project siting (cultivated agriculture landscape), response to pre-construction monitoring actions (turbines sited greater than two miles from eagle nests, site turbines greater than one mile from active sharp-tailed grouse leks), follow a construction timing limitation (no activity/construction) from March 1st to June 30th, within a distance of 2.0 miles to protect sharp-tailed grouse leks and nests, placement of bird diverters on guy wires of met towers, all collection lines associated with the Project would be buried to reduce the potential collisions, an overhead tie line will be used to connect the proposed Project substation with an

existing transmission line (rather than a new line), results to date of overall biological monitoring (e.g., low raptor use rates), whooping crane monitoring, the anticipated impact from the Project on birds and bats is expected to be low, and consistent with most other projects in the region. As such, the Project is avoiding and minimizing impacts to birds and bats in general through siting. To confirm predicted impacts, Dakota Plains will implement post-construction fatality monitoring for one year after the Project becomes operational utilizing trained biologists and for the life of the CCWF utilizing trained operations personnel.

This section outlines what the responses may be if post-construction efforts determine that impact to wildlife is greater than anticipated. The main focus for adaptive management during operations will be for eagles and whooping cranes.

During operations, biologists, for one year, and operations personnel, for the life of CCWF, will survey for new eagle nests. If a new nest is located a biologist will be contacted to monitor the nest for two days per week, 8 hours per day, until an established foraging area is identified or until it is determined that the adults are not using the Project area extensively.

If, during operations, the biologist or operations personnel document increased eagle use or from new nesting birds within the Project, the following actions will be implemented:

1) Immediately contact the USFWS's Pierre Field Office of the increased use and plans to implement monitoring activities.
2) Document use locations of the eagles. Are the eagles flying through the area, are the eagles foraging within the Project, are the eagles roosting within the Project, etc.?
3) If eagles are found to be foraging within the Project, the source of the prey base will be located and removed if possible. This could include working with local farmers to cover or remove dead livestock, development of a road kill management plan to remove road kill quickly, removal of fish if trapped in low level lakes/ponds, or other such actions.
4) Use monitoring will continue to document that the eagles discontinue using the Project area.

If roosting, foraging, or in-flight whooping cranes are observed within one mile of the project site, construction/operation should cease until the U.S. Fish and Wildlife Service (USFWS) is contacted within 24 hours, or the next business day, whichever comes first, in order to evaluate the level of disturbance risk to the individuals present within the vicinity of the project area. The South Dakota USFWS can be contacted at (605) 224-8693. Following coordination with the USFWS, activities will resume if it is unlikely the birds will be disturbed by the continuation of the activities or after the bird(s) relocate to a new site beyond the disturbance area of the project site.

The above is an example of how biological monitoring or operations monitoring will document use and what the responses to that information will be. There may be other scenarios, finding a roost location, for example, that dictate a need for individual turbines to be monitored more closely for use and fatalities. The intent of monitoring is to document changes in use (e.g., higher use) in a timely manner such that management changes (e.g., removal of prey sources) or operations changes (e.g., curtailment) can be implemented and potential impact to eagles, whooping cranes, and other wildlife continues to be minimized.

While this adaptive management section focuses primarily on eagles and whooping cranes, the same general concepts will apply if there is significantly higher than expected bird or bat fatalities or if current or future listed species are observed in the Project area. This includes identification of the issue or problem, notification to the USFWS, development of a specific plan or course of action dictated by the circumstances, implementation of the actions, and monitoring to confirm that actions are sufficiently avoiding or minimizing the potential or realized impacts.

