FOXTAIL WIND ENERGY CENTER

Draft Wildlife Conservation Strategy

Foxtail Wind

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Acronyms and abbreviations

°F	degrees Fahrenheit
APLIC	Avian Power Line Interaction Committee
BBS	Breeding Bird Survey
BCC	Birds of Conservation Concern
BCR 11	Prairie Potholes Bird Conservation Region
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
CBC	Christmas Bird Count
DNV GL	DNV KEMA Renewables, Inc.
ECP Guidance	*Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy: Version 2*
ESA	Endangered Species Act
FmHA	Farmers Home Administration
Foxtail Wind	Foxtail Wind Energy, LLC
FS	Focal Species
GIS	Geographic Information System
LSB	Leola State Bank
MBTA	Migratory Bird Treaty Act
MW	megawatts
NAIP	National Agriculture Imagery Program
NDGFD	North Dakota Game and Fish Department
NDPRD	North Dakota Parks and Recreation Department
NLCD	National Land Cover Database
NLEB	northern long-eared bat
NWR	National Wildlife Refuge
O&M	Operations and Maintenance
Project	Foxtail Wind Energy Center
PS	Priority Species
RSA	rotor-swept area
SCP	Species of Conservation Priority
SDSL	Sand Lake National Wildlife Refuge Christmas Bird Count
SPUT	Special Purpose Utility
SWAP	North Dakota State Wildlife Action Plan
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCS	Wildlife Conservation Strategy
WEG	USFWS Land-based Wind Energy Guidelines
WMA	Wildlife Management Area
WPA	Waterfowl Production Area
WRA	Wind Resource Area

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1 INTRODUCTION

Foxtail Wind, a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC, is developing the Foxtail Wind Energy Center (Project) in Dickey County, North Dakota (Figure 1). Following receipt of a Certificate of Site Compatibility (Certificate) from the North Dakota Public Service Commission (Commission), Foxtail Wind and Northern States Power Company (NSP), doing business as Xcel Energy (Xcel), will seek approval to transfer the Certificate to NSP/Xcel. Subject to that approval, the Project will be constructed and operated by NSP/Xcel. Foxtail Wind is committed to environmental due diligence, and contracted DNV GL to assess potential wildlife impacts resulting from Project construction and operation. Foxtail Wind has voluntarily developed and implemented this Wildlife Conservation Strategy (WCS) in its continued efforts to demonstrate due diligence in avoiding and minimizing impacts to avian and bat species in association with the development and operation the Project. This WCS describes Foxtail Wind's strategy to address wildlife conservation in all phases of Project development.

1.1 Statement of Purpose

There are potential wildlife impacts resulting from construction and operation of a wind energy facility. This WCS outlines various processes that Foxtail Wind has employed or will employ to:

- Comply with all state and federal wildlife conservation and protection laws and regulations at the Project;
- Ensure that impacts to wildlife resources, particularly birds and bats, are identified, quantified, and analyzed;
- Implement various avoidance and minimization measures to address potential unanticipated impacts that result from the operation of the Project; and
- Implement priority conservation actions to offset unavoidable impacts to priority wildlife resources to the extent practicable.

Interactions of birds and bats with wind generating facilities (including wind turbines, transmission and distribution lines, substations, and other associated structures and equipment) may be associated with injury or mortality. Additionally, construction activities my affect habitat value for some species of wildlife. Bird interactions can result in power outages, which in turn could lead to grass and forest fires, raising safety concerns. Generating facilities also have the potential to impact bats. Impacts to birds and bats may raise concerns by employees, resource agencies, and the general public. Therefore, impacts on birds, bats, and other wildlife that occur as a result of the Project are important to Foxtail Wind as both a regulatory and natural resource conservation priority.

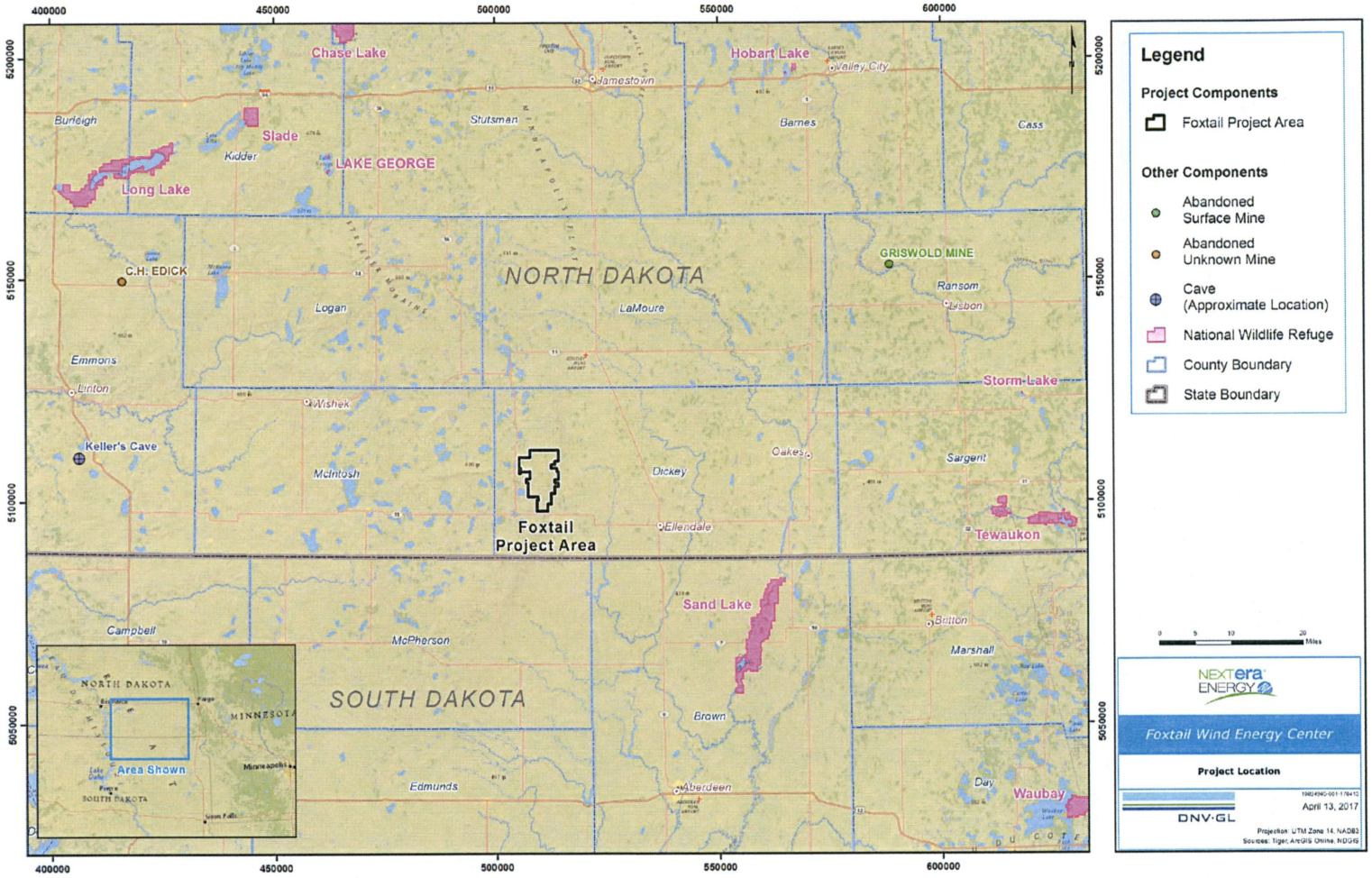

Figure 1. Project Location Map

1.2 Analytical Approach

In developing this WCS, assessment of potential impacts to wildlife proceeded according to the process described by the U.S. Fish and Wildlife Service (USFWS) Land-based Wind Energy Guidelines (WEG; USFWS 2012a). The WEG provide a systematic, tiered approach to evaluation increasingly detailed aspects of potential Project impacts. The tiered approach is an iterative process in which results of each tier inform decisions regarding the next tier, including which species of concern or habitats of concern to focus on and which types of risks or impacts need to be evaluated. The tiers progress from landscape-scale analysis (Tiers 1 and 2) to project-specific surveys and risk assessments at a smaller scale (Tier 3) in the pre-construction phase. The results of Tiers 1-3 then inform decisions regarding post-construction monitoring for impacts (Tier 4), and in some cases, additional research (Tier 5). Analysis in each of the pre-construction tiers is intended to recognize uncertainty and serve to identify areas in which the subsequent tiers should focus in to reduce uncertainty. This WCS has been structured to follow the tiers of the WEG in sequence, and section headers include tier references to assist the reader.

The WEG focus most analytical attention on "species of concern", which are defined as species either listed as threatened, endangered or candidate species under federal or state regulations; subject to protection un federal statutes as listed in Section 2 below; designated by law, regulation or other formal process for protection and/or management by the relevant authority; or has been shown to be significantly adversely affected by wind energy and determined to be possibly affected by the project. Due to the large number of species potentially covered by this definition, Foxtail narrowed the meaning of the term to include the following:

- Species listed as Threatened, Endangered, or Candidate species under federal or state regulations describe in Section 2;
- North Dakota Level I Species of Conservation Priority;
- USFWS Region 6 Priority Species and Focal Species; and
- USFWS Birds of Conservation Concern

Detailed lists of these species and analyses of their presence or absence from the Project are found in Sections 4 and 5 below.

1.3 Corporate Policy

Foxtail Wind is committed to siting, constructing, operating, and decommissioning the Project in an environmentally responsible and sustainable manner. This includes minimizing impacts to natural resources, such bird and bat species and the habitats they use. As part of this commitment, Foxtail Wind has developed this WCS for the Project. The objective of this WCS is to ensure that:

- All Project-related actions comply with federal and state regulations pertaining to birds and bats;
- Avoidance and minimization measures designed for Project-specific wildlife species concerns are implemented;
- Effective documentation of bird and bat injuries and fatalities will occur to provide the basis of ongoing adaptive management and development of avian protection procedures; and

- Foxtail Wind staff and all relevant subcontractors will receive the appropriate training pursuant to avian and bat monitoring and reporting.

1.4 Agency Coordination History

Foxtail Wind has coordinated with the North Dakota Game and Fish Department (NDGFD), the North Dakota Parks and Recreation Department (NDPRD), and the North Dakota field office of the U.S. Fish and Wildlife Service (USFWS) as part of the development of the Project (Table 1). Coordination regarding the Project began in 2008 and has continued through 2017. Initial coordination efforts were assisted by Tetra Tech, Inc.

Table 1 Chronology of Resource Agency Contact for the Project

Date	Purpose	Contacts
4 November 2008	Email response from the USFWS to Tetra Tech, Inc. regarding USFWS easement data request for the project.	Heidi Kuska, USFWS, North Dakota, Fish and Wildlife Biologist
24 November 2008	Inquiry letter to NDPRD from Tetra Tech, Inc. requesting information on environmental resources in the vicinity of the proposed Rough Rider I Wind Resource Area.	NDPRD
2 December 2008	Inquiry letters to USFWS North Dakota Field Office and the Kulm Wetland Management District from Tetra Tech, Inc. requesting information on environmental resources in the vicinity of the proposed Rough Rider I Wind Resource Area.	Jeffrey Towner, USFWS, North Dakota Field Supervisor, Bismarck, ND
3 December 2008	Inquiry letter to NDGFD from Tetra Tech, Inc. requesting information on environmental resources in the vicinity of the proposed Rough Rider I Wind Resource Area.	NDGFD
22 December 2008	Response email to Tetra Tech, Inc. from USFWS Kulm Wetland Management District regarding Rough Rider I Wind Resource Area.	Michael Erickson, USFWS Kulm Wetland Management District
15 January 2015	Letter request from Tetra Tech, Inc. to the NDGFD regarding resources within Project Area	Brian Kietzman, Wildlife Resource Management Supervisor, North Dakota Game and Fish Department - Jamestown Office
4 February 2009	Response letter to Tetra Tech, Inc. from USFWS North Dakota Field Office outlining potential biological resource constraints.	Jeffrey Towner, USFWS, North Dakota Field Supervisor, Bismarck, ND
4 March 2015	Request for Tier 1/Tier 2 site	Kevin Shelley, USFWS, Acting

Date	Purpose	Contacts
	characterization information from USFWS.	North Dakota Supervisor, Bismarck, ND
4 March 2015	Request for Tier 1/Tier 2 characterization information from NDGFD	Bruce Kreft, NDGFD, Conservation Biologist, Bismarck, ND
24 March 2015	Response letter to Tetra Tech, Inc. from NDGFD regarding biological concerns related to Project development.	Greg Link, NDGFD, Chief of Conservation and Communication Division, Bismarck, ND
7 April 2015	In person meeting with Foxtail Wind, USFWS, and Tetra Tech, Inc. in Bismarck	Kevin Shelley, USFWS, Acting North Dakota Supervisor, Bismarck, ND
10 August 2016	Email request from Tetra Tech, Inc. for information regarding eagle nest locations, black-tailed prairie dog colonies, hawk nests, and grouse leks in the vicinity of the Project.	Sandy Johnson, NDGFD, Conservation Biologist, Bismarck, ND
12 August 2016	Email regarding eagle nest locations, black-tailed prairie dog colonies, hawk nests, grouse leks, and whooping cranes to Tetra Tech, Inc.	Sandy Johnson, NDGFD, Conservation Biologist, Bismarck, ND
23 August 2016	Data sharing agreement between NDGFD and Tetra Tech, Inc. for raptor nest location data.	Sandy Johnson NDGFD, Conservation Biologist Bismarck, ND
25 August 2016	Results of raptor nest query from Tetra Tech, Inc. for the project.	Sandy Johnson NDGFD, Conservation Biologist Bismarck, ND
27 March 2017	Request for updated information regarding biological resources from USFWS.	Kevin Shelley, USFWS, Acting North Dakota Supervisor, Bismarck, ND
27 March 2017	Request for updated information regarding biological resources from NDGFD.	Steve Dyke, NDGFD, Conservation Supervisor, Bismarck, ND
10 April 2017	Teleconference with Tetra Tech, Inc. and USFWS Wetland Management District personnel to discuss process of identifying USFWS easements for avoidance purposes	Michael Erickson, USFWS Kulm Wetland Management District
26 April 2017	NDGFD response to request for updated biological resource information	Greg Link, NDGFD
08 May 2017	Email request from Tetra Tech, Inc. to USFWS requesting wetland easement maps of parcels overlapping with proposed Project infrastructure	Michael Erickson, USFWS Kulm Wetland Management District
12 May 2017	Transmittal from USFWS to Tetra Tech, Inc. of wetland easement	Michael Erickson, USFWS Kulm Wetland Management District

Date	Purpose	Contacts
	map book	
12 May 2017	Discussion of USFWS wetland easement maps	Michael Erickson, USFWS Kulm Wetland Management District
22 May 2017	Teleconference to discuss USFWS interpretation of wetland avoidance to confirm that boring under wetlands is considered avoidance	Michael Erickson, USFWS Kulm Wetland Management District
30 May 2017	Email request from Tetra Tech, Inc. to USFWS requesting additional wetland easement maps not previously requested	Michael Erickson, USFWS Kulm Wetland Management District
31 May 2017	Transmittal from USFWS to Tetra Tech, Inc. of wetland easement map book	Michael Erickson, USFWS Kulm Wetland Management District
14 September 2017	Conference call to solicit input on Wildlife Conservation Strategy (this document) from USFWS and NDGFD	Kevin Shelley, USFWS, Acting North Dakota Supervisor, Bismarck, ND Greg Link, NDGFD, Chief of Conservation and Communication Division, Bismarck, ND Sandy Johnson NDGFD, Conservation Biologist Bismarck, ND
19 September 2017	Conference Call to discuss USFWS comments on Wildlife Conservation Strategy	Kevin Shelley, USFWS, Acting North Dakota Supervisor, Bismarck, ND
19 September 2017	Email transmittal of NDGFD comments on draft Wildlife Conservation Strategy	Sandy Johnson, NDGFD, Conservation Biologist, Bismarck, ND
9 October 2017	Email transmittal of USFWS written comments on Wildlife Conservation Strategy	Kevin Shelley, USFWS, Acting North Dakota Supervisor, Bismarck, ND
9 November 2017	Conference call to discuss approach to offsetting mitigation for native prairie impacts	Kevin Shelley, USFWS, Acting North Dakota Supervisor, Bismarck, ND; Michael Erickson, USFWS Kulm Wetland Management District

2 REGULATORY FRAMEWORK

Native birds are protected under a variety of federal and state laws and regulations. Wildlife laws and regulations relevant to the Project include the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA).

In addition to regulatory drivers, the WCS also briefly discusses bird species included on the USFWS list of Birds of Conservation Concern (BCC; USFWS 2008a). Although these species are not formally protected under any regulatory laws, BCC species are closely monitored by USFWS due to population declines and/or

rare occurrences in a specific region. As a result, BCC species that might be encountered at the Project are included in this WCS. Development of the BCC category for birds was the result of a 1988 amendment to the Fish and Wildlife Conservation Act that mandates the USFWS identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. The overall goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. The BCC categorization is intended to stimulate coordinated and collaborative proactive conservation actions among federal, state, tribal, and private partners (USFWS 2008a). The proposed Project Area is located in the Badlands and Prairies Bird Conservation Region (BCR 17) and only BCC species for this region are discussed in the WCS.

2.1 Migratory Bird Treaty Act

The MBTA implements the Unites States' obligations under four treaties for the protection of migratory birds. The MBTA is administered by the USFWS, which maintains a list of all species protected by the MBTA (50 Code of Federal Regulations [CFR] 10.13). This list includes over 1,000 species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines. The MBTA makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, kill ... possess, offer for sale, sell ... purchase ... ship, export, import ...transport or cause to be transported... any migratory bird, any part, nest, or eggs of any such bird ..." except as otherwise permitted under the regulations. (16 United States Code [USC] 703). The USFWS has interpreted the MBTA to be a strict liability statute, meaning that proof of intent, knowledge, or negligence is not an element of an MBTA violation. Actions resulting in the "take" of a protected species, in the absence of a USFWS permit or regulatory authorization, are a violation. The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect". (50 CFR 10.12). The MBTA does not have a provision directly prohibiting incidental takes and the definition of "take" does not include the broader terms of "harass" or "harm" that have been found to prohibit incidental takes under the Endangered Species Act. Indeed, in the historic context of the MBTA, and an interpretation supported by the U.S. Court of Appeals for the 8th Circuit, the term "take" refers to conduct directed at birds, such as hunting or poaching, and not on prohibiting lawful, commercial activity which may indirectly cause bird deaths. (See U.S. v. Brigham Oil and Gas, L.P., 840 F.Supp. 2d 1202 (D. N.D. 2012)). USFWS has established a permitting scheme for a variety of intentional activities, such as hunting and scientific research and has also worked with industries to find ways to minimize impacts to migratory birds. Since the scope of USFWS' legal authority to regulate incidental takes remains unclear, as the 8th Circuit's interpretation is not accepted by all courts, USFWS has not been deterred from attempting to regulate incidental takes under the MBTA.

2.2 Bald and Golden Eagle Protection Act

Under authority of the BGEPA (16 USC 668–668d), bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are afforded additional legal protection. The BGEPA prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof (16 USC 668). The BGEPA also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb" (16 USC 668c), and includes criminal and civil penalties for violating the statute (16 USC 668). The term "disturb" is defined as agitating or bothering an eagle to a degree that causes, or is likely to

cause, injury to an eagle, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior (50 CFR 22.3). USFWS promulgated regulations in 2009 that provided for a voluntary permitting framework for incidental take associated with otherwise lawful activities, including wind energy, under the existing BGEPA (50 CFR 22.26). Applications for incidental take permits under BGEPA are being considered by USFWS for bald eagles throughout the contiguous United States. Incidental take permits for golden eagles are available only to projects located west of the 100th meridian (USFWS 2013a). However, since 2009, only three incidental take permits for golden eagles have been granted to a wind energy project, and no permits for incidental take of bald eagles at a wind energy facility have been issued. USFWS issued Final Rule revising the permit regulations in December 2016 after collecting public comment relative to eagle population management objectives, compensatory mitigation, and programmatic permit issuance. The Final Rule provided for a 30-year permit term, incorporated a practicability standard, re-defined eagle management units, and modified some permit requirements. The Draft Eagle Conservation Plan Guidance, that outlines the recommended steps for permit applicants, was released by USFWS in February 2011 (USFWS 2011a), with revised technical appendices released in August 2012 (USFWS 2012b). USFWS released Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy: Version 2 (ECP Guidance; USFWS 2013a) in April 2013.

2.3 Endangered Species Act

The ESA directs USFWS to identify and protect endangered and threatened species and their critical habitat, and to provide a means to conserve their ecosystems. Among its other provisions, the ESA requires USFWS to assess civil and criminal penalties for violations of the ESA or its regulations. Section 9 of the ESA makes it unlawful to knowingly violate the "take" provisions of the ESA. "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" (16 USC 1532). "Harass" is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly impair normal behavioral patterns including breeding, feeding or sheltering." Significant modification or degradation of listed species' habitats where the modification actually kills or injures wildlife by significantly impairing essential behavioral patterns is considered "harm" under ESA regulations.

2.4 Non-regulatory Framework

In addition to regulatory drivers, the WCS also briefly discusses bird species included on the USFWS list of Birds of Conservation Concern (BCC). Although these species are not formally protected under any regulatory laws, BCC species are closely monitored by USFWS due to population declines and/or rare occurrences in a specific region. As a result, BCC species that might be encountered at the Project are included in this WCS. Development of the BCC category for birds was the result of a 1988 amendment to the Fish and Wildlife Conservation Act that mandates the USFWS identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. The overall goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. The BCC categorization is intended to stimulate coordinated and collaborative proactive conservation actions among federal, state, tribal, and private partners (USFWS 2008a). The proposed Project Area is located in the Prairie Potholes Bird Conservation Region (BCR 11) and only BCC species for this region are discussed in the WCS. Additionally,

USFWS Region 6 has identified Regional Priority Species (PS) that are the focus of regional conservation efforts for a variety of reasons; and these species are also discussed in the WCS.

2.5 State Protection

The protection and regulation of species not listed under the federal ESA is typically at the discretion of state wildlife agencies The North Dakota Century Code 20.1-04-02 prohibits any person, without a permit, from hunting, taking, killing, possessing, conveying, shipping, or causing to be shipped, by common or private carrier, selling, or bartering any game bird or any part thereof taken in the state and North Dakota Century Code 20.1-04-03 prohibits any person, without a permit, from killing, catching, taking, shipping, causing to be shipped, purchasing, offering or exposing for sale, selling, having in that person's possession or under that person's control any harmless wild bird or any part thereof. Imported songbirds used as domestic pets are excluded from the regulation. The nests of birds protected under this state regulation are also protected. Harmless wild birds includes all wild birds except harmful wild birds (blackbirds, magpies, English sparrows, and starlings) or game birds (all varieties of geese, brant, swans, ducks, plovers, snipes, woodcocks, grouse, sagehens, pheasants, Hungarian partridges, quails, partridges, cranes, rails, coots, wild turkeys, mourning doves, and crows). The regulation does not define the term "take", making it uncertain whether incidental deaths are prohibited.

North Dakota does not have a state endangered or threatened species list, and only those species listed by the ESA are considered threatened or endangered in North Dakota. NDGFD has identified 115 Species of Conservation Priority (SCP), or those in greatest need of conservation in the state (Dyke et al. 2015) to aid in managing these species and prioritizing their conservation; however, these species are not afforded regulatory protection.

Species are categorized into three levels according to conservation need, with Level I representing highest conservation need and Level III representing moderate conservation need:

- Level I – species of high conservation priority due to state or range-wide declines, or at-risk species for which North Dakota constitutes the core breeding range;
- Level II – species of moderate conservation priority, or species that are of high conservation priority but have support from other wildlife programs; and
- Level III – species of moderate conservation priority that are believed to be peripheral or non-breeding in North Dakota.

All federally-threatened and endangered species are assigned a Level II category, except for the northern long-eared bat (*Myotis septentrionalis*), which is assigned Level I status. To facilitate reporting, species categorized by NDGFD as Level I, II, or III are referred to in this report as state SCP, with the understanding that these species are not afforded regulatory protection as noted above.

3 PROJECT DESCRIPTION

3.1 Project Components

The Project has a proposed nameplate capacity of approximately 150 megawatts (MW), anticipated to consist of up to 75 Vestas 2.0-MW wind turbine generators (Figure 2). Additional Project facilities include

access roads, electrical collection systems and cabling, a collection substation, a switchyard, an operation and maintenance (O&M) building, meteorological towers (nine temporary and one permanent), and a temporary construction laydown area. Interconnection to the existing transmission line will be made at the Project substation, so no new transmission line will be built.

The Project is located on 20,029 acres (approximately 31 square miles) of private lands. Although the turbines will be placed throughout the Project Area, Project structures will occupy approximately 81.13 acres during operation, or less than 1 percent of the total Project Area. The Project Area extends approximately 8.5 miles (13.7 km) north to south at its greatest extent, and approximately 5 miles (8.0 km) west to east at its greatest extent.

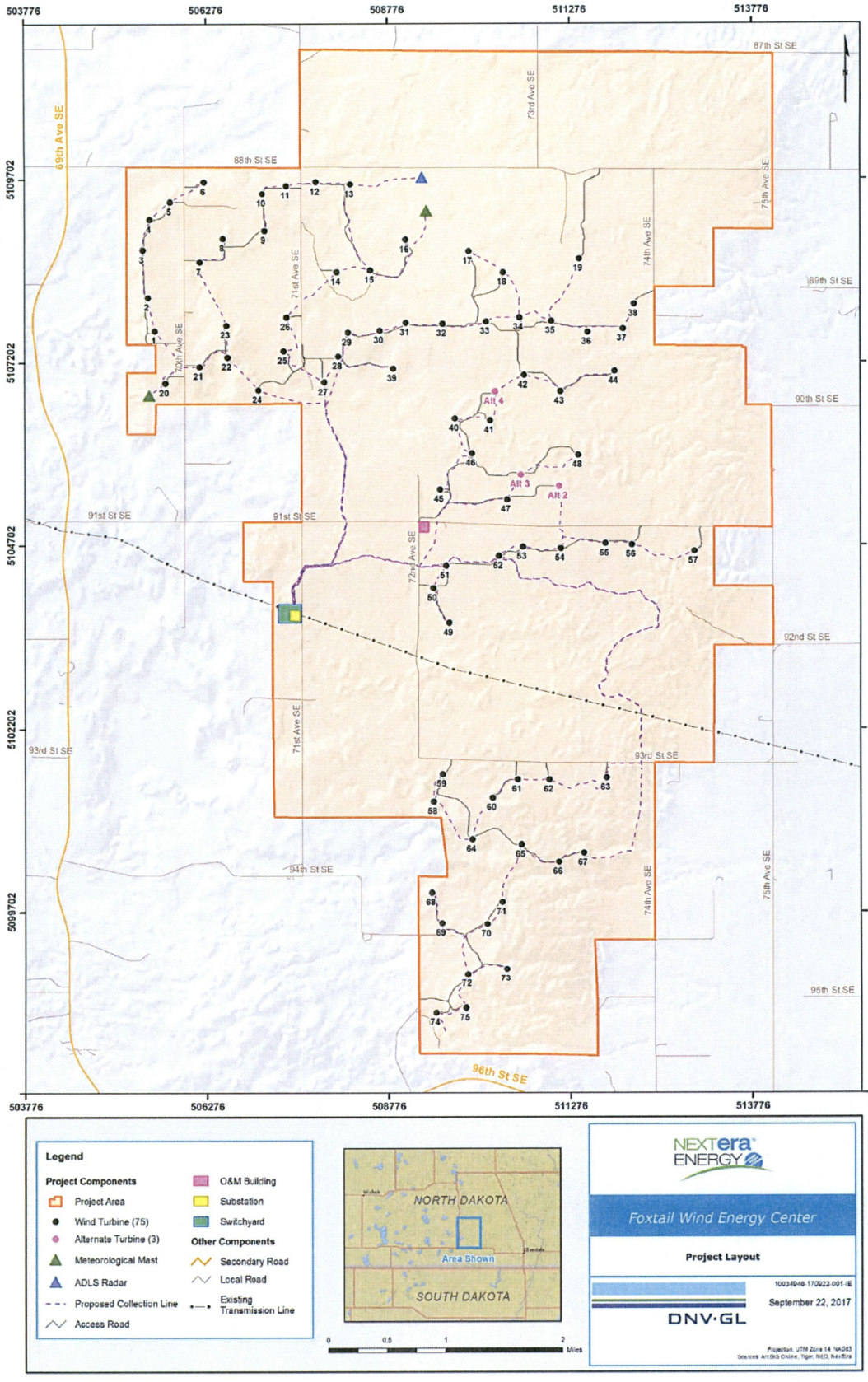

Figure 2. Project Layout

3.2 Site Description

3.2.1 Tier 1 Evaluation Areas

In January 2008, Tetra Tech, Inc. (Tetra Tech) conducted a desktop analysis of a 269,384-acre evaluation area in Stutsman, Logan, Lamoure, McIntosh and Dickey Counties, North Dakota and McPherson County, South Dakota comprising the Rough Rider I Wind Resource Area (WRA) (Tetra Tech 2008a). The Foxtail Wind Energy Center is in Dickey County within the southern portion of the Rough Rider I WRA (Figure 3). As part of the initial site screening for both evaluation areas, Tetra Tech evaluated existing, publicly available Geographic Information System (GIS) data on the proposed Project Area, including land ownership, National Land Cover Database (NLCD), U.S. Geological Survey (USGS) Ecoregions, the National Wetlands Inventory, the National Hydrography Database, Federal Emergency Management Agency floodplains. Factors that influenced the selection of the Rough Rider I WRA were wind resource, interested landowners, proximity to transmission, and input from local officials.

In 2013, Tetra Tech performed Tier 1 evaluation of The Foxtail Wind Energy Center comprising 55,975 acres in Dickey and McIntosh Counties, ND (Tetra Tech 2013). This evaluation area was nested within the Rough Rider WRA, and contained the current Project. The 2013 Tier 1 evaluation considered a broader area than the current Project Area in order to provide flexibility in siting, consistent with the intent of the WEG. Although larger areas than the Foxtail Project Area were considered, NextEra does not intend additional wind energy development within the evaluation areas described in this section of the WCS.

The evaluation areas for Tier 1 are located in the Missouri Coteau region of the Northwestern Glaciated Plains (USGS 2007). The Northwestern Glaciated Plains ecoregion marks the western most extent of continental glaciation and is characterized by significant surface irregularity and high concentrations of wetlands. The rise in elevation along the eastern boundary of the ecoregion defines the beginning of the Great Plains. The glacially carved rolling hummocks of the Missouri Coteau enclose numerous wetland depressions or potholes. Streams and rivers are nearly absent, as are upland deciduous forests. Land use on the Missouri Coteau is a mixture of tilled agriculture of hay and spring wheat in flatter areas and cattle grazing on steeper slopes. The area receives 15 to 17 inches of precipitation annually and average daily temperatures range from 21 degrees Fahrenheit (°F) in January to 83°F in July. Native mixed-grass prairie remains on unbroken rangeland.

The Tier 1 preliminary site evaluation identified species of concern with the potential to occur within the Rough Rider I WRA, including 6 federally listed or protected avian species and 18 avian North Dakota Level I SCP (see Section 4). Additionally, one federally-listed and ND Level I SCP mammal, northern long-eared bat (NLEB) has the potential to occur within Dickey County, ND. Other SCP potentially present in the evaluation area include two terrestrial mammals, two amphibians, two reptiles and two insects. This WCS focuses on upland species; aquatic species were considered, but not included in the analyses because impacts to aquatic habitats are extremely limited from the Project. The following species of concern are evaluated in detail to determine the likelihood of occurrence within the Foxtail Project Area in Section 4.1:

- Whooping crane (*Grus americana*; Federally Endangered)
- Piping plover (*Charadrius melodus*; Federally Threatened)
- Red knot (*Calidris canutus rufa*; Federally Threatened)
- Northern long-eared bat (Federally Threatened, Level I ND SCP)
- Sprague's pipit (*Anthus spragueii*; Level I state SCP)

- Baird's sparrow (*Ammodramus bairdii*); Level I state SCP
- Bald eagle (*Haliaeetus leucocephalus*; Federally Protected)
- Golden eagle (*Aquila chrysaetos*; Federally Protected)
- Sharp-tailed grouse (*Tympanuchus phasianellus*; Level II state SCP)
- Dakota skipper (*Hesperia dacotae*; Federally Threatened)

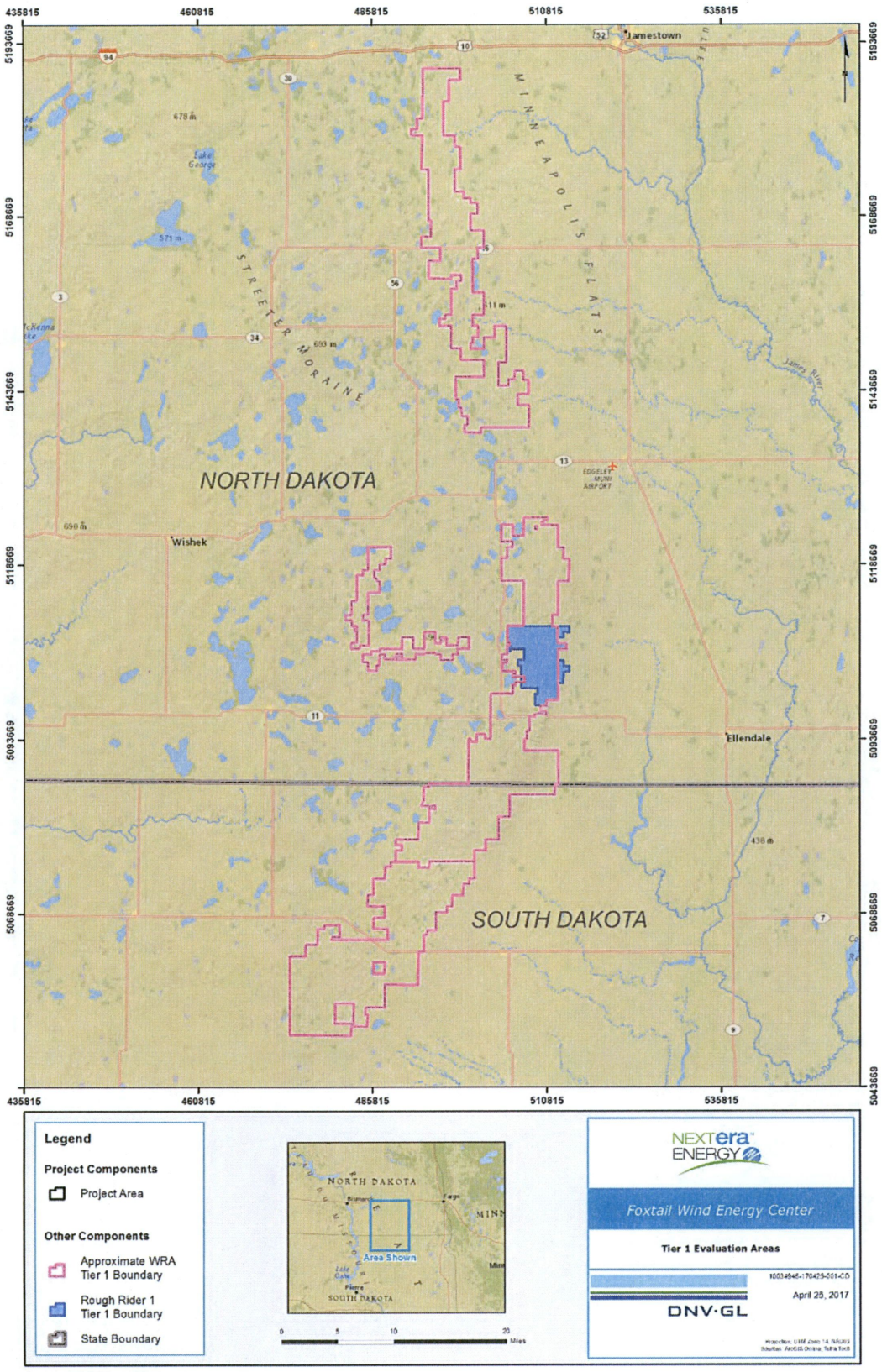

Figure 3. Tier 1 Evaluation Areas

3.2.2 Tier 2 Site Characterization Area

Tier 2 Site Characterization studies were carried out by Tetra Tech on the Rough Rider I WRA in Dickey County, ND in 2007-2009 and in the Foxtail Wind Energy Center Project Area in 2013-2014 to systematically characterize these potential sites in terms of the risk wind energy development would pose to species of concern and their habitats. The two Site Characterization Areas were within the Rough Rider I WRA and largely overlapped, but there are some differences in lands included in the two (Figure 4). They are therefore described separately here and in subsequent sections.

The Rough Rider I WRA comprised 16,118 acres of prairie grasslands (tame pasturelands [i.e., pastures and hayfields] and native prairie), agricultural croplands, and wetlands. A site reconnaissance visit was conducted in October 2007, and noted that the Rough Rider I WRA contained small to large wetlands that varied from shallow, vegetated depressions to deeper, open water lakes; some of these wetlands had been converted to cropland. A Piping Plover Likelihood of Occurrence Assessment was prepared in February 2009 (Tetra Tech 2009a), and a windshield Native Prairie Survey was completed by Tetra Tech in September 2008 with additional areas surveyed in March 2009 (Tetra Tech 2008b, 2009b).

A site reconnaissance visit to the Foxtail Wind Energy Center was conducted in October 2013 (Tetra Tech 2013). No avian or bat species of concern were observed during the site visit. Dominant land cover within the Project Area was confirmed to be pasture, grasslands, and croplands in October 2013. Tree cover was scarce and found primarily in windbreaks for fields and residences composed of deciduous trees such as cottonwood (*Populus spp.*) and elm (*Ulmus spp.*). Land use in the Project Area is a mixture of cattle ranching and agriculture. Several large bodies of water were observed during the field visit in addition to smaller wetlands throughout the Project Area. It was noted that Waterfowl Production Areas within and bordering the Project Area could support large numbers of breeding ducks seasonally. In March 2015, Tetra Tech completed a desktop Whooping Crane Likelihood of Occurrence Assessment (Tetra Tech 2015a) for the Foxtail Wind Energy Center Project Area. In the whooping crane assessment, Tetra Tech evaluated the suitability of the Project Area for whooping cranes compared to the landscape context in a 35-mile radius area surrounding the Project Area. A windshield Native Prairie Survey was completed by Tetra Tech in August 2014 (Tetra Tech 2014).