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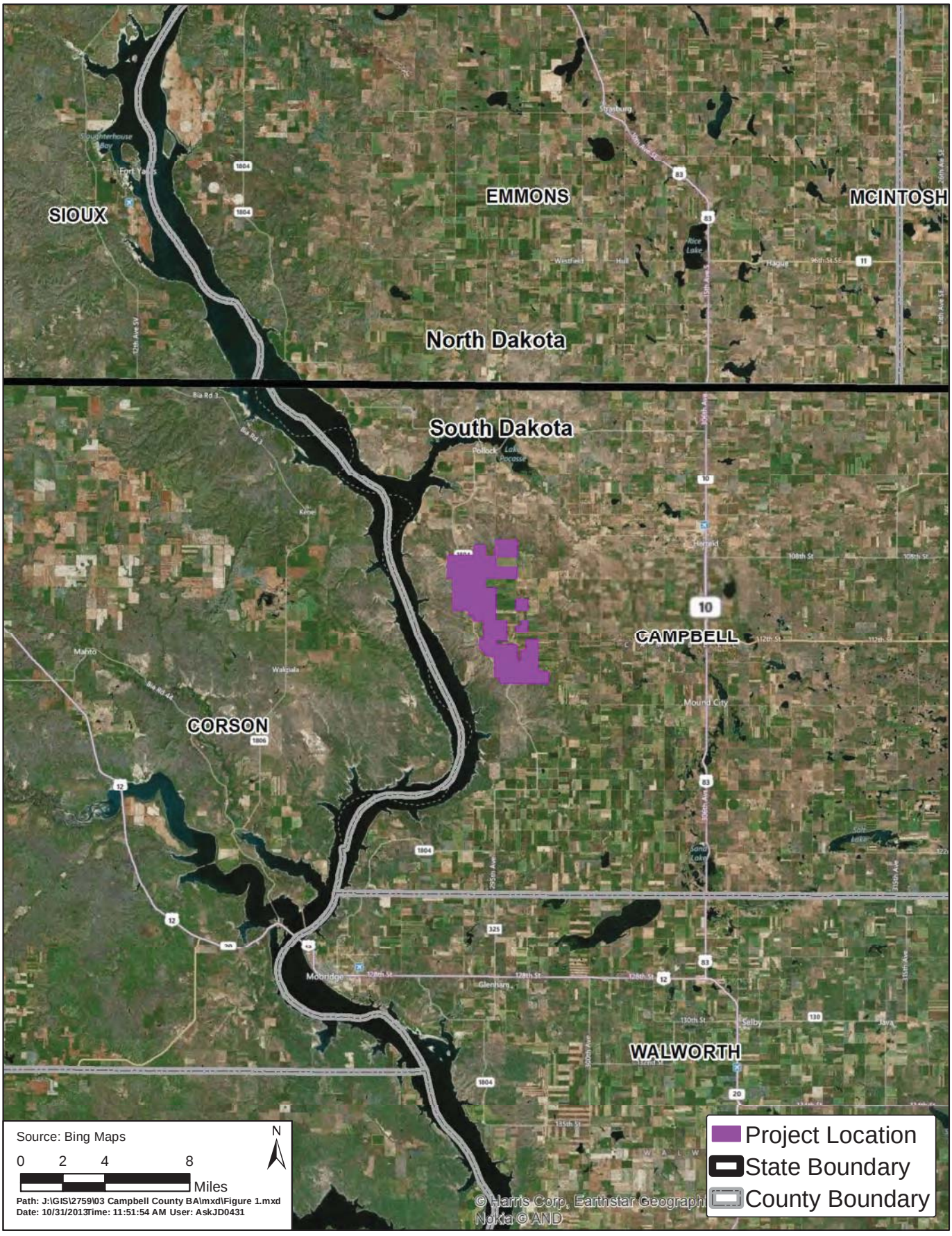
Figures



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Campbell County Wind Farm-Campbell County, South Dakota
Site Location Map

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Figure 1

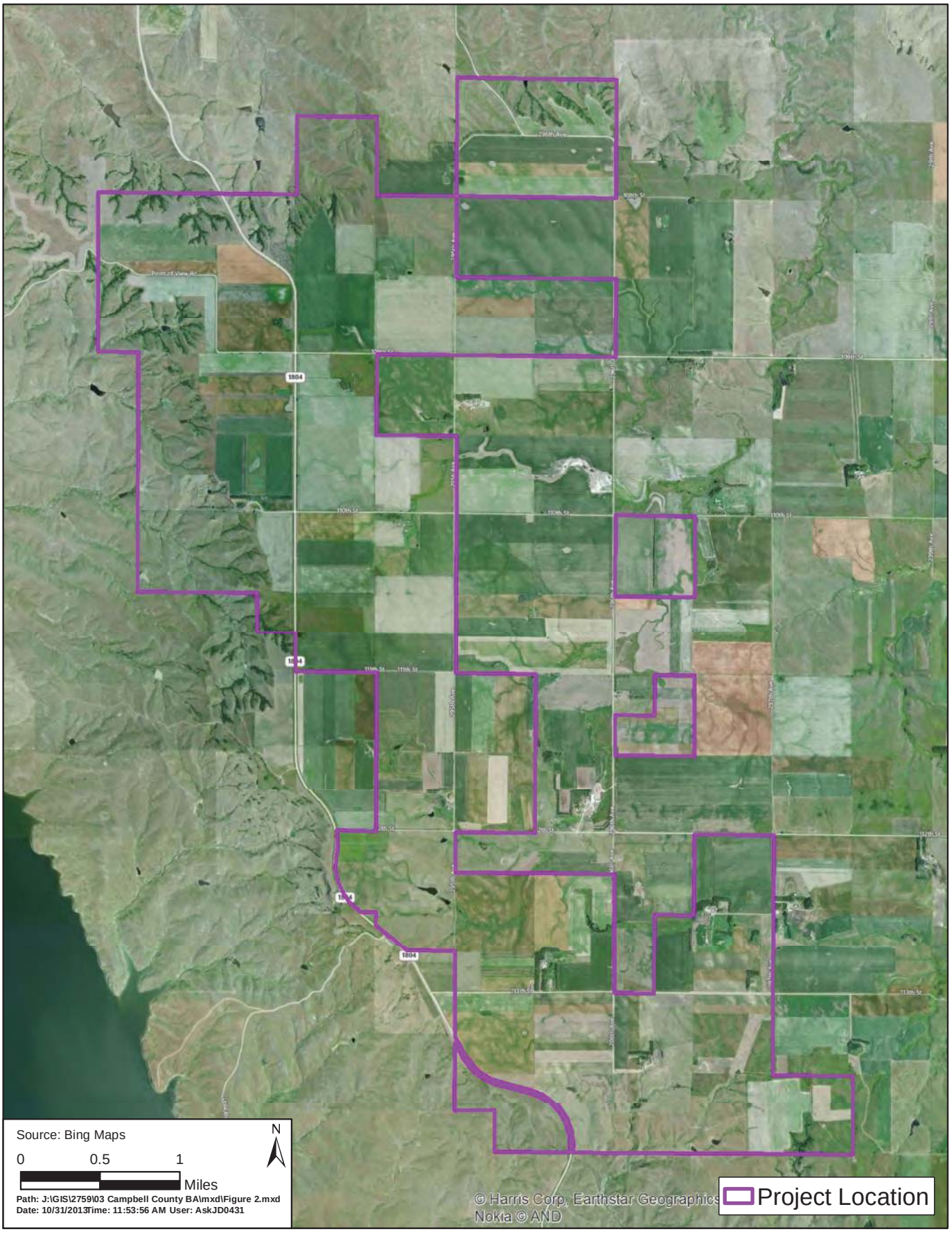