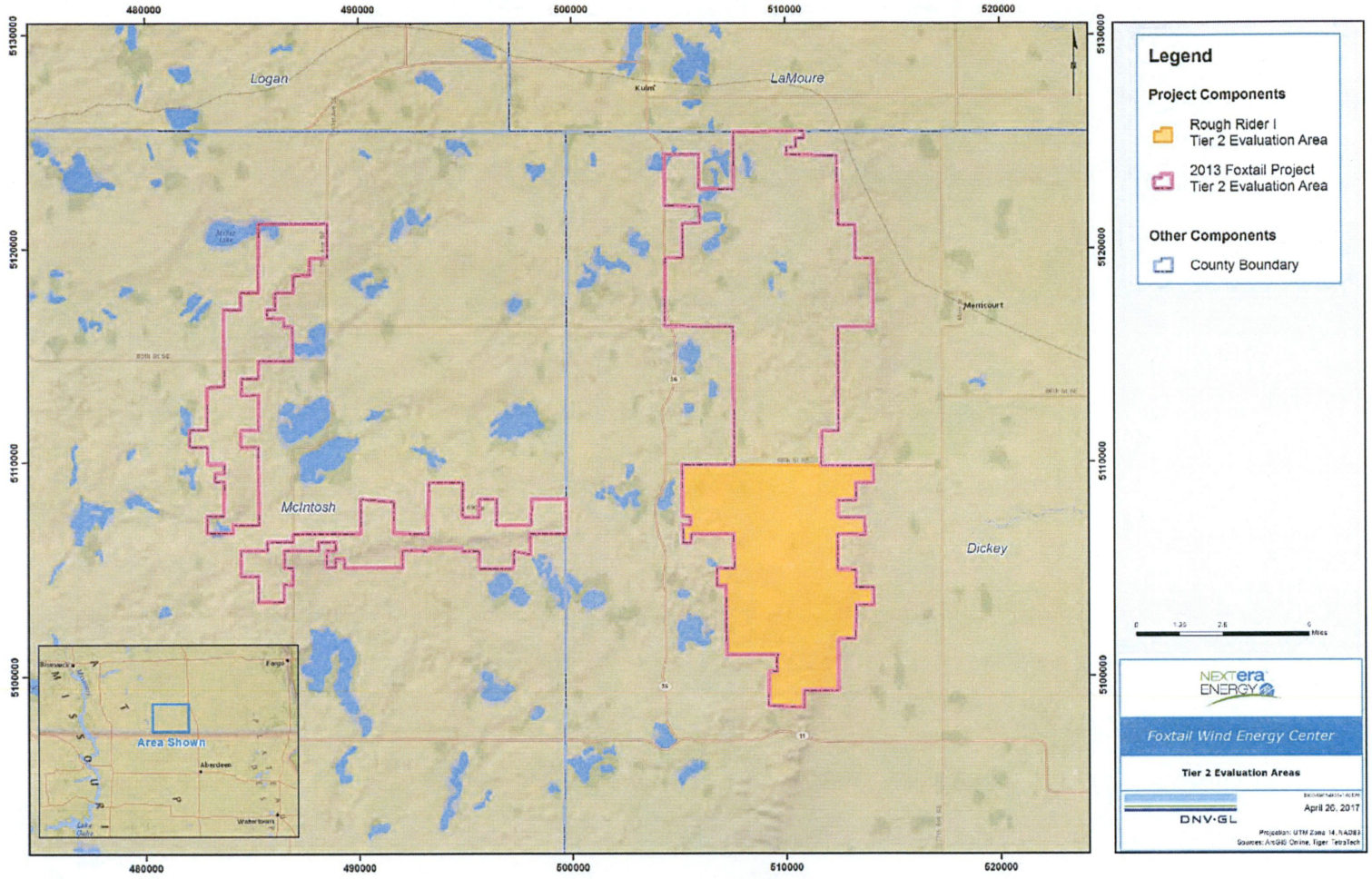

Figure 4. Tier 2 Evaluation Areas

3.2.3 Baseline Habitat Management

According to National Land Cover Data (NLCD; Homer et al. 2015) for North Dakota, the primary plant communities within the Foxtail Project Area are as follows (Figure 5, Table 2):

- Grasslands/herbaceous – approximately 61 percent
- Hay/pasture – approximately 12 percent
- Cultivated crops – approximately 9 percent
- Shrub/scrub – approximately 9 percent
- Open water – approximately 7 percent
- Developed/open spaces – approximately 2 percent
- Emergent herbaceous wetlands – approximately 1 percent

In addition, the Project Area contains less than 1 percent of each of the following land covers: deciduous forest, woody wetlands, barren land, developed low intensity, developed medium intensity, and evergreen forest.

Table 2 Land Cover Types at the Project (NLCD[1])

Land Use/ Land Cover Description	Acres in Project Area	Percent of Project Area
Grassland/Herbaceous	12,129.75	60.56%
Pasture/Hay	2,420.49	12.08%
Cultivated Crops	1,773.54	8.85%
Shrub/Scrub	1,714.81	8.56%
Open Water	1,320.18	6.59%
Developed, Open Space	341.45	1.70%
Emergent Herbaceous Wetlands	270.37	1.35%
Deciduous Forest	52.09	0.26%
Woody Wetlands	5.10	0.03%
Barren Land (Rock/Sand/Clay)	1.55	0.01%
Developed, Low Intensity	0.00	0.00%
Developed, Medium Intensity	0.00	0.00%
Evergreen Forest	0.00	0.00%
TOTAL	20,029.34	100.00%

[1] Homer et al. 2015

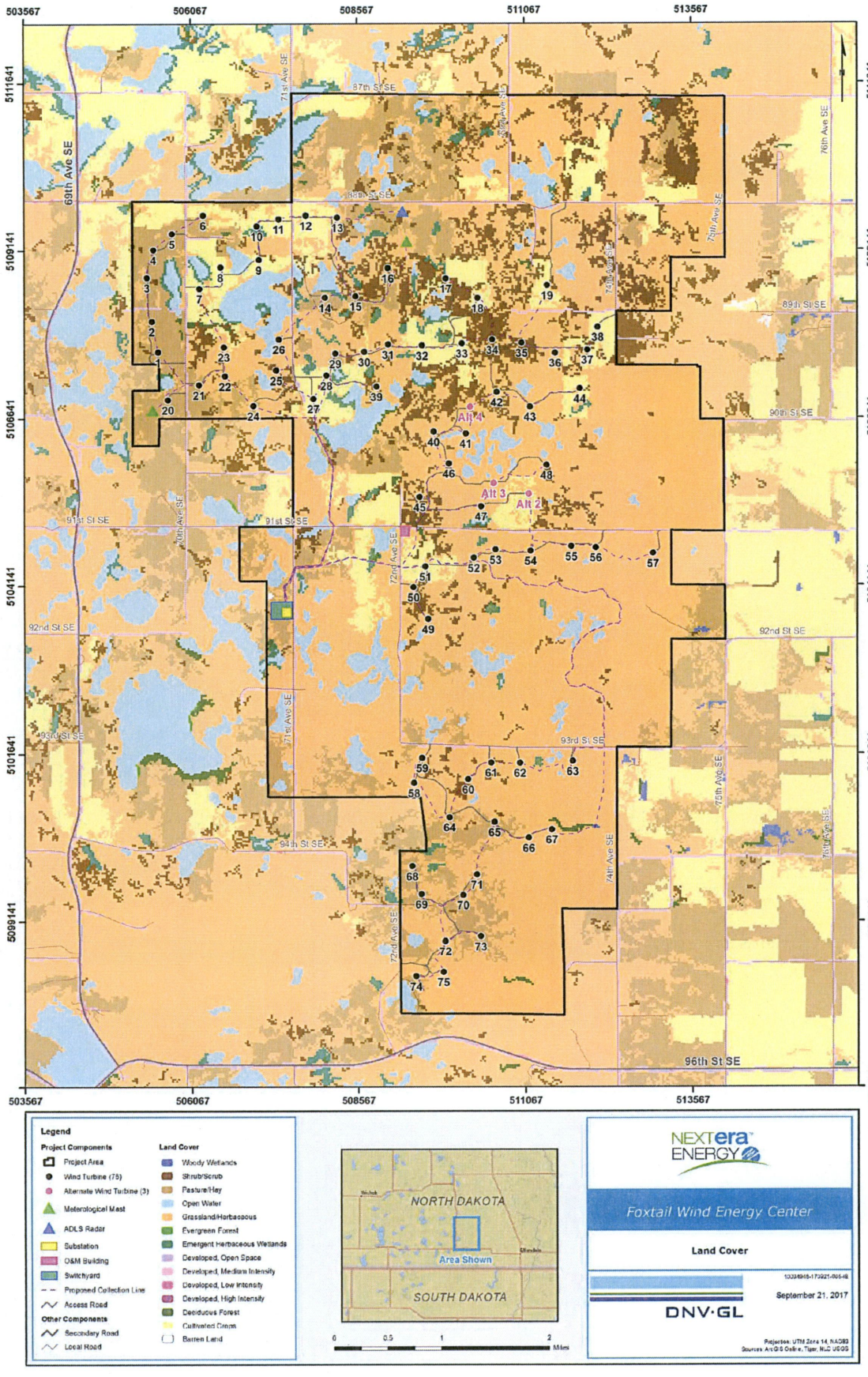

Figure 5. Land Cover

In addition to the general land uses listed above, the USFWS manages lands including their easements within the Project Area (Figure 6). One USFWS Waterfowl Production Area (WPA), the Reinke WPA, is within the Project Area. Development is precluded within WPAs, and no project infrastructure is located within the Reinke WPA. The nearest project infrastructure to the WPA is a road, which is approximately 30 m outside the WPA; the nearest turbine is 193 m from the WPA. Four other WPAs, the Leola State Bank (LSB) WPA, Erienbusch WPA, Rutschke WPA, and the North Rutschke WPA are within one mile of the Project Area. These WPAs are managed by the Kulm Wetland Management District. Wildlife Production Areas are open to a variety of public uses including hunting, fishing, trapping, wildlife observing, and environmental education. There are no National Wildlife Refuges (NWRs) within the Project Area; the nearest NWR is the Maple River NWR, located approximated 20 miles east of the Project Area.

The USFWS also holds Farmer Home Administration (FmHA), wetland, and grassland easements within the Project Area. These easements are legal agreements between landowners and the USFWS to protect wetlands and grasslands that are vital to wildlife habitat. The USFWS owns the perpetual rights to certain wetland basins within wetland easements which cannot be burned, drained, filled, or leveled without authorization under a Special Use Permit from the USFWS. The upland portions of wetland easements may be developed without a permit as long as the wetland basins are avoided. The USFWS owns the perpetual rights to the entire grassland easements, and plowing, grading, and development within an easement are not allowed without authorization under a Special Use Permit. Within FmHA easements, the USFWS may own rights to wetland basins, shelterbelts, and/or other features. Each FmHA easement has its own specific regulations that may prohibit draining or filling of wetlands, require vegetation buffers around wetlands, or may restrict the cultivation of grasslands (USFWS 2013c). Approximately 5,419 acres of wetland easements, 298 acres of grassland easements, 4,078 acres of grassland/wetland combination easements, and 800 acres of other FmHA easements exist within the Project Area (Figure 6).

The North Dakota Game and Fish Department (NDGFD) holds Private Land Open to Sportsmen (PLOTS) agreements with private landowners within the Project Area, and allows walk-in public access to otherwise private land. Normal farming and ranching activities are allowed in these PLOTS agreements. Three areas, totaling approximately 324 acres are enrolled in the PLOTS program. Foxtail was previously unaware of the presence of CRP SAFE lands within the Project area based on review of the CRP contracts provided by the landowner, but has since verified with FSA that two turbines (#38 and 44) are located on this type of CRP contract.

Foxtail Wind has identified several exclusion and avoidance areas in the Project Area based on criteria defined in North Dakota Administrative Code (NDAC) Article 69-06, including areas potentially important to wildlife (Figure 6). The Reinke WPA and jurisdictional wetlands were avoided, and the Project is expected to impact < 0.10 acres of these wetlands when avoidance measures are applied. Foxtail Wind avoided placing infrastructure on USFWS grasslands or grassland/wetland combination easements and is working with USFWS Refuge staff to avoid impacts on protected basins within the USFWS wetland easements. Foxtail acknowledges that indirect impacts to easements may still be possible, but it has taken all practicable measures to avoid foreseeable impacts. Additional analysis of native prairie to inform avoidance and minimization of impacts to this important component of the ecosystem was conducted in subsequent tiers.

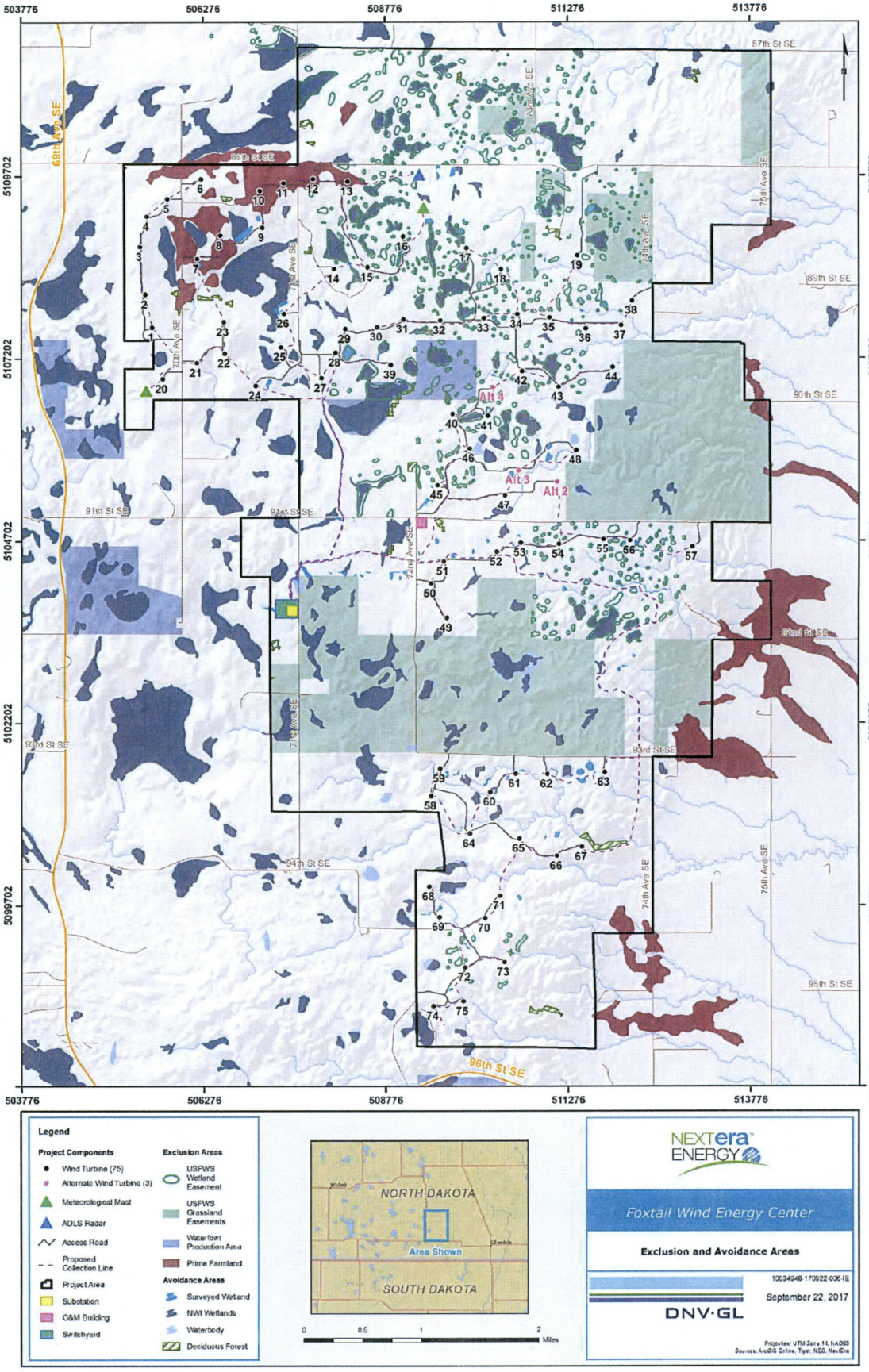

Figure 6. Exclusion and Avoidance Areas

4 PROJECT HISTORY OF BIRD AND BAT PRESENCE AND RISK ASSESSMENTS

4.1 Tier 1: Preliminary Site Evaluation

Per the WEG, Tier 1 evaluation focuses on the larger landscape surrounding a potential Project, and is designed to serve as a preliminary, high level screening for the presence of species of concern and sensitive habitats that may need to be investigated in subsequent tiers to resolve uncertainty. The subsections below address the WEG questions specific to Tier 1 analysis.

4.1.1 Decision to Abandon or Move Foreword

4.1.1.1 Are Species or Habitats of Concern Present?

Native prairie and the following special-status wildlife species were identified as potentially present within the Project Area and were therefore evaluated in detail to determine the likelihood of occurrence within the proposed Project Area and potential risks to these species and their habitats.

Habitat

Native Prairie – Based on the 2014 windshield native prairie assessment, approximately 14,109 acres (71 percent) of the 20,012-acre (at the time of the assessment) proposed Project Area were identified as potential native prairie and 1,522 acres (8 percent) was determined to be non-native (tame) prairie. Native prairie is a habitat of concern because it may support the Dakota skipper, Sprague's pipit, and other grassland bird species, including species of habitat fragmentation concern. See Section 5.1 for details.

Birds

Whooping Crane – The Project Area is within the whooping crane migration corridor, and a desktop assessment concluded that there is a low likelihood of occurrence of this species within the Project Area. See Section 5.2 for a detailed analysis.

Area-Sensitive Grassland Birds (Sprague's Pipit, Baird's Sparrow, and Chestnut-collared Longspur)- Sprague's pipit is dependent on contiguous native prairie habitat and was petitioned for listing under the ESA in 2008. In 2010 the species was identified as a Candidate Species for listing under ESA. The USFWS determined that federal listing was not warranted in April 2016 but asked that the public submit new information as it becomes available concerning Sprague's pipit or its habitat (USFWS 2016b). The species has the potential to occur within Dickey County (USFWS 2016b) and the likelihood of its occurrence in the Project Area is moderate. Baird's sparrow also breeds in native prairie habitats with little shrub cover (Green et al. 2002). The species breeds primarily in western North Dakota but has the potential to occur in the Project Area. Like Baird's sparrow, the chestnut-collared longspur has the potential to occur within the Project Area and breeds in grasslands with low shrub cover and litter accumulation. The chestnut-collared longspur often uses grazed and mowed areas because they provide vegetation less than 20-30 cm (8 – 12 inches) in height (Bleho et al. 2015, Rosenberg et al. 2016). See Section 5.1 for a detailed analysis.

Sharp-tailed Grouse – Sharp-tailed grouse occur in areas dominated by relatively dense herbaceous cover and shrubs, and the habitat within the Project Area may therefore be suitable for the species. The likelihood

of occurrence is high, and the species has been documented as present within the Project Area. See Section 5.2 for a detailed analysis.

Piping Plover – Piping plovers nest on sparsely vegetated sand or gravel beaches adjacent to alkali wetlands, and on sparsely vegetated interior riverine sandbars. The historic breeding range of the piping plover does not include Dickey County and to date there have been no recorded occurrences of breeding pairs in Dickey County (Tetra Tech 2009a). The likelihood of occurrence of this species within the Project Area is therefore probably low.

Rufa Red Knot - An interior migratory route for red knot occurs through the Great Plains states, with stopover areas generally characterized by large wetlands and lakeshores. Observations of red knot during migration are scattered throughout the state, with no known occurrences in Dickey County (eBird 2017), and there are no stopover sites consistently used by the species in North Dakota. No suitable red knot habitat has been observed in the Project Area. The likelihood of occurrence of this species within the Project Area is therefore probably low.

Bald Eagle – Bald eagles are likely to occur in the vicinity of the Project Area. There is one in-use bald eagle nest 2.9 miles from the Project Area (See Section 5.2), and an unoccupied large stick nest consistent with bald eagles 2 miles from the Project Area. Bald eagles have been observed to be present within and near the Project Area, and the likelihood of occurrence is high. See Section 5.2 for a detailed analysis.

Golden Eagle – Golden eagles may occur year-round in North Dakota. There are no known golden eagle nests within 10 miles of the Project Area; however, golden eagles have been observed within the Project Area. The likelihood of golden eagle occurrence is therefore moderate to high. See Section 5.2 for a detailed analysis.

Mammals

Northern Long-Eared Bat – The NLEB is the only listed bat species with the potential to occur within the Project Area and therefore was evaluated in detail to determine the likelihood of occurrence within the Project Area and the potential risks to this species and its habitat. This species' range includes Dickey County (BCI 2014, USFWS 2016a). The County is within the USFWS white nose syndrome buffer (USFWS 2017a). The species has a low likelihood of occurrence in the Project Area during breeding season, but there is uncertainty regarding its occurrence during migration. See Section 5.3 for a detailed analysis.

Gray Wolf – Gray wolf has the potential to occur in Dickey County (USFWS 2017b). The gray wolf was listed as endangered in 1974 (USFWS 2014a, USFWS 2014b). Gray wolves previously inhabited a large portion of the United States in a variety of habitats including tundra, forests, grasslands, and deserts. Gray wolf sightings are rare to occasional in North Dakota, no known breeding populations occur in North Dakota (NDGFD 2017), and the Project Area lacks forested areas known to support wolf pack establishment and persistence (USFWS 2012c, NaturServe 2017). Therefore, this species has been eliminated from further consideration in this WCS because there is a low to moderate likelihood of the species transiting the Project Area, but it is unlikely to maintain a local resident population.

Insects

Dakota skipper and Poweshiek skipperling – Landscape-scale habitat evaluation indicated that there are no known occurrences of Dakota skipper within Dickey County (USFWS 2017c). The native prairie survey concluded that suitable habitat for the species is present within the Project Area and that 98.6 percent of areas surveyed represented unsuitable habitat (Tetra Tech 2015b). The species has not been documented in

the vicinity of the Project, and due to a history of continuous grazing, invasion of non-native species, and woody encroachment, the likelihood of occurrence is low to moderate; however, due to uncertainty regarding occurrence, further investigation is warranted in subsequent tiers. The Poweshiek skipperling is known to occur only in Wisconsin, Michigan, and Manitoba, and may have been extirpated from the Dakotas (USFWS 2014d), therefore the species is unlikely to occur in the Project Area. See Section 5.4 for a detailed analysis of habitat for both species.

4.1.1.2 Does the Landscape Contain Areas Precluded by Law or Areas that are Designated as Sensitive?

The USFWS, the U.S. Forest Service, and NDGFD maintain conservation areas to help preserve habitats critical to migratory birds and other species of concern (e.g., recreation areas, National Wildlife Refuges [NWR], National Grasslands, state parks, and state wildlife areas). Based on both literature review and agency websites, there are no National Grasslands (USFS 2011) or state wildlife management areas (WMA; NDGFD 2016) in the Project Area; the nearest WMA to the Project is the Johnson's Gulch WMA, located approximately 2.5 miles from the Project. The USFWS has confirmed that there are easements in the Project Area including Farmers Home Administration (FmHA), grassland, wetland, and wetland-grassland complexes (WET/GRA, GRA/WET, WET/GRA/WET). There is one USFWS waterfowl production area (WPA), the Reinke WPA, within the Project Area and another, the Rutschke WPA, adjacent to, but outside the Project Area. An additional three WPAs are located within one mile of the Project (LSB, North Rutschke, and Erlenbusch). The Project is located within the Kulm Wetland Management District (USFWS 2014e). Foxtail Wind believes there is currently no project infrastructure overlapping with USFWS easements, and is coordinating with the Kulm Wetland Management District on concurrence to avoid impacts. The closest NWR to the Project Area is Maple River NWR, located approximated 20 miles east of the Project. Additionally, Sand Lake NWR is approximately 31 miles southeast of the Project. There are no other NWRs within 50 miles of the Project. The Project is within the Missouri Coteau Breaks Focus Area per the North Dakota SWAP (Dyke et al. 2015). Development is not precluded by law from Focus Areas; however, they represent broad areas containing natural habitats and communities that are rare in North Dakota. The Tier 1 evaluation area did not contain known bald eagle or golden eagle nests.

4.1.1.3 Are There Critical Areas of Wildlife Congregation?

No known critical areas of wildlife congregation were identified within the Project Area during Tier 1 screening, but the WPA and the NWRs discussed in Section 4.1.1.2 may draw concentrations of migratory birds, particularly waterfowl, to the general vicinity. Additionally, the native grassland habitats of the Missouri Coteau Breaks Focus Area are considered sensitive.

4.1.1.4 Is There Potential to Fragment Large, Intact Habitats for Species that are Sensitive to Habitat Fragmentation?

The USFWS North Dakota Field Office lists 11 species of habitat fragmentation concern for the state: Baird's sparrow, bobolink, chestnut-collared longspur, grasshopper sparrow, greater prairie-chicken, greater sage grouse, northern harrier, sedge wren, sharp-tailed grouse, Sprague's pipit, and upland sandpiper (USFWS 2013b). Except for the greater prairie-chicken and sedge wren, it is possible that these species may potentially occur within the Project Area due the presence of potentially suitable habitat. Habitat fragmentation is the division of large, continuous habitats in to smaller patches of habitat separated by dissimilar matrix. Although grassland habitats were historically maintained by disturbance including grazing, excessive mowing or grazing may fragment or degrade the value of grasslands for many species. Portions

of the Project Area are already fragmented and in use as pasture or crop production. A network of county roads exists throughout the Project Area; although these roads are not barriers to wildlife movement, their presence disrupts the continuity of the landscape, contributing to habitat fragmentation. There are areas of native prairie that could be sensitive to habitat fragmentation; these native prairie patches are further evaluated in subsequent tiers to resolve uncertainty. Foxtail Wind has delineated and avoided siting turbines in areas of high quality native prairie in order to minimize impacts.

4.2 Tier 2: Site Characterization

Per the WEG, Tier 2 analysis focuses on a subset of the landscape comprising the proposed Project Area and its immediate vicinity. Tier 2 is designed to reduce uncertainty regarding potential impacts remaining after Tier 1 analysis and to assist in identifying species of concern and sensitive habitats that may warrant additional investigation in Tier 3 to resolve uncertainty.

4.2.1 Abandon Site or Advance to Field Surveys to Support a Bird and Bat Conservation Strategy?

4.2.1.1 Are Plant Communities or Vegetation Habitats of Conservation Concern Present?

Native prairie, a plant community of conservation concern, was detected within the Project Area during the Tier 2 Site Characterization. Using the results of the native prairie assessment (see Section 5.1), Foxtail Wind determined that high quality native prairie could be mostly avoided by the Project. The Project is within the Missouri Coteau Breaks Focus Area according to the North Dakota State Wildlife Action Plan (SWAP) (Dyke et al. 2015). Native prairie was further evaluated on-site in Tier 3 to reduce uncertainty regarding impacts.

4.2.1.2 What Species of Birds and Bats are Likely to Use the Proposed Site?

Birds

North Dakota has 353 documented bird species (Faanes and Stewart 1982), and is situated within the Central Flyway, one of several broad bird migratory routes in North America (USFWS 2011b). During fall migration, most birds that move along the Central Flyway travel from breeding grounds as far away as Alaska and northern Canada through the central states, eventually reaching wintering grounds near the Gulf of Mexico, and as far away as South America (USFWS 2011b). Resident and migratory birds may use the Project Area for foraging, hunting, shelter, breeding and nesting, and possibly as a stopover site during migration.

Species present within the Project Area are likely to be common grassland/agriculture birds of North Dakota. Waterfowl and waterbird species are likely to use the wetlands or large waterbodies as breeding and migratory stopover areas. Raptor species breeding in the Project Area are likely to be in low numbers, and mostly restricted to species adapted to open grassland and agriculture habitats such as great-horned owls, Swainson's hawks, and red-tailed hawks. Grassland species have the potential to occur within the native prairie that occurs within the Project Area. To determine the species that are likely to use the Project Area, DNV GL reviewed the results from the closest National Audubon Society Christmas Bird Count (CBC) circle and USGS Breeding Bird Survey (BBS) route, summarized below.

Christmas Bird Count – The closest CBC location is the Sand Lake National Wildlife Refuge Count (SDSL) approximately 35 miles southeast of the Project Area (National Audubon Society 2010). There are 70 species that have been observed during the SDSL CBC over the last 10 years (2007–2016) (Table 3). Species of conservation concern documented during the SDSL CBC in the last decade include two USFWS BCC (Table 3).

Table 3 Species and Average Counts for the SDSL Christmas Bird Count Circle from 2007–2016

Species Group	Average Count/Year[1]
Songbirds	
Red-winged Blackbird	458.1
House Sparrow	440.2
European Starling	282.3
Common Redpoll	176.3
Snow Bunting	150.7
American Tree Sparrow	139.2
Horned Lark	84.1
Blue Jay	49.3
American Goldfinch	37.4
Dark-eyed Junco	36.9
Cedar Waxwing	22.1
American Robin	5.2
Northern Shrike	5.0
Brewer's Blackbird	4.0
House Finch	3.5
White-breasted Nuthatch	3.4
Common Grackle	3.2
American Crow	2.9
Black-capped Chickadee	2.3
Pine Siskin	2.3
Purple Finch	2.0
Rusty Blackbird	1.7
Unknown sparrow	1.6
Yellow-headed Blackbird	1.4
Brown-headed Cowbird	1.3
Lapland Longspur	1.0
Brown Creeper	0.2
Harris's Sparrow	0.2
Loggerhead Shrike	0.1
Waterfowl	
Mallard	1297.6
Canada Goose	572.8
Snow Goose	41.7
Northern Pintail	1.3

Species Group	Average Count/Year[1]
Common Goldeneye	1.1
Tundra Swan	1.1
Ruddy Duck	0.8
Redhead	0.6
Blue-winged Teal	0.2
Green-winged Teal	0.2
Pied-billed Grebe	0.2
Western Grebe	0.2
Common Merganser	0.1
Greater White-fronted Goose	0.1
Cranes and Rails	
American Coot	4.2
Gamebirds	
Ring-necked Pheasant	796.3
Wild Turkey	5.0
Sharp-tailed Grouse	1.9
Doves/Pigeons	
Rock Pigeon (Feral Pigeon)	108.2
Mourning Dove	4.3
Eurasian Collared-Dove	0.2
Raptors	
Bald Eagle[2]	11.1
Great Horned Owl	10.8
Rough-legged Hawk	10
Northern Harrier	2.5
Red-tailed Hawk	2.2
Snowy Owl	1.6
Short-eared Owl[2]	1.1
American Kestrel	0.8
Merlin	0.5
Sharp-shinned Hawk	0.4
Long-eared Owl	0.3
Prairie Falcon	0.1
Cooper's Hawk	0.1
Woodpeckers	
Downy Woodpecker	10.1
Hairy Woodpecker	5.2
Northern Flicker	2.3
Red-bellied Woodpecker	1.0
Northern Flicker (Yellow-shafted)	0.2
Yellow-bellied Sapsucker	0.1

Species Group	Average Count/Year[1]

Source: National Audubon Society. 2010.
[1] Average number of individuals counted / year.
[2] USFWS Bird of Conservation Concern, BCR 11 (USFWS 2008a).

Breeding Bird Survey – The nearest USGS BBS is the Danzig Survey Route (#64006), which ends approximately 6 miles to the northeast and is situated along similar agricultural, grassland, and riparian habitats. The Danzig Survey Route has documented 97 species of birds that potentially breed in the area (Table 4). Most of these species are associated with grassland habitat, agricultural areas, or wetland habitat. The Project Area is approximately 60.6 percent grassland, 21.0 percent agriculture (8.9 percent cultivated crops and 12.1 percent pasture/hay), 8.6 percent shrub/scrub, grassland/herbaceous habitat, and 1.4 percent wetland habitat, indicating that similar species could breed in the Project Area.

Species of conservation concern documented during the Danzig BBS include 9 USFWS BCC in the last decade (Table 4 and Table 5). Sprague's pipit (Section 4.1.1.1), which prefers short-grass native prairie, was observed only once in the last 20 years (in 2001) during the Danzig BBS (Table 5). The species has also been observed during the Edgeley BBS (#64006), located approximately 14 miles from the Project, but not during the Forman BBS (#64001) located approximately 55 miles from the Project, within the last 20 years. As approximately 71 percent of the Project Area is native prairie, it is possible that the Sprague's pipit could occur within the Project Area. Chestnut-collared longspur also has been documented on the Danzig BBS in the last decade. Baird's sparrow, however, has not been observed during the Edgeley, Danzig, or Forman Survey BBSs over the last 20 years.

Table 4 Species Encountered and Their Abundance on the Danzig Breeding Bird Survey Route

Species Group	Birds/Route[1]	Preferred Breeding Habitat
Songbirds		
Red-winged Blackbird	258.4	grasslands/agriculture
Yellow-headed Blackbird	97.6	shrub/woodlands
Brown-headed Cowbird	90.2	grasslands
Common Grackle	56.1	grasslands/agriculture
Western Meadowlark	46.7	shrub/woodlands
Brewer's Blackbird	41.9	shrub/wetlands
Barn Swallow	30.1	grasslands/agriculture
Savannah Sparrow	24.6	grasslands/agriculture
Bobolink	20.5	grasslands/agriculture
Common Yellowthroat	17.8	shrub/agriculture
Eastern Kingbird	17.5	wetlands
Clay-colored Sparrow	15.2	grasslands/agriculture
House Sparrow	14.9	grasslands/agriculture
Western Kingbird	14.6	shrub/woodlands
Grasshopper Sparrow[2]	13.2	grasslands/agriculture

Species Group	Birds/Route[1]	Preferred Breeding Habitat
Horned Lark	11.3	wetlands/open areas
Tree Swallow	9.2	shrub/woodlands
Marsh Wren	8.6	wetlands
European Starling	8.1	shrub/grasslands
Dickcissel[2]	7.3	wetlands
Sedge Wren	7.3	shrub/woodlands
Song Sparrow	5.8	shrub/woodlands
Vesper Sparrow	5.4	shrub/woodlands
American Robin	5	agriculture/wetlands
Yellow Warbler	4.6	forests/woodlands
Cliff Swallow	4.2	grasslands/agriculture
American Goldfinch	3.4	grasslands/agriculture
Bank Swallow	2.6	grasslands/agriculture
Willow Flycatcher	2.1	shrub/woodlands
Orchard Oriole	1.2	grasslands/agriculture
Brown Thrasher	1.2	grasslands
American Crow	0.4	cliffs/open areas
Chestnut-collared Longspur[2]	0.3	grasslands/agriculture
Nelson's Sparrow[2]	0.3	wetlands
Northern Rough-winged Swallow	0.3	wetlands/agriculture
Lark Bunting	0.2	grasslands
Chipping Sparrow	0.1	grasslands/agriculture
Eastern Phoebe	0.1	woodlands
Gray Catbird	0.1	shrub/woodlands
House Finch	0.1	agriculture/developed
House Wren	0.1	grasslands/agriculture
Lark Sparrow	0.1	agriculture/grasslands
Least Flycatcher	0.1	shrub/woodlands
Le Conte's Sparrow	0.1	grasslands
Say's Phoebe	0.1	grasslands
Gulls/Terns		
Ring-billed Gull	43.3	wetlands
Franklin's Gull	9.7	wetlands
Black Tern[2]	3.4	wetlands
Common Tern	1.2	wetlands
California Gull	0.6	wetlands

Species Group	Birds/Route[1]	Preferred Breeding Habitat
Forester's Tern	0.2	wetlands
Waterfowl		
Mallard	62.1	wetlands
Gadwall	52	wetlands
Blue-winged Teal	44.5	wetlands
Canada Goose	34.6	wetlands
Lesser Scaup	24.4	wetlands
Northern Shoveler	14.7	wetlands
Northern Pintail	14.2	wetlands
Redhead	9.1	wetlands
American Wigeon	8.7	wetlands
Ruddy Duck	6.2	wetlands
Western Grebe	5.6	wetlands
Pied-billed Grebe	2.7	wetlands
Green-winged Teal	1.3	wetlands
Canvasback	0.8	wetlands
Bufflehead	0.3	wetlands
Ring-necked Duck	0.2	wetlands
Wood Duck	0.2	wetlands
Hooded Merganser	0.1	wetlands
Waterbirds		
Double-crested Cormorant	25.9	wetlands
American White Pelican	16.1	agriculture/wetlands
Black-crowned Night-Heron	4.2	wetlands
American Bittern[2]	2.8	wetlands
Great Blue Heron	0.2	wetlands
Great Egret	0.1	wetlands
Cranes/Rails		
American Coot	13.1	wetlands
Sora	2.6	wetlands
Shorebirds		
Killdeer	28.3	wetlands
Upland Sandpiper[2]	14.3	grasslands
Marbled Godwit[2]	9.9	wetlands
Wilson's Snipe	6	wetlands
Willet	5	wetlands

Species Group	Birds/Route[1]	Preferred Breeding Habitat
American Avocet	2.6	wetlands
Wilson's Phalarope	1.1	wetlands
Spotted Sandpiper	0.1	wetlands
Gamebirds		
Ring-necked Pheasant	36.2	grasslands/agriculture
Sharp-tailed Grouse	0.4	grasslands/agriculture
Doves/Pigeons		
Mourning Dove	28.9	shrub/open areas
Rock Pigeon	5.3	urban areas
Eurasian Collared-dove	0.2	agriculture/developed
Raptors		
Swainson's Hawk[2]	3.2	grasslands/agriculture
Red-tailed Hawk	2.4	grasslands/agriculture
Northern Harrier	1.6	grasslands/wetlands
Ferruginous Hawk	0.4	grasslands
Great Horned Owl	0.1	forests
Woodpeckers		
Northern Flicker (yellow-shafted)	0.4	forests

Source: Pardieck et al. 2016.
[1] These numbers reflect the abundance of the species near the survey route. They are averages of the total counts along the route for the period 2005-2014. Because each survey route is 24.5 mi long, and consists of 50, 3 minute counts along the length of the route, the abundance estimate represents the number of birds that a biologist would encounter in about 2.5 hours of roadside birding in the area near the BBS route.
[2] USFWS Bird of Conservation Concern, BCR 11 (USFWS 2008a).

Birds of Conservation Concern – The Project Area is in BCR 11 within the Prairie Pothole Joint Venture (USFWS 2008a; Rosenberg et al. 2016) and in USFWS Region 6 (Mountain-Prairie Region; USFWS 2017d). The USFWS has identified 27 Birds of Conservation Concern (BCC) for BCR 11 (Table 5). In addition, the USFWS has identified 20 Priority Species (PS) and 19 Focal Species (FS) for Region 6 (Table 5), for a total of 43 species of concern. None of the species are currently listed as federally endangered or threatened. Six species are non-breeding migrants that may pass through the region, and possibly the Project Area, during spring and fall migration. Eleven BCC species were observed during avian surveys in the Rough Rider I WRA and/or Foxtail Project Areas (grasshopper sparrow, dickcissel, Swainson's hawk, bald eagle, American bittern, upland sandpiper, marbled godwit, short-billed dowitcher, horned grebe, black tern, and red-headed woodpecker; see Section 5.2.2.2).

Two BCC species (short-eared owl, bald eagle) have been observed within the last 10 years during the SDSL CBC, one of which (bald eagle) is also a Priority Species for Region 6 (Table 5). One additional species identified as a Focal Species for Region 6 was also recorded during the SDSL CBC (northern pintail)

(Table 6). There have been no federally listed threatened or endangered species observed during the SDSL CBC.