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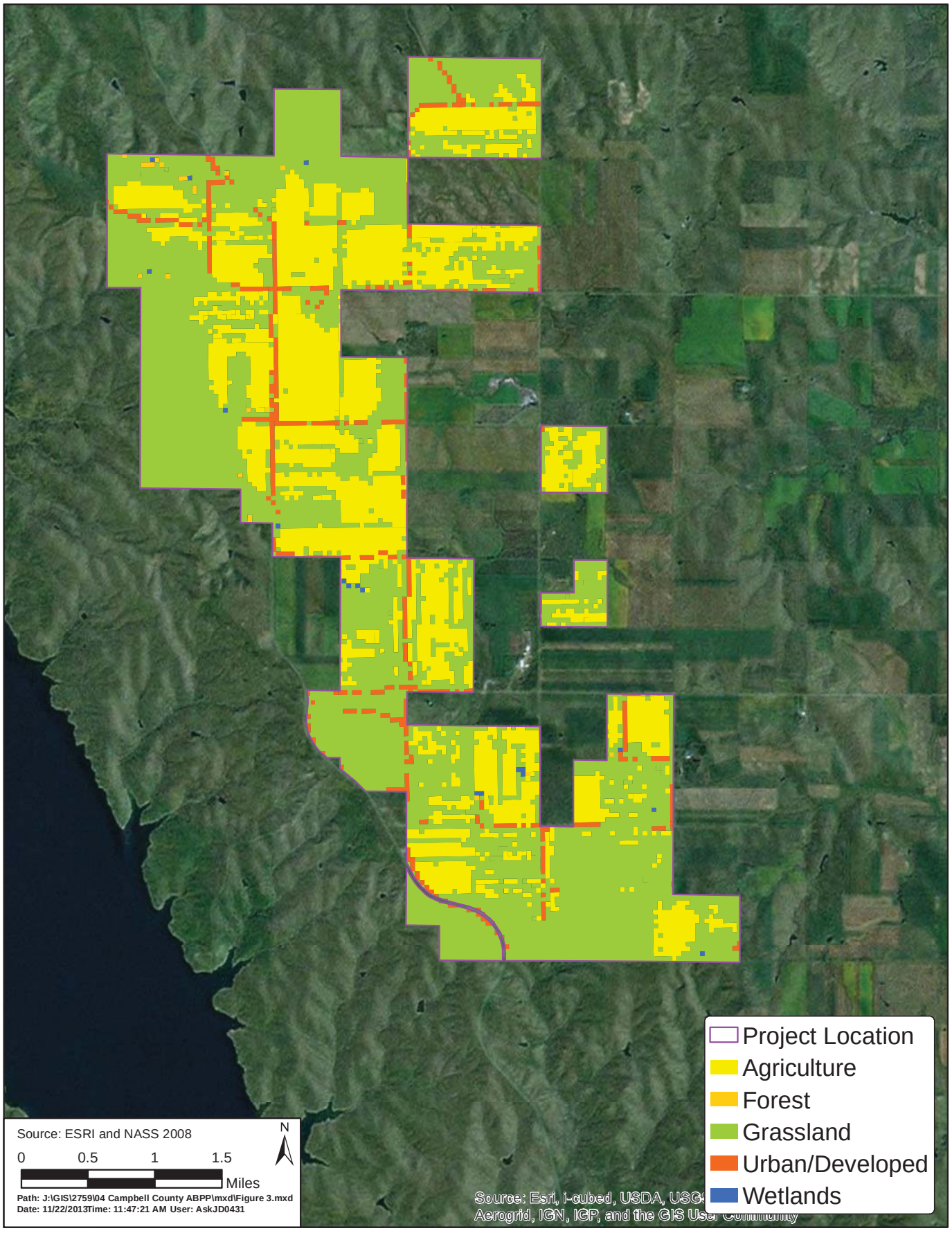
Figure 2