Nine BCC species have been detected along the nearby BBS route (chestnut-collared longspur, dickcissel, Nelson's sparrow, grasshopper sparrow, American bittern, Swainson's hawk, black tern, marbled godwit, and upland sandpiper) (Table 5), three of which are also identified as PS and FS for Region 6 (grasshopper sparrow, marbled godwit, and upland sandpiper) (Table 6). Five of these species (chestnut-collared longspur, dickcissel, grasshopper sparrow, Swainson's hawk, and upland sandpiper) are found in grasslands and/or agricultural habitat, and therefore also could be found within the Project Area. An additional four species were recorded during the BBS that are not BCC but are identified as PS or FS for Region 6 (bobolink, ferruginous hawk, northern pintail, and lesser scaup); bobolink and ferruginous hawk are both associated with grasslands and/or agricultural habitat. The remaining four BCC species (American bittern, black tern, marbled godwit, and Nelson's sparrow) and remaining two FS species (lesser scaup and northern pintail) prefer wetlands or woodlands. Wetlands comprise approximately 1.3 percent of the Project Area and may provide habitat for wetland species such as bitterns, bald eagle, black tern, marbled godwit, northern pintail, lesser scaup, and Nelson's sparrow. However, most wetland patches in the Project Area are small (i.e., smaller than < 10 acres), with only three patches having contiguous areas of 10 acres or greater, which would preclude use for area-sensitive waterbird species such as black tern (49-acre minimum, NDGFD 2015) and lesser scaup (>25-acre minimum, GBBO 2010). Nelson's sparrow and American bittern are known to use smaller wetland patches of 12 acres (Dechant et al. 2002) and 0.01 acres (USFWS 2001) respectively, and are more likely to occur in the Project Area. AreaWoodlands comprise less than one percent of the project area and occur as small, mostly linear fragments that are widely separated by grassland matrix; it is not expected that large numbers of woodland species such as red-headed woodpecker would occur within the Project Area.

Table 5 USFWS Birds of Conservation Concern for BCR 11

Species	Residency Status Near Project Area/Notes	Previously Detected in Vicinity of Project Area
Chestnut-collared Longspur	Breeder – summer resident	BBS
Dickcissel	Breeder – summer resident	BBS
McCown's Longspur	Project outside of range	No
Smith's Longspur	Migration	No
Baird's Sparrow	Breeder – summer resident	No
Nelson's Sparrow	Breeder – summer resident	BBS
Sprague's Pipit	Breeder – summer resident; USFWS 2016 decision - not warranted for listing under ESA.	No[1]
Grasshopper Sparrow	Breeder – summer resident	BBS
Short-eared Owl	Overwintering	CBC
Black-billed Cuckoo	Breeder – summer resident	No
Red-headed Woodpecker	Breeder – summer resident	No
Horned Grebe	Breeder – summer resident	No

Species	Residency Status Near Project Area/Notes	Previously Detected in Vicinity of Project Area
American Bittern	Breeder – summer resident	BBS
Least Bittern	Rare	No
Swainson's Hawk	Breeder – summer resident	BBS
Buff-breasted Sandpiper	Migration	No
Short-billed Dowitcher	Rare	No
Black Tern	Breeder – summer resident	BBS
Bald Eagle	Breeder – year-round resident	CBC
Mountain Plover	Rare	No
Upland Sandpiper	Breeder – summer resident	BBS
Long-billed Curlew	Rare	No
Hudsonian Godwit	Rare	No
Marbled Godwit	Breeder – summer resident	BBS
Buff-breasted Sandpiper	Migration	No
Peregrine Falcon	Rare	No
Yellow Rail	Migration; Project outside of breeding range	No

Sources: USFWS 2008a; Sibley 2003 (residency status); NDGFD 2015 (residency status).

[1]Not detected in last 10 years, but was detected in BBS prior to that

Table 6 USFWS Priority Species and Focal Species for Region 6

Species	Residency Status Near Project Area/Notes	PS/FS Status[1]	Detected in Vicinity of Project Area
Bobolink	Breeder – summer resident	FS	BBS
Sprague's Pipit	Breeder – summer resident; USFWS 2016 decision - not warranted for listing under ESA	PS, FS	No[2]
Grasshopper Sparrow	Breeder – summer resident	PS, FS	BBS
Trumpeter Swan	Rare	PS, FS	No
Cinnamon Teal	Rare	PS	No
Bald Eagle	Breeder – year-round resident	PS	CBC
Ferruginous Hawk	Breeder – summer resident	PS	BBS
Golden Eagle	Migration; Project is east of breeding range	PS	No

Species	Residency Status Near Project Area/Notes	PS/FS Status[1]	Detected in Vicinity of Project Area
Sandhill Crane	Migration; Project Area may be out of range - considered "Possible Range" by NDGFD	PS	No
Mountain Plover	Rare	PS, FS	No
Upland Sandpiper	Breeder – summer resident	PS, FS	BBS
Long-billed Curlew	Rare	PS, FS	No
Hudsonian Godwit	Rare	PS, FS	No
Marbled Godwit	Breeder – summer resident	PS, FS	BBS
Buff-breasted Sandpiper	Migration	PS, FS	No
Flammulated Owl	Project outside of range	PS	No
Western Burrowing Owl	Breeder – summer resident	PS, FS	No
Peregrine Falcon	Rare	PS	No
Band-tailed Pigeon	Rare	PS	No
Cassin's sparrow	Project outside of range	PS	No
Henslow's Sparrow	Rare	PS, FS	No
Northern Pintail	Breeder – summer resident	FS	BBS, CBC
Greater Scaup	Rare	FS	No
Lesser Scaup	Breeder – summer resident	FS	BBS
Yellow Rail	Migration; Project outside of breeding range	FS	No
Black Rail	Project outside of range	FS	No
Snowy Plover	Project outside of range	FS	No

Sources: USFWS 2017d; Sibley 2003 (residency status); NDGFD 2015 (residency status).

[1] PS – USFWS Region 6 Priority Species; FS – USFWS Region 6 Focal Species.

[2] Not detected in last 10 years, but was detected in BBS prior to that

Avian Species of Habitat Fragmentation Concern – Of the 11 species of habitat fragmentation concern with the potential to occur in the Project Area, eight have been detected in the vicinity of the Project during BBS or CBC surveys. These species are bobolink, chestnut-collared longspur, grasshopper sparrow, northern harrier, sedge wren, sharp-tailed grouse, Sprague's pipit, and upland sandpiper (Tables 3 and 4). Sprague's pipit has not been detected in the vicinity of the Project within the last 10 years. These species are further addressed in Section 5.2.

Bats

Of the 11 bat species known to occur in North Dakota (Barnhart and Gillam 2016, BCI 2017), five species have moderate or high potential to occur within the vicinity of the Project Area based on available information about species-specific suitable habitat, known distribution ranges, and documented occurrences (Tetra Tech 2017a). Three species that have a moderate or high likelihood of occurring in the Project Area (silver-haired bat [*Lasionycteris noctivagans*], hoary bat [*Lasiurus cinereus*], and eastern red bat [*Lasiurus borealis*]) migrate to southern latitudes during winters. The remaining species with a moderate or high likelihood of occurring in the Project Area, big brown bat (*Eptesicus fuscus*) and little brown bat (*Myotis lucifugus*), are non-migratory. Northern long-eared bat (*Myotis septentrionalis*), a short-distance migrant, has a low likelihood of occurring in the Project Area during the breeding season due to lack of suitable roosting habitat; however, it may potentially pass through on migration if populations occur in the vicinity of the Project. There is uncertainty regarding this possibility because surrounding areas have not been systematically surveyed for presence of the species.

Non-developed and non-agricultural habitats (open water, forested, wetlands, and shrub/scrub) typically provide the best foraging opportunities for bats, and account for approximately 16 percent of the Project Area. *Myotis* species have demonstrated preferential foraging in riparian forest and edge habitats (Rogers et al. 2006). A recent study indicated that some *Myotis* species, including northern long-eared bat, associate with grasslands in North Dakota, although mostly when juxtaposed within a forest/shrubland mosaic (Barnhart and Gillam 2016). The forested habitats available within the Project Area comprise less than one percent of the total area (Table 4) and are unlikely to provide preferred foraging habitat for *Myotis* species. There is evidence to indicate that non-*Myotis* species such as big brown bat (Rogers et al. 2006) and eastern red bat (Walters et al. 2006) forage over agricultural lands (cultivated crops and/or pasture/hay), which comprise approximately 21 percent of the Project Area.

The Project Area contains a limited number of small forested riparian corridors (Figure 5) that tree-roosting bats could potentially use as roosting sites, but these represent small, isolated patches and are not significant features from a regional perspective. There are also small stands of forested wetlands along the margins of scattered wetlands located throughout the Project Area. There are no known winter bat hibernacula within the Project Area. According to published records (Murphy 2007) and a surveillance field visit (Tetra Tech 2013) there are likely no caves or other natural rock or crevice formations in the Project Area that would serve as suitable hibernacula. The closest documented cave is Keller's Cave, located approximately 60 miles west of the Project; all other documented caves are greater than 125 miles from the Project (Murphy 2007). There are two known openings to Keller's Cave that extend to at least 7 feet below the surface (Murphy 2007). There are no abandoned mines within the Project Area; the closest mine that could provide potential roosting habitat for bats is the Griswold Mine, an abandoned surface gold mine located approximately 53 miles northeast of the Project Area (NDPSC 2017). The suitability of this mine for roosting bats is unknown. The limited roosting habitat and hibernacula within the Project Area is a major

limiting factor for use of the Project Area by migrating bats. Therefore, bat migration through the Project Area is likely low in magnitude.

Roosting colonies of big brown bat and little brown bat have a high probability of occurring within the Project Area because of their known association with human-made structures and widespread presence in North Dakota (Gillam and Barnhart 2011; Tetra Tech 2013). Northern long-eared bats are also known to use anthropogenic structures (Gillam and Barnhart 2011), but more frequently roost and hibernate in natural features and thus have a low likelihood of occurrence in the Project Area (Tetra Tech 2013). Eastern red bat, hoary bat, and silver-haired bat have a high likelihood of occurring in the Project Area, primarily during migration. These three migratory species are associated with forested habitats and would most likely occur in small woodlots present in the Project Area during migration, which takes place from May through September in North Dakota (Cryan 2003, Cryan and Veilleux 2007).

The remaining five species found in North Dakota (fringed bat [*Myotis thysanodes*], long-eared bat [*Myotis evotis*], long-legged bat [*Myotis volans*], western small-footed bat [*Myotis ciliolabrum*] and Townsend's big-eared bat [*Corynorhinus townsendii*]) have a low likelihood of occurrence in the Project Area based upon species range, known habitat associations, and available habitat within the Project Area.

4.2.1.3 Is There Potential for Significant Adverse Impacts to Those Species?

The Tier 1 and Tier 2 evaluation results show low potential for significant adverse impacts regarding birds, bats, or other wildlife species or their habitats within the Project Area based on the landscape scale analysis appropriate to these tiers. Based on the habitat present, abundance of cultivated crops, and the distance from forested habitats, there is a low potential for impacts to bats. There is likely higher potential for adverse impacts to individuals of some species of birds due to the large number of water bodies and the large amount of native prairie within the Project Area; however, any impacts are not expected to be significant at the population level, because avian and bat populations are generally large and interconnected by dispersal, occupy large amounts of space outside the Project, and are unlikely to be affected by impacts to isolated individuals. To resolve uncertainty regarding impacts, additional study was conducted on-site during Tier 3.

4.2.1.4 Is There a High Probability of Significant Adverse Impacts That Cannot be Avoided or Minimized?

The Tier 2 site-specific characterization was consistent with the Tier 1 Site Evaluation in that there was a low probability of significant adverse impacts on wildlife or their habitats; however, any impacts can likely be avoided or minimized. Therefore, Foxtail Wind decided to move forward with focused, Tier 3 field studies of the Project Area to further evaluate the presence of bird and bat species and reduce uncertainty regarding potential impacts. The data from those studies are used to inform this WCS.

5 TIER 3: FIELD STUDIES

Based on the results of the Tier 1 and Tier 2 analysis, Foxtail Wind conducted Tier 3 field studies in accordance with the WEG (USFWS 2012a) to better understand risks to wildlife from development of the Project and to facilitate Project design in a way that minimizes impacts. Surveys conducted at the Project are summarized in Table 7 and described in detail in this section. Studies related to wildlife due diligence at the Project were conducted in 2008-2009, 2013, 2014-2015, and 2017.

Table 7 Summary of Survey Efforts To-Date at the Project

Study (Report)	Focus	Survey Type	Dates Conducted
Rough Rider Critical Issues Analysis	Tier 1/Tier 2	Desktop Analysis	January 2008
Rough Rider I Fall Avian Survey Report	All Birds	Point Counts	21 August – 11 November 2008
Rough Rider I Native Prairie Survey	Native Prairie Habitat/Dakota Skipper	Desktop/Road-based Survey	October 2008
Bat Likelihood of Occurrence Assessment for Seven Proposed Wind Energy Facilities in North Dakota and South Dakota	All Bats	Desktop Analysis	February 2008
Piping Plover Likelihood of Occurrence Report	Piping Plover	Desktop Analysis	February 2009
Rough Rider I Spring Avian Survey	All Birds	Point Counts	29 March – 7 June 2009
Rough Rider I Native Prairie Survey – Expansion Area	Native Prairie Habitat/Dakota Skipper	Desktop/Road-based Survey	16-17 June 2009
Foxtail Critical Issues Analysis	Tier 1/Tier 2	Desktop Analysis	December 2013
Foxtail Native Prairie Survey	Native Prairie Habitat/Dakota Skipper/Poweshiek Skipperling	Desktop/Road-based Survey	14-15 August 2014
Foxtail Dakota Skipper Habitat Suitability Report	Dakota Skipper and Poweshiek Skipperling	Field Delineation	3-5 August 2015
Foxtail Fall 2014 Avian Survey	All Birds	Point Counts	20 August – 6 November 2014
Foxtail Bat Habitat Assessment	All Bats	Desktop Analysis	February 2015
Foxtail Whooping Crane Likelihood of Occurrence Report	Whooping Crane	Desktop Analysis	March 2015
Foxtail Spring 2015 Avian Survey	All Birds	Point Counts	17 March – 11 June 2015
2014-2015 Foxtail Eagle Survey	Bald and Golden Eagles	Point Counts	21 August 2014 – 4 September 2015
2015 Foxtail Raptor Nest Survey	Raptor Nests	Aerial Survey	26 March 2015
2017 Foxtail Raptor Nest Survey	Raptor Nests	Aerial Survey	April-May 2017
2017 Foxtail Eagle Survey	Bald and Golden Eagles	Point Counts	March-November

Study (Report)	Focus	Survey Type	Dates Conducted
			2017
2017 Foxtail Grouse Lek Survey	Sharp-tailed Grouse	Aerial and Ground-based Survey	April – May 2017
2017 Micrositing and Grassland Delineation	Native Prairie	Field Delineation	18-20 May 2017
2017 Foxtail Whooping Crane Potentially Suitable Habitat Assessment	Whooping Crane	Desktop	June 2017
2017 Foxtail Bat Habitat Assessment	All Bats	Desktop	June 2017

5.1 Habitat Assessment

5.1.1 Methods

Foxtail Wind evaluated native prairie for suitability for species dependent on native grasslands, with a focus on the Dakota skipper and Poweshiek skipperling. Although not all grassland species are overtly considered in the analyses that follow, Foxtail believes that the highest quality grasslands for most species are captured in this way, and the impacts to the grassland ecosystem are thereby minimized in the best, practicable way. The approach used standard methods described by the USFWS (USFWS 2015c) to identify skipper habitat. Further analysis to overlay skipper habitat with grasslands of highest value to grassland birds (contiguous native prairie in patches ≥ 160 acres) was developed in coordination with the USFWS North Dakota Field Office to identify high quality grasslands with the greatest potential to support a diverse grassland community. Native prairie assessments were carried out in four stages as the Project Area changed over time. This section reviews surveys conducted for Rough Rider I and Foxtail Project Areas, and focuses on results specific to the Foxtail Project Area. In each assessment, Tetra Tech conducted an initial desktop native prairie assessment for the proposed Project. Field surveys occurred during growing seasons in three different years, which facilitated understanding interannual variation in vegetation at the Project Area. The desktop assessments preliminarily classified areas of potential native prairie within the Project Area using the following GIS and spatial imagery data:

- NLCD land cover data (Homer et al. 2007, Homer et al. 2015);
- U.S. Department of Agriculture cropland data (USDA 2007, USDA 2013);
- National Agriculture Imagery Program (NAIP) aerial photographs (USGS 2014); and
- Google Earth Pro (2008, 2014).

Tetra Tech clipped NLCD and cropland data to the Project Area and viewed the resulting imagery in Google Earth Pro. The Project Area was also overlaid on NAIP aerial imagery. Using the above data sources, Tetra Tech delineated areas that appeared to contain native prairie vegetation on hardcopy maps and then digitized them using ArcGIS software. Biologists performed field verification of areas delineated as potential native prairie during the desktop habitat assessment via road-based surveys from public rights-of-way to confirm the presence of native prairie and classify potential Dakota skipper and Poweshiek skipperling

habitat. The grassland type was determined based on several visual cues including the following: dominant visible plant species, particularly the proportion of native to non-native species in core areas away from fence lines; frequency of typical native prairie species, such as forbs (herbaceous flowering plants) that are not as common in tilled and seeded pastureland compared to native prairie; topography (feasibility of being tilled); presence of piles of rocks (which indicate clearing of rock from an area in preparation for cultivation); and vegetation growing in obvious rows (indicating prior tilling and seeding). Visual assessment of a few portions of the Project Area was not possible due to lack of access from public rights-of-way. Biologists classified areas that were not visible from the roads, and thus were not visually assessed, as "Undetermined." Potential Dakota skipper/Poweshiek skipperling habitat was identified based on criteria set forth by USFWS (2002, 2015b).

Rough Rider I - In 2008, Tetra Tech conducted an initial desktop assessment and road-based survey within the original, 11,209-acre Rough Rider I Project Area (Tetra Tech 2008b). Field Surveys were conducted on 5, 10, and 16 September 2008. A July 2009 Native Prairie Assessment evaluated an additional 4,909 acres in the expanded Rough Rider I Project Area (Tetra Tech 2009b).

Foxtail Wind Energy Center - In September 2014, Tetra Tech completed a native prairie assessment for the Foxtail Project Area, which comprised 20,013 acres at that time. The assessment included a desktop screening and field surveys (conducted 14-15 August 2014; Tetra Tech 2014). The primary objective of the 2014 native prairie assessment was to evaluate the Project Area for habitat quality for the Dakota skipper and Poweshiek skipperling. The field surveys were road-based and conducted from within public rights-of-way. Total area included in the survey was 20,012 acres. Grasslands were primarily evaluated to determine their suitability as habitat for the Dakota skipper and poweshiek skipperling. Habitat quality was evaluated based on (1) the presence of key plant species, such as little bluestem, dropseed, coneflower, camas, and black-eyed susan (2) presence of high quality prairie fens, grassy lake and stream margins or high/dry areas with sparse shrub and (3) intensity of land disturbance. Grasslands were broadly classified as excellent, good, or fair/poor quality butterfly habitat. Excellent habitat was defined as grasslands where only light grazing had occurred and at least 1 key plant species was present; good habitat was defined as areas with moderate grazing and where key plant species were either present or not; and fair/poor habitat was defined as grasslands where heavy grazing had occurred and key plant species were either present or not. Grazing intensity was recorded for grasslands by estimating the percentage of vegetation grazed in broad classes: <25 percent (light), 25-50 percent (moderate), and >50 percent (heavy).

In August 2015, Tetra Tech and Wenck Associates, Inc. performed additional pedestrian field surveys to delineate Dakota skipper habitat on 12 parcels on which wind turbines were proposed. The 12 parcels were classified as Excellent/Likely or Good/Possible habitat for Dakota skipper using USFWS criteria during the 2014 road-based survey (Tetra Tech 2015b). The survey was focused on Type B habitat, defined by the USFWS as habitat occurring primarily on rolling grassland over gravelly glacial moraine deposits that is dominated by native prairie species such as little bluestem grass, purple coneflower, upright prairie coneflower, and common gaillardia (USFWS 2015c).

On May 18-20, 2017, Foxtail Wind completed turbine micrositing surveys in the Project Area. During the micrositing surveys, native prairie and Dakota skipper habitat suitability evaluations were completed for each proposed turbine location. The surveys expanded on previous surveys completed in 2014 and 2015. The purpose of the micrositing field survey was twofold: (1) to identify turbines sited in native prairie remnants, and (2) to evaluate the overall butterfly habitat quality of the identified native prairie. Each turbine location was visually surveyed to determine if it contained remnant native prairie or tame grassland

that had been previously cultivated based on the composition of native and non-native species, presence of forbs, topography, and other factors. Grassland quality was then determined by evaluating plant diversity, current grazing level, and dominant composition (native or non-native) to define three levels of grassland quality – poor, good, and excellent. In locations that were identified as good to excellent, surveyors then determined if appropriate habitat was present for the Dakota skipper.

Using methods similar to those used in the 2014 and 2015 surveys, each Potentially Suitable habitat area was evaluated for plant community composition (native, non-native, woody species) and current grazing level to define three levels of grassland quality – Poor/Unlikely, Good/Possible, and Excellent/Likely.

- Poor/Unlikely habitat was heavily grazed or ungrazed, had moderate to heavy invasion of non-native species, and was surrounded by either poor quality or existing disturbances (e.g., roads, cropland).
- Good/Possible habitat was lightly to moderately grazed, had moderate to low invasion from native species, and was surrounded by similar quality native prairie.
- Excellent/Likely habitat was lightly grazed, had little to no invasion from non-native species (0-25 percent), and was surrounded by similar excellent native prairie.

Analysis for Other Grassland Species at Foxtail Wind Energy Center - To understand potential impacts to area-sensitive grassland birds and other grassland species included in the list of state SCP, Foxtail combined the habitat-based analysis above with a guild-based approach. In recognition of the importance of native grasslands in large, contiguous tracts to most species, Foxtail, in coordination with USFWS, used the 160-acre tract size recommended as suitable habitat for Sprague's pipit (WAPA and USFWS 2015) to identify areas of native prairie occurring in large, unbroken tracts, and defined these as areas of high quality native prairie. Although large tracts within the Project Area are protected under USFWS easements, the USFWS and Foxtail agreed it was desirable to identify other areas of highest priority for avoidance. A geographic information system (GIS) was therefore used to cross-tabulate areas of good/possible and excellent Dakota skipper habitat from the 2014-15 native prairie assessments with contiguous tracts of grassland ≥ 160 acres to identify the subset of grasslands in the Project Area most suitable for a broad range of grassland species.

5.1.2 Results

Rough Rider I - The expanded Rough Rider I Project Area contained a total of 11,545 acres of native prairie, 1,685 acres of tame grasslands, and 2,888 acres of non-grasslands.

Foxtail Wind Energy Center - At the time of the 2014 Native Prairie Survey, the Project Area contained approximately 20,013 acres. Approximately 14,109 acres (70.5 percent) of the Project Area were identified as potential native prairie, 1,522 acres (7.6 percent) were classified as tame grasslands, and 28.7 acres (0.002 percent) were classified as wet complex lands (emergent wetlands and wetland meadows). The remainder of the Project Area (4,353 acres) was non-grassland.

5.1.2.1 Dakota skipper/Poweshiek skipperling

Rough Rider I – Of the 11,545 acres of native prairie, 294 (2.2 percent) acres were classified during the road-based survey as excellent, and 6,112 (46.2 percent) were classified as good habitat for the Dakota

skipper (Figure 7). The remainder of the Rough Rider I Project Area was classified as fair/poor habitat for the Dakota skipper.

Foxtail Wind Energy Center – Of the 15,658 acres classified as native prairie or tame grasslands, the road-based survey found that 13,601 acres (23 percent) were excellent or good habitat, and 2,041.1 acres (76.9 percent) were poor/fair habitat for Dakota skipper and Poweshiek skipperling. The 2014 assessment concluded that due to the overall quality of habitat within the Project Area, the likelihood of occurrence for Dakota skipper and Poweshiek skipperling was low.

The August 2015 field survey covered 2,141 total acres of native prairie, of which 2,111.2 acres were found to be unsuitable for Dakota skipper and Poweshiek skipperling. A total of 26 acres (1.2 percent) were found to be Good/Possible habitat and 3.8 acres (0.4 percent) were found to be Poor/Unlikely habitat (Table 8). None of the areas tentatively identified as Excellent/Likely habitat by the 2014 assessment were found to match criteria for that category during the 2015 delineation. The majority of the Project Area was not suitable habitat for the Dakota skipper due to invasion of nonnative species, heavy grazing, and woody encroachment. However, scattered areas of potential Type B Dakota skipper habitat were documented, primarily in the eastern portion of the survey area. None of the planned turbine locations were within mapped areas of potential Type B habitat.

During the 2017 micrositing, Foxtail Wind shifted turbine locations to avoid areas containing cultural resources, wetlands, excellent native prairie, and other constraints. Of the 83 turbine locations visited during micrositing, 51 were in native prairie, 2 were in tame prairie, and 30 were in cropland. Zero proposed turbine locations were in Excellent/Likely habitat. Of the 83 proposed locations, 23 were in Good/Possible habitat, 30 were in Poor/Unlikely habitat, and the 30 in cropland were not ranked for grassland quality.

5.1.2.2 Area-Sensitive Grassland Bird Habitat

Not all habitat important to obligate grassland species was identified as high quality native prairie during the assessments for Dakota skipper and Poweshiek skipperling; however the additional analysis described above is likely to have captured the highest quality habitat for other grassland species. Sprague's pipits breed in native grasslands and will use areas of non-native grasses but not grasslands encroached by woody vegetation; a minimum of between 69 and 314 hectares of grassland patches is typically needed for nesting (170 to 776 acres: Davis 2004). Baird's sparrow uses native prairie habitat with low shrub cover, similar to Sprague's pipit, but is known to use smaller patches of 24 ha (60 acres; Davis 2004, COSEWIC 2012) or greater. Suitable habitat for Sprague's pipit, as defined in the Upper Great Plains Wind Energy Programmatic Environmental Impact Statement (PEIS), consists of native prairie patches $\geq$ 160 acres (USDOE and USDOI 2015), and these patches would also be expected to provide habitat for Baird's sparrow. Based on the 2014 native prairie survey, the Project Area contains 14,106 acres of native prairie habitat (Figure 8). Approximately 98% of the native prairie in the Project Area (13,775 acres) occurs in patches > 160 acres, representing potentially suitable habitat for area-sensitive grassland birds such as Sprague's pipit, Baird's sparrow, and chestnut-collared longspur. Cross tabulation with Dakota skipper habitat patches of good/possible or excellent/likely quality resulted in an estimate of 3,487 acres of high quality native prairie in the Project Area (cross hatched areas in Figure 8). The majority of the high quality native prairie identified in this way occurs in the southern portion of the Project Area.

Table 8 Dakota Skipper Habitat within the Project Area as Identified During Field Delineation and Native Prairie Assessment (Includes Alternate Turbines)

Classification	Field Delineated in 2015 (Location)	Percent of Delineated Area (2,141 acres)	2014 Native Prairie Assessment (Acres)	Number of Turbines Proposed in Habitat Category per 2017 Delineation
Excellent/Likely Habitat	0 acres	0%	699.5 acres	0
Good/Possible Habitat	26 acres (S19, T130N, R65W S13, T130, R66W)	1.2%	2,895.9 acres	5
Poor/Unlikely Habitat	3.8 acres S24, T130N, R66W S31, T130N, R65W S8, T130N, R65W S32, T131N, R65N	0.4%	12,041 acres	42
Non-habitat	2,111 acres	98.6%	21.6 acres	28

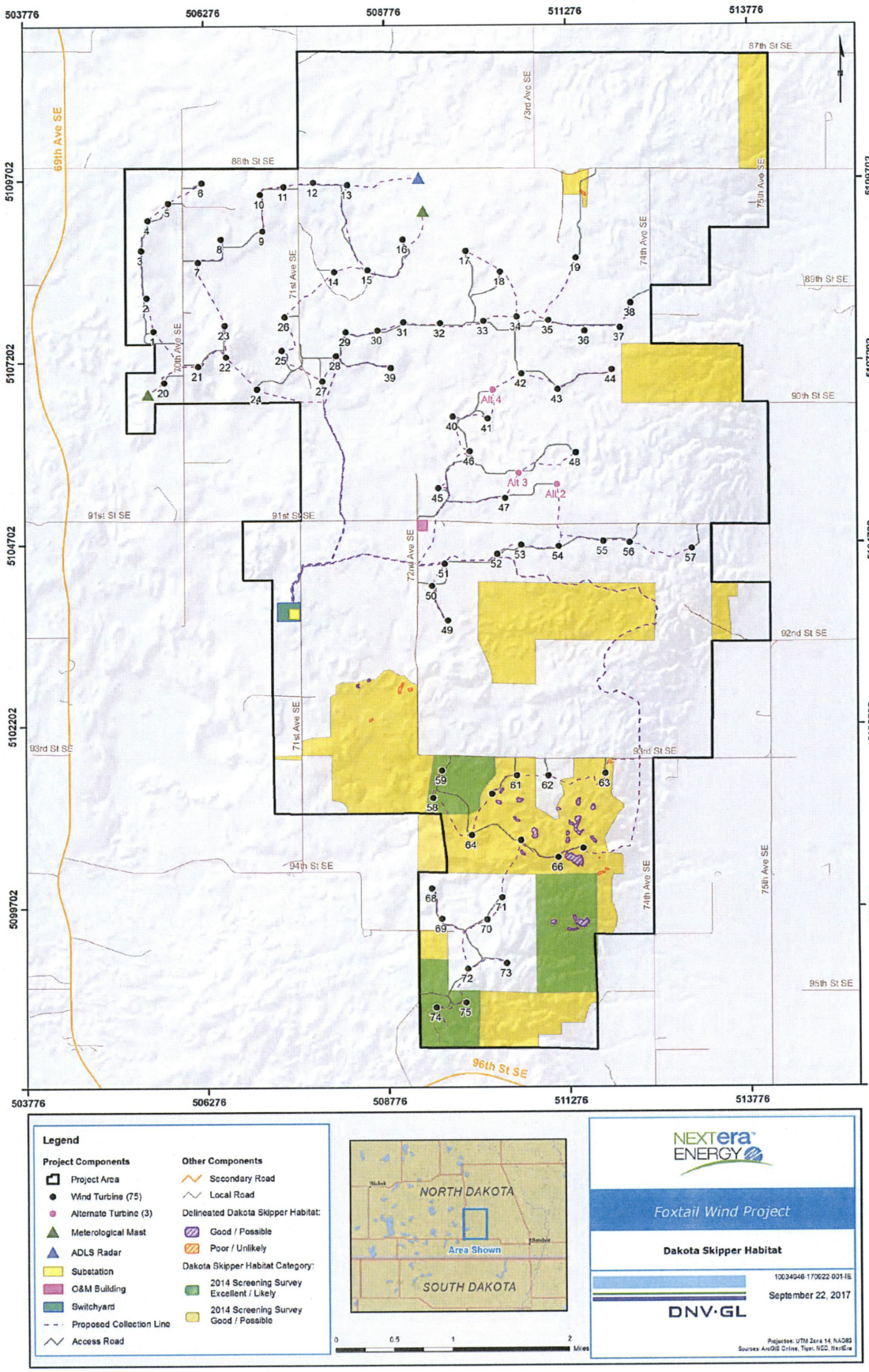

Figure 7. Dakota Skipper Habitat

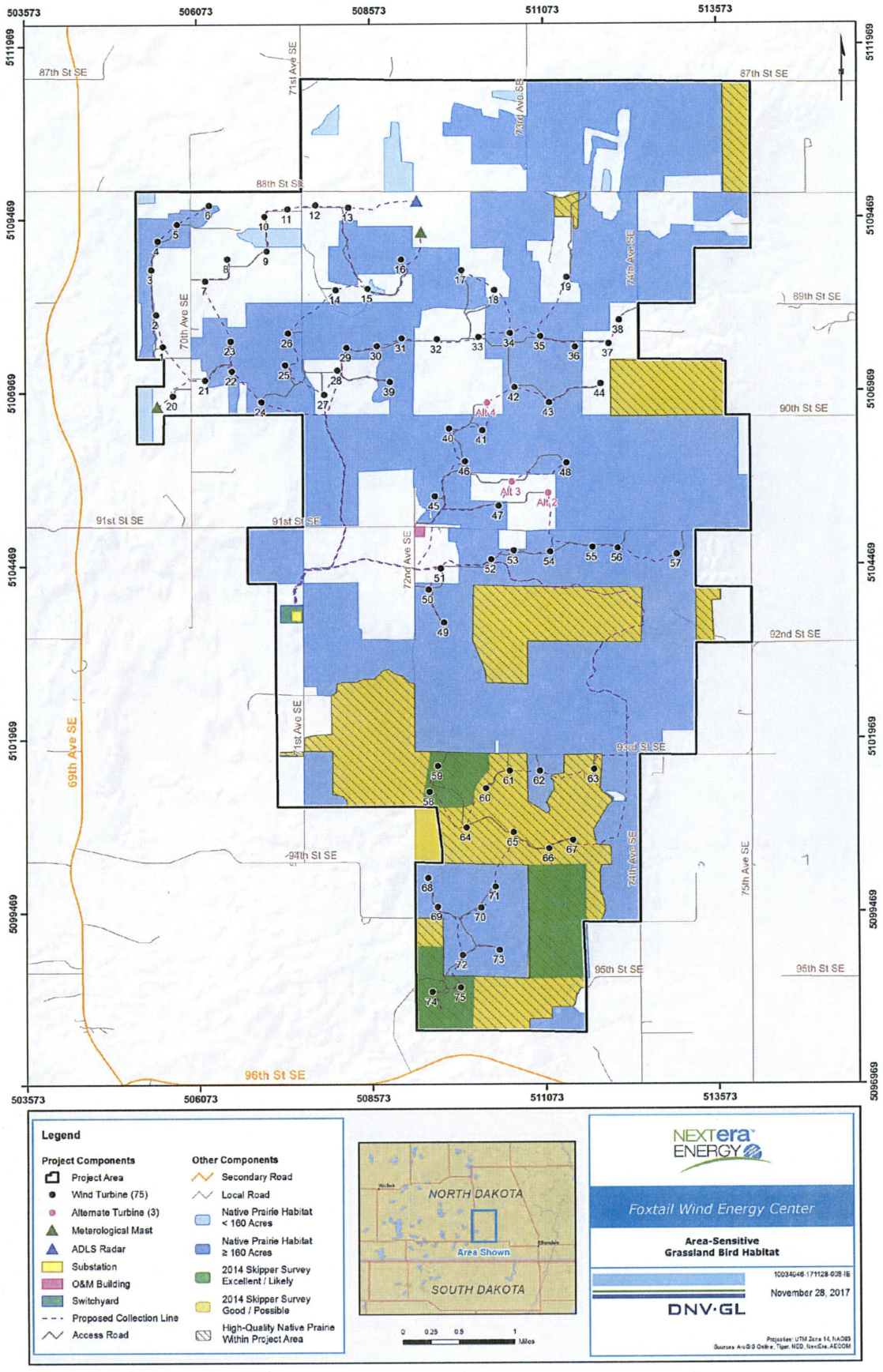

Figure 8. Potential Habitat for Area-Sensitive Grassland Birds

5.2 Bird Status Assessment

The following surveys were conducted to assess bird presence and use of the Project Area.

5.2.1 Survey Methods

5.2.1.1 Avian Point-Count Surveys – Rough Rider I

During fall 2008 and spring 2009, experienced avian biologists conducted point-count surveys at 12 locations within the Rough Rider I Project Area (Figure 8) to evaluate avian use, flight behavior, and species composition (Tetra Tech 2008c, Tetra Tech 2009c). Fall surveys were conducted every week from 21 August through 11 November 2008, encompassing the fall migratory period, for a total of 155 surveys. Spring surveys were conducted every week from 29 March through 7 June 2009, encompassing the spring migratory period, for a total of 106 surveys. Although the spring surveys ended prior to the end of the breeding season, and could potentially miss some late-breeding individuals, sampling in May and June was sufficient to detect the presence of any species breeding in the Project Area. Survey locations and methods were similar during the fall and spring surveys. Survey locations were distributed throughout the Project Area and represented locations that maximized the 360-degree sight distance for the observer and covered a diversity of habitats and topography. Surveys at each point lasted 20 minutes, during which biologists continuously recorded all visual and auditory observations. Surveys were conducted throughout the day to capture activity by a variety of avian species.

During each avian point-count survey, the biologists recorded all birds observed within an 800-m radius circle centered on the point-count location. Data recorded included species, number of individuals, time of observation, height above ground, flight direction, and behavior. Flight heights and distances were estimated using existing reference points such as meteorological towers and transmission lines, and topographic maps. Incidental observations, including birds outside the 800-m radius and birds observed while moving between point-count locations, were recorded as such. Birds not easily identifiable, such as those seen under low light conditions or small birds seen at a distance, were identified to the lowest taxonomic level possible. Note that American coot is in the family Rallidae and typically grouped with cranes and rails for analysis (Table 3, Table 4). American coot was classified as a waterbird for the Rough Rider I surveys, and pooled waterbird statistics (e.g., total count, mean) from 2008 and 2009 therefore include American coot observations.

5.2.1.2 Avian Point-Count Surveys – Foxtail

During fall 2014 and spring 2015, an experienced avian biologist conducted morning point-count surveys at 16 locations within the Foxtail Wind Energy Center Project Area to evaluate avian use, behavior, and species composition (Tetra Tech 2015c; Figure 9). Fall surveys were conducted every week from 20 August through 6 November 2014, encompassing the fall migratory period, for a total of 120 surveys. Spring surveys were conducted every week from 13 March through 11 June 2015, encompassing the spring migratory period, for a total of 130 surveys. Survey locations and methods were similar during the fall and spring surveys. Survey locations were distributed throughout the Project Area and represented locations that maximized the 360-degree sight distance for the observer and covered a diversity of habitats. Surveys at each point lasted

20 minutes, during which biologists continuously recorded all visual and auditory observations. Surveys were conducted throughout the day to capture activity by a variety of avian species.

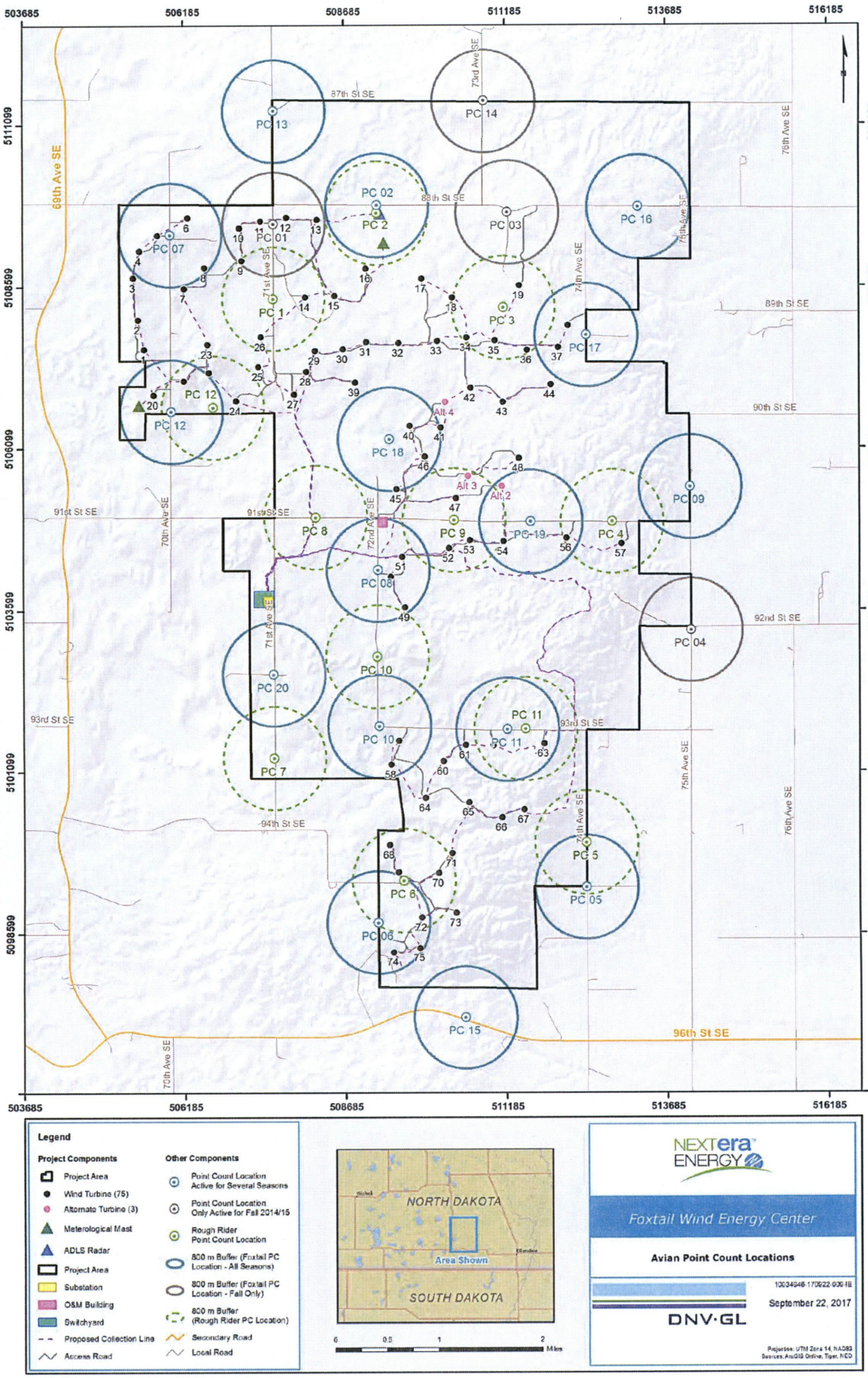

Figure 9. Avian Point Counts

During each avian point-count survey, the biologist recorded all birds observed within an 800-m radius circle centered on the point-count location. Data recorded included species, number of individuals, time of observation, height above ground, flight direction, and behavior. Flight heights and distances were estimated using existing reference points such as meteorological towers and transmission lines, and topographic maps. Birds not easily identifiable, such as those seen under low light conditions or small birds seen at a distance, were identified to the lowest taxonomic level possible. For the 2014 and 2015 Foxtail surveys, American coot was classified with the cranes and rails, and pooled statistics for this group (e.g., total count, mean) thus include American coot observations.

5.2.1.3 Eagle Use Surveys

In August 2014, Tetra Tech established 16 observation points, each with an 800-meter-radius, within the original proposed Project Area (Figure 10). These observation points provided spatial coverage of approximately 34 percent of a 1-kilometer buffer around the proposed turbine locations, consistent with recommendations in the ECP Guidance (USFWS 2013a). Eagle surveys were conducted for one hour at each point every other week from 21 August 2014 to 4 September 2015 for a total of 26 rounds of surveys. Additionally, eagle use was also measured during the 20-minute, general avian surveys in the spring and fall weeks that eagle use surveys were not conducted. A total of 12 survey weeks between 20 August and 6 November 2014, and 17 March and 11 June 2015 were utilized for quantifying eagle use within the 1-km turbine buffer.

During each eagle use survey, the biologist continuously scanned the surrounding landscape for eagle activity using an unlimited viewshed. For each eagle observed, species, age class, time first and last observed, minimum and maximum flight heights, and flight behavior were recorded. Eagle flights were categorized as ≤ 200 meters (m) or >200 m above ground, consistent with recommendations of the ECP Guidance. The time an eagle spent flying within the 800-m radius plot at each of these height categories was recorded and rounded-up in one-minute intervals. Flight paths were drawn for each eagle within the viewshed on a topographic map of the Project Area, and later digitized using GIS software.

5.2.1.4 2017 Eagle Use Surveys

In March 2017, eagle-use surveys began at the same 16 observation points used for the 2014-15 surveys. These eagle-use surveys occurred every other week until the week of 20 November, 2017, for a total of 20 survey visits. Due to modification of the Project layout, the 16 points sample approximately 30 percent of a 1-km buffer around turbine locations. The eagle use surveys provided additional eagles-only survey data collected using the same methodology as the 2014-15 surveys in accordance with the ECP Guidance. Collection of these eagle-use data facilitated understanding of inter-annual variation in eagle use of the Project Area.

5.2.1.5 Spring 2009 Rough Rider I Nest Surveys

In April and May 2009, Tetra Tech conducted ground-based raptor nest surveys within the Rough Rider I WRA plus a 1-mile radius. This search area largely overlapped the Foxtail Project Area. Initial surveys were conducted on 4 April 2009, with follow-up visits to nests occurring on 19 and 30 April, and 4, 11, 18, and 25 May to assess nest status and breeding activity. Biologists visited each nest a minimum of two times to facilitate an accurate early-season inventory and a mid-to late-season determination of activity.

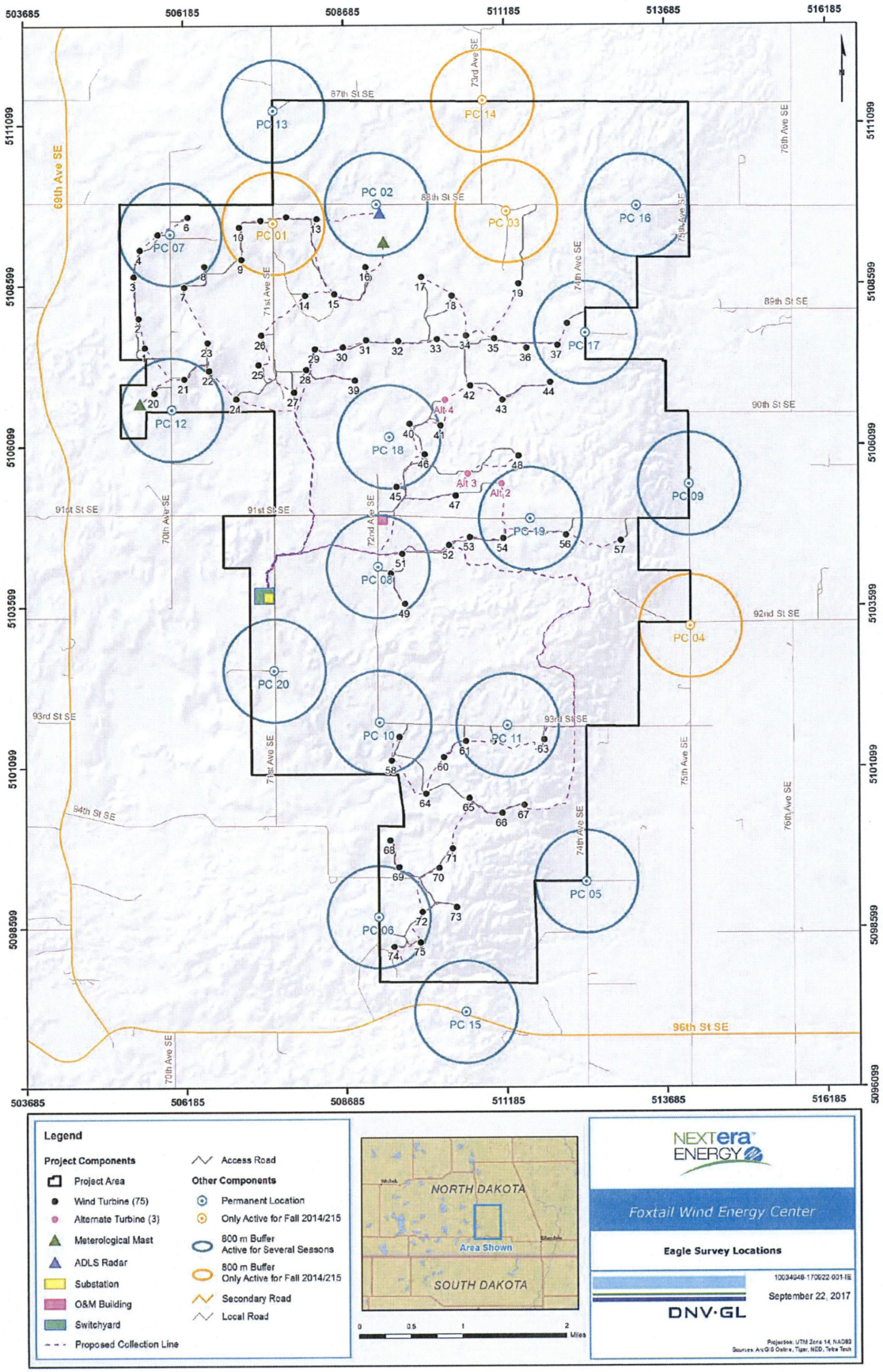

Figure 10. Eagle Survey Locations

5.2.1.6 Spring 2015 Raptor Nest Survey

Tetra Tech performed an aerial survey for raptor nests, focused on eagle nests within a 10-mile radius of the Project on 18 March 2015. The survey was conducted in accordance with recommendations of the ECP Guidance using a fixed-wing aircraft flying at low altitude over the search area; the search was focused on areas of tree habitat that could support nesting by large raptors, particularly in proximity to water bodies. The survey biologists searched for nests of all raptors within the Project Area plus a 1-mile buffer, and eagle nests, only, within the remainder of the 10-mile-radius search area. Information received from NDGFD prior to the survey indicated that there were no known historical eagle nests within the 10-mile-radius search area.

A biologist conducted a ground-based follow-up survey concurrent with eagle-use survey visits from mid-April through June 2015. The objective of this survey was to detect activity of any late-nesting raptors within the Project Area plus 1-mile buffer and to check the status of nests found during the aerial survey.

5.2.1.7 Spring 2017 Raptor Nest Surveys

Tetra Tech performed an aerial survey to inventory and determine the status of raptor nests within the Project Area plus 1-mile buffer and eagle nests within the Project Area plus 10-mile buffer from 11-15 April 2017, in accordance with the ECP Guidance. During the survey, a helicopter flew North-South transects spaced at 1-mile intervals across the 10-mile-radius search area to search for stick nests (Figure 11). Additionally, biologists checked the status of 26 known raptor nests (those found during previous survey efforts) and found 7 new nests (all located within 1 mile of the Project Area). To ensure a complete inventory and accurate occupancy determinations for eagle nests Tetra Tech conducted an additional ground-based survey on May 10-11 2017. The ground-based survey was conducted from accessible public roadways within the Project Area plus 1 mile (1.6 km).

In association with the Final Eagle Rule in 2016, the USFWS changed the term for occupied eagle nests to "in-use" eagle nests and the term for unoccupied eagle nests to "alternate" eagle nests. For clarity, both sets of terms are used when referring to eagle nests in this document.

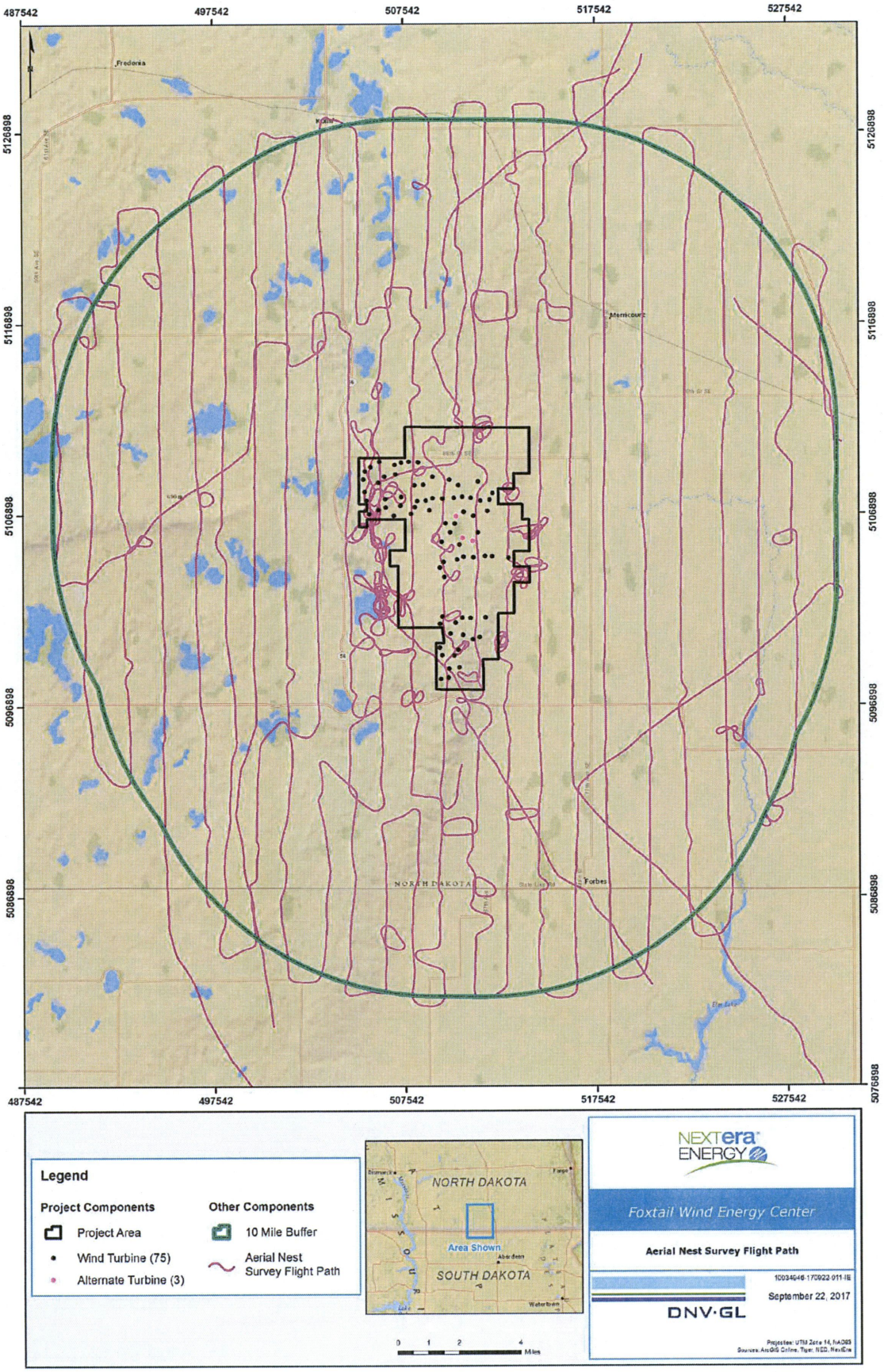

Figure 11. Aerial Raptor Nest Survey Flight Path, 2017

5.2.1.8 Spring 2015 Grouse Lek Survey

In spring 2015, Tetra Tech conducted ground-based grouse lek surveys to identify areas used by breeding prairie grouse within the Project Area plus a 1-mile buffer. Surveys occurred on 8 days spanning mid-March to mid-May to coincide with the breeding season. Surveys followed the NDGFD protocol (Pitman 2011), but some data were collected later than 2.5 hours after sunrise if prairie grouse were audibly detected. Surveys were conducted by driving roadways through suitable habitat and stopping for 5 minutes every 0.5 mile to listen for male grouse and prairie chickens. Surveys were not conducted if winds exceeded 16 km/h (10 mph) or if there was any type of precipitation. Each detected lek was visited three times to determine activity level. Leks with three or fewer displaying males, or leks which were only detectable on the initial survey were considered satellite leks.

5.2.1.9 Spring 2017 Grouse Lek Surveys

An aerial survey for grouse leks was conducted from 11-15 April 2017, concurrent with the raptor nest surveys. The aerial survey was followed by a ground-based survey from 121 listening stations from 15-19 May 2017. During the ground-based survey, the biologist listened at each stop for a minimum of three minutes. The objective of the lek surveys was to inventory all sharp-tailed grouse leks within the Project Area plus a 1-mile buffer around the Project Area. The surveys consisted of verification of leks known from previous ground-based surveys and searches for new leks.

5.2.2 Bird Presence and Use Patterns

5.2.2.1 Species Presence by Season/Bird Use Patterns

Non-Raptors

Fall 2008 avian point counts recorded a total of 21,779 individuals from 74 bird species within the Rough Rider I WRA (Tetra Tech 2008c). Overall mean bird use within the WRA was 140.51 birds/20 minutes, and use ranged from 0 to 1,988 birds per 20-minute count. Non-raptor mean use was 139.66 birds/20 minutes. Waterfowl had the highest mean use of all species groups observed (81.86 birds/20 minutes). The waterfowl species with the highest mean use was mallard (37.32 birds/20 minutes), which was observed in 32.9 percent of all surveys. Waterbirds had the second highest mean use (25.98 birds/20 minutes), primarily represented by American coot (20.63 birds/20 minutes), which comprised 57 percent of all waterbirds observed. Mean use for songbirds and gulls/terns were 20.30 and 10.68 birds/20 min respectively. All other species groups had a mean use estimates of less than 1.0 bird/20 minutes.

Spring 2009 avian point counts recorded a total of 41,072 individuals from 107 bird species within the Rough Rider I WRA (Tetra Tech 2009c). Overall mean bird use within the WRA was 387.47 birds/20 minutes, and use ranged from 3 to 7,280 birds per 20-minute count. Non-raptor mean use was 386.35 birds/20 minutes. Waterfowl had the highest mean use of all species groups observed (276.53 birds/20 minutes). The waterfowl species with the highest mean use were snow goose (210.57 birds/20 minutes; 80 percent of all waterfowl observations), Canada goose (33.28/20 minutes) and greater white-fronted goose (16.21 birds/20 minutes). Songbirds had the second highest mean use (98.19 birds/20 minutes), primarily represented by red-winged blackbird (35.81 birds/20 minutes). Waterbirds and gulls/terns had mean use estimates of 7.01 birds/minute and 3.42 birds/minute, respectively. All other species groups had a mean use estimates of less than 1.0 bird/20 minutes.

No federally-listed species were observed during the Rough Rider I WRA surveys, but 10 state SCP were recorded during the fall 2008 surveys and 23 state SCP species were recorded during the spring 2009 surveys, representing 24 unique state SCP species. In addition, three BCC species were observed during fall 2008 surveys and nine were observed during the spring 2009 surveys, representing 9 unique BCC species (Table 10).

Fall 2014 avian point counts recorded a total of 10,462 individuals from 65 bird species within the Foxtail Wind Energy Project Area (Tetra Tech 2015c). Overall mean bird use within the Project Area was 54.49 birds/20 minutes, and use ranged from 0 to 1,077 birds per 20-minute count. Non-raptor mean use was 53.78 birds/20 minutes. Waterfowl had the highest mean use of all species groups observed (25.89 birds/20 minutes). The waterfowl species with the highest mean use were snow goose (37.32 birds/20 minutes) and Canada goose (6.32 birds/20 minutes). Songbirds had the second highest mean use (14.37 birds/20 minutes), primarily represented by horned lark (2.83 birds/20 minutes), brown-headed cowbird (1.54 birds/20 minutes) and common grackle (1.41 birds/20 minutes). Gulls/terns and waterbirds had mean use estimates of 6.10 birds/minute and 5.58 birds/minute, respectively. All other species groups had a mean use estimates of less than 1.0 bird/20 minutes.

Spring 2015 avian point counts recorded a total of 13,956 individuals from 87 bird species within the Foxtail Wind Energy Project Area (Tetra Tech 2015c). Overall mean bird use within the Project Area was 67.10 birds/20 minutes, and use ranged from 0 to 1,577 birds per 20-minute count. Non-raptor mean use was 66.77 birds/20 minutes. Waterfowl had the highest mean use of all species groups observed (44.96 birds/20 minutes). The waterfowl species with the highest mean use were Canada goose (20.62 birds/20 minutes) and snow goose (17.78 birds/20 minutes), which together comprised over 57 percent of all avian observations. Songbirds had the second highest mean use (15.84 birds/20 minutes), primarily represented by red-winged blackbird (4.83 birds/20 minutes) and brown-headed cowbird (3.69 birds/20 minutes). Western meadowlark had a low mean use estimate (1.25 birds/20 minutes) but was observed in over 68 percent of surveys. Mean use for waterbirds was 2.56 birds/20 minutes, for gulls/terns was 1.05 birds/20 minutes, and for cranes/rails was 1.27 birds/20 minutes. All other species groups had a mean use estimates of less than 1.0 bird/20 min.

No federally-listed species were observed during the Foxtail surveys, but 12 state SCP were recorded during the fall 2014 surveys and 21 state SCP were recorded during the spring 2015 surveys, representing 22 unique state-SCP species. In addition, four BCC species were observed during fall 2014 surveys and nine were observed during the spring 2009 surveys, representing 8 unique BCC species (Table 10).

Raptors

Avian point counts in fall 2008 recorded eight raptor species in the Rough Rider I WRA and raptor mean use was 0.85 birds/20 minutes (Tetra Tech 2008c). Red-tailed hawk (0.32 birds/20 minutes) and northern harrier (0.25 birds/20 minutes) had the highest mean use among raptors. All other raptors including Swainson's hawk, broad-winged hawk, merlin, bald eagle, turkey vulture, and rough-legged hawk each had mean use estimates less than 0.10 birds/20 minutes. Of raptor individuals observed flying, 43.1 percent flew within the height of the anticipated Rotor Swept Area (RSA). Red-tailed hawk and northern harrier had the highest encounter rates of 0.20 and 0.03 within the RSA/20 minutes, respectively.

In spring 2009, avian point counts recorded 10 raptor species in the Rough Rider I WRA and raptor mean use was 1.12 birds/20 minutes (Tetra Tech 2009c). Northern harrier (0.25 birds/20 minutes), red-tailed hawk (0.24 birds/20 minutes), and rough-legged hawk (0.10 birds/20 minutes) had the highest mean use

among raptors. All other raptors including Swainson's hawk, ferruginous hawk, great horned owl, bald eagle, prairie falcon, merlin, and American kestrel each had mean use estimates less than 0.10 birds/20 minutes. Of raptor individuals observed flying, 36.6 percent flew within the height of the anticipated RSA. Red-tailed hawk, rough-legged hawk, and northern harrier had the highest encounter rates of 0.13, 0.05, and 0.05 within the RSA/20 minutes, respectively.

In fall 2014, avian point counts recorded 10 raptor species in the Foxtail Project Area and raptor mean use was 0.71 birds/20 minutes (Tetra Tech 2015). Swainson's hawk (0.24 birds/20 minutes), red-tailed hawk (0.16 birds/20 minutes) and northern harrier (0.13 birds/20 minutes) had the highest mean use among raptors. All other raptors including American kestrel, prairie falcon, broad-winged hawk, merlin, bald eagle, turkey vulture, and great horned owl each had mean use estimates less than 0.10 birds/20 minutes. Of raptor individuals observed flying, 27.7 percent flew within the height of the anticipated RSA. Red-tailed hawk and Swainson's hawk had the highest encounter rates of 0.07 and 0.02 within the RSA/20 minutes, respectively.

In spring 2015, avian point counts recorded seven raptor species in the Foxtail Project Area and raptor mean use was 0.33 birds/20 minutes (Tetra Tech 2015). Red-tailed hawk (0.17 birds/20 minutes) had the highest mean use among raptors. All other raptors including northern harrier, American kestrel, Swainson's hawk, bald eagle, great horned owl and rough-legged hawk each had mean use estimates less than 0.10 birds/20 minutes. Of raptor individuals observed flying, 30.8 percent flew within the height of the anticipated RSA. Red-tailed hawk had the highest encounter rate of 0.07 RSA/20 minutes; encounter rates for all other raptor species were <0.01.

No federally listed raptor species were observed during surveys, but five SCP and two BCC raptor species were observed during the 2008 and/or 2014 fall surveys (Table 6). All raptor species observed in fall plus one additional SCP species (prairie falcon) were observed during the 2009 and 2015 spring surveys (Table 6).

Bald and Golden Eagles

Tetra Tech conducted a total of 480 hours of observation for eagles during 2014-15 surveys; 416 hours during eagles-only surveys, and 66 hours during general avian surveys. No golden eagles were observed during general avian and eagle use surveys conducted in 2014-15. Three bald eagles (2 during eagle surveys, 1 during general avian surveys) were observed during the surveys, for a total of 6 exposure minutes flying ≤200 m above ground, and a mean use of 0.012 bald eagles per hour (Figure 12, Table 9). One sub-adult bald eagle was observed incidentally during 2014-15 surveys. Additionally, 43 bald eagles were observed incidentally during an 18 March 2015 aerial survey for eagle nests (Figure 13). The majority of these bald eagles were observed to the east of the Project Area; however, one was observed within the Project Area, and one was observed adjacent to the western edge of the Project Area.

As of 20 November 2017, DNV GL completed 304 hours of eagle-use surveys, which yielded detections of 6 golden eagles and 9 bald eagles within survey plots (Figure 12). Only one eagle sighting has occurred since June, which suggests that earlier observations in 2017 reflected seasonal, rather than year-round, use of the area by both species. The timing of most of these sightings is consistent with the timing of migration of both eagle species. Total exposure minutes flying ≤200 m above ground within survey plots were 14 minutes for golden eagles and 16 minutes for bald eagles, with mean use rates of 0.02 golden eagles per hour and 0.05 bald eagles per hour (Table 9).

Table 9 Results of eagle surveys at the Foxtail Wind Energy Center as of 20 November, 2017

Variable	2014-15 Eagle-use Surveys	2014-15 General Avian Surveys	2015 Raptor Nest Survey	2017 Eagle-use Survey
Survey Hours	416	64	8	304
Total Golden Eagles in Plots	0	0	na[1]	6
Total Incidental Golden Eagles	0	0	0	2
Golden Eagle Exposure Minutes	0	0	na	14
Total Bald Eagles in Plots	2	1	na	9
Total Incidental Bald Eagles	1	0	43	11
Bald Eagle Exposure Minutes	5	1	na	16
Total Incidental Unidentified Eagles	0	0	0	5

[1] na – not applicable to this survey type

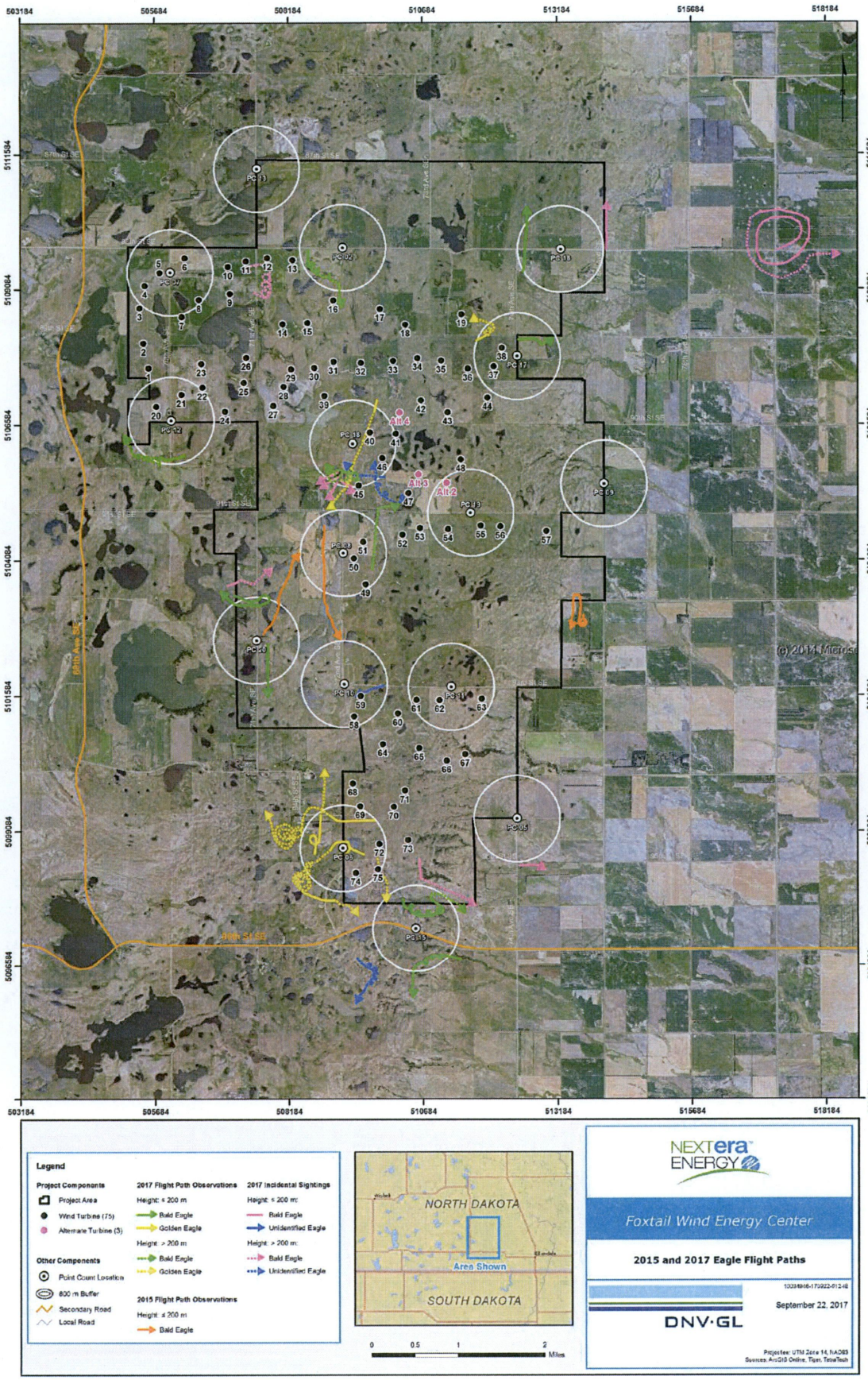

Figure 12. 2015 and 2017 Eagle Observations

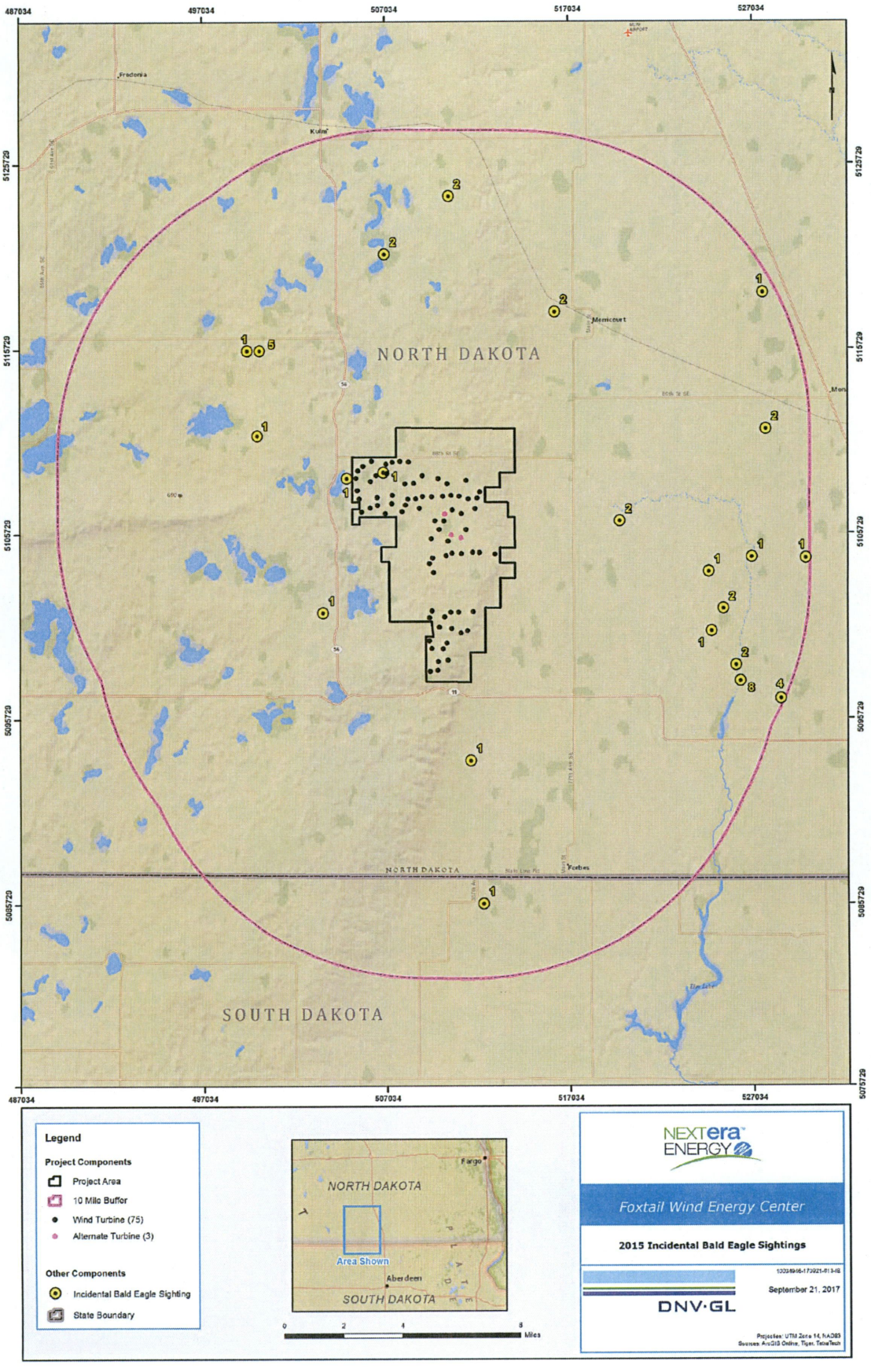

Figure 13. 2014-15 Incidental Eagle Sightings

Non-Eagle Raptor Nests

Raptor nests detected within the Rough Rider I WRA during spring 2009 included five occupied red-tailed hawk nests, three Swainson's hawk nests, three ferruginous hawk nests, two unknown species' nests, one great horned owl nest, and nine unoccupied nests.

Raptor nests detected in spring 2015 within the Project Area included four occupied red-tailed hawk nests, two occupied Swainson's hawk nest, one occupied great-horned owl nest, and seven unoccupied nests (Figure 14). Raptor nests found outside of the Project Area but within the 1-mile buffer included four occupied red-tailed hawk nests, one occupied Swainson's hawk nest, one occupied great-horned owl nest, and 6 unoccupied nests.

In 2017, Tetra Tech found a total of 28 non-eagle raptor nests. Raptor nests documented in the Project Area plus 1-mile search area consisted of 15 red-tailed hawk nests, 5 great horned owl nests, and 8 nests of unknown species. Within the Project Area, there were 9 red-tailed hawk nests, of which 8 were determined to be in-use. The Project Area also contained 2 great horned owl nests, both of which were in-use, and 3 inactive nests of unknown species. All nests of unknown species were small stick nests, indicating they were unlikely to be used by eagles (Tetra Tech 2017c). (Figure 14).

Eagle Nests

No eagle nests were found during the 2009 raptor nest surveys. No confirmed nests of bald or golden eagles were found within 10 miles of the Project Area during the 2015 nest surveys (Figure 14). A single, unoccupied large stick nest 2 miles south of the Project's southern boundary was classified as consistent with bald eagles during the March 2015 aerial survey. This nest was subsequently visited from the ground, and determined to be more likely an unoccupied red-tailed hawk nest.

The 2017 eagle nest survey, conducted 11-15 April, found one in-use (occupied) bald eagle nest containing an adult in incubating posture approximately 2.9 miles East of the northern boundary of the Project. No other eagle nests were observed during the April 2017 eagle nest survey (Figure 14). During the May 10-11 survey, an adult bald eagle was observed in incubating or brooding posture on the nest, and the nest was determined to be in-use (occupied).

Sharp-tailed Grouse

During spring 2015 surveys, Tetra Tech documented a total of 15 sharp-tailed grouse leks within the Project Area plus 1-mile buffer (Tetra Tech 2015c). Based on activity over 3 survey rounds, 6 leks and 4 satellite leks occurred within the Project Area in 2015 (Figure 15).

During spring 2017 surveys, Tetra Tech documented a total of 20 sharp-tailed grouse leks within the Project Area plus 1-mile (1.6 km) search area. A total of 14 leks were found within the Project boundary (9 active and 5 inactive). Four of the leks found within the Project were newly documented in 2017 (Tetra Tech 2017 (Figure 15).