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Land Cover Map

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Figure 3

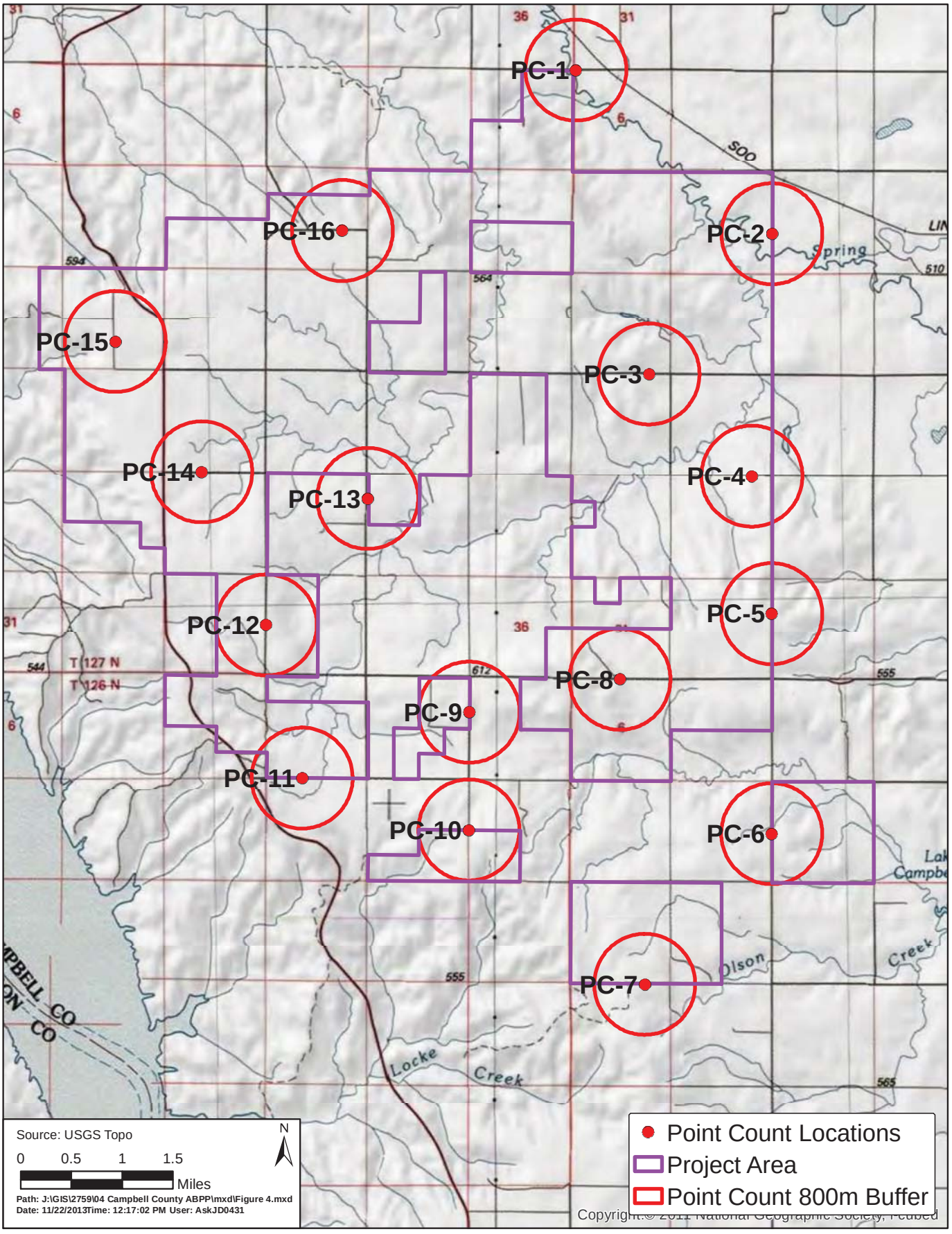