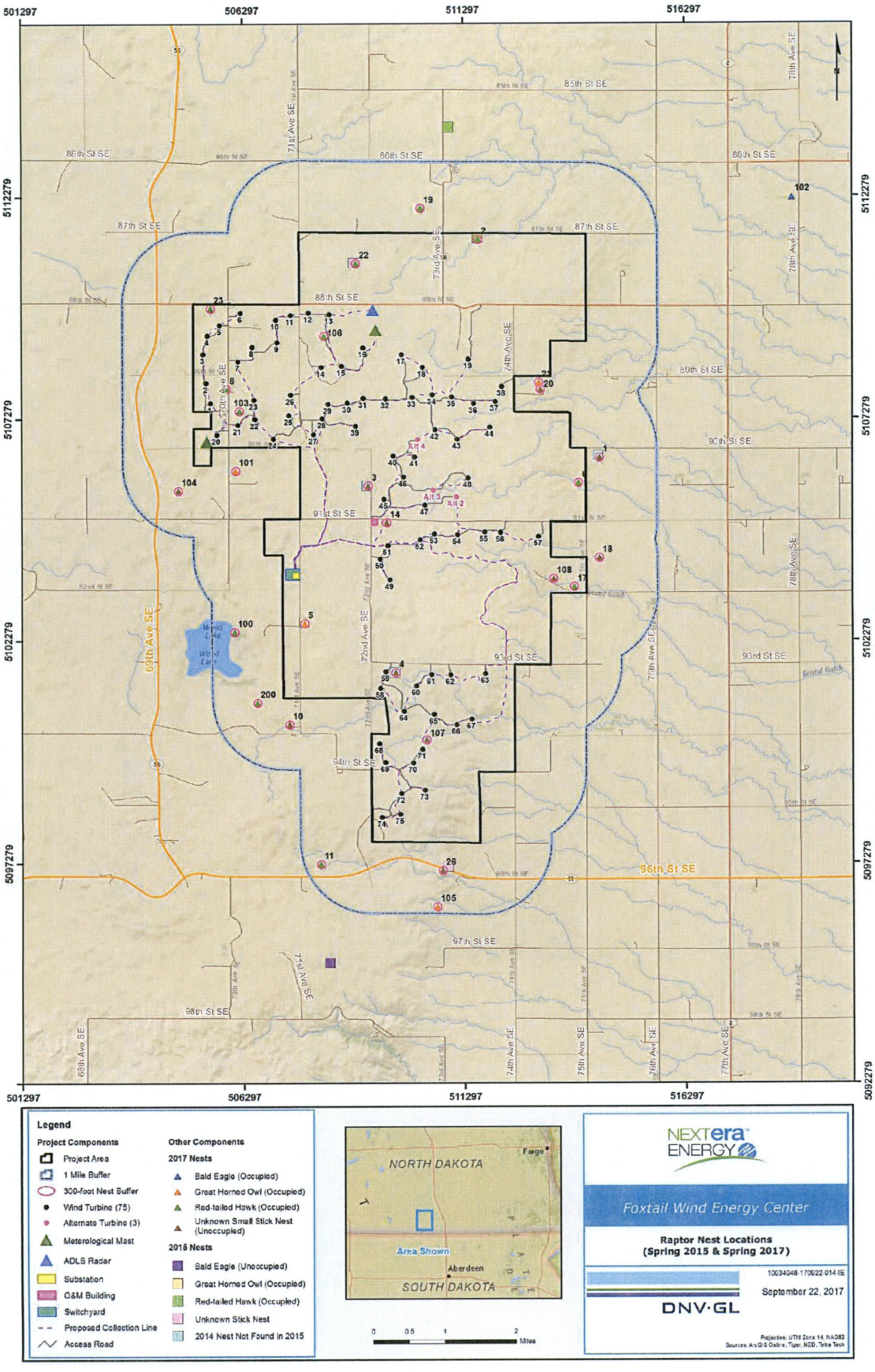

Figure 14. Raptor Nest Locations (Spring 2015 and 2017)

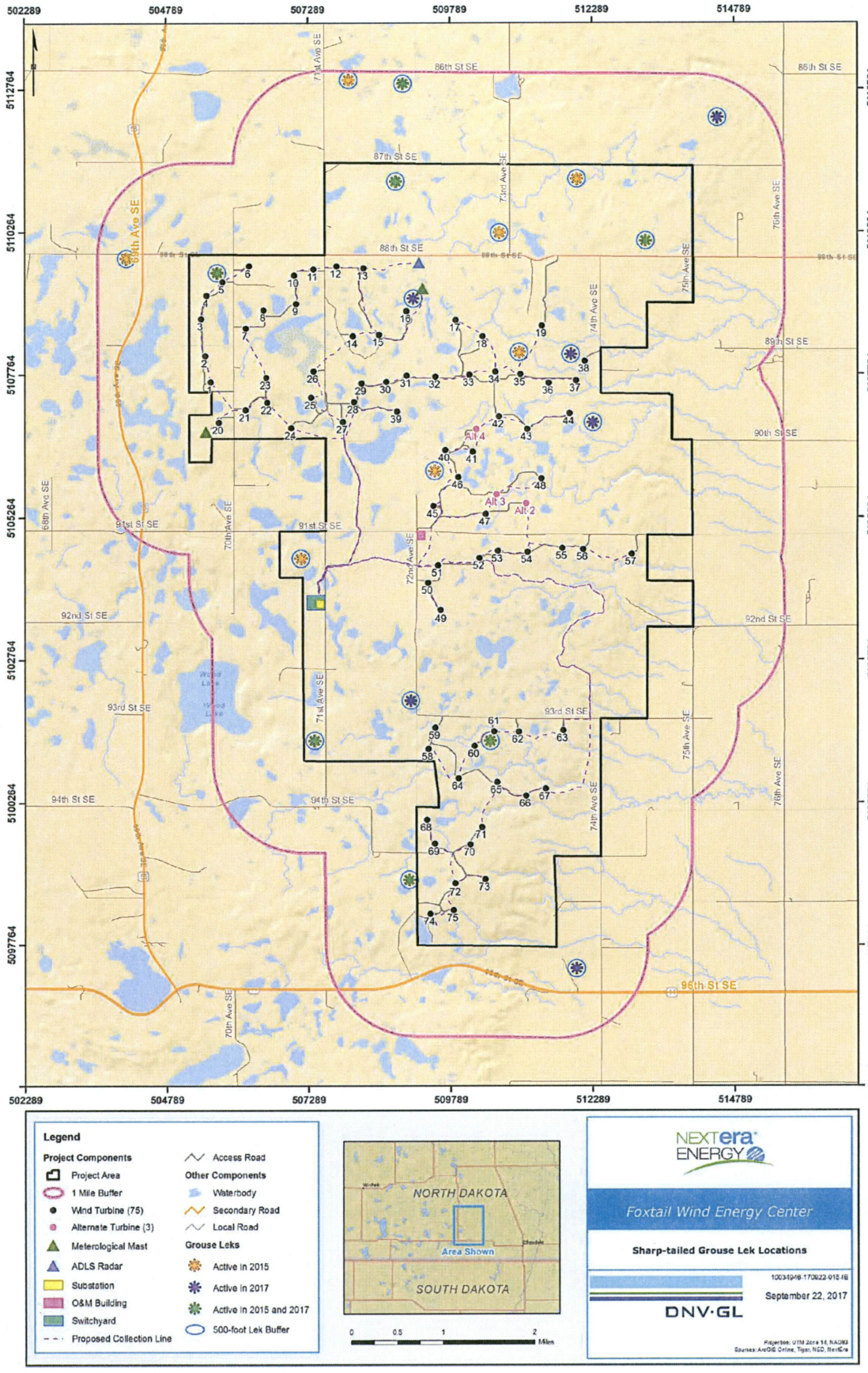

Figure 15. Sharp-tailed Grouse Lek Locations (Spring 2015 and 2017)

5.2.2.2 Species of Concern

Biologists did not observe any federally listed threatened or endangered species during avian point-count surveys, raptor nest surveys, or as incidental observations. Observations of eagles, BCC species, state SCP, and species of fragmentation concern by season are summarized in Table 10. Focal species of concern with the potential to occur within the Project Area are discussed below.

Table 10 Federally Protected, SCP, and BCC Species Observed during Avian Surveys at the Project as of February 2017

Species	BCC Region 11 Listing	State SCP Listing	USFWS Habitat Fragmentation Concern[1]	Avian Survey[2]				Total
				Fall 2008	Spring 2009	Fall 2014	Spring 2015	
Songbirds								
Bobolink	No	Level II	Yes	0	42	0	60	102
Western meadowlark	No	Level II	No	23	10	13	3	49
Grasshopper sparrow	Yes	Level I	Yes	2	12	2	14	30
Baird's sparrow	No	Level I	Yes	0	3	0	0	3
Dickcissel	Yes	Level II	No	0	0	0	3	3
Sedge wren	No	No	Yes	0	0	0	3	3
Raptors								
Swainson's hawk	Yes	Level I	No	14	8	47	4	73
Northern harrier	No	Level II	Yes	0	26	25	13	64
American kestrel	No	Level II	No	1	1	5	7	14
Bald eagle	Yes	Level II	No	0	3	1	2	6
Ferruginous hawk	No	Level I	No	1	6	0	0	7
Prairie falcon	No	Level II	No	0	1	2	0	3
Grouse								
Sharp-tailed grouse	No	Level II	Yes	0	62	50	80	192
Waterbirds								
American white pelican	No	Level II	No	300	189	219	177	885
American bittern	Yes	Level I	No	0	1	1	1	3
Shorebirds								
Upland sandpiper	Yes	Level I	Yes	0	30	0	16	46
Willet	No	Level I	No	0	14	0	10	24

Species	BCC Region 11 Listing	State SCP Listing	USFWS Habitat Fragmentation Concern[1]	Avian Survey[2]				Total
				Fall 2008	Spring 2009	Fall 2014	Spring 2015	
Marbled godwit	Yes	Level I	No	0	16	0	8	24
Wilson's phalarope	No	Level I	No	7	0	0	0	7
Short-billed dowitcher	Yes	No	No	0	2	0	0	2
American avocet	No	Level II	No	0	0	0	1	1
Waterfowl								
Lesser scaup	No	Level II	No	468	366	0	382	1216
Redhead	No	Level II	No	0	205	0	73	278
Northern pintail	No	Level II	No	0	273	4	21	298
Canvasback	No	Level II	No	0	22	0	0	22
Horned grebe	Yes	Level I	No	0	3	0	0	3
Gulls/Terns								
Franklin's gull	No	Level I	No	153	62	104	26	345
Black tern	Yes	Level I	No	5	233	0	8	246
Woodpeckers								
Red-headed woodpecker	Yes	Level I	No	0	0	0	1	1

[1] North Dakota Field Office (USFWS 2013b).
[2] Numbers of birds detected during surveys.

Whooping Crane (Federal Endangered)

The only self-sustaining population of whooping cranes breeds in Wood Buffalo National Park in Canada and winters along the Gulf of Mexico at Aransas NWR in Texas (Austin and Richert 2001). Spring migration occurs primarily in April and May and fall migration occurs primarily in October and November. Stopover habitat during migration includes a variety of croplands with roosting occurring in shallow, freshwater, inland wetlands (Austin and Richert 2001). Four areas associated with major stopover areas are designated as critical habitat: Quivira National Wildlife Refuge and Cheyenne Bottoms State Wildlife Management Area in Kansas; a section of the Platte River in Nebraska; and the Salt Plains National Wildlife Refuge in Oklahoma (USFWS 2009). The Platte River is the closest of these four sites to the Project Area and is located over 350 miles south of the Project (Tetra Tech 2015a). The Project is located on the eastern edge of the whooping crane migration corridor (Pearse et al. 2015, Tetra Tech 2015a; Figure 16). Whooping cranes have been documented to occur at Hausauer Lake (approximately 40 miles southwest), Dakota Lake National Wildlife Refuge (approximately 32 miles to the southeast), and Long Lake National Wildlife Refuge (approximately 65 miles to the northwest) during their annual migration periods (Austin and Richert 2001, Tetra Tech 2015a). As of spring 2017, no whooping crane sightings have occurred in the vicinity of the Project.

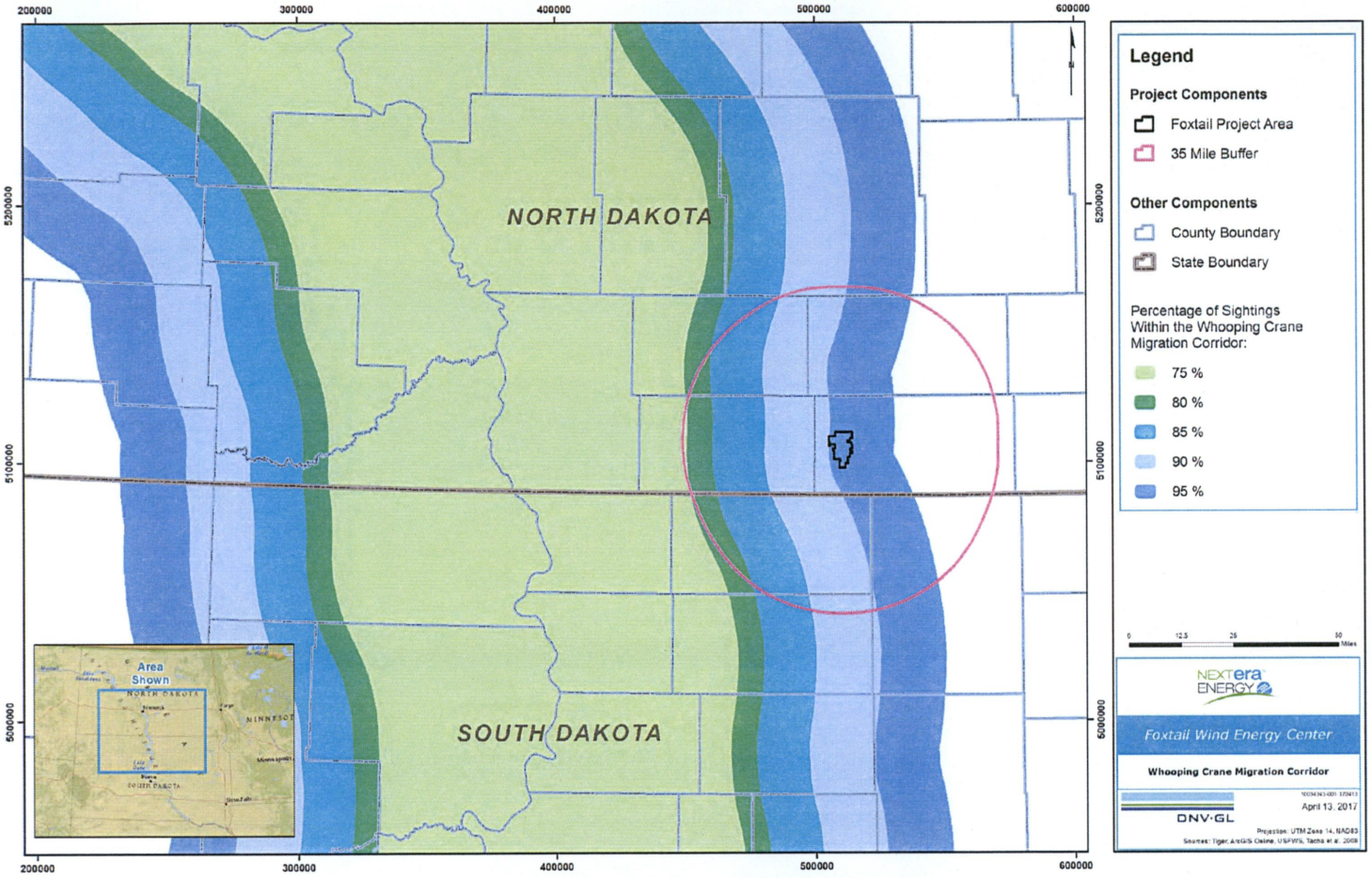

Figure 16. Whooping Crane Migration Corridor

Wind energy development has been identified as a threat to the species due to the potential for displacement from the presence of the turbines, and potential for collisions with operational wind turbines, and new power lines (USFWS 2009, Pearse et al. 2015). Collisions with power lines contribute substantially to whooping crane mortality during migration and are considered the primary risk to cranes during migration (Stehn and Wassenich 2008, USFWS 2009, Pearse et al. 2015). Collisions with wind turbines is of lower risk because turbines are more visible than power lines. Pearse et al. (2015) found that 84 percent of areas they studied containing wind turbines and within the whooping crane migration corridor did not contain stopover sites used by whooping cranes during migration, and that this was not likely due to avoidance of turbines by cranes. Whooping and sandhill cranes have been documented altering flight direction in response to turbines at a wind facility in South Dakota (Nagy et al. 2012), and multiple studies have documented sandhill cranes gradually climbing as they approach marked power lines (Morkill and Anderson 1991, Murphy et al. 2009). No whooping cranes have been reported as wind turbine-related fatalities in publicly available literature.

2015 Likelihood of Occurrence Assessment. Tetra Tech conducted a whooping crane likelihood assessment in which wetlands within the proposed Project Area and surrounding 35-mile buffer around the Project boundary were evaluated for suitable wetland habitat for whooping cranes (Tetra Tech 2015a). Palustrine wetlands (freshwater wetlands characterized by emergent vegetation, e.g., playas) are most often used as roosting sites, but individuals have been found roosting at lacustrine wetlands (wetlands around a lake), and riverine wetlands (wetlands along a river; Austin and Richert 2001). The NLCD indicates approximately 1.3 percent of the Project Area is wetland habitat (Table 2; Figure 5).

In addition to wetlands, another indicator of potential occurrence by whooping cranes during migration is the presence of cultivated croplands. Austin and Richert (2001) found that cultivated croplands, such as wheat, were most often utilized by migrating whooping cranes if in close proximity to wetlands. Thirty-five percent of the Project Area consists of suitable wetland-agriculture matrix habitat (Tetra Tech 2015a). Based on the whooping crane likelihood assessment (Tetra Tech 2015a) the likelihood of whooping cranes occurring within the Project Area is low. Most whooping crane sightings (95 percent) occurred closer to the center of the migration corridor and farther away from the Project Area. Furthermore, the wetland habitat within the Project Area is 23 percent lower than the surrounding 35-mile buffer area, which may make the Project Area less attractive to migratory whooping cranes when compared to the surrounding area (Tetra Tech 2015a). In addition, the Project Area does not occur near whooping crane critical habitat (USFWS 2015a, 2016d); the closest critical habitat is in the designated section of the Platte River in Nebraska, which is located approximately 600 km (373 miles) south of the Project.

2017 Potentially Suitable Habitat Assessment. Tetra Tech conducted an updated whooping crane habitat assessment using methods consistent with those developed by the Watershed Institute in Kansas (Watershed Institute 2013) to identify wetlands within and adjacent to the Project Area that may provide suitable habitat for whooping cranes (Tetra Tech 2017b). Tetra Tech modified the protocols provided by the Watershed Institute to better fit the non-linear character of a wind project.

Of 3,646 NWI-mapped wetlands within the Project Area plus 1.6-km (1-mile) buffer, 2,532 wetlands were considered unsuitable due to their size, proximity to human disturbance, and/or wetland classification. The assessment identified 763 wetlands as potentially suitable stopover habitat within the Project Area and a surrounding 1.6-kilometer (1-mile) buffer, consisting of 2,170 acres of emergent wetlands, 135 acres of pond, and 214 acres of lacustrine wetlands (wetlands around a lake). Habitat quality scores ranged from 8 to 19, with a mean score of 12.3. This compares to the TWI-generated mean score of 12.1 for habitat suitability at the Quivira National Wildlife Refuge (NWR), a traditional migratory stopover location and

designated critical habitat for migrating whooping cranes. Based on the Quivira NWR potentially suitable habitat scores generated by TWI, any habitat score of 12 or higher was considered potentially suitable stopover wetland habitat for migrating whooping cranes.

Although potentially suitable habitat was identified within the Project Area and surrounding buffer, these habitat features are not unique on the landscape. As a result, Tetra Tech concluded that whooping cranes are no more likely to use stopover habitat within this area than on the surrounding landscape. This conclusion is supported by the absence of whooping crane sightings recorded by USFWS in the vicinity of the Project as of spring 2017. Whooping cranes may pass through the Project Area during spring and fall migration between known stopover sites, which may put them at risk of colliding with Project infrastructure.

Area-Sensitive Grassland Birds (Sprague's Pipit, Baird's Sparrow, and Chestnut-collared Longspur)

Sprague's pipit and Baird's sparrow breed in South Dakota, North Dakota, Montana, and into southern Canada, and both species use grasslands during all periods of the lifecycle. Sprague's pipit migrates through the Central Plains and winters in the southern United States, primarily in Arizona, New Mexico, and Texas. Baird's sparrow similarly migrates through the Central Plains but overwinters primarily in northern Mexico. The Project Area falls within the "possible" breeding ranges of Sprague's pipit and Baird's sparrow (NDGFD 2015), and both species have the potential to occur in Dickey County. Both species breed in native prairie habitat with minimal woody encroachment and are considered area-sensitive. Native prairie surveys determined that the Project Area contains approximately 14,007 acres of native prairie habitat in patches of 160 acres or larger, which could provide habitat for both Sprague's pipit and Baird's sparrow. No Sprague's pipits or chestnut-collared longspurs were observed in the Project Area or vicinity during avian surveys conducted, and three Baird's sparrows were observed during 2009 avian point-count surveys. Due to the potential occurrence of Sprague's pipit and Baird's sparrow in Dickey County, and because potential suitable habitat exists within the Project Area, the likelihood of occurrence for these species is moderate.

Sharp-tailed Grouse (ND Species of Conservation Priority)

Although sharp-tailed grouse are afforded no special federal regulatory protection, the species is a Level II state SCP (Section 2.5). Current research suggests that certain grouse species may avoid anthropogenic structures (USFWS 2012a, Hagen et al. 2011); however, long-term data sets are still needed to assess wind energy impacts (Johnson et al. 2012). Additionally, a meta-analysis of results to date indicated that hypothesized avoidance of tall structures cannot be isolated from other aspects of development activity (Walters et al. 2014). A recent study of Columbian sharp-tailed grouse (*T. p. columbianus*) in Idaho found that wind energy development did not impact nest site selection or nest survival, but did appear to reduce brood survival (Proett 2017). Research on greater prairie-chickens (*T. cupido*) found that proximity to wind energy infrastructure did not negatively impact nest site selection, nest survival, female survival (McNew et al. 2014, Winder et al. 2014); however, the persistence of leks was reduced by proximity to wind turbines (Winder et al. 2015). Regardless, state and federal wildlife agencies have regularly expressed concern about the locations of wind turbines with respect to grouse leks. Leks are breeding grounds where grouse congregate and males engage in communal breeding displays during the spring (March –April; Connelly et al. 1998).

Sharp-tailed grouse prefer areas dominated by relatively dense herbaceous cover and shrubs. Common grasses include bluestems (*Andropogen* spp.), bluegrasses (*Poa* spp.), wheatgrasses (*Agropyron* spp.), and needlegrasses (*Stipa* spp.); common shrubs include rose (Rosa spp.), cherry (*Prunus* spp.), serviceberry (*Amalanchier* spp.), snowberry (*Symphoricarpos* spp.), sagebrush (Artemisia spp.), and hawthorn (*Crataegus* spp.) (Connelly et al. 1998). Leks form the hub of breeding habitat and usually occur on elevated

areas. Leks sometimes are associated with disturbed sites and often on sites with less vegetation than surrounding areas. Lek locations are generally stable from year to year, although location may change, especially if area is covered with snow or water (Connelly et al. 1998). Nesting habitat includes stands of grasses, shrubs, and forbs. The species may nest in alfalfa (*Medicago sativa*) and wheat (*Triticum aestivum*) stubble, but usually nests in relatively heavy cover, often under a shrub in vegetation at least 30 cm high with dense foliage (Connelly et al. 1998). Sharp-tailed grouse may remain in summer habitat until snowfall forces individuals to winter range. Winter habitat requirements are narrower than in other seasons, when the species often relies on riparian areas, deciduous shrub draws, and open coniferous woods (Connelly et al. 1998). During mild winters, the species may use grain fields and CRP (Conservation Reserve Program) fields (Connelly et al. 1998). Sharp-tailed grouse were observed during point-count surveys within the Project Area. Additionally, 15 sharp-tailed grouse leks were found within the Project Area plus 1-mile buffer in 2015. To obtain a better understanding of lek locations, and facilitate avoidance and minimization of impacts, Foxtail conducted aerial and ground-based lek surveys within the project plus 1-mile buffer during April and May 2017, which indicated the presence of 9 active and 5 inactive leks within the Project Area. The survey protocols were designed to follow methods recommended by NDGFD and were sent to the agency for review in March 2017; however, NDGFD staff were unable to provide a review prior to the surveys.

Bald Eagle (Federally Protected Under BGEPA)

Bald eagles occur throughout the contiguous United States, Alaska, and Canada (Buehler 2000). Individuals may occur as breeders, winter residents, migrants, or year-round residents (Buehler 2000). Bald eagles can nest in large trees or cliffs. The nesting period in North Dakota begins with nest building or maintenance in February and ends when the young fledge, typically in July (Johnson 2010). Nests are relatively close to water, typically less than 2 miles. Although bald eagle nests have historically been found primarily along the Missouri River and Red River (Johnson 2010), the number of bald eagle nests has increased in North Dakota over the last 20 years as the species continues to recover from population declines, primarily due to environmental contaminants. Nesting bald eagles now occur in more than half of the counties in the state (Dyke et al. 2015) growing steadily to 140–150 active bald eagle nests to date (Johnson 2015). Most of the nests occur near streams and mid- to large-sized lakes, but bald eagles are also initiating nests in areas not considered traditional nesting habitat such as cottonwood trees surrounded by cropland or grassland (Dyke et al. 2015). The home range of bald eagles is variable. Populations in Oregon and Washington have home ranges of 2.7 to 18.1 square miles, with an average of 8.5 square miles (Watson et al. 1991), and in Montana the average home range size was 3.5 square miles (Stangl 1994). Along the Mississippi River in Minnesota, nests were located an average of 0.94 mile from the nearest neighboring nest (Mundahl et al. 2013).

During the non-breeding season (September through January; USFWS 2013a), bald eagles concentrate near large bodies of water where the water remains unfrozen, and roost up to 20 miles from foraging sites, depending on abundance of prey (Buehler 2000). Bald eagles are opportunistic foragers that prey primarily on fish but also feed on other aquatic and terrestrial vertebrates, as well as on carrion (Buehler 2000).

Although landscape within the Project Area does not support any large waterbodies, there is an abundance of smaller waterbodies that may attract bald eagles for foraging on waterfowl. One bald eagle nest occurs approximately 3 miles outside the Project Area, which is likely too distant to be directly impacted by Project activities. The observation of bald eagles using the Project in Spring 2015 and Spring 2017, and the observation of several individuals along the drainage of the James River outside the Project, suggests that the species may hunt within or pass through the Project Area during these seasons. Based on the bald eagle

sightings within the Project Area and surrounding area, there is a high likelihood of bald eagle occurrence. In March -November 2017, 9 bald eagles were observed within the Project Area during eagle-use surveys, only one of which was observed after June.

Golden Eagle (Federally Protected Under BGEPA)

Golden eagles are common in western North America west of the 100th meridian with small populations also present in the eastern portions of Canada and the United States (Kochert et al. 2002). Western golden eagle populations may be migratory or year-round residents; individuals from northern populations typically migrate south to over-winter in the southern region of the U.S. where eagle populations tend to be residential (Kochert et al. 2002). Both year-round and migratory golden eagles occur in North Dakota (NDFG 2015). Golden eagles in the western U.S. are most commonly associated with open and semi-open habitats such as shrublands, grasslands, woodland-brushlands, and coniferous forests as well as in farmland and riparian habitats (Kochert et al. 2002). Golden eagles nest on cliffs, utility poles, or in large trees and breeding areas vary by region, but are generally associated with mountainous canyon land, rimrock terrain of open desert, grassland areas, riparian habitats, and occasionally in forested areas (Kochert et al. 2002). Golden eagles in North Dakota nest mainly west of the Missouri River (Johnson 2015) and egg-laying occurs from late March to early May (Stewart 1975, DeLong 2004). The species feeds upon a wide variety of prey species but tends to hunt small to medium-sized mammals such as hares, rabbits, ground squirrels, marmots, and prairie dogs depending upon local availability (Bloom and Hawks 1982; Kochert et al. 2002).

Although golden eagles have a low likelihood of breeding within the Project Area due to a lack of suitable nesting habitat, the species may hunt or pass through the Project Area during any time of the year. Surveys to date have detected the presence of golden eagles near the Project in spring, during the migration period of the species. Possible food resources for golden eagles within the Project Area include both carrion and live prey. Potential sources of carrion include wildlife from road kill, powerline collision, natural death and predation, and hunting. Domestic animals, particularly livestock could also be available as road kill or cattle left or placed in private fields. Live prey includes small and medium sized mammals, particularly Richardson's ground squirrel, lagomorphs, and larger mammals such as deer and antelope. Game birds such as pheasant and sharp-tailed grouse could also be prey for golden eagles. However, there are no known features or prey concentrations that would concentrate golden eagles within the Project Area compared to the surrounding area (Figure 16). The presence of suitable foraging habitat and sightings within the Project Area and surrounding area suggest that there is a moderate to high likelihood of golden eagle occurrence. In March - November 2017, 6 golden eagles were observed within the Project Area during eagle-use surveys, and none were observed after April.

5.2.2.3 Species of Habitat Fragmentation Concern

Seven avian species of habitat fragmentation concern (USFWS 2013b) were observed during surveys within the Rough Rider I or Foxtail Project Areas: Baird's sparrow, bobolink, grasshopper sparrow, northern harrier, sharp-tailed grouse, sedge wren, and upland sandpiper (Table 9). Baird's sparrow was observed only in the Rough Rider I Project Area during 2009 spring surveys (three observations), and was not observed within the Foxtail Project Area during 2014 or 2015 surveys. Sharp-tailed grouse, bobolink, and northern harrier were the most commonly observed species of habitat fragmentation concern, with total observations of 192, 102, and 64, respectively (Table 9). Upland sandpiper was observed a total of 46 times during spring surveys, and grasshopper sparrow was observed 30 times during spring and fall surveys. Three sedge wren observations were recorded during spring 2015 surveys in the Foxtail Project Area.

5.3 Bat Status Assessment

Tetra Tech prepared a desktop assessment of bat likelihood of occurrence for seven proposed wind energy projects in North and South Dakota, including the Rough Rider I WRA (272,500 acres), in February 2008 (Tetra Tech 2008d). Once the Foxtail Project Area was defined, a bat habitat assessment was prepared to further evaluate the potential for impacts to bats from the smaller Project (Tetra Tech 2015d). In May 2017, a bat habitat assessment focused on the current Project Area and a 2.4-km (1.5 mile) buffer was conducted to provide an evaluation of potential impacts specific to the Project as configured in 2017 and to update information based on regulatory changes since the 2015 habitat assessment.

5.3.1 Likelihood of Occurrence Assessment (2008)

Tetra Tech developed an index to rank the seven prospective WRAs evaluated in the 2008 assessment. The ranking system was based on two habitat and species variables. Habitat-based variables were the amount of suitable foraging and roosting habitat (specifically forest aquatic matrix), the number of natural areas, number of perennial streams, distance from the Missouri River and number of human developments. Species-based variables included using bat species known to occur in the region and landscape characteristics. Habitat-based variables essential to the species' requirements during roosting and foraging determine the suitability of the habitat, whereas understanding the species' ecology and behavior is important to understanding the potential risks associated with development.

For the analysis, Tetra Tech defined a forest aquatic matrix patch as all wetlands within 0.8 miles of a forested area. They considered wildlife management areas, wildlife refuges, state parks, and recreation sites to comprise natural areas, because they typically contain woodland and water habitats that are attractive to bats. Tetra Tech also included perennial water bodies (perennial streams, rivers, riparian areas, ponds or other forms of open water), in the assessment as indicative of potential foraging habitat for bats. Distance from the Missouri river was included as a habitat variable based on research in South Dakota (Swier 2003) that indicated some species were largely restricted to cottonwood woodlands in the floodplain of the river. The density of human development was also considered as a habitat variable in the assessment on the basis that human-made structures often provide roosting habitat for bats.

Tetra Tech's assessment incorporated species-based variables into the analysis in the form of a species risk index and a species landscape index. The species risk index was based on the life-history characteristics of individual species and the frequency with which they occur as fatalities at wind farms. The species landscape index was based on the amount of suitable habitat near the WRA, using a 3-mile buffer as an approximation of the distance at which habitat influences the movements of bats.

The 2008 Bat Likelihood of Occurrence Assessment concluded that the Rough Rider I WRA contained nearly 200,000 acres of forest aquatic matrix, suggesting that much of the WRA contained potential bat habitat. In addition, the Rough Rider I WRA also contained a high number of natural areas, which are also assumed to provide high quality bat habitat. From a landscape perspective, the WRA contained more forest-aquatic matrix inside the WRA than the surrounding area (ratio inside: outside = 1.13:1.0), suggesting bats in the area may be attracted to habitat in the WRA. Five species of bat were determined to be likely to occur: hoary bat, eastern red bat, silver-haired bat, big brown bat, and little brown myotis. The overall likelihood index for the Rough Rider I WRA indicated a moderate to high likelihood of bat occurrence.

5.3.2 Bat Habitat Assessment (2015)

Tetra Tech performed a desktop evaluation of habitat within the Foxtail Project Area for bats in 2015 (Tetra Tech 2015d). The objectives of the habitat assessments were to: (1) evaluate habitat features within the Project Area for bats, focusing specifically on northern long-eared bat (NLEB), and (2) assess the likelihood of NLEB and other bat species occurring within the Project Area based on known distributions and habitat requirements of bat species in the region. Variables examined included species ranges, occurrence information, and GIS-calculated coverages of the amount of suitable foraging and roosting habitat, as well as potential migration and movement corridors in the Project Area. Habitat variables reviewed in the assessment were based on bat species known to occur in the region surrounding the Project Area, and their behavioral characteristics relative to roosting, foraging and migratory activity. This information was used to derive a high, moderate, or low likelihood of occurrence in the Project Area for each species with ranges overlapping the Project Area, and specifically for NLEB.

The assessment concluded that suitable natural roosting habitats in the Project Area were limited to individual trees, wind breaks, and woodlots (Tetra Tech 2015e). No cavity or cave-roosting habitat such as caves, mines, or other natural rock or crevice formations are known to occur in the Project Area. In addition, there are no known geological formations that have the potential for karst development (which could potentially support hibernacula) within the Project Area (Weary and Doctor 2014), and the nearest abandoned mine feature was determined to be approximately 64 miles northwest of the Project, in Emmons County (CH Edick Mine; a second mine that is approximately 53 miles northeast of the Project Area, in Ransom County, has since been identified).

Tetra Tech determined that foraging habitat within the Project Area is primarily limited to grasslands, pastures and agricultural crops, which comprise approximate 82 percent of the Project Area (Table 2, Figure 5). Deciduous forest (approximately 0.25 percent) consists of small stands of cottonwoods occurring as windbreaks surrounding homesteads that could also be used for foraging. Grasslands, pastures and cultivated crops Agricultural lands have limited value as bat foraging habitat but may provide foraging habitat for some species including big brown bat. Habitats associated with water, including open water, woody wetlands, and emergent herbaceous wetlands comprise approximately eight percent of the Project Area (Table 2, Figure 5). Wetlands within the Project Area were determined to include kettle ponds, stock ponds, and several unnamed creeks, which could represent foraging habitat for bats. However, water features along will not support most bats species without suitable roosting habitat in close proximity to foraging habitat (Tetra Tech 2015e). For NLEB, suitable foraging habitat consisting of forested areas, wind breaks, riparian corridors, and open water accounted for less than three percent of the Project Area. The assessment also concluded that because there are no large forested riparian corridors for bat species to follow or utilize as stopover roosting sites, use of the Project Area by bats during migration is likely to be low.

The multi-species assessment concluded that roosting colonies of big brown bat and little brown bat have a high probability of occurring within the Project Area because of their known association with edge habitats and human-made structures. Eastern red bat, hoary bat, and silver-haired bat have a moderate likelihood of occurring in the Project Area, primarily during migration. The remaining species typically found in North Dakota, including fringed bat, long-eared bat, long-legged bat, western small-footed bat, and northern long-eared bat, were concluded to have a low likelihood of occurrence in the Project Area based upon species range, known habitat associations, and habitat availability within the Project Area.

Tetra Tech conducted a more detailed, stepwise assessment for NLEB specifically, based on the approach provided in the USFWS NLEB Guidance (USFWS 2014c). The stepwise assessment determined that:

1. The Project is within the range of NLEB;
2. Less than one percent of the Project Area is forested, and the lack of large contiguous woodlots makes likelihood of NLEB occurrence during summer low;
3. Likelihood of presence during winter is low because no hibernacula are known to occur near the Project Area or in North Dakota;
4. Because NLEB are rare in eastern North Dakota, likelihood of summer and winter occurrence is low, and no clear migratory pathways occur in the Project Area, likelihood of occurrence during migration is very low;
5. No summer or winter occurrence records have been reported within five miles of the Project Area;
6. The Project is outside the range of the Indiana bat.

5.3.2.1 Species of Concern

Few data are available on NLEB in North Dakota; however, Harvey et al. (2011) suggest that it occurs statewide in suitable habitats. Surveys conducted in the summers of 2009, 2010, and 2011, confirmed the presence of NLEB in the Turtle Mountains (approximately 200 miles north of the Project), Missouri River Valley (approximately 120 miles northwest of the Project), and in the Badlands region (approximately 230 miles northwest of the Project) (USFWS 2013). All recorded instances of NLEB in the Dakotas have been in ecoregions (Turtle Mountains, Little Missouri Badlands, River Breaks) with more topographic relief and trees than the Missouri Coteau region of the Project Area.

Northern long-eared bats are active in North Dakota from about 1 April to 30 September and in hibernacula from about 1 October to 15 May (USFWS 2014c Tetra Tech 2015e). The NLEB requires trees for roosting outside of the hibernation period and its presence is generally correlated with closed canopy forests (Broders and Forbes 2004, Bales 2007). Given the small, isolated, and fragmented nature of forested areas within the Project Area, it is anticipated that the species is unlikely to occur within the Project Area during the breeding period, generally May through August. Although the species may use wind breaks within fragmented forest-agricultural landscapes for commuting between roosts and foraging areas, there is little forested habitat present in the Project Area that would be preferred for roosting and breeding by NLEB. There are no known hibernacula records of this species in North Dakota (NDGFD 2015) and the nearest known hibernaculum of this species is in the Black Hills of South Dakota, more than 200 miles from the Project; therefore, there is a low likelihood that NLEB migrating between summer and winter roosts will pass through the Project Area.

Although NLEB are expected to have a low likelihood of occurrence within the Project Area due to lack of suitable habitat, the range of NLEB includes Dickey County (USFWS 2013c, USFWS 2015d, BCI 2017), and therefore occurrence is possible. The most likely period of potential risk to NLEB is during seasonal movements between winter hibernacula and summer habitats.

5.3.3 Bat Habitat Assessment (2017)

At the time of publication of the 2015 bat habitat assessment, the species was listed as Threatened with an Interim 4d Rule. In January 2016, a Final 4d Rule was published, which drives survey and avoidance and minimization requirements for projects. To update the previous assessment, Tetra Tech performed a desktop evaluation of habitat within the 2017 Project Area (20,029 acres) plus a 2.4-km (1.5-miles) buffer in May 2017 with the following objectives:

- Assess the likelihood of NLEB and other bat species occurring within the proposed Project Area based on known species' distributions and habitat requirements.
- Evaluate habitat features within the proposed Project Area and surrounding buffer that may provide potentially suitable habitat for bats.

Tetra Tech conducted the bat habitat assessment in accordance with recommendations in the voluntary WEG (USFWS 2012) and the USFWS recommendations for NLEB impact assessments (USFWS 2014c), and focused on evaluating the suitability of habitat within the Project Area for NLEB.

The Project Area and the 2.4-km (1.5-mile) buffer area are dominated by grassland/herbaceous, pasture/hay and cultivated crops (approximately 80 percent), with suitable bat roosting and foraging habitats (open water, emergent herbaceous wetlands, deciduous forest, evergreen forest, shrub/scrub, and woody wetlands) comprising approximately 17 percent and 15 percent of these areas, respectively. Other cover types comprise less than 3 percent of each landscape. Therefore, it is unlikely that bats would use the Project Area disproportionately for roosting or foraging over adjacent areas.

Suitable roosting habitat within the Project Area comprises trees, windrows, woodlots, and riparian zones, generally located near homes, along riparian corridors, or as planted windbreaks. These features cover less than 1 percent of the Project Areas; the average size of a forested patch within the Project Area is 0.5 ha vs 0.9 ha in the buffer area. Tetra Tech concluded that the Project Area was unlikely to support roosting by NLEB due to the small average patch size (Tetra Tech 2017a). Potentially suitable habitat for bats comprises about 17 percent of the Project Area and less than 10 percent of the Project Area is covered by forested and riparian areas suitable as foraging habitat for NLEB. The potentially suitable NLEB habitat within the Project Area is fragmented, which reduces its value to the species.

Following the USFWS NLEB Interim Conference and Planning Guidance (NLEB Guidance; USFWS 2014c) stepwise assessment approach, Tetra Tech concluded that the NLEB has a low likelihood of occurrence within the Project Area during the summer residency period and during migration due to lack of suitable habitat, as well as distance to known occurrences. Although the species is believed to occur statewide in suitable habitats, data specific to North Dakota are lacking (Harvey et al. 2011; Gullickson nd). There are no known occurrences of NLEB within Dickey County (USFWS 2015a).

5.4 Dakota Skipper Assessment

The Dakota skipper is a small butterfly found in the tallgrass and mixed-grass prairies of the Northern Great Plains. On 24 October 2014, the USFWS listed the Dakota skipper as a threatened species (USFWS 2014d). Although its historic range once consisted of vast, unbroken native prairie in the north-central United States and south-central Canada, its current range is now limited to scattered remnants of high quality native prairie in Minnesota, North Dakota, South Dakota, and southern Manitoba and Saskatchewan (USFWS 2015b). The Dakota skipper population has declined due to sensitivity to disturbances, such as grazing and fire, and the loss of native prairie habitat. The USFWS designated 50 units, ranging in size from 31 acres to 2,887 acres, in North Dakota, Minnesota, and South Dakota as critical habitat (USFWS 2015a, 2015b). The closest critical habitat to the Project Area is approximately 70 miles to the northeast in Ransom County and 70 miles to the southeast in Marshall County, SD.

The Dakota skipper is not known to occur in Dickey County (Western and USFWS 2015); however, the species has been reported in adjacent counties (Sargent and Ransom Counties, ND and Brown and

McPherson Counties, SD; USFWS 2015b, 2015c), and thus, there is a low likelihood for the species to occur within the Project Area. Foxtail Wind has evaluated potential habitat for the Dakota skipper within the Project Area and has identified approximately 700 acres (3.5 percent of the Project Area) as Excellent/Likely Dakota skipper habitat and approximately 2,895 acres (14.5 percent of Project Area) was classified as Good/Possible Dakota skipper habitat. A field delineation of Dakota skipper habitat in 12 parcels of land in which turbines are proposed found no Excellent/Likely habitat and only 26 acres of Good/Possible habitat. The 2017 delineation around proposed turbine locations determined that 0 turbines are located in Excellent/Likely habitat and 5 turbines are located in Good/Possible habitat.

6 POTENTIAL PROJECT IMPACTS

This section summarizes potential risks to wildlife related to the construction and operation of the Project.

6.1 Project Risk Assessment

The following sections analyze the field data collected between 2008 and 2017 and provide an assessment of potential Project impacts. The analysis has been organized to address specific categories of impacts identified in the USFWS Region 6 Bird and Bat Conservation Strategy Outline (USFWS 2013d). Impacts have the potential to affect population viability as a result of changes in key population-state parameters such as reproduction and mortality rates. Impacts to the species under discussion can be short-term (one or two reproductive seasons), or long-term (affecting several generations). They can be direct (an immediate effect to an individual, population, or its habitat), or indirect (an effect that may occur over time or result from other actions). Direct impacts may include collisions with Project infrastructure such as turbine blades or transmission lines; electrocution; disturbance from construction or operations activities; displacement due to loss of suitable habitat; and habitat loss and fragmentation that creates a barrier to dispersal, regular movements, or migration. Indirect impacts may include loss or change of population vigor; attraction to modified habitats (e.g., population sinks), and increased exposure to predation risk because of altered habitat use. Additionally, the Project may contribute to cumulative impacts that may affect certain species, in conjunction with impacts from other current or future development projects. Indirect and cumulative effects are difficult to quantify, and have been estimated for the Project qualitatively by comparison of the wildlife community at the Project to information from research literature regarding known indirect effects on these taxa.

The avian (Section 6.1.1) and bat (Section 6.1.2) sections below are organized by the type of impact. Within impact sections, the species or species groups of primary focus are analyzed with respect to the impact type. Broad categories of impact – direct or indirect – are indicated parenthetically within each subsection heading. Additionally, to reduce repetitive information, impacts for which the analysis applies to all species groups are labeled "All Species Groups" and will not be further sub sectioned.

6.1.1 Avian Impacts

Waterfowl, songbirds, waterbirds, gulls, and terns were the most commonly observed species groups during fall 2008, spring 2009, fall 2014, and spring 2015 avian point-count surveys, and are likely to use the Project Area in the future. The most commonly observed species during fall surveys were snow goose,

Canada goose, mallard, American coot and horned lark. During spring surveys, snow goose, Canada goose, and red-winged blackbird were the most commonly observed species.

The avian community detected within the Project Area during avian surveys was characterized by species typical of wetlands, open-water features, agricultural lands and cattle pastures in North Dakota. The Project falls within the Prairie Pothole Region of the Central Flyway, which provides highly productive waterfowl breeding habitat (Ducks Unlimited 2017). Few studies have been conducted to assess the potential effects of wind energy projects on waterfowl, with general concerns about impacts to waterfowl including the potential for indirect displacement effects or collisions during wind facility operations. Research to date indicates that waterfowl may be less likely than other avian taxa to suffer direct fatality from wind operations, including at facilities that have high waterfowl use such as the Prairie Pothole Region (Pettersson 2005, Gue et al. 2013, Bird Studies Canada 2014). Research in the Prairie Pothole Region found mixed evidence of displacement of dabbling ducks from wind energy facilities (Loesch et al. 2013). Recent meta-analyses relevant to the Project have estimated an average all-bird (mostly small birds) fatality rate of 1.81 birds/MW/year in the Great Plains (Loss et al. 2013) and 2.08 small birds/MW/year in the Northern Great Plains (Erickson et al. 2014). Project-related bird fatalities of songbirds may be reasonably expected to occur within the range defined by these studies, which suggests a range of 271 to 312 total avian fatalities per year can be anticipated at the Project. Post-construction fatality monitoring described in Appendix A will be used to measure these impacts in the first year of operations to facilitate adaptive management.

6.1.1.1 Collision (Direct Impact)

General Avian Species

Potential collision impacts to species of habitat fragmentation concern and area-sensitive grassland birds do not differ from those of general avian species, so these groups are treated together in this section.

Birds can be at risk because of potential collisions with wind turbines and power lines (Erickson et al. 2005, Drewitt and Langston 2006, Arnett et al. 2007). Specifically, migrant passerines (e.g., songbirds) are found more often in post-construction mortality monitoring compared to other groups of birds (Arnett et al. 2007). At newer generation wind energy facilities outside of California, approximately 80 percent of documented mortalities have been songbirds, of which 50 percent are often nocturnal migrants (Erickson et al. 2001, Johnson et al. 2002, Drewitt and Langston 2006, Strickland and Morrison 2008).

Waterfowl fatalities at two wind farms near the Project Area comprised approximately 60 percent of all avian fatalities found in 2013-14, suggesting that waterfowl may be a larger proportion of fatalities at Foxtail than is typically the case for onshore wind farms (Graff 2015). Conversely, studies published in the peer-reviewed literature have not reported high mortality rates for waterfowl at operational wind facilities in the Prairie Pothole Region and elsewhere (Loesch et al. 2013, Gue et al. 2013). Collision-risk and flight-behavior research indicates that waterfowl may be less likely than other avian taxa to suffer direct mortality from wind operations during both the breeding and migratory periods. For instance, only one collision event was recorded during observations of 1.5 million migrating waterfowl, primarily common eider, at a wind facility in the Kalmar Sound, Sweden (Pettersson 2005). Similarly, a recent study demonstrated that wind turbines at an operational wind facility in North Dakota had no effect on mallard and blue-winged teal survival rates during breeding, and that collision mortalities were rare (one mortality of 165 tracked individuals over two years; Gue et al. 2013). Radar and collision observation studies indicate that migrating waterbirds (including waterfowl) may be able to detect turbines and divert their flight paths away from turbines from up to 3 km in daytime and 1 km at night (Kahlert et al. 2004, Drewitt and Langston 2006). Research conducted at off

shore wind farms in Europe has demonstrated that waterfowl are able to avoid wind farms and individual turbines (Drewitt and Langston 2006, Plonczkier and Simms 2012). In general, waterfowl mortalities at wind facilities tend to be low relative to higher strike-risk species that do not exhibit avoidance behaviors at the micro- or macro-spatial scale (review in Marques et al. 2014). Of all avian mortality events reported at Canadian wind power facilities between 2006 and 2012, waterbird species combined (including shorebirds, seabirds and waterfowl) represented 4 percent of total mortalities, and no individual waterfowl species represented more than 1.5 percent of total mortalities (mallard,1.4 percent; Bird Studies Canada 2014).

Locally breeding songbirds may experience lower mortality rates than migrants because many of these species tend not to fly at turbine heights during the breeding season. However, some breeding songbird species have behaviors that increase the risk of collisions with turbines. For example, horned larks have been commonly found as fatalities at wind farms, and mortality may be partially attributed to the breeding flight displays within the rotor swept area (Pickwell 1931, Johnson and Erickson 2011). Most song birds are short-lived, have high reproductive output, and their population growth rates are more sensitive to reproductive failure than to adult survival (Stahl and Oli 2006, Arnold and Zink 2011). Additionally, recent meta-analysis of wind-energy impacts concluded that collisions with wind turbines have negligible cumulative impacts on passerine (songbird) populations, with mortality rates due to these collisions ranging from 0.008 to 0.0043 percent of the continental population per year (Erickson et al. 2014). Therefore, collision mortality for most songbird species is expected to have negligible effects on population dynamics.

The 2015 survey report identified two songbirds as having potential risk of collision due to high encounter rates and/or relatively high mean use rates during avian point-count surveys: red-winged blackbird and brown-headed cowbird (Tetra Tech 2015c). Red-winged blackbirds are local year-round residents and transient migratory species in this region of North Dakota and may be at the greatest fatality risk during the spring and fall due to their flocking characteristics. Project-related fatalities of red-winged blackbird and brown-headed cowbird, should they occur, are unlikely to have population level impacts because populations for each species are large (8.2 and 12 million in ND, respectively; PIFSC 2013). Tree swallows have somewhat smaller populations in North Dakota (200,000, PIFSC 2013), but those potentially affected by the Project during fall migration would represent a small proportion of the estimated Prairie Pothole regional population (1.4 million; PIFSC 2013).

Red-winged blackbird (Kerlinger et al. 2006, Thelander et al. 2003) and tree swallow (Erickson et al. 2014) have been documented as fatalities at other wind energy projects based on publicly available data. These two species are also among the 25 most commonly-detected collision fatalities at wind energy facilities in the U.S. (Erickson et al. 2014). Other species among the 25 most commonly-detected collision fatalities that were observed in the Project Area included European starling, western meadowlark, yellow-rumped warbler, dark-eyed junco, savannah sparrow, American robin, common yellowthroat, Brewer's blackbird, and bobolink. These species were either observed in very low numbers and/or had low encounter rates so are not considered to be at risk from the Project.

Although avian mortality due to collision is expected to be low, collision fatalities are a cause of concern to Foxtail Wind. To monitor and minimize collision fatalities to the extent practicable, Foxtail Wind will implement fatality monitoring for one year (Section 8) and adaptive management for the life of the Project (Section 9).

Table 11 Estimated Mean Bird Fatalities for all Birds per Turbine and per Megawatt at Wind Facilities Having Records in the Public Domain in the Midwest

Wind Facility	State	Habitat	Estimated mean bird fatality/ turbine/year	Estimated mean bird fatality/ MW/year	Source
Blue Sky Green Field	WI	Agricultural Cropland	11.8	7.2	Gruver et al. 2009
Cedar Ridge	WI	Agricultural Cropland	10.8 (2009) 6.1 (2010)	6.5 (2009)[1] 3.7 (2010)	BHE 2011
Buffalo Ridge Phase I (1996-1999)	MN	Agricultural Cropland	1.0	2.9	Johnson et al. 2000
Forward Energy	WI	Agricultural Cropland	3.3	2.2	Grodsky and Drake 2011
Kewaunee County	WI	Agricultural Cropland	1.3	2.0	Howe et al. 2002
Ainsworth	NE	Mixed grass prairie	2.7	1.6	Derby et al. 2007
Summerview	AB Canada	Mixed grass prairie	2.0	-	Brown and Hamilton 2006
Red Canyon	TX	Short-grass prairie	0.8	0.5	Miller 2008
Top of Iowa	IA	Agricultural cropland	0.4 (2003) 1.0 (2004)	0.5 (2003) 1.1 (2004)	Jain 2005 Jain et al. 2011
Buffalo Gap II	TX	Mixed-grass prairie	0.2	0.2	Tierney 2009
Regional Mean (90-percent confidence interval)			**3.4 (1.90)**	**2.6 (1.23)**	

[1] Estimates calculated per 169 days in 2009 and 166 days in 2010

Birds of Conservation Concern

During avian surveys in and near the Project Area, 11 BCC species were observed: grasshopper sparrow, dickcissel, Swainson's hawk, bald eagle, American bittern, upland sandpiper, marbled godwit, short-billed dowitcher, horned grebe, red-headed woodpecker, and black tern. Of these species, six have been reported as fatalities at operating wind farms in the U.S. and/or Canada according to publicly available data, including grasshopper sparrow, upland sandpiper, Swainson's hawk, bald eagle, marbled godwit and horned grebe (Derby et al. 2007, Bird Studies Canada et al. 2016, Stantec 2010b, 2011). The most complete, publicly

available data are for wind farms in Canada. Swainson's hawk was the most commonly detected of the BCC species as fatalities at operating wind farms in Canada, but represented less than 1 percent of reported fatalities between 2007 and 2014 (Bird Studies Canada et al. 2016). Fatalities for the remaining species are uncommon, for instance representing less than 0.3 percent each of reported Canadian fatalities. None of the BCC songbirds observed in the Project Area have been identified as one of the most commonly found species of small passerines as fatalities at wind-energy facilities in the U.S. (Erickson et al. 2014). Bald eagle is considered to have low risk of collision in general (see below: Eagles). Swainson's hawk has the smallest U.S. population of species monitored by Partners in Flight (PIF) of approximately 420,000 (PIFSC 2013). Grasshopper sparrow and dickcissel populations are large (30 million and 19 million, respectively, PIFSC 2013), although both species have shown long-term declines in North Dakota and elsewhere in the U.S. (Sauer et al. 2017), likely due primarily to agricultural intensification and habitat loss (Brennan and Kuvlesky 2005, Hill et al. 2014). North American estimates for upland sandpiper and marbled godwit are approximately 750,000 each (Andres et al. 2012), for horned grebe is 200,000-500,00 (Wetlands International 2017), and for black tern is 300,000-750,000 (Wetlands International 2017). There are approximately 1.2 million red-headed woodpeckers in the U.S., and 7,000 in North Dakota (PIFC, 2013), and woodpecker fatalities tend to be rare at operational wind farms (Erickson et al. 2014).

Because of the low activity of BCC species observed in and near the Project Area, risk is expected to be low and impacts at the population level unlikely. The risk of direct impacts will be reduced through avoidance and minimization measures implemented during the design, construction, and operational phases of the Project (Section 7).

Raptors

Despite the observation that most bird fatalities at wind farms are songbirds, raptor mortality historically has received the most attention. Raptor mortality at newer wind projects has been low relative to older-generation wind farms, although there is substantial regional variation in raptor mortality rates (Erickson et al. 2002, Erickson et al. 2004, Johnson et al. 2002, Kerns and Kerlinger 2004, Jain et al. 2007).

A recent meta-analysis suggests that pre-construction studies provide poor indicators of post-construction mortality (Ferrer et al. 2012). A general pattern is that high raptor use (greater 2.0 birds/20 minutes) has often been associated with high raptor mortality at wind farms (Strickland et al. 2011). Conversely, raptor mortality often appears to be low when raptor use is low (< 1.0 birds/20 min; Strickland et al. 2011). In the case of this Project, overall raptor use was 0.71-0.85 birds/20 minutes in fall, and 0.33-1.12 birds/20 minutes in the spring. These estimates are lower than or close to low mean use threshold of 1.0 birds/20 minutes suggested by (Strickland et al. 2011).

Red-tailed hawk, northern harrier and Swainson's hawk had the highest mean use (0.16-0.32, 0.13-0.25, and <0.10-0.24 birds/20 min, respectively) for the raptor species group during fall surveys. Similarly, red-tailed hawk and northern harrier had the highest mean use (0.17-0.24 and < 0.10-0.25 birds/20 minutes, respectively) during spring surveys. Red-tailed hawk exhibited greater encounter rates (fall, 0.07-0.20 birds flying within the RSA/20 minutes; spring, 0.07-0.13/20 minutes) than northern harrier and Swainson's hawk (0.05 or fewer birds flying within the RSA/20 minutes for all seasons surveyed). These three species are commonly associated with agricultural and grassland prairie habitats, which are present within the Project Area and provide opportunities for foraging, an activity associated with susceptibility to turbine collisions (Thelander et al. 2003).

Swainson's hawk and northern harrier fatalities have been recorded at operating wind facilities. Erickson et al. 2002, Young et al. 2003, Erickson et al. 2004, Gritski et al. 2010, Johnson and Erickson 2011). Swainson's hawk nests were found within two miles of the Project Area during raptor nest surveys; this may increase the risk for collisions during nesting activities. Given the low mean use of Swainson's hawks within the Project Area, low encounter rate, and the fact that they are not commonly detected as wind farm fatalities (according to publicly available data); turbine-related fatalities at the Project are likely to be low. Project-related fatalities of Swainson's hawk and northern harrier, should they occur, are unlikely to have population-level impacts because both species' populations are relatively stable (Sauer et al. 2017).

Seven ferruginous hawk observations were recorded during avian use surveys in the Rough Rider I survey area, but the species was not observed during the 2014 or 2015 Foxtail surveys. The ferruginous hawk is not commonly found as a fatality at wind energy facilities according to publicly available data. Therefore, impacts on ferruginous hawks are expected to be low. One prairie falcon was observed in the Rough Rider I spring surveys, and two were observed during the fall Foxtail surveys. Falcons in general, with the exception of American kestrel, are expected to have low risk from wind turbines (Beston et al. 2016), and the low use recorded in the Project Area (mean use 0.01 birds/20 minutes) indicates risk to prairie falcon is low.

In a study of raptor response to wind farms, red-tailed hawks were observed engaging in high-risk flight behaviors at operational wind facilities whereas northern harriers were identified as having a low risk flight behavior for collisions (Garvin et al. 2011). Results from post-construction mortality monitoring studies indicate that red-tailed hawks are frequently found as turbine-related fatalities (Jain 2005, Grodsky and Drake 2011, Johnson and Erickson 2011). Drewitt and Langston (2008) summarized that bird activity is typically higher near active nests than areas without active nests, thus, red-tailed hawks may have increased potential for collision if they repeatedly fly within the Project Area during nesting activities and during the time when young begin to fledge from the nests. Red-tailed hawk, Swainson's hawk, and great-horned owl nests were found within the Project Area; the presence of occupied raptor nests in or near the Project Area may increase the risk for collisions during nesting activities. However, Project-related fatalities are unlikely to have population-level impacts because red-tailed hawk populations in North America are relatively large and stable (2.0 million; PIFSC 2013, Sauer et al. 2017).

Other non-eagle raptor species detected during surveys included broad-winged hawk, merlin, turkey vulture, American kestrel, great-horned owl, and rough-legged hawk. Both turkey vultures and American kestrels are commonly found as fatalities at wind facilities (Erickson et al. 2002, Stantec 2010a). However, only one turkey vulture was observed in the Project Area, and the ten American kestrels observed had a low encounter rate of 0.00 birds flying at the RSA height/20 minutes, suggesting a low risk for turbine collisions at the Project for both species.

Eagles

The most recent eagle nest survey found one in-use (occupied) bald eagle nest 4.9 miles from the nearest turbine (approximately three miles from the Project Area), and no other eagle nests within 10 miles. Although bald eagles have a low likelihood of breeding within the Project Area due to a lack of suitable nesting habitat, bald eagles nesting in the vicinity of the Project could occur in the Project Area when foraging or migrating. Eagle surveys conducted at the Project in 2014-15 and 2017 have shown what appears to be seasonal (spring and fall) use by bald eagles, with 16 minutes of bald eagle exposure observed, but only one after June 2017. Six bald eagle mortalities associated with wind energy facilities within the United States were reported from 1997 through June 2012 (Pagel et al. 2013). To date, one bald eagle mortality has been reported at a wind energy facility in North Dakota (Public Prairie Broadcasting

2015). Bald eagles are believed to be at less risk of turbine collision than golden eagles because they tend to focus their hunting efforts on fish and waterfowl in lakes and rivers (Buehler 2000). However, waterfowl, cattle carcasses, and ground squirrel colonies could also serve as attractants to nearby bald eagles, drawing them into proximity with turbines. Although bald eagle collisions with turbines are possible, the likelihood of collisions is reduced due to the lack of nests and suitable nesting habitat within the Project Area and will be minimized through the implementation of avoidance and minimization measures described in Section 7.

No golden eagles or their nests were found within the Project Area or 10-mile buffer surrounding the Project Area during the nest surveys. Although golden eagles have a low likelihood of breeding within the Project Area due to a lack of suitable nesting habitat, they have been observed in the Project Area and could occur in the Project Area when foraging or migrating. In addition, grouse leks, cattle carcasses and ground squirrel colonies within the Project Area could serve as attractants to golden eagles. Eagle surveys conducted in 2017 indicate that golden eagles may be present seasonally (spring), with six individuals observed for a total of 14 exposure minutes during March and April, 2017, but none during May and June, 2017. Seventy-nine golden eagle mortalities associated with wind energy facilities within the United States were reported from 1997 through June 2012, excluding the Altamont Pass Wind Resource Area in California (Pagel et al. 2013.); however, to date no golden eagle mortalities have been reported at wind energy facilities in North Dakota. Golden eagles are believed to be more at risk of turbine collision than bald eagles because they hunt for land-based prey along topographic contours where turbines are often located (Kochert et al. 2002). Collision impacts on golden eagles will be minimized through the implementation of avoidance and minimization measures described in Section 7.

Whooping Cranes

Whooping cranes may be directly affected by the Project through collision with wind turbines or associated power lines. No whooping crane observations were documented in the Project Area and the likelihood analysis concluded that the likelihood of occurrence within the Project Area is low; however, the Project is located within the 95 percent isopleth of the whooping crane migration corridor, and contains some suitable wetlands for the species.

To date, no whooping crane mortality has been attributed to collision with wind turbines at any facility. Whooping cranes typically fly at altitudes higher than the tallest proposed turbine height (431 feet at the tip of an upright turbine blade); however, individuals fly at lower altitudes in response to climate conditions (e.g., low cloud cover), while searching for a stopover location and while landing, taking off, and moving between roosting and foraging locations. It is during these low flight times that the cranes are at the highest risk for collision with turbines and power lines. Although collision with turbines or transmission lines is a risk, there is evidence that cranes alter their flight to avoid wind turbines (Nagy et al. 2012), and marked power lines (Morkill and Anderson 1991, Murphy et al. 2009). The risk of whooping crane collisions with power lines will be reduced by placing all collection lines underground and connecting directly to an existing transmission line in the Project Area via a short tap line to avoid construction of new overhead lines (see Section 7).

6.1.1.2 Electrocution (Direct Impact)

All Species Groups

Utility lines, particularly distribution lines, can potentially result in electrocution of large raptors because their wing span is large enough that the bird can simultaneously contact two conductors or a conductor and grounded hardware (APLIC 2006, Loss et al. 2014). Due to their large size, raptors can bridge conductive elements to complete a circuit (APLIC 2006). Utility lines generally pose less of a threat to non-raptors

because of their smaller wing spans. However, any structures that allow for circuit completion (i.e., flesh-to-flesh contact between energized parts or an energized and grounded part) pose an electrocution risk. Avian electrocutions typically occur on distribution lines with voltages less than 60 kilovolts. To protect birds from possible electrocution, the Avian Power Line Interaction Committee (APLIC) recommends that lines have a horizontal separation of 60 inches and a vertical separation of 40 inches between phase conductors or between a phase conductor and grounded hardware (APLIC 2006, 2012). The risk of electrocution for avian species, including eagles at the Project is low due to measures Foxtail Wind will undertake to prevent electrocution, including the use of underground collection lines and use of only a short, overhead tap wire of several hundred feet (i.e. < 100 m) length to connect to the existing transmission line. See Section 7 for details of avoidance and minimization measures.

6.1.1.3 Disturbance/Displacement (Direct Impact)

General Avian Species

In addition to mortality associated with wind farms, concerns have been raised that some bird species may avoid areas near turbines after the wind farm is in operation (Drewitt and Langston 2006). For example, at the Buffalo Ridge wind energy facility in Minnesota, densities of male songbirds were significantly lower in Conservation Reserve Program (CRP) grasslands containing turbines than in CRP grasslands without turbines though the causal mechanism was not studied (Leddy et al. 1999). Reduced abundance of grassland songbirds was found within 50 m of turbine pads for a wind farm in Washington and Oregon, and the investigators attributed displacement to the direct loss of habitat or reduced habitat quality and not the presence of the turbines (Erickson et al. 2004). Research at three sites in North and South Dakota has shown that some grassland nesting birds may avoid turbines by 100-300 m, but results varied among species and sites (Shaffer and Buhl 2015). None of these studies have addressed whether these avoidance effects are temporary (i.e., the birds may habituate to the presence of turbines over time) or permanent, although the North and South Dakota research indicated that displacement effects for some species, including grasshopper sparrow and bobolink, may be delayed up to one-year post-construction and may last from two to five years (Shaffer and Buhl 2015). Pearce-Higgins et al. (2012) found little evidence for a post-construction population decline for ten species of birds at wind projects in upland habitats in the United Kingdom.

Post-construction data indicate that waterfowl and other waterbirds may be displaced from preferred breeding habitats at some sites (Strickland et al. 2011, Loesch et al. 2013), but not at others (Niemuth et al. 2013). Such displacements are often temporary, for instance in one studied case lasting only one year past project construction before returning to pre-construction habitat use levels (Buffalo Ridge, MN; Strickland et al. 2011). Spring-staging pink-footed geese have likewise shown habituation to operational wind farms after initial displacement and have been observed foraging among land-based turbines in Denmark (Madsen and Boertmann 2008). Population-level consequences of displacement have not yet been demonstrated for waterfowl (Drewitt and Langston 2006).

Project construction activities and the presence of turbines and other Project features may disturb or displace birds, particularly species of habitat fragmentation concern. Many of the species detected during bird surveys likely breed in the Project Area, suggesting potential for impact to breeding birds. The impacts to birds from disturbance or displacement from the Project are likely to be low based on species composition and relatively low use recorded in the Project. The Project Area primarily consists of grazed grassland habitats interspersed with wetlands, suggesting that some avian disturbance and habitat loss caused by construction and operation of the Project may occur. Waterfowl and waterbirds, which represented the

majority of species observed during surveys, are unlikely to avoid the Project Area or to alter the current use of habitat within the Project Area over the long-term, based on available studies. The risk of disturbance/displacement to songbirds and other species groups will be reduced through avoidance and minimization measures taken during the design, construction, and operational phases of the Project (Section 7).

Species of Habitat Fragmentation Concern

Six species of habitat fragmentation concern (USFWS 2013) have been observed within the Project Area: bobolink, grasshopper sparrow, northern harrier, sharp-tailed grouse, sedge wren, and upland sandpiper. Impacts to these species will be minimized by avoiding the fragmentation of large patches of high quality native prairie grasslands during construction (see Figure 8).

In the Midwestern U.S., nesting by northern harriers occurs in wetlands, on reclaimed mines and in CRP fields planted in non-native grasses (Dechant et al. 2002). A before-after/control impact study of avian use at the Buffalo Ridge Wind Resource Area in Minnesota found evidence that northern harriers avoided turbines on small (≤ 100 m from turbines) and large (105-5,364 m) scales the year following construction. Such avoidance was not detected in a study conducted two years following construction (Johnson et al. 2000), suggesting that any displacement effect of a wind farm on the species may be temporary.

Sharp-tailed grouse could be affected by Project development if Project infrastructure disturbs or displaces grouse from leks or areas of preferred habitat (grasslands). There are known leks within the Project Area and surrounding area, and disturbance caused by turbines and other Project infrastructure appears to reduce the persistence of leks of a related species (Winder et al. 2015). Current research suggests that certain grouse species may avoid anthropogenic structures (Hagen et al. 2011, USFWS 2013a) but the potential effect of tall structures on birds is still not well understood, and cannot be isolated from other effects of development (Walters et al. 2014). Males may tolerate various types of disturbance more than females (Connelly et al. 1998). The only observed effect to date on sharp-tailed grouse is a reduction in brood survival as the density of turbines in grassland habitat increases (Proett 2017). Native grassland habitat, particularly near known leks, will be avoided to the extent feasible by the Project. Known grouse leks will be avoided by establishing a 500-foot (152-m) non-disturbance buffer on the center of each active lek during the breeding season. This reduces the likelihood of disturbance and displacement impacts on the sharp-tailed grouse. The risk of disturbance/displacement will be further reduced through avoidance and minimization measures taken during the design, construction, and operational phases of the Project (Section 7).

Research examining potential wind-energy displacement effects for grassland birds was recently conducted at three facilities in North Dakota and South Dakota (Shaffer et al. 2015), and is relevant to the local species of habitat fragmentation concern. Findings indicated that one-year after construction, grasshopper sparrow did not avoid wind turbines, but bobolink were less-likely to occur 200-300 m from turbines and upland sandpiper were less likely to occur within 100 m of turbines (Shaffer et al. 2015). These displacement effects, however, were only observed at one North Dakota facility and no displacement was observed at the South Dakota facility. After two to five years of operation, displacement was observed for grasshopper sparrow at distances up to 300 m at all sites. Bobolink demonstrated displacement of up to 200 m at one North Dakota facility and up to over 300 m at a second North Dakota facility, but no displacement at the South Dakota facility. Upland sandpiper displayed some displacement effects but these varied widely among sites, with displacement from 0-100 m at one North Dakota facility, from over 300 m at the South Dakota

facility, and no displacement observed at the second North Dakota facility. Overall, there is potential for some displacement of grassland birds of fragmentation concern at the Project, but evidence to date indicates that this effect varies widely and does not occur at all locations. The risk of disturbance/displacement will be further reduced through avoidance and minimization measures taken during the design, construction, and operational phases of the Project (Section 7).

Raptors

Raptors may be vulnerable to disturbance from many types of human activity. Human disturbance may result in direct and indirect impacts to raptor habitat, occupancy, and nesting success (USFWS 2008b). Direct impacts may include the loss of foraging or nesting habitat within the Project Area, direct mortality (e.g., due to collisions with wind turbines, electrocution by power lines), noise disturbance (e.g., construction noise), and loss of nest sites or winter roost sites (USFWS 2008b).

Disturbance or displacement of nesting raptors is possible if birds are nesting or have preferred foraging areas within line-of-sight of the Project facilities. Findings to date regarding potential raptor avoidance behavior or displacement, however, have been mixed (review in Schuster et al. 2015). Several studies conducted at western wind energy facilities suggest that wind energy facilities do not have long-term impacts on raptor nest densities (Howell and Noone 1992; Erickson et al. 2004; Johnson et al. 2003; Young et al. 2006; Gritski et al. 2008). For example, post-construction studies at an Oregon project found that raptor nests more than 0.5 mile from turbines were not impacted by project disturbance (Gritski et al. 2008). Studies have also found no clear relationship between nest occupancy and distance from turbines (Johnson et al. 2003, Young et al. 2006). Suitable raptor nesting habitat within the Project Area is limited; there are few trees sufficient to support raptor nests and there is no cliff nesting habitat. Given the number of known of raptor nests within the Project Area and one-mile buffer (Section 5.2.2.1), some nesting raptors may be disturbed or displaced by construction activities. However, disturbance and displacement of raptors will be minimized through the implementation of avoidance and minimization measures described in Section 7.

Eagles

Due to the distance between the known bald eagle nest and the Project Area, it is unlikely that foraging or nesting bald eagles will be displaced or disturbed by the Project. There is some evidence that bald eagles avoid operating wind turbines (Sharp et al. 2012), but this avoidance appears to be over short distances rather than displacement from the entire wind farm. It is unlikely that nesting golden eagles will be disturbed or displaced due to the lack of nesting habitat and absence of golden eagle nests within the Project Area. However, golden eagles may be disturbed or displaced from the Project Area if infrastructure interferes with hunting or availability of prey. Although Richardson's ground squirrel occurs at low densities within Dickey County (Sovada et al. 2005), it is unknown what the species' density is within the Project Area, but it is unlikely that the project will interfere with availability of prey.

Whooping Cranes

Land use within the Project Area consists mainly of active grazing or agricultural production, but there are also abundant wetlands and grasslands within the Project Area. The wetland-agricultural habitat matrix preferred by whooping cranes as stopover habitat exists within the Project Area; however, it also exists in the surrounding landscape at a higher density (Tetra Tech 2015a, Tetra Tech 2017b). A desktop landscape-scale analysis conducted to evaluate whooping crane stopover habitat within the vicinity of the Project in 2017 used methods designed by The Watershed Institute (TWI), and adapted to fit non-linear projects such

as wind energy facilities. Although potentially suitable habitat was identified within and around the Project Area in 2017, these habitat features are not unique on the landscape. As a result, whooping cranes are no more likely to use stopover habitat within this area than on the surrounding landscape. This conclusion is supported by the absence of whooping crane sightings recorded by USFWS in the vicinity of the Project as of spring 2017. Given that the Project Area is on the outer edge of the known migration corridor and is not more attractive than the surrounding area, it is unlikely that whooping cranes will be displaced from the Project Area or that Project operations will disturb them.

Area-sensitive Grassland Birds (Sprague's pipit, Baird's sparrow, and Chestnut-collared Longspur)

Project development may potentially cause disturbance or displacement of Sprague's pipit or Baird's sparrow; however, study of this potential impact to date has not demonstrated displacement of Sprague's pipit from an active wind farm (Stevens et al. 2013). There is evidence that abundance of the species is impacted by human activities in grassland complexes (e.g., Sutter et al. 2000, Koper et al. 2009), and some disturbance or displacement is therefore possible during construction if the species occurs in the Project Area. To date, Sprague's pipit and chestnut-collared longspur have not been detected within the Project Area, although Baird's sparrow was detected during avian point counts in 2009. Foxtail Wind will avoid fragmenting large, contiguous parcels of native grasslands of 160 acres or more to the extent practicable to minimize impacts to these species, and will undertake other avoidance and minimization of impacts to these species and habitat as described in Section 7. A summary of permanent and temporary impacts by grassland habitat type is provided in Section 7.4. Additionally, Foxtail is developing an offsetting mitigation package in coordination with USFWS to mitigate for remaining direct impacts to high quality native prairie.

6.1.1.4 Habitat Loss and Fragmentation (Indirect Impact)

General Avian Species and Raptors

Birds, including raptors, may be adversely affected by habitat loss, degradation and fragmentation due to Project development. Habitat fragmentation can exacerbate the problem of habitat loss for birds by decreasing patch area and increasing edge habitat. Habitat fragmentation can reduce bird productivity through increased nest predation and parasitism and reduced pairing success of males (Robinson et al. 1995). Indirect impacts to raptors may include habitat degradation and fragmentation and reduction or changes in available prey species (USFWS 2008b). The Project Area is primarily grassland and pastureland, which offers habitat for small mammals that are prey sources for raptors. Overall, habitat degradation and fragmentation due to Project construction will be minimal due to the existing disturbed nature of the Project Area and the small permanent footprint of the Project. The increase in the amount of habitat loss and fragmentation as a result of Project construction will be minimized by the use of existing roads to the extent practicable and lands already altered by agriculture and cattle grazing, as well as reseeding disturbed grasslands, if approved by the landowner. Temporary habitat impacts of Project development will total 709.65 acres (287.19 hectares [ha]), and permanent habitat impacts will be limited to 81.13 acres (32.83 ha). Permanent impacts will occur on 7.40 acres (2.99 ha) of high quality native prairie, and a total of 38.86 acres (15.73 ha) of native grasslands of all types. Additionally, Foxtail Wind will follow all requirements of the Project's Storm Water Pollution Prevention Plan to control erosion and pollutants, thus minimizing potential aquatic and riparian habitat degradation that could contribute to fragmentation for species exploiting these habitats.

Species of Habitat Fragmentation Concern

Six species of habitat fragmentation concern (USFWS 2013b) have been observed within the Project Area: bobolink, grasshopper sparrow, northern harrier, sharp-tailed grouse, sedge wren, and upland sandpiper (Table 11). Two of these species – grasshopper sparrow and upland sandpiper – are also Birds of Conservation Concern, and the groups are therefore considered together for this impact type. According to the NLCD, the Project Area is 61 percent grassland and 21 percent cultivated cropland and pasture/hay (Homer et al. 2015). Portions of the land in the Project Area are used for cattle ranching and agriculture and are thus already disturbed or fragmented. Although grassland habitats were historically maintained by disturbance including grazing, excessive mowing or grazing may fragment or degrade the value of grasslands for many species. Although each of these species may be breeding within the Project Area, the design of infrastructure has minimized impacts by avoiding additional fragmentation of large parcels of grassland to the extent practicable.

Eagles

Indirect impacts on bald and golden eagles relating to habitat loss and fragmentation are similar to those discussed for other raptors (see Section 6.1.1.2); impacts on bald eagles' prey species may differ slightly. Bald eagles typically hunt in large bodies of water for fish or waterfowl, as well as scavenge. There are numerous small bodies of water within the Project Area, but Project development would not reduce live bald eagle prey species; however, it is possible that turbine operation will cause bald eagles to avoid some areas where they may have hunted in the past.

Whooping Cranes

Potential indirect effects to the whooping crane posed by the Project include avoidance of structures (e.g., turbines, meteorological towers, and transmission lines), habitat loss and fragmentation, and disturbance caused by anthropogenic activities. Because cranes may avoid turbines by altering flight paths, the USFWS (2009a) holds the opinion that such avoidance will lead to avoidance of stopover in areas with operational wind turbines. Behavioral avoidance of wind farms by whooping cranes, while reducing the probability of direct impacts through collision, may amount to loss of stopover habitat. The loss of stopover habitat use through avoidance; however, may be relatively small given the large amount of suitable habitat present within the migration corridor (WAPA and USFWS 2015). This is likely the case for the Project as nearby suitable habitat continues to be present outside of Project boundaries. If stopover in the area occurs, the potential for disturbance to whooping cranes exists primarily during the construction phase of the Project.

It has been assumed that whooping cranes prefer areas isolated from human disturbances when available. Studies on whooping crane migration habitat and use, and the diminution of this habitat with increasing development, point to an inverse relationship between disturbance level and habitat value (Austin and Richert 2001, USFWS 2009). Placing wind turbine structures in already developed, agricultural areas will likely have less impact than placement in areas where there are no existing disturbances. Although none of these factors excludes the possibility of crane use of the Project Area, in combination it is likely that they make the attractiveness of the location less appealing than habitats surrounding the Project Area.