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Figure 4

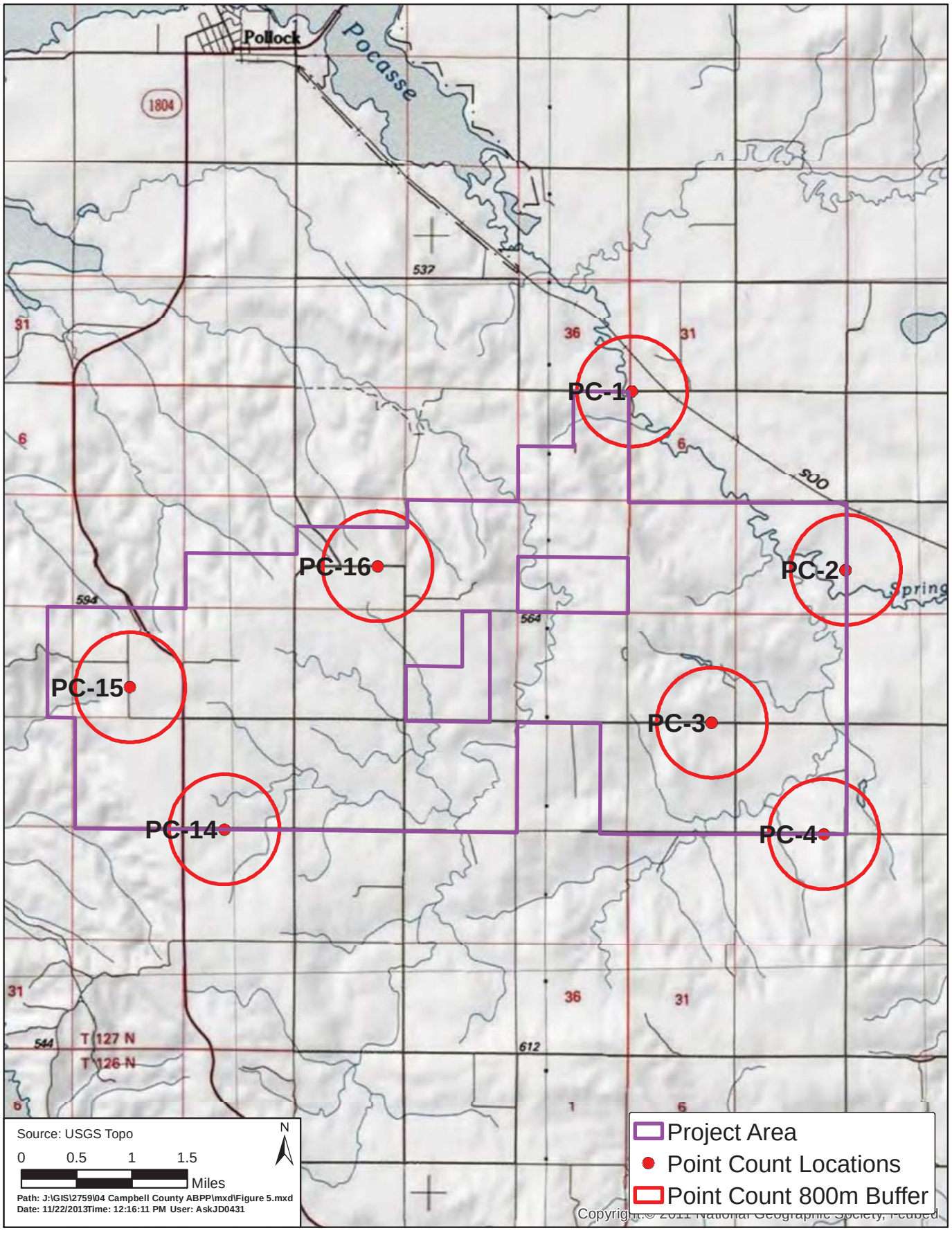

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Figure 5