Area-Sensitive Grassland Birds (Sprague's Pipit, Baird's Sparrow, and Chestnut-collared Longspur)

Indirect impacts on area-sensitive grassland birds, if present within the Project Area, would likely be confined to habitat fragmentation. No Sprague's pipits were detected within the Project Area during any of the onsite surveys. Chestnut-collared longspur has been recorded on BBS surveys in the vicinity of the Project, but not within the Project Area. Baird's sparrow was observed only in the Rough Rider I Project Area during 2009 spring surveys (three observations), and was not observed within the Foxtail Project Area

during 2014 or 2015 surveys. However, 69 percent of the Project Area is native prairie in large patches, which may support these species. In coordination with USFWS, Foxtail developed a method to further identify areas in which the project may impact these and other grassland species. Foxtail crosstabulated areas of grassland > 160 acres in size that were also rated as good/possible or excellent/likely habitat for the Dakota skipper to delineate the most important areas of native prairie. Impacts to these species will be avoided by minimizing permanent habitat alteration in these high quality native prairie habitats and implementing the minimization measures in described in Section 7.

6.1.1.5 Decreases to Population (Indirect Impact)

General Avian Species

The primary waterfowl species observed in the Rough Rider I WRA and Project Area were snow goose, Canada goose, and mallard, and the primary rail species observed in the Project Area was American coot. These species have large and stable or growing populations: Canada goose Western Prairie and Great Plains populations for instance have increased in recent years to between 1.8 and 2.0 million in spring (USFWS 2016f). Estimates for snow goose (3.4 million in the mid-continent population [includes Ross's goose]; USFWS 2016f), mallard (11.7 million; USFWS 2016f) and American coot (population size unclear but range-wide estimates range from approximately 2 million to 5 million; Case and Associates 2010) also indicate large breeding, migratory or overwintering populations. Furthermore, collision-risk and flight-behavior research indicates that waterfowl and other waterbirds may be less likely than other avian taxa to suffer direct mortality from wind operations during both the breeding and migratory periods due to small-scale avoidance behavior (Kahlert et al. 2004, Drewitt and Langston 2006). Evidence also suggests that waterfowl and waterbird populations may not experience long-term displacement effects (Drewitt and Langston 2006, Madsen and Boertmann 2008), and temporary displacement is unlikely to have population-level impacts on fecundity or survival rates. Overall, fatalities at wind facilities tend to be low for these species groups and population-level consequences of collision and displacement have not yet been demonstrated (Drewitt and Langston 2006).

The primary songbird species observed during Project surveys were red-winged blackbird and brown-headed cowbird, which were identified as having potential risk of collision due to high encounter rates and/or relatively high mean use rates during avian point-count surveys (Tetra Tech 2015c). The risk of turbine-related fatalities thus exists for each of these species at the Project. However, Project-related fatalities of these species, should they occur, are unlikely to have population-level impacts because North Dakota populations for each species are large (8.2 and 12 million in ND, respectively; PIFSC 2013). In addition, locally breeding songbirds may experience lower mortality rates than migrants because many of these species tend not to fly at turbine heights during the breeding season. However, some breeding songbird species have behaviors that increase the risk of collisions with turbines. For example, horned larks have been commonly found as fatalities at wind farms, and mortality may be partially attributed to breeding flight displays within the RSA (Pickwell 1931, Johnson and Erickson 2011). Most songbirds are short-lived and have high reproductive output, and their population growth rates are more sensitive to reproductive failure than to adult survival (Stahl and Oli 2006, Arnold and Zink 2011). Therefore, collision mortality for most songbird species is expected to have negligible effects on population dynamics.

Species of Habitat Fragmentation Concern

The species of fragmentation concern observed within the Project Area are expected to occur in low densities and therefore fatalities are expected to be minimal. Project-related fatalities of northern harrier, should they

occur, are unlikely to have population-level impacts because populations are relatively stable in North Dakota and the Badlands/Prairie region (Sauer et al. 2017) and because the species does not tend to occur as fatalities at operational wind projects. Although populations of some breeding grassland birds are showing declines, they tend to have very large populations, are less likely to be recorded as fatalities at wind projects, and had low encounter rates at the Project; therefore, the Project is unlikely to have population-level impacts on these species. For instance, grasshopper sparrow (approximately 30 million in U.S., 4.0 million in N.D.; PIFSC 2013), upland sandpiper (750,000 in North America, N.D. population unknown; Andres et al. 2012), bobolink (8.0 million in U.S., 1.8 million in N.D.; PIFSC 2013), and sedge wren (4.6 million in U.S., 900,000 in N.D.; PIFSC 2013) have very large populations and have not been shown to be at notable risk from wind-energy projects. Sharp-tailed grouse populations are somewhat smaller (600,000 in North America), and North Dakota represents approximately 30 percent of the North American population (170,000; PIFSC 2013), but populations are stable range-wide (Sauer et al. 2017) and fatalities are uncommon at operating wind farms. Sprague's pipit populations are declining (Sauer et al. 2012) and the North Dakota population is estimated at 60,000 (PIFSC 2013). Population-level impacts on Sprague's pipit from the Project may be more likely than those to other species; therefore, Foxtail Wind will avoid impacting suitable habitat for the species to the extent practicable. Overall, the Project is not expected to impact species of fragmentation concern at the population level. The risk of potential impacts will be further reduced through avoidance and minimization measures implemented during the design, construction, and operational phases of the Project (Section 7).

Birds of Conservation Concern

Of the 11 BCC species within or in the vicinity of the Project Area, some, like grasshopper sparrow and dickcissel have shown declines but have relatively large North Dakota populations (4.0 million and 170,000, respectively; PIFSC 2013, Sauer 2017). Others such as Swainson's hawk and red-headed woodpecker have smaller populations in the state (30,000 and stable, 7,000 and declining, respectively; PIFSC 2013, Sauer 2017). Black tern populations in North Dakota are unknown and have undergone population declines over the last 40 years, but appear to have stabilized in the state (NDGFD 2015). Similarly, horned grebe populations are unknown but appear to be stable in North Dakota (NDGFD 2015). Population estimates for American bittern, bald eagle, upland sandpiper and marbled godwit are not available for North Dakota but these species may be increasing in the state (Wiggins 2006; NDGFD 2015, USFWS 2016e). Short-billed dowitcher populations are also relatively small (under 100,000 in North America, Andres et al. 2012), although only individuals passing through the Project Area during migration would potentially be at risk. Population-level impacts from the Project may be more likely for species with low numbers or those that have declined in North Dakota, including grasshopper sparrow, dickcissel and red-headed woodpecker (NDGFD 2015, Sauer et al. 2017); therefore, Foxtail Wind will avoid impacting these species and their habitat to the extent practicable, as outlined in Section 7.

Raptors

Northern harrier, red-tailed hawk, and rough-legged hawk were the most common raptor species detected during the avian surveys within the Project Area. All species are commonly associated with agricultural and grassland habitats (Thelander et al. 2003). Risk of collision by northern harriers is believed to be low because most foraging flights occur below typical RSA heights (Whitfield and Madders 2006). Although red-tailed hawks are frequently found as turbine-related fatalities (Jain 2005, Grodsky and Drake 2011, Johnson and Erickson 2011), any Project-related fatalities are unlikely to have population-level impacts because red-tailed hawks are common nationwide (Sauer et al. 2012). Rough-legged hawks have not been common

fatalities at wind farms in the U.S.; however, their breeding range is primarily in Canada, and the lack of fatalities may be due to limited temporal exposure to turbines at lower latitudes.

Eagles

Bald and golden eagle populations appear to be generally increasing or stable in North Dakota (Sauer et al. 2012) and the larger Badlands and Prairies BCR (Millsap et al. 2013). However, their population sizes are relatively small when compared to other raptors and they are uncommon; no population estimate is available for bald eagle, and the golden eagle breeding population is estimated at about 400 birds (PIFSC 2013). Due to their low population numbers, eagles may be susceptible to population-level impacts; therefore, Foxtail Wind will avoid impacting these species and their habitat to the extent practicable, as outlined in Section 7.

Whooping Cranes

The population of whooping cranes is estimated at 329 birds (with a 95 percent probability of actual flock size being between 293–371 birds) as of the 2015/2016 winter whooping crane survey conducted by USFWS (USFWS 2016g). Due to the small population, any Project-related fatalities would have population-level impacts. Foxtail Wind will avoid impacting these species and their habitat to the extent practicable, as outlined in Section 7.

Area-Sensitive Grassland Birds

Sprague's pipit populations are declining (Sauer et al. 2012) and the North Dakota population is estimated at 60,000 (PIFSC 2013). Population-level impacts on Sprague's pipit from the Project may be more likely than those to other species; therefore, Foxtail Wind will avoid impacting suitable habitat for the species to the extent practicable. An estimated 400,000 Baird's sparrows breed in North Dakota, representing approximately 16% of the global population (PIFSC 2013), and the species has also experienced significant declines (Sauer et al. 2012). Because of similarities in habitat requirements, avoidance measures enacted to avoid impacts to Sprague's pipit habitat will also benefit Baird's sparrow.

Avoidance and minimization measures will be implemented during all phases of the Project to reduce the possibility of population-level impacts on all bird species, especially those within the groups of species of concern identified above (see Section 7).

6.1.2 Bat Impacts

6.1.2.1 Collision (Direct Impact)

General Bat Species

Bats have been identified as a wildlife group at risk due to collisions or other interactions with wind turbines (Erickson et al. 2001, Drewitt and Langston 2006, Arnett et al. 2007, Arnett et al. 2008). Bat collision mortality at wind farms is a widespread phenomenon, commonly exceeding avian collision mortality (Kunz et al. 2007). Of 46 species of bats in North America, 11 species have been identified among fatalities at wind farms. Migratory foliage or tree-roosting bat species (hoary bat, eastern red, and silver haired bat) appear to be most susceptible to collision with wind turbines. These species have experienced the highest fatality rates at wind energy facilities in North America, particularly during the spring (March – May) and fall (August – October) season when activity levels increase as these species migrate (Cryan 2003, Kunz et al. 2007,

Arnett et al. 2008). Studies of wind energy facilities in the Midwest with agriculture/grassland habitat have documented Brazilian free-tailed, hoary, eastern red, silver-haired, little brown, big brown, and tricolored as fatalities during mortality surveys (Table 12). Few among these studies occur within the range of Brazilian free-tailed bat, but for the three that did, Brazilian free-tailed bats averaged 63.5 percent of fatalities (Miller 2008, Tierney 2009, Piorkowski and O'Connell 2010).

The relationship between activity and fatalities has yet to be clearly identified, but we assume that regional fatality patterns are indicative of potential risk at the Project Area. Recent research has shown that mean wind speed and mean ambient temperature have the greatest effects on bat activity patterns, and that bat activity is generally lower at low mean nightly temperatures and wind speeds above 5 meters/second (Weller and Baldwin 2012). Bat fatality rates at wind energy facilities in the Midwest region average 21.9 ± 11.26 (90-percent confidence interval) bats/turbine/year or 14.8 ± 7.74 bats/MW/year (Table 12). Of the 11 bat species that may occur in the Project Area (Section 3.2.2), five have been found during mortality searches at operating wind farms in agricultural/grassland habitat (Table 12). Of these species, the migratory tree bats are considered to be at the greatest risk from wind energy projects (Tierney 2009).

In addition to migration, habitat within the Project Area may attract bats and potentially put them at risk of collision with turbines; therefore, the overall risk of collision impacts to bats at the Project is considered moderate. However, the limited roosting habitat within the Project Area is a major limiting factor for use of the Project Area by migrating bats. Therefore, bat migration through the Project Area is likely low in magnitude. To better understand Project impacts on bats, Foxtail Wind will conduct one year of post-construction fatality monitoring.

Table 12 Estimated Mean Bat Fatalities per Turbine and per Megawatt at Wind Facilities Having Records in the Public Domain in the Midwest

Wind Facility and State	State	Habitat	Estimated Mean Fatalities/ Turbine/Year	Estimated Mean Fatalities/ MW/Year	Documented Bat Species Fatalities[1]	Source
Red Canyon	TX	Short-grass prairie	71.8	46.1	Brazilian free-tailed, hoary, eastern red	Miller 2008
Cedar Ridge	WI	Agricultural cropland	50.5 (2009)[2] 39.8 (2010)	30.4 (2009) 24.0 (2010)	Hoary, silver-haired, big brown, eastern red, little brown	BHE 2011
Blue Sky Green Field	WI	Agricultural Cropland	40.5	24.6	Little brown, silver-haired, big brown bat, hoary, eastern red, and unidentified	Gruver et al. 2009

Wind Facility and State	State	Habitat	Estimated Mean Fatalities/ Turbine/Year	Estimated Mean Fatalities/ MW/Year	Documented Bat Species Fatalities[1]	Source
Forward Energy	WI	Agricultural Cropland	23.4	15.6	Hoary, silver-haired, eastern red, unknown, little brown, big brown	Grodsky and Drake 2011
Kewaunee County	WI	Agricultural Cropland	4.3	6.5	Eastern red and hoary.	Howe et al. 2002
Top of Iowa	IA	Agricultural cropland	4.5 (2003) 7.1 (2004)	4.9 (2003) 7.9 (2004)	Hoary, little brown, eastern red, big brown, silver-haired	Jain 2005, Jain et al. 2011
Ainsworth	NE	Mixed-grass prairie	1.9	1.2	Hoary, unidentified species, big brown and eastern red	Derby et al. 2007
Buffalo Gap II	TX	Mixed-grass prairie	0.2	0.4	Hoary bat, Brazilian free-tailed, unidentified species	Tierney 2009
Summerview	AB Canada	Mixed-grass prairie	18.5	-	Hoary, silver-haired, little brown, big brown, eastern red	Brown and Hamilton 2006
Buffalo Ridge Phase I (1996-1999)	MN	Agricultural Cropland	0.3	-	Hoary, eastern red, silver-haired, tricolored,	Johnson et al. 2000
Regional Mean (90-percent Confidence Interval)			**21.9 (11.23)**	**14.8 (7.74)**	-	

Mortality estimation given as a range, as authors used range of observer efficiencies for calculation.

[1] In order of decreasing frequency.

[2] Estimates calculated per 169 days in 2009 and 166 days in 2010

Northern Long-eared Bat

No NLEB fatalities from wind energy facilities have been documented in North Dakota (WAPA and USFWS 2015). Based on the limited quantity of suitable habitat and the lack of documented detections within the Project Area, direct impacts on the NLEB are unlikely.

6.1.2.2 Disturbance, Habitat Loss and Fragmentation (Indirect Impacts)

General Bat Species

Disturbance and displacement have not been identified as risks associated with bats and operational wind farms in reviews of bat-wind turbine impacts (Kunz et al. 2007), and bats are known to habituate to anthropogenic structures (Keeley and Tuttle 1999). Project-related noise levels are not anticipated to have deleterious effects on resident or migrant bats due to bats' nocturnal nature.

The impacts of habitat fragmentation from wind development on bats are not well-known (Kuvlesky et al. 2007). Roosting habitat within the Project Area are limited in availability due to large amounts of open-land agriculture and few wooded areas. Due to the numerous small bodies of water, there is ample foraging habitat, but without nearby roosts, it is of limited value to bats. In addition, the Project has a relatively small footprint of temporary and permanent disturbance. For these reasons, the risk of habitat loss and fragmentation is low.

Northern long-eared Bat

The northern long-eared (NLEB) bat is the only listed bat species with the potential to occur within the Project Area. The Project Area is within the species' range and within the white-nose syndrome buffer zone as of 3 April 2017. If present, indirect impacts could include habitat disturbance by removal of roost trees or disturbance to hibernacula. The Project Area contains less than one percent of forested habitat (based on NLCD data) that would be desirable for roosting and breeding by NLEB. No hibernacula are known in the state (Murphy 2007, USFWS 2013c). Indirect impacts on NLEB could include habitat loss and fragmentation. However, due to the lack of known occurrences or hibernacula of northern long-eared bat within the Project Area, the existing fragmented nature of the Project Area, and lack of large tracts of forested habitat, indirect impacts are not expected.

6.1.3 Impacts to Dakota Skipper and Poweshiek Skipperling

6.1.3.1 Direct Impacts

The Dakota skipper is not known to occur in Dickey County, and the nearest designated critical habitat is approximately 70 miles away. The August 2015 field survey covered 2,141 total acres of native prairie in areas for which turbines were proposed, of which 2,111.2 acres were found to be unsuitable for Dakota skipper and Poweshiek skipperling. No Excellent/Likely habitat was found, and total of 26 acres (1.2 percent) were found to be Good/Possible habitat and 3.8 acres (0.4 percent) were found to be Poor/Unlikely habitat. Therefore, presumably the Dakota skipper could be present with the Project Area within areas of suitable habitat, but such presence is likely to be extremely limited. If present, direct impacts on the Dakota skipper could include collision with Project vehicles or disturbance and/or displacement from preferred habitat. Foxtail Wind has avoided locating Project facilities on lands classified as Excellent/Likely. Therefore, the impacts of the Project on the Dakota skipper are likely to be low. Similarly, impacts to Poweshiek skipperling are not expected, because suitable habitat is limited and the species is believed to have been extirpated from North Dakota.

6.1.3.2 Indirect Impacts

The Dakota skipper is not known to occur in Dickey County, and the nearest critical habitat is approximately 70 miles away. The August 2015 field survey covered 2,141 total acres of native prairie, of which 2,111.2 acres were found to be unsuitable for Dakota skipper and Poweshiek skipperling. No Excellent/Likely habitat

was found, and total of 26 acres (1.2 percent) were found to be Good/Possible habitat and 3.8 acres (0.4 percent) were found to be Poor/Unlikely habitat. If suitable habitat for the Dakota skipper is fragmented by Project construction, it could impact the species if it is present within the Project Area. Foxtail Wind has avoided locating Project facilities on lands classified as Excellent/Likely, or as Good/Possible, thereby minimizing any potential impacts on the Dakota skipper. Similarly, impacts to Poweshiek skipperling are not expected, because suitable habitat is limited and the species is believed to have been extirpated from North Dakota.

6.1.4 Cumulative Impacts

Activities that currently exist within the Project Area and vicinity are primarily limited to agriculture. Existing wind energy development in the vicinity of Foxtail consists of the Tatanka Wind Farm in Dickey and McIntosh Counties, ND and McPherson County SD, comprising 120 turbines with a capacity of 180 MW; and the Edgeley-Kulm Wind Farm in LaMoure County, ND, comprising 41 turbines with a capacity of 60 MW. There is another wind energy facility with a 150-MW capacity proposed for Dickey and McIntosh Counties, ND by Otter Tail Power and EDF Renewable Energy for construction in 2018-19. It is likely that wind energy development will continue in southeastern North Dakota.

Oil extraction records for Dickey County are not available and likely minimal activity likely occurs in the county, with (NDDMR 2017); the closest oil and gas drilling records reported by the state are for McLean County, located approximately 112 miles from the Project.

With regard to the potential cumulative impacts to wildlife resources, there is potential for the Project to affect local wildlife both directly (mortality) and indirectly (habitat loss and fragmentation). Both direct and indirect potential impacts would be avoided and minimized to the extent practicable, and therefore, are not expected to cause cumulative impacts. Although the wind turbines would contribute to the utility/industrial component of the existing landscape, the area would remain primarily agricultural in nature. As these agricultural lands are of minimal value to wildlife compared to native vegetation, the Project is not expected to result in a cumulative loss of quality wildlife habitat. Based on the existing land use, location of existing and planned facilities, and known impacts from similar wind facilities in the area, it is expected that the Project would have minimal cumulative impacts to wildlife.

6.2 Risk Assessment Decisions

6.2.1 Decision Criteria to either Abandon or Advance

6.2.1.1 Tier 1/Tier 2 Questions

Results of the Initial Site Evaluation indicate most of the Project Area consists of tame and native grasslands, croplands, and hay fields (Section 3.2.3). Many grasslands have been tilled, mowed, and/or used for intensive cattle grazing making them low quality prairie habitats for many breeding birds; however, grazing by native species historically maintained grassland ecosystems, and some grassland birds select grazed or mowed grasslands. Therefore, additional analysis was conducted in Tier 3 to reduce uncertainty. The anticipated avian community using the Project Area is composed of common species typically associated with agricultural and pasture lands of North Dakota. There are some areas of native prairie habitat within the Project, but there are no critical areas of wildlife congregation within the Project Area. There are eight species of concern potentially occurring within the Project Area; these species' potential use of the Project

Area and Project risks were evaluated in Sections 4.0 and 6.0. For many of these species, risk is likely low and can be managed through best management practices and avoidance and minimization measures (Section 7).

Based on the results of the Tier 1 Preliminary Site Evaluation (Section 4.1) and Tier 2 Site Characterization (Section 4.2), Foxtail Wind concluded the Project is viable for development within the Project Area.

6.2.1.2 What Are the Distributions, Abundance, Behaviors and Site Use of Birds and Bats, and What Project Elements Expose These Species to Risk?

Field studies (Tier 3; Section 5) were designed and are currently being implemented to document eagle use of the Project Area. The results of these studies will be combined with prior studies of avian and bat species to predict the overall Project impacts to the avian and bat community, particularly during the migratory seasons when impacts would be the highest risk. The results of the studies conducted to date and the potential Project risks to the species documented or identified as potentially occurring are discussed in Section 5 and 6, respectively.

Based on the results of the Tier 1 Preliminary Site Evaluation, Tier 2 Site Characterization, and Tier 3 Field Studies, Foxtail Wind concluded the Project is viable for development within the Project Area.

6.2.1.3 What are the Potential Risks to Individuals and Local Populations of Birds and Bats and Their Habitats?

Based on the wildlife species that occur and are likely to occur, potential Project risks include direct and indirect impacts. Direct impacts include mortality due to collision with Project structures and electrocution, disturbance, and displacement. Indirect impacts could be adverse effects due to habitat fragmentation or habitat loss. A detailed risk assessment is presented above, in Section 6.1. No significant impacts to local populations of wildlife are anticipated from development of the Project. Based on the results of the risk assessment, Foxtail Wind concludes that there will be no significant, unavoidable impacts on birds, bats, or other wildlife species and the Project is viable for development within the Project Area.

6.2.1.4 How Can Impacts to Birds and Bats Be Avoided and Minimized?

Foxtail Wind understands that the construction and operation of a wind energy facility poses risks to birds, bats, and other wildlife. Foxtail Wind is committed to minimizing impacts on these resources and will implement conservations measures throughout the construction and operations phases of the Project. Conservation measures that will be implemented by the Project are detailed in Section 7.

6.2.1.5 What Studies Should Be Initiated and Continued Post-Construction to Evaluate Predictions of Impacts to Birds and Bats

Post-construction studies are essential to understanding whether pre-construction predictions of impacts and risks to birds, bats, and other wildlife are accurate. Therefore, Foxtail Wind will conduct formal post-construction fatality monitoring and implement an employee-based routine monitoring program. Details of these studies are presented in Section 8.

6.2.2 Decision of Need for Other Bird and Bat Conservation Plans

Foxtail Wind does not anticipate the need for additional bird or bat conservation plans based on the data collected to date. Foxtail Wind will coordinate with USFWS regarding ongoing surveys and assessments and further evaluate the need for additional plans as needed.

7 CONSERVATION MEASURES TO AVOID AND MINIMIZE ADVERSE IMPACTS

7.1 Siting and Design Measures to Avoid/Minimize Impacts

This section identifies impact avoidance and minimization measures that will be incorporated into the final design for the Project. These measures were derived from the voluntary WEG and industry Best Management Practices (BMPs). All avoidance and minimization measures implemented during the planning and design phase demonstrate practical means to reduce impacts to bird and bat species and their habitats.

- Utility lines will be designed following APLIC (2012) guidelines to prevent bird collision. The Project interconnection to the existing transmission line will occur at the Project substation, so now new above-ground transmission line will be created. All collection lines will be routed underground to prevent avian collisions, as practicable.
- To protect birds from electrocution, Foxtail Wind will use pad-mounted transformers.
- Birds and bats could collide with electrical collection lines and redundant overhead telecommunication lines. Foxtail Wind will bury these lines to prevent collisions.
- All turbines will sit on a tubular tower, and not a lattice structure, to minimize perching opportunities for raptors such as eagles and other birds.
- All guy lines on guyed met towers will be marked with bird diverters to minimize bird collision hazards. In addition, the met towers will not be placed in sensitive habitats or in areas where ecological resources known to be sensitive to human activities are present.
- Actual construction footprints and surface disturbance areas will be minimized during construction to minimize wildlife habitat disturbance. In addition, all native prairie will be avoided to the extent practicable to minimize impacts on native prairie and the bird and wildlife species that rely on it.
- Access roads and turbines will be located away from wetlands and waterbodies to the greatest extent practicable to minimize impacts on aquatic species, semiaquatic species, birds, bats, and their habitat.
- Permanent impacts to jurisdictional wetlands will be avoided and minimized as practicable. Avoiding wetland impacts will generally reduce potential impacts to migratory birds and bats and sensitive habitat.
- A Storm Water Pollution Prevention Plan will be developed for the construction site to prevent contamination of natural water resources, minimize erosion, storm water runoff, and transport of sediment and other contaminants.
- Existing county and state roads will be used whenever possible rather than constructing new roads to minimize disturbance to wildlife and their habitat.
- USFWS wetland and grassland easements were avoided during micrositing to the extent practicable to minimize impacts to wildlife habitats.
- Five turbines from the 30 March 2017 array were moved to avoid conflicts with grouse lek buffers (T5, T21, T35, T36, Alt2), one turbine was moved to avoid conflicts with an active raptor nest buffer (T74), and one turbine was moved to avoid potential high quality native prairie for Dakota skippers (T66).
- Buffers of 300 feet around active raptor nests and 500 feet around active grouse leks were also used during siting to avoid infrastructure placement

7.2 Construction Measures to Avoid/Minimize Impacts

This section identifies impact avoidance and minimization measures that will be used during construction of the Project. These measures were derived from the voluntary WEG and industry BMPs. All avoidance and minimization measures implemented during the construction phase demonstrate practical means to reduce impacts to bird and bat species and their habitats.

- To reduce habitat disturbance and minimize the potential for wildlife mortality, equipment and vehicle travel will be limited to roads or specific construction pathways during construction. Construction traffic, parking, and laydown areas will be located within previously disturbed lands to the extent feasible. The construction footprint will be minimized in areas of native vegetation. Disturbed soil, if not replanted with crops, will be reclaimed with weed-free native grass and forbs, if approved by the landowner.
- Areas of native vegetation will be marked for construction crews to highlight their location to minimize disturbance in those areas.
- All trash and food-related waste will be placed in self-closing containers and removed daily from the site. This prevents trash from being exposed or blown around the Project Area and reduces attraction of wildlife to the Project Area.
- Vehicular speed will be limited to 25 miles per hour on Project roads to minimize vehicle collisions with wildlife.
- A site-specific worker environmental training program will be developed and implemented throughout the construction of the Project to inform workers of the biological resources present on-site to minimize wildlife impacts. All employees and contractors working in the field will be required to attend the environmental training session prior to working on-site. This training includes information regarding the sensitive biological resources, restrictions, protection measures, individual responsibilities associated with the Project, and the consequences of non-compliance. Written material will be provided to employees at orientation and participants sign an attendance sheet documenting their participation.
- To avoid habitat destruction, BMPs for fire prevention during construction will be implemented to minimize wildfire potential.
- Any use of pesticides, herbicides, fertilizers, and other chemicals will be in accordance with federal and state laws to minimize drift and other impacts on native habitat.
- Removal of vegetation will be avoided within the peak bird nesting season to the extent feasible to avoid removing or disturbing nests. If that is not possible, a pre-construction clearance survey will be completed prior to vegetation removal to avoid disturbing active nests.
- During construction, disturbance to raptor nests within the Project Area will be avoided by establishing a 300-foot radius non-disturbance buffer on the center of each active nest during the nesting season. If temporary use within a buffer is necessary for access to construction areas, a construction monitor will monitor the nest for signs of disturbance.
- During construction, disturbance of sharp-tailed grouse leks will be avoided by establishing a 500-foot radius non-disturbance buffer around the center of each active lek during the breeding season.
- To avoid injury or mortality of wildlife due to poisoning, an appropriately-sized emergency spill containment kit will be available to contain and remove spilled fuels, hydraulic fluids, and other potential pollutants when working within or near streams, lakes, or ponds.

- To avoid degradation of native habitat, construction areas will be treated as required by local and state regulations to prevent the spread of noxious weeds throughout the Project Area or adjacent areas during construction and ongoing operations.

7.3 Operational Measures to Avoid/Minimize Impacts

This section identifies impact avoidance and minimization measures that will be incorporated into operation of the Project. These measures were derived from the voluntary WEG and industry BMPs. All avoidance and minimization measures implemented during the operational phase demonstrate practical means to reduce impacts to bird and bat species and their habitats.

- Avian and bat fatalities will be evaluated during standardized post-construction fatality monitoring for one year following construction.
- Foxtail Wind will implement an Adaptive Management Program (Section 9) for avoidance, minimization, and mitigation of impacts to birds, bats, and other sensitive wildlife.
- A site-specific worker environmental training plan will be developed and implemented throughout the Project operating life to inform workers of the biological resources present on-site to minimize wildlife impacts. All employees and contractors working in the field will be required to attend the environmental training session prior to working on site. This training will include information regarding the sensitive biological resources (with an emphasis on eagles and whooping cranes), restrictions, protection measures, individual responsibilities associated with the Project, and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet to document their participation.
- "Good housekeeping" procedures will be developed to keep the site clean of debris, garbage, carrion, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards. This will prevent trash from being exposed or blown around the Project Area, and will avoid attracting predators and potential food sources for eagles and other predators (i.e. rodents and other small mammals) to the Project.
- Vehicle speeds will be limited to 25 miles per hour on Project roads to minimize vehicle collisions with wildlife.
- Road-killed animals or other carcasses (excluding eagles and other migratory birds) detected by personnel on or near roads within the Project Area will be removed promptly to avoid attracting eagles or other raptors to the Project Area. Carcass removal will be conducted following an approved protocol.
- To avoid habitat destruction, BMPs for fire prevention during operation will be implemented to minimize wildfire potential.
- Foxtail Wind Energy Center workers and subcontractors will not be allowed to have firearms or pets at the Project and will be instructed to not disturb or harass wildlife.
- Lighting of the turbines will be pursuant to Federal Aviation Administration aviation hazard lighting standards. Foxtail Wind will install a radar-activated aircraft detection lighting system, which will minimize the illumination of obstruction lighting. Foxtail Wind may also install motion activated timed lighting on tower entrances and other facilities that require lighting at night to avoid the potential to attract insects that may draw birds and bats toward the facility.

- Foxtail Wind has voluntarily agreed to develop and implement this WCS in its continued efforts to demonstrate due diligence in avoiding and minimizing impacts to avian and bat species in association with development and operation of the Project.

7.4 Measures to Offset and/or Compensate for Habitat-Related Impacts

Foxtail intends to implement priority conservation actions to offset impacts to priority resources (e.g., high quality native prairie) that cannot practicably be avoided. Up to 81.13 acres (32.83 ha) of the total Project Area will be permanently affected due to conversion to turbine sites, access roads, junction boxes, and the permanent meteorological towers, and up to 709.65 acres (287.19 ha) of land will be temporarily disturbed during construction for turbine installation, road construction, collection line trenching, temporary meteorological tower installation, and temporary crane paths. See Table 13 for a detailed summary of disturbance by land cover type.

Table 13 Permanent and Temporary Disturbance by NLCD Land Cover Type and by Grassland Habitat Type

Land Cover Type	**Permanent Disturbance**	**Temporary Disturbance**
Barren Land	0.00	0.00
Cultivated Crops	11.13	126.91
Deciduous Forest	0.00	0.05
Developed, Low Intensity	0.00	0.00
Developed, Open Space	1.45	6.64
Emergent Herbaceous Wetlands	0.89	5.19
Grassland/Herbaceous	39.71	384.01
Open Water	1.34	3.05
Pasture/Hay	20.02	130.59
Shrub/Scrub	6.58	52.99
Woody Wetlands	0.00	0.23
Grassland Habitat Type	**Permanent Disturbance**	**Temporary Disturbance**
High-quality Native Prairie[1]	7.40	107.63
Grasslands ≥ 160 acres Contiguous	38.23	455.71
Grasslands < 160 acres	0.63	4.58
All Grasslands	38.86	460.29

[1]High quality native prairie was defined as all contiguous grasslands ≥ 160 acres that were also classified as good/possible or excellent/likely habitat for Dakota skipper

Land where the turbines will be sited is primarily undeveloped pasture/hay, cropland, and grassland. Areas of high quality native prairie were avoided to the extent practicable. Foxtail has committed to develop offsetting mitigation for remaining impacts to native prairie in coordination with USFWS and NDGF, and is evaluating mitigation options for this habitat. Access road construction would result in the greatest effects to native vegetation, resulting in permanent loss of these habitats where they occur along selected routes. Installation of the buried collection lines would result in some temporary effects to native and non-native grasslands. Foxtail Wind will minimize impacts to existing trees and shrubs. If impacts to trees or shrubs cannot be avoided, the individual trees or shrubs will be replaced per North Dakota Public Service Commission regulations. Any temporary impacts to native prairie will be offset by reseeding using a native

prairie mix in accordance with landowner preferences. Other temporarily disturbed areas will be reseeded or restored to crop, depending on original conditions and landowner preference.

8 TIER 4: POST-CONSTRUCTION STUDIES TO ESTIMATE IMPACTS

8.1 Carcass Surveys

Foxtail Wind will conduct standardized post-construction fatality monitoring for one year following construction (Appendix A). The objective of the fatality monitoring is to identify the bird and bat species found as fatalities at the Project and to statistically estimate fatality rates. The monitoring framework consists of standardized carcass searches conducted at a sample of the Project turbines. The number of fatalities found during searches represents a minimum number of fatalities at a project because not all fatalities that occur are found by observers. Therefore, carcass persistence trials and searcher efficiency trials will be conducted concurrently with standardized fatality monitoring to account for the bias attributable to carcass removal by scavengers and searcher efficiency. Fatality rates (e.g., birds/turbine/year and birds/operational MW/year) will then be estimated using statistical methods that adjust the number of carcasses found for detection biases. Per-turbine and per-MW estimates provide different ways of scaling fatality information to be comparable to other projects. Annual fatality rate estimates will be provided for the following groups, as appropriate, based on the results of the standardized carcass searches: (1) all birds, (2) small birds (less than or equal to 10 inches), (3) large birds (greater than 10 inches), (4) raptors, (5) eagles, and (6) bats. For further information on this protocol, see Appendix A: Post Construction Fatality Monitoring.

Any incident involving a whooping crane or other federally listed species will be promptly reported to the USFWS North Dakota Ecological Services Field Office (701-250-4481) and NDGFD (701-328-6300) (see Appendix A). Any carcass of a federally protected species will be covered with a weighted container until it is recovered by a responding field agent. A kit containing the materials necessary for the protocol will be provided in the operations and maintenance building.

8.1.1 Project Permits Addressing Birds and Bats

To collect, transport, and temporarily possess migratory birds found as fatalities on properties that generate electricity, a USFWS Special Purpose Utility (SPUT) permit must be obtained. Additionally, a state scientific collection permit from NDGFD is required to kill, take, or possess wildlife and their parts when conducting research or for other scientific purposes, including education and information.

Foxtail Wind will obtain a SPUT permit, so it can collect any fatalities detected at the Project during post-construction monitoring. Should injured or downed wildlife be detected within the Project Area, reporting will occur as described in the Operational Monitoring protocol (Appendix A).

8.2 Other Surveys

8.2.1 Operational Monitoring

In addition to the carcass surveys, a standard protocol for Operational Monitoring will be followed at the Project. The purpose of the protocol is to standardize the actions taken in response to any wildlife fatalities

and/or injuries found within the Project's boundaries. Personnel will be trained to follow the search procedure and fill out the reporting form. Wildlife surveys/inspections will be completed each time a turbine is visited. For further information on this protocol, see Appendix A.

9 TIER 5: OTHER POST-CONSTRUCTION STUDIES AND ADAPTIVE MANAGEMENT

The United States Department of Interior defines adaptive management as a decision-making process that promotes flexible decision making and adjustment of management decisions as information is collected (Williams et al. 2007). Foxtail Wind has adopted an adaptive management approach to assessing and responding to the impacts of its wind energy facility on birds and bats. Foxtail Wind is committed to adaptively managing impacts to birds and bats for the life of the Project. Based on experience from the operating wind farms in the region, significant unanticipated impacts to species of concern are not expected. In the event that the Foxtail Wind detects a significant unanticipated impact, such as mortality or injury to a federally listed species or higher than expected migratory bird or bat mortality for the region, Foxtail Wind will contact the USFWS North Dakota Field Office to discuss additional potential avoidance, minimization, or mitigation measures to be considered. Foxtail Wind is committed to developing an approach that facilitates understanding any unanticipated significant issues and collaboratively working with the USFWS to develop additional avoidance, minimization, or mitigation measures that may be appropriate.

10 REPORTING FORMATS AND SCHEDULE

10.1 Pre-construction Survey Data

Pre-construction survey data have been, and will continue to be compiled and analyzed in a report for each survey and/or survey season. Reports are in standard scientific format or in memorandum format, as appropriate based on the amount of data collected. Reports have been and will be submitted to USFWS and NDGFD.

10.2 Operations/Post-construction Monitoring

A post-construction fatality monitoring report will be prepared for the one year of surveys conducted to summarize avian and bat fatalities associated with operations of the Project. This report will include a detailed summary of the methods; results from carcass searches, carcass persistence trials, and searcher efficiency trials; an estimate of fatalities on a per-turbine and per-MW basis; and discussions of the results in the context of adaptive management. The report will be provided to USFWS, NDGFD, and the PSC by the end of the first quarter following completion of one year of post-construction monitoring.

10.3 Personnel Training

Foxtail Wind will develop a site-specific worker environmental training program that will be administered to all employees and contractors working in the field. The training will be implemented throughout construction

and operation of the Project to inform workers of the biological resources present on-site to minimize wildlife impacts. All employees and contractors working in the field will be required to attend the environmental training session prior to working on-site. This training includes information regarding the sensitive biological resources, restrictions, protection measures, individual responsibilities associated with the Project, and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet documenting their participation. The training will be performed by qualified consultants or in-house environmental staff qualified to conduct the training.

11 DECOMMISSIONING

The Project is anticipated to have a lifetime of up to 30 years after which it may no longer be cost-effective to continue operations. The Project will then be decommissioned, and the existing equipment removed. A Decommissioning Plan will be prepared prior to construction in accordance with NDCC 49-02-27, and NDAC 69-09-09. Additionally, Foxtail Wind has a contractual obligation to the landowners to remove the wind facilities, including foundations to a depth of three feet below ground, when the wind easement expires and to restore the area to the same physical condition that existed immediately before the construction of the turbines. Foxtail Wind also reserves the right to explore alternatives regarding Project decommissioning at the end of the Project Certificate term. For example, retrofitting the turbines and power system with upgrades based on new technology may allow the wind farm to produce efficiently and successfully for many more years.

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APPENDIX A – POST-CONSTRUCTION FATALITY MONITORING PROTOCOL

1 FATALITY MONITORING

According to the WEG, "during post-construction tiers (including Tier 4), developers are assessing whether actions taken in earlier tiers to avoid and minimize impact are successfully achieving the goals and, when necessary, taking additional steps to compensate for impacts" (USFWS 2012). The specific questions to be investigated in Tier 4 fatality studies are:

1. What are the bird and bat fatality rates for the project?
2. What are the fatality rates of species of concern?
3. How do the estimated fatality rates compare to the predicted fatality rates?
4. Do bird and bat fatalities vary within the project site in relation to site characteristics?
5. How do the fatality rates compare to the fatality rates from existing projects in similar landscapes with similar species composition and use?
6. What is the composition of fatalities in relation to migrating and resident birds and bats at the site?
7. Do fatality data suggest the need for measures to reduce impacts?