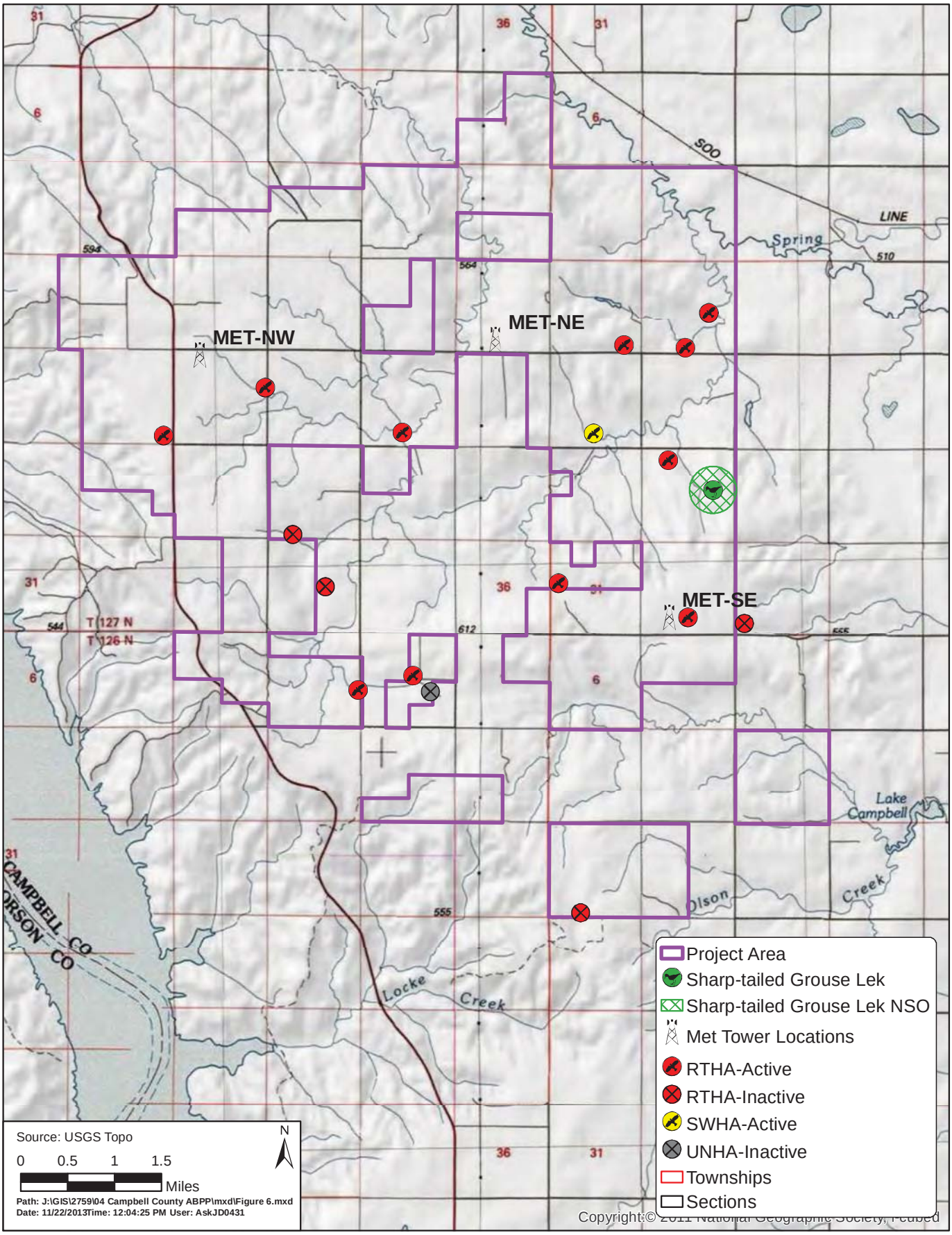

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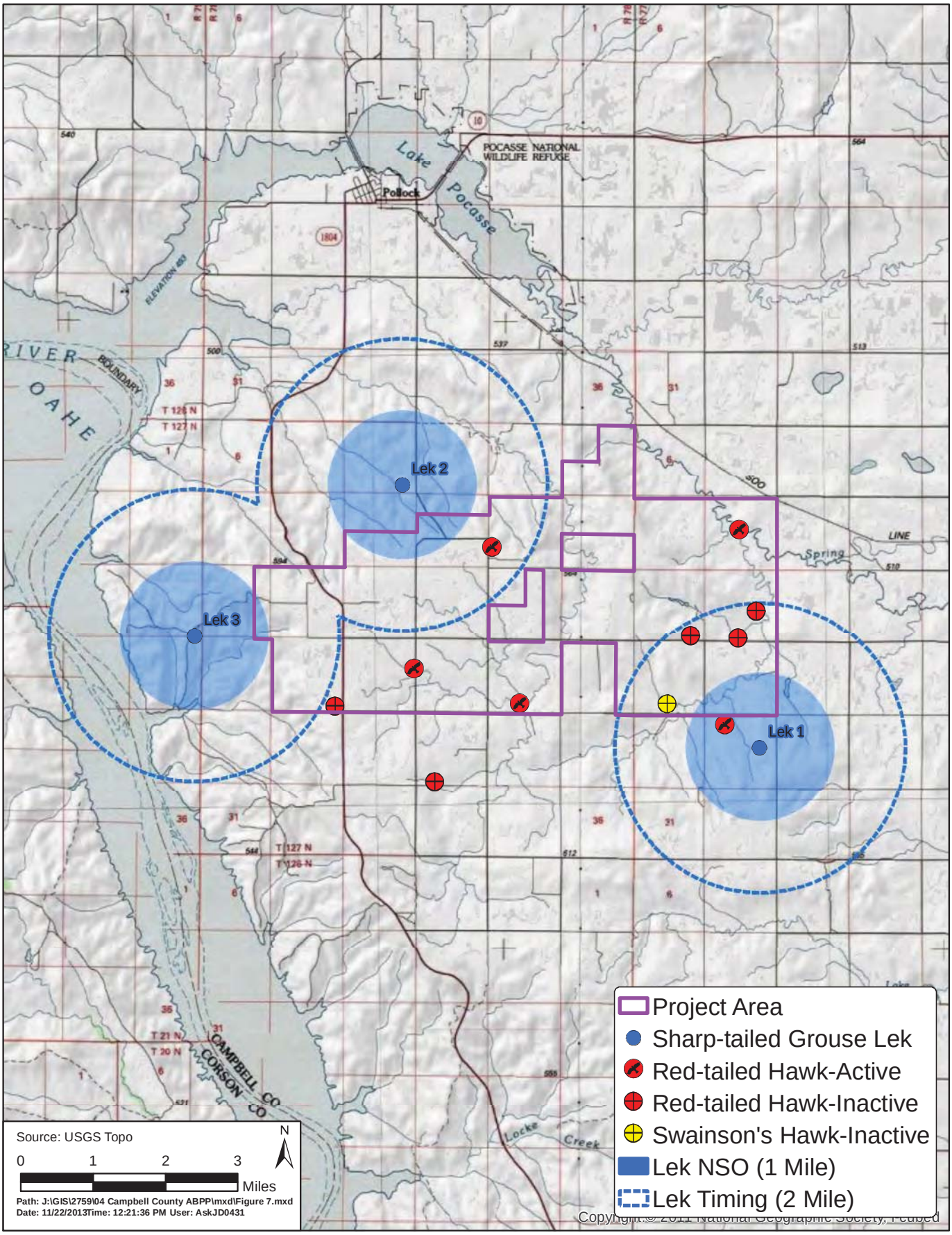
Figure 6



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2012 Raptor Nest and Lek Locations

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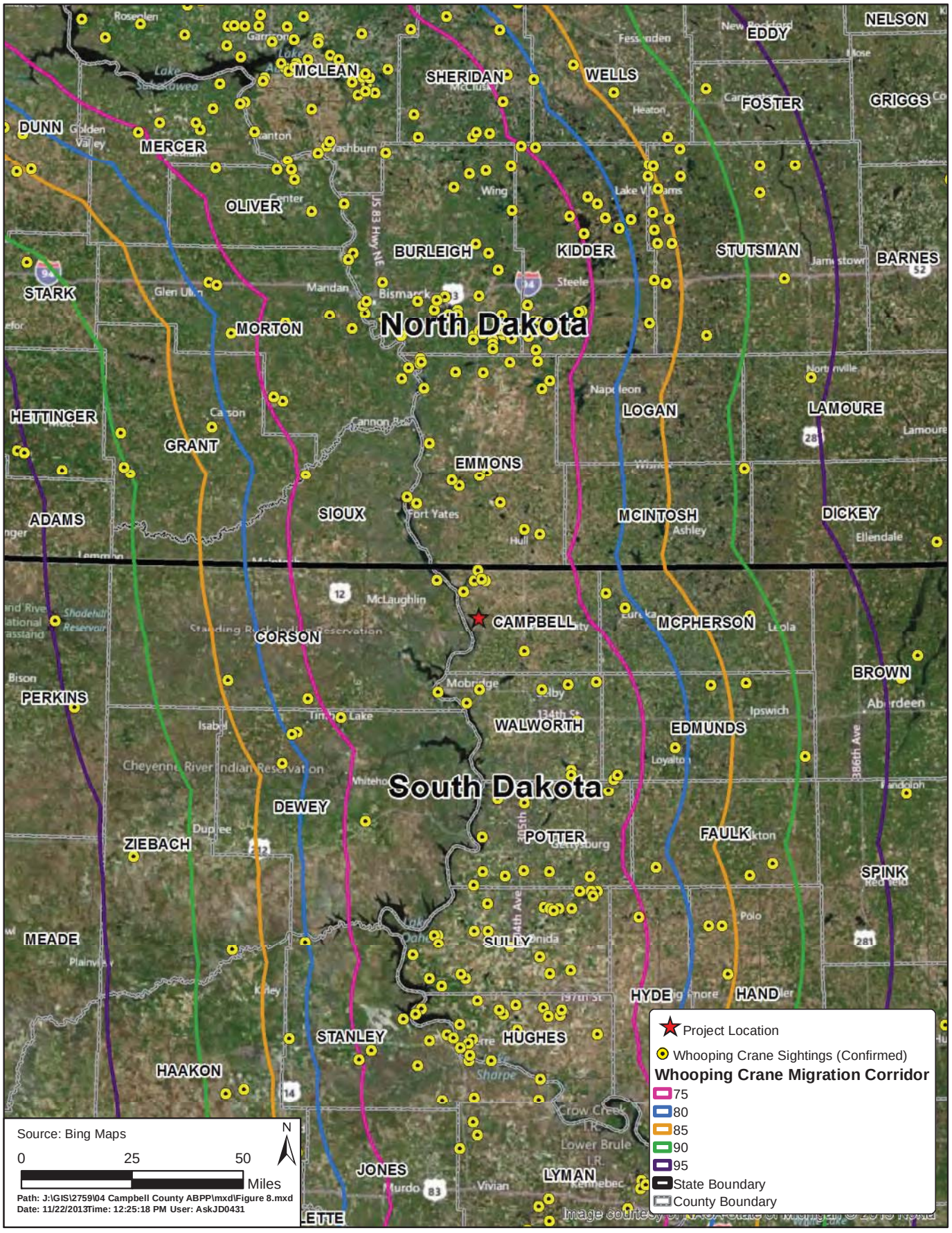
Figure 7



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