After the field surveys and analysis are completed in accordance with the protocol described below, NSPM will review the results using the context of the Tier 4 questions and a make a determination pursuant to the WEG Tier 4a decision framework to recommend the next steps for additional monitoring or measures that may be appropriate to reduce impacts (USFWS 2012). The final decision on additional monitoring or measures will be made in coordination with USFWS and NDGFD.

1.1 Standardized Fatality Monitoring

The fatality monitoring methods proposed here are intended to provide statistical estimates for all bat and bird fatalities. Standardized carcass searches will be conducted using two types of surveys:

1) Cleared-plot surveys for at least five (5) turbines within plots measuring 120 meters by 120 meters. These plots will be cleared of all vision-obstructing vegetation.

2) Road-and-pad surveys along access roads and on turbine pads within 60 meters of the remainder of the turbines not included in cleared-plot surveys.

The number of fatalities found during searches represents a minimum number of fatalities at a project because not all fatalities that occur are found by observers. Therefore, carcass persistence trials and searcher efficiency trials will be conducted concurrently with standardized fatality monitoring to account for the bias attributable to carcass removal by scavengers and searcher efficiency.

Fatality monitoring will begin after all the turbines have been commissioned and are fully operational, and will be conducted by a third-party consultant. The standardized fatality monitoring described below will be conducted for at least one year; however, the methods and timing outlined may be modified over the course of the study as Project-specific information is gained to maximize the effectiveness and efficiency of the monitoring program (e.g., search interval, number of turbines searched, plot size). The decision on the need for and scope of subsequent years of fatality monitoring will be made in consideration of the results of the first year of monitoring in coordination with USFWS and NDGFD.

1.1.1 Survey Period

The survey year will be divided into seasons to allow for the inclusion of season-specific searcher efficiency probabilities and carcass persistence times. Searches at each of the designated turbines will be conducted weekly during spring, summer, and fall; surveys will not be conducted during winter due to health and safety concerns and anticipated low fatality levels. Search frequency may be adjusted based on the results of seasonal carcass persistence trials to ensure that on average, the search interval minimizes the bias associated with carcass removal by scavengers (see Section 5.1.1.4).

Seasonal sampling intervals will be as follows:

- Spring: March 15–May 15;
- Summer: May 16–August 15; and
- Fall: August 16–November 15

1.1.2 Turbine Selection Method

The avian and bat fatality monitoring will include a search of at least five (5) cleared plots. A decision regarding the appropriate number of cleared survey plots will be made in coordination with the consultant and plots will be selected to provide representative coverage throughout the Project Area. Confirmation of the final plot locations will require agreement from NSPM and the landowner so the plots can be cleared. Roads and pads out to 60 meters from the turbine base for all other turbines will be searched.

1.1.3 Search Methods

The objective of the standardized carcass searches is to systematically search turbine locations for bird and bat casualties that are attributable to collision with project facilities.

The cleared plots will consist of a square search plot centered on the turbine. Vegetation clearing is expected to entail either mowing or herbicide treatment; however, plots located in heavily grazed areas may not require clearing. The search plot will extend 60 meters from the turbine on all sides; creating a 120-meter by 120-meter search plot. Linear transects will be established within the search plots approximately 6 meters (20 feet) apart. The searchers will walk along each transect searching both sides out to 3 meters (10 feet) for fatalities. For the remaining turbines searched using the road and pad sample method, the surveyors will walk and search the turbine pad and all roads within 60 meters of the turbine. In most cases, the searchers work as a two-person team searching the same turbine in tandem. Personnel trained and tested in proper search techniques will conduct the carcass searches.

During the set-up for carcass surveys, a sweep survey will be conducted to remove any fatalities that occur before the study is initiated. These carcasses will be documented in the same manner as those found during the standardized carcasses searches; however, they will not be included in the statistical analysis because the statistical analysis requires a known search interval (i.e., an estimate of when fatalities occurred). Thus, any fatalities detected during the sweep survey will be considered incidental to the study and will inform species composition of fatalities at the Project.

Searchers will assume that carcasses found are a result of turbine collisions unless the cause of death can be clearly attributed to a non-turbine cause. Although an unknown number of fatalities may result from natural predation, disease, or anthropogenic events (e.g., shooting), the condition of the carcasses when found rarely facilitates determining the cause of death. Therefore, any fatalities found within the search plot will be attributed to turbine strike unless other lines of evidence present unequivocally rule out turbine strike.

Carcasses found during standardized carcass searches will be labeled with a unique number, and species, sex, age, date, time found, location (Global Positioning System [GPS] coordinate, and distance/direction from the turbine), condition (e.g., intact, scavenged, feather spot), observer, turbine number, and any comments that may indicate cause of death will be collected. All carcasses will be photographed in situ. Once documented, carcasses will be collected (see Section 5.1.3 below) or marked in a standardized fashion (e.g., clipping of primary flight feathers) to indicate they have already been recorded.

Searchers may discover carcasses incidental to standardized carcass searches (e.g., outside of a search plot or of a scheduled survey date). For each incidentally discovered carcass, the searcher identifies, photographs, and records data for the carcass as would be done for carcasses found during standardized scheduled searches, but will code these carcasses as incidental discoveries. As previously mentioned, incidental discoveries are not included in the statistical calculation of fatality rate.

1.1.4 Carcass Persistence Trials

The objective of carcass removal trials is to estimate the likelihood that a carcass is removed by scavengers as a function of the time (measured in days) since the trial carcasses are placed in the field. Carcass removal includes removal by predation or scavenging, or removal by other means such as being plowed into a field. Estimates of carcass removal will be used to adjust the total number of carcasses found for those removed from the study area, correcting for removal bias. Removal trails will be conducted both within the search plots and on roads and pads within 60 meter of turbines.

Carcass removal trials will begin when carcass search studies begin. Carcasses will be placed on a minimum of two dates during each season, spreading the trials throughout the study year to incorporate the effects of varying weather, climatic conditions, and scavenger densities. During both survey years, approximately 25 bird carcasses will be used each season, along with a total of 50 bat surrogate carcasses for summer and fall trials. Bird carcasses will consist of non-native/non-protected or commercial available species such as house sparrows (*Passer domesticus*), European starlings (*Sturnus vulgaris*), rock pigeons (*Columbia livia*), bobwhite quail (*Colinus virginianus*), hen mallards (*Anas platyryhnchos*) or hen pheasants (*Phasianus colchicus*). Bat carcasses will be represented by brown or black mice carcasses.

All carcasses will be placed at random locations within the search area. Carcasses will be dropped from waist high or higher and allowed to land in a random posture. Each trial carcass will be discreetly marked prior to placement so that it can by identified as a study carcass if it is found by other searchers or O&M personnel.

Personnel conducting carcass searches will monitor, as closely as possible, the trial birds over a 30-day period according to the following schedule: carcasses will be checked every day for the first 4 days, and then on days 7, 10, 14, 20, and 30. This schedule may vary depending on weather and coordination with the other survey work. Experimental carcasses will be left at the location until the end of the carcass removal trial. At the end of the 30-day period any evidence of the carcasses that remain will be removed.

Scavenger removal rates will be regularly checked to confirm that removal rates are not exceedingly short. If the removal time is very short, there are means to address this such that additional uncertainty is not added into the analysis unnecessarily. Methods to address very short removal times include increasing search frequency, placing carcasses at night if avian scavengers are suspected of removing carcasses (i.e. some avian predators that are active during the day my cue in on and remove carcasses immediately after placement), or other situation-appropriate measures. The frequency of the standardized searches may be increased if carcass removal rates by scavengers are so high at the wind farm that it precludes accurate bird and bat fatality estimates. For example, more frequent searches could be necessary if scavengers are removing a majority of carcasses from the site within a few hours or days. Based on removal trials at other wind project sites in the region, this level or carcass scavenging is not anticipated.

1.1.5 Searcher Efficiency Trials

The objective of the searcher efficiency trials is to estimate the percentage of casualties which are found by searchers. Searcher efficiency trials will be conducted in the same plots that carcass searches occur. Trials

will be conducted during all study seasons. Estimates of searcher efficiency will be used to adjust the total number of carcasses found for those missed by searchers, correcting for detection bias. Searcher efficiency trials will be conducted within both the search plots and on roads and pads.

Searcher efficiency trials will begin when carcass search studies begin. Personnel conducting carcass searches will not know when trials are conducted or the location of the detection carcasses. Approximately 25 bird carcasses will be used each season, along with 50 total bat surrogate carcasses. Bird and bat carcasses will include the same species used in carcass persistence trials (see Section 5.1.1.4). Additionally, carcasses collected under the auspices of the SPUT and state collection permits may be used for searcher efficiency trials.

All carcasses will be placed at random locations within the search area. Carcasses will be dropped from waist high or higher and allowed to land in a random posture. Each trial carcass will be discreetly marked prior to placement so that it can be identified as a study carcass after it is found. The number and location of the detection carcasses available for detection each trial will be determined immediately after the trial by the person responsible for distributing the carcasses.

1.1.6 Estimation of Fatality Rates

Carcass rate estimation is a complex task due to a number of variables present in every study. Animal fatalities occur at an unknown rate, carcasses persist for variable amounts of time, and carcass detection is variable, based on carcass characteristics and ground cover. Fortunately, methods have been developed to account for these auxiliary variables in the estimation of carcass rates.

Estimates of facility-related carcass rates are based on:

- Observed number of carcasses found during standardized searches during the monitoring year for which the cause of death is either unknown or is potentially facility-related.
- Non-removal rates expressed as the estimated average probability a carcass is expected to remain in the search area and be available for detection by the searchers during scavenger removal trials.
- Searcher efficiency expressed as the proportion of planted carcasses found by searchers during searcher efficiency trials.
- Search area adjustment based on the plot size and carcass density.

Carcass rate estimates will be provided for the following groups, as appropriate, based on the results of the standardized carcass searches: (1) all birds, (2) small birds, (3) large birds, (4) raptors, (5) eagles, and (6) bats. The total number of carcasses found during standardized road-and-pad and cleared-plot searches will be tallied for each of the groups listed above. For each group, carcass rate estimates will be calculated by adjusting for carcass removal rates, searcher efficiency rates, and (when appropriate) the proportion of

carcasses expected to fall on roads and pads. In general, bias-adjusted carcass rate estimates are calculated via an equation of the form (Huso 2010, Korner-Nievergelt et. al 2011):

$$F = \frac{C}{r * p * A}$$

where F is the adjusted carcass rate estimate, C is the number of carcasses detected, r is the probability a carcass is available to be found, p is the probability a carcass is detected, and A is density-weighted area correction for road and pad plots (A=1 for cleared plots).

There are several carcass rate estimators that can be used for post-construction monitoring studies at wind energy facilities (e.g., Shoenfeld 2004, Huso 2010, Korner-Nievergelt et. al 2011). Some estimators are more appropriate under particular field conditions (e.g., removal time, search interval, detection probability) due to inherent biases in all estimators. The Huso (2010) estimator was demonstrated to be relatively robust under a wide range of field condition. Therefore, the Huso estimator will be used to estimate carcass rates for the Project; however, if a more appropriate carcass rate estimator is available at the time of analysis, and its implementation is agreed upon by all parties involved, then it may be implemented in lieu of the Huso estimator.

The estimates and 90 percent confidence intervals will be calculated using bootstrapping (Manly 1997). Bootstrapping is a computer simulation technique that is useful for calculating point estimates, variances, and confidence intervals for complicated test statistics. A total of 1,000 bootstrap replicates will be used. The lower 5th and upper 95th percentiles of the 1,000 bootstrap estimates will provide estimates of the lower limit and upper limit of an approximate 90 percent confidence interval on all estimates.

To account for unsearched area, a carcass density-weighted proportion of area approach is used to adjust carcass rate estimates found in searched areas (Huso and Dalthorp 2014). Separate estimates are calculated for birds and bats. A density-weighted approach assigns more weight to areas nearer the turbine (where carcass density is higher), and less weight to areas farther from the turbine (where carcass density is low). The result is an estimate of the proportion of carcasses expected to land within searched and unsearched areas around a turbine. Data collected from searched areas at the Project will be used to derive density models for birds and bats. If carcass counts are low, the carcass density distribution will be estimated using a Bayesian approach (Gelman et al. 2013), and publicly available prior data on bird and bat distances from turbines in the U.S. will be used in conjunction with the Project's data.

1.2 Operational Fatality Monitoring

O&M staff will conduct inspections for bird and bat fatalities each time a turbine is visited as an auxiliary effort to regular operations and maintenance activities. Any carcasses discovered by O&M staff will be recorded as incidental fatalities. Incidentally found wildlife will be documented for the life of the wind farm to identify wildlife concerns should they arise.

1.2.1 Training

All operations personnel will be trained to identify potential wildlife conflicts and the proper response, and training records will be maintained on-site. This training will include sensitivity to birds and other wildlife. An

incidental reporting process will be developed for operations personnel ensuring they can document bird or bat casualties during routine maintenance work and at other times that they are within the Project Area. Incidentally found wildlife will be reported according to federal and state collection permits, as applicable.

Any injured wildlife observed during operations of the Project will be left in place until Foxtail's primary environmental representative has been contacted (see Section 4 below for contact information). The environmental representative will decide the most appropriate course of action depending on the condition and species of injured animal discovered. All injured eagles or federally-listed species will be handled in accordance with applicable federal and state collection permits, as applicable, or as directed by appropriate law enforcement personnel.

1.3 Permit Requirements

1.3.1 SPUT Permit

Most native birds in North America are protected under the MBTA and cannot be salvaged without a permit from the USFWS. It is anticipated that Foxtail will obtain a federal salvage permit (Migratory Bird Special Purpose Utility Permit – Wind [SPUT permit]) for fatality monitoring. Fatality reporting and carcass collection and disposition methods will be in accordance with requirements of the SPUT permit. Any incident involving eagles and federally listed Threatened and Endangered species found dead or injured must be reported to Office of Law Enforcement (OLE) immediately, but no more than 24 hours from discovery of the bird. This permit is expected to require NSPM to notify USFWS of any fatalities of migratory birds on a quarterly and annual basis in a specified USFWS format. Additionally, SPUT permits require a final study report detailing estimated fatality rates, analyses of searcher efficiency and scavenger trials, and any discernable patterns in migratory bird fatalities.

1.3.2 Scientific Collection Permit

NSPM will also acquire a Scientific Collection Permit for the facility from the NDGFD. This permit requires that an annual report by submitted to the NDGFD by December 31 of every calendar year covered by the permit. The report must, at a minimum, describe the species of animals taken, the number taken, and their specific locations.

1.3.3 North Dakota Certificate of Site Compatibility

Fatality or injury events of 5 or more non-protected individuals per search/per turbine, one or more state or federal threatened or endangered species, and any eagle fatality will be reported to Xcel to enable reporting to the appropriate state and federal agencies within 5 business days, in accordance with the Certificate of Site Compatibility from the NDPSC for the Project. Furthermore, if any areas of critical habitat for threatened species, any endangered species, bald eagles, or golden eagles are observed in the Project Area, these observations will be reported to NDPSC in accordance with the Certificate of Site Compatibility for the Project.

2 HABITAT STUDIES

Based on avoidance and minimization measures implemented during siting of project facilities and results of Tier 3 studies, no habitat loss, degradation, or fragmentation effects are anticipated that warrant specific post-construction monitoring studies.

3 ADAPTIVE MANAGEMENT

Post-construction monitoring will be adaptively managed to adjust search protocols and frequency as needed to optimize data inputs for the statistical estimator. Foxtail will coordinate any adjustments with USFWS and NDGF.

4 KEY RESOURCES

Name	Role/Organization	Contact Information
Kate Schindler	Xcel Energy/Environmental Analyst	Office:651-267-6044 kate.schindler@xcelenergy.com
Environmental Incident Reporting Hotline	Xcel Energy	TBD
Operations and Maintenance Building	Xcel Energy	TBD
Kevin Shelley	USFWS/Ecological Services Field Office Supervisor	Office: 701-355-8512 kevin_shelley@fws.gov
Greg Link	NDGFD	701-328-6331

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
1	1.1	page 1 - last bullet	USFWS	Suggest adding an additional bullet to characterize the conservation objective(s): e.g., "implement priority conservation actions to offset unavoidable impacts to priority resources..."	We acknowledged this comment and noted that this objective is stated later in the document. We also added it to this bulleted list.
2	1.1	page1 - bottom	USFWS	Suggest adding a section entitled: "Approach to the Analysis." Here one could address the analytical framework and metrics used to assess direct, indirect, and cumulative impacts relative to priority resources. Also would be valuable to explain how scaling will be used to evaluate species-specific effects (both lethal and sub-lethal) at the local and population scales. Describing methods on how uncertainty was dealt with is also an opportunity in this section: e.g., when species occurrence data were lacking, likelihood of occurrence models were used. Finally, surveys always have imperfect detection so false negatives should be explicitly addressed.	We added a section describing this process as Section 1.2 (Analytical Approach) of the WCS
3	2.3	page 7 - paragraph 2	USFWS	add definition of "harass"...both are addressed and defined via the regulations and are of equally-weighted prohibitions.	We acknowledged this comment, which is currently being reviewed by our legal team.
4	2.4	page 7 - paragraph 3	USFWS	but many are otherwise protected via the MBTA or other fed or state statutes	We acknowledged this comment, and note that Migratory Bird Treaty Act (MBTA) protection is addressed in Section 2.1.
5		page 10 - paragraph 1	USFWS	Elaborate more on the transition from Rough Rider to Foxtail. Overlap in space between all 4 phases of Rough Rider and Foxtail. Are there no intentions to build further phases? If so, state that , even if only for NextEra's purposes, not Xcel's. I.e. do we we need to be thinking about additional future impacts or is NextEra finished with this area?	We added language to clarify NextEra Energy Resources has no intent of further development within the evaluation areas.
6	3.2.1	page 10 - paragraph 4	USFWS	Confusing: Table 2 is a land cover table.	We removed the incorrect Table reference
7	3.2.1	page 10 - paragraph 4	USFWS	Extend this to impacts to other level SCP beyond avian – mammals, etc.. -focus on uplands. Mention that aquatics were examined but dismissed due to no anticipated impacts.	We added language regarding other species, both upland and aquatic
8	3.2.2	page 12 - paragraph 3	USFWS	this term confuses me [reference to sensitive]. I could find no definition in the document and believe it could be inaccurate, depending on the definition (e.g., State Level 1 species could be defined as "sensitive" vis-a-vis, SCP. This statement is out of place -recommend placing it (and others)in the results/summary of Tier 2, S4.2.	We revised the language here and throughout the document to use USFWS Land-based Wind Energy Guidelines (WEG) terminology, which focuses on species of concern. We also defined "species of concern" in the new Section 1.2
9	3.2.2	page 12 - paragraph 3	USFWS	the tool informed the evaluation; [reference to whooping crane assessment]	It is unclear what this comment means and we have requested clarification from USFWS.
10	3.2.3	page 16 - paragraph 1	USFWS	add the the distance to the WPA. WPA's are fee title and I believe there's no regulatory provision to allow siting on a WPA so no infrastructure is a given.	We added language to make it clear that development is precluded in Waterfowl Protection Areas (WPA). We also noted that the nearest project infrastructure to a WPA is a road, which is approximately 30 m outside the WPA, and that the nearest turbine is 193 m from the WPA.

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
12	3.2.3	page 16 - paragraph 3	USFWS	acknowledgment that there could be some indirect effects to easements outside the footprints – i.e. avoiding direct impacts does not rule out indirect impacts	We added language to the document acknowledging potential indirect impacts
11	3.2.3	page 16 - paragraph 4	USFWS	see prior comment	We acknowledged this comment and noted that the statement, as written, indicates the WPA was avoided and that wetland impacts outside the WPA are less than 0.10 acre in size
13	4.1.1	page 18 - paragraph 2	USFWS	and/or	We acknowledged this comment and noted that the use of "or" in the sentence denotes "and/or" without the use of awkward language
14	4.1.1	page 18 - paragraph 3	USFWS	...that there may be a lower likelihood...	We acknowledged this comment and note that the sentence is directly reporting the conclusions of a detailed assessment, so the original language is appropriate.
15	4.1.1	page 18 - paragraph 3	USFWS	again, this conclusion or inference seems out of place and beyond what what was assessed. Based on 5.2, the assessment was about "suitable wetland habitat..." p. 58. The likelihood of occurrence was simply professional judgment based on a 23 percent lower wetland base compared to the 35mi buffer area, which "may make the Project Area less attractive."	We acknowledged this comment and note that the likelihood of occurrence analysis for whooping crane was more objective than professional judgement and used an index that incorporated multiple factors related to the project's location and habitats. We also provided the original report to USFWS for context
16	4.1.1	page 18 - paragraph 4	USFWS	citation	Citation was added
17	4.1.1	page 18 - paragraph 4	USFWS	citation	Citation was added
18	4.1.1	page 18 - paragraph 5	USFWS	Highlight - The likelihood of occurrence	no action - the highlighting appears to be only for the reference of the commenter
19	4.1.1	page 19 - paragraph 2	USFWS	Highlight - The likelihood of occurrence	no action - the highlighting appears to be only for the reference of the commenter
20	4.1.1	page 19 - paragraph 3	USFWS	Highlight - The likelihood of golden eagle occurrence	no action - the highlighting appears to be only for the reference of the commenter
21	4.1.1	page 19 - paragraph 3	USFWS	non-sequitur. if a has been document to be present, the likelihood of presence is not needed. Otherwise, it is high. The logic behind including a moderate rating is not transparent	We acknowledged this comment but note that eagle presence in the project area in the future may be likely, but it is not certain. We reached this conclusion because there was no consistent breeding or overwintering presence documented in the project area.
22	4.1.1	page 19 - paragraph 4	USFWS	Highlight-The species has a low likelihood of occurrence in the Project Area.	We modified this statement to indicate that there is a low likelihood of northern long-eared bat presence during breeding, but that presence during migration is uncertain. We also noted that the USFWS Final 4D Rule for the species explicitly acknowledges that lethal take by wind turbines is not a threat to the species.
23	4.1.1	page 19 - paragraph 6	USFWS	Suggest this sentence: Because no surveys have been conducted for DASK, the species has an unknown status in the project area. As written, it leads the reader to believe surveys have been conducted and no DASK encountered. Same would hold true for POSK. Both spp probably occurred in the project area historically.	We added a statement regarding the lack of information for the Project area and acknowledging uncertainty that will be resolved in subsequent stages of the assessment (tiers).
24	4.1.1	page 19 - paragraph 7	USFWS	State Focal Areas may be included in this section I think	We added a note indicating the Project is within the Missouri Coteau Breaks focus area, which contains rare natural habitats, but from which development is not precluded.

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
25	4.1.1	page 20 - paragraph 1	USFWS	Not sure why this statement is here. If eagle nests are "sensitive" and deemed appropriate to mention here, then it would be more informative and relevant to mention that a bald eagle nest is located within 2.9 mi outside the project area. This is a good example of why there is a need for more of a structured, step-down approach discussed at the onset. This leads the reader to be confused about what and when a finding is important. Not having an analytical context leaves the reader with a low level of confidence in the results.	We acknowledged this comment but note that the statement is here because the Tier 1 evaluation includes a desktop screening for known eagle nests. We added introductory material in Section 1.2 , as suggested, to orient the reader to the sequential organization of the Tiers.
26	4.1.1	page 20 - paragraph 2	USFWS	Not true, at least under Tier 2. So Tier 1 and 2 should match up i think. this is where, per the WEGS (p. 16) that the following resources should be mentioned; leks; SWAP focus area; migration corridors (for WC, C. Flyway waterfowl, waterbirds, etc.); possibly game winter range; and spring foraging area for migrating bald and golden eagles.	We acknowledged this comment but note that because Tier 1 is undertaken prior to Tier 2, no critical areas of wildlife congregation were known at this stage. We also modified the statement to clarify that is was based on information regarding known congregations found during Tier 1 desktop research.
27	4.1.1	page 20 - paragraph 3	USFWS	This statement is misleading as it implies an existing condition of little value worth being concerned about and downplays the conservation imperative behind this significant resource...given 71 percent/14.5k acres of native grassland in the project area.	We added a definition of habitat fragmentation here, and noted that grasslands were historically maintained by disturbance but that excessive mowing or grazing may degrade the value of grasslands for many wildlife species. We also explicitly acknowledged the uncertainty regarding conclusions in this tier.
28	4.1.1	page 20 - paragraph 3	USFWS	conjecture in the absence of supporting analysis, metrics, and rationale. This would also help address the subjectively assigned categories of high quality vs. other quality classifications (in the next sentence).	We explicitly acknowledged the uncertainty regarding conclusions in this tier and referenced the analyses in subsequent tiers.
29	4.1.1	page 20 - paragraph 3	USFWS	Do not see support for this conclusion – may need to be softened – sounds like conjecture. – change to say it will be evaluated further in subsequent tiers.	We explicitly acknowledged the uncertainty regarding conclusions in this tier and referenced the analyses in subsequent tiers. We also noted that the the term "high quality native prairie" was not subjective and followed definitions and guidelines provided by USFWS.
30	4.2.1	page 28 - paragraph 1	USFWS	Deciduous forest and woody welands (57ac) may be sufficient to support some breeders. it seems to me is what is missing here is a discussion on the breeding territory/habitat patch size needs and the availability of these patches in the project area. I noted that turbines 10, 28, 29, and 67 are in close proximity to woodlands. As written, this statement is unsupported.	We added language to further describe the woodlots and to qualify this statement, since the woodlands on the project occur as small, isolated fragments
31	4.2.1	page 30 - paragraph 1	USFWS	This suggests further analysis is warranted - I suggest directing the reader to the section where these resources are addressed. The notable presence of these species undermines the notion that these lands are fragmented (see earlier comment, i think about 4 comments earlier).	We added a reference to Section 5.2
32	4.2.1	page 30 - paragraph 2	USFWS	comment not supported. Needs citations or rationale to address why 57 ac of woodlands is not biologically relevant for the species.	We added rationale and changed the language of the statement to focus on breeding. We also acknowledged that the woodlands may support migration and that presence is somewhat uncertain despite lack of records of presence.
33	4.2.1	page 31 - paragraph 1	USFWS	same comment as prior one	We added rationale and changed the language of the statement to focus on breeding. We also acknowledged that the woodlands may support migration and that presence is somewhat uncertain despite lack of records of presence.

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
34	4.2.1	page 31 - paragraph 2	USFWS	species?	We added "tree-roosting" to qualify the guild of species we expect to use the woodlands
35	4.2.1	page 31 - paragraph 2	USFWS	rationale is biologically vague	We acknowledged this comment but noted that the statement indicates that the tiny amount of woodlot acreage in the project area is not a significant resource for bats in the context of the larger region encompassing the project.
36	4.2.1	page 31 - paragraph 3	USFWS	I'm having difficulty tracking the life history components of this effects analysis. There's breeding (rearing, roosting, foraging), migration, and winter in ND and it seems like breeding and migration habitat is present in the project area. So to me it comes down to patch size. Did the Gillam and Barnhart 2011 study only deal with roosting and hibernacula or did it include migration. I suggest reorganizing this section to make the logic and thought process transparent. It should be noted if acoustic surveys were or were not performed.	We acknowledged this comment but noted that this is best addressed by reading the original bat assessment, as provided, as the text within this section is a condensed summary of that assessment. We also noted that bat acoustic surveys would not enter a Tier 2 analysis.
37	4.2.1	page 31 - paragraph 5	USFWS	where is the evidence for this statement? This is a pivotal question to answer and warrants supporting documentation.	We acknowledged this uncertainty, referenced the analyses in subsequent tiers, and provided rationale for moving ahead to Tier 3 from Tier 2.
38	4.2.1	page 31 - paragraph 5	USFWS	this seems to contradict the first sentence	We acknowledged this uncertainty, referenced the analyses in subsequent tiers, and noted that impacts to individuals do not equate to impacts to species. However, we also acknowledged that for extremely rare species such as whooping crane, impacts to individuals would be of greater concern and considered differently.
39	4.2.1	page 32 - paragraph 1	USFWS	why?	We acknowledged this uncertainty, referenced the analyses in subsequent tiers, and noted that this conclusion only refers to the Tier 2 assessment.
40	4.2.1	page 32 - paragraph 2	USFWS	avoidance and minimization is part of the message in the WEGS. Tier 2 objectives indicate (WEGs, p. 14) the "developer should identify and document possible action that will avoid or compensate for impacts. Such actions might include....compensatory mitigation." I think the developer is trying to demonstrate alignment with the WEGs throughout the WCS; minimizing suggests something was not fully avoided, so it begs the question, "then what?".	We acknowledged this comment, referenced the Tier 3 field studies, and clarified their purpose was to further evaluate the presence of bird and bat species and reduce uncertainty regarding potential impacts
41	5	page 32 - Table 7	USFWS	Highlight - Field Delineation	no action - the highlighting appears to be only for the reference of the commenter
42	5.1.1	page 34 - paragraph 3	USFWS	Highlight - The field surveys...	no action - the highlighting appears to be only for the reference of the commenter
43	5.1.1	page 34 - paragraph 4	USFWS	Highlight - performed additional field surveys...	no action - the highlighting appears to be only for the reference of the commenter
44	5.1.1	page 35 - paragraph 1	USFWS	Highlighted bullet - Good/Possible habitat was lightly grazed...	no action - the highlighting appears to be only for the reference of the commenter
45	5.1.2	page 35 - paragraph 5	USFWS	non-sequitur.	No Action -the highlighted passage is reporting the results of a previous study, so we cannot change those results
46	5.1.2	page 35 - paragraph 6	USFWS	Highlight - August 2015 field survey....	no action - the highlighting appears to be only for the reference of the commenter
47	5.1.2	page 35 - paragraph 6	USFWS	Highlight - 87 bird species	no action - the highlighting appears to be only for the reference of the commenter
48	5.2.2	page 47 - paragraph 3	USFWS	Highlight - Although potentially suitable habitat was identified...	no action - the highlighting appears to be only for the reference of the commenter
49	5.2.2	page 59 - paragraph 1	USFWS	Highlight - None of the planned turbine locations...	no action - the highlighting appears to be only for the reference of the commenter
50	5.2.2	page 59 - paragraph 3	USFWS	prairie grouse leks are also reference in the WEGs as mentioned previously	We acknowledged this comment and noted that grouse leks were studied in Tier 3.
51	5.2.2	page 59 - paragraph 3	USFWS	nicely worded; emphasizing widlife congregation areas	We acknowledged this comment and no action was taken.
52	5.2.2	page 60 - paragraph 4	USFWS	Highlight - which is likely too distant....	no action - the highlighting appears to be only for the reference of the commenter
53	5.2.2	page 60 - paragraph 4	USFWS	Highlight - high likelihood of bald eagle occurrence	no action - the highlighting appears to be only for the reference of the commenter

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
54	5.2.2	page 61 - paragraph 2	USFWS	Highlight - is a moderate to high likelihood of golden eagle occurrence	no action - the highlighting appears to be only for the reference of the commenter
55	5.3.1	page 62 - paragraph 5	USFWS	Highlight - The overall likelihood index....	no action - the highlighting appears to be only for the reference of the commenter
56	5.3.2	page 63 - paragraph 1	USFWS	methods for this assessment are not clear to me; a short summary would be helpful (I know I have the report but , as with all the other comments on methods, I haven't had the luxury of time to read them all).	We added a summary of the information and analysis used to reach these conclusions.
57	5.3.2	page 63 - paragraph 3	USFWS	Highlight - large	no action - the highlighting appears to be only for the reference of the commenter
58	5.3.2	page 64 - paragraph 3	USFWS	Highlight - lack of forested areas within the Project Area	We modified this statement to clarify our rationale, specifically that the woodlots in the project area are small, isolated, and fragmented.
59	6	page 66 - paragraph 2	USFWS	and bats and DASK	We added additional species to the introductory statement
60	6	page 66 - paragraph 2	USFWS	get at the framework by which indirect effects were defined and thought about – reference to Region 6 BBCS outline and any definitions in WEG	We added a statement to clarify that indirect and cumulative effects (i.e., potential negative effects on a species from the project plus other sources in the region) are difficult to quantify. We also clarified that based on the species known or expected to be in the area, we consulted the research literature to assess potential indirect effects to these species from the project.
61	6.1.1	page 68 - paragraph 3	USFWS	Highlight - These species were either observed in very low numbers...	no action - the highlighting appears to be only for the reference of the commenter
62	6.1.1	page 68 - Table 11	USFWS	this title needs to be adjusted. there are many more facilities not reported here.	We added "public domain" to the title to clarify that although there are more facilities, their fatality rates are not in the public domain, and we therefore do not have access to them. We made a parallel title change for bats.
63	6.1.1	page 69 - paragraph 1	USFWS	Highlight - Although avian mortality due to collision....	no action - the highlighting appears to be only for the reference of the commenter
64	6.1.1	page 69 - paragraph 2	USFWS	Highlight - Swainson's hawk was the most commonly detected...	no action - the highlighting appears to be only for the reference of the commenter
65	6.1.1	page 70 - paragraph 2	USFWS	Highlight - Because of the low activity of BCC species...	no action - the highlighting appears to be only for the reference of the commenter
66	6.1.1	page 71 - paragraph 3	USFWS	again, recommend projecting fatality rates to capture anticipated lethal consequences.	We acknowledged this comment but note that there are currently no good methods for estimating fatality rates for these common species, and we believe that any quantitative estimate would be misleading.
67	6.1.1	page 73 - paragraph 3	USFWS	state the projected/anticipated fatalities	We acknowledged this comment but noted that this Section describes indirect, nonlethal impacts only
68	6.1.1	page 74 - paragraph 3	USFWS	Highlight - The risk of disturbance/displacement....	no action - the highlighting appears to be only for the reference of the commenter
69	6.1.1	page 75 - paragraph 2	USFWS	Highlight - However, golden eagles may be disturbed or displaced...	no action - the highlighting appears to be only for the reference of the commenter
70	6.1.1	page 76 - paragraph 2	USFWS	Highlight - Temporary habitat impacts	We updated our temporary impacts calculation and added a breakdown of impacts in the categories identified on Figure 8
71	6.1.1	page 76 - paragraph 3	USFWS	Highlight - minimized impacts by avoiding fragmentation....	no action - the highlighting appears to be only for the reference of the commenter
72	6.1.1	page 77 - paragraph 3	USFWS	Highlight - Baird's sparrow was observed....	We added the results of the additional analysis recommended by USFWS to this section
73	6.1.1	page 78 - paragraph 2	USFWS	Highlight - for most songbird species....	no action - the highlighting appears to be only for the reference of the commenter
74	6.1.2	page 82 - paragraph 1	USFWS	Highlight - based on the limited quantity of suitable habitat....	no action - the highlighting appears to be only for the reference of the commenter
75	7.1	page 86 - paragraph 1	USFWS	Highlighted bullet - 500 feet around active grouse leks	no action - the highlighting appears to be only for the reference of the commenter
76	7.2	page 86 - paragraph 3	USFWS	Highlighted bullet - The construction footprint will be minimized...	no action - the highlighting appears to be only for the reference of the commenter
77	7.2	page 87 - paragraph 1	USFWS	Highlighted bullet - Removal of vegtetation will be avoided...	no action - the highlighting appears to be only for the reference of the commenter
78	7.3	page 87 - paragraph 3	USFWS	Highlighted bullet - Foxtail Wind will implement an Adaptive Management Program...	no action - the highlighting appears to be only for the reference of the commenter

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79	7.4	page 88 - paragraph 2	USFWS	Highlighted - and up to 630.43 acres of land will be temporarily disturbed	no action - the highlighting appears to be only for the reference of the commenter
80	7.4	page 88 - paragraph 3	USFWS	Highlighted - Any temporary impacts to nativie prairie will be offset...	no action - the highlighting appears to be only for the reference of the commenter
81	4.1.1	page 20 - paragraph 3	USFWS and NDGF	NDGF and USFWS not see support for the c conclusion that grasslands are fragmented by grazing and impacts are therefore unlikely – may need to be softened – sounds like conjecture. – change to say it will be evaluated further in subsequent tiers.	We modified the language to acknowledge the historical importance of disturbances like grazing in maintaining grasslands, but also noted that excessive grazing and mowing can be detrimental to habitat quality and can fragment grasslands.
82	3.2.3	page 16 - paragraph 3	NDGFD	Two of the turbine locations, #38 and #44, appear to be sited on CRP-SAFE tracts. This CRP program is designed to maintain or increase populations of high-value or high priority wildlife species. We recommend seeking alternative sites on non-SAFE sites but not on unbroken grassland.	Foxtail has worked extensively with local landowners in identifying CRP lands within the leased parcels. Although Foxtail was aware of the presence of CRP contracts on the parcels proposed to host these two turbines, Foxtail was not previously aware of the existence of CRP-SAFE contracts in the vicinity; however, Foxtail has since conferred with FSA and determined that turbines 38 and 44 are located on such lands. The owners of these tracts, however, prefer adding turbines to the land over maintaining the easement contracts. Foxtail is committed to balancing private landowner desires and environmental protection, so will assist with any requirements to remove portions of these parcels from the CRP program with FSA and has already factored these native prairie impacts into the calculation of permanent impacts for the voluntary offset.
83	5.1.2	page 35 - paragraph 2	NDGFD	The baseline habitat assessment separates grassland/herbaceous and hay/pasture (land cover), but does not specify which of each category is unbroken.	It is unclear from the comment whether "unbroken" refers to soil that has never been tilled or to native prairie habitat that is contiguous (connected) parcels of land. Foxtail is not aware of any data for North Dakota that facilitates the identification of soils that have never been tilled; furthermore, this can be approximated by field surveys, but tilling history often remains uncertain. Therefore, Foxtail has identified contiguous parcels of native prairie habitat by performing a series of desktop and field studies and delineations, culminating in a 2017 micrositing exercise to place turbines outside of native prairie. The grassland/herbaceous and hay/pasture land cover types are derived from the National Land Cover Database, which does not break down the categories any further. In order to identify native prairie, Foxtail therefore used these categories to screen land cover in the Project Area for areas that needed additional field survey; these field surveys were conducted in 2014-15 and 2017, resulting in the identification of native prairie within the Project Area. Foxtail further analyzed the native prairie in the Project Area to identify areas of high quality habitat for wildlife by delineating suitable habitat for the Dakota Skipper and for area-sensitive grassland birds, such as Sprague's pipit. The areas identified in this way were avoided to the extent practicable. These overlapping efforts are summarized in Sections 3.2.2, 3.2.3, 4.1.1, 4.2.1, 5.1.1, 5.1.2, 5.2.2, 5.4, 6.1.1.3, 6.1.1.4, 6.1.3, 6.2.1, 7.1, and 7.4 of the WCS.
84	5.1.2	page 35 - paragraph 2	NDGFD	The habitat assessment solely focused on two ESA Lepidoptera species. However, this assessment is meant to be a proactive, rather than reactive, approach and SWAP species of concern should be considered when evaluating the presence of native habitat	This characterization of the analysis of habitat is inaccurate. It is, of course, important to avoid and minimize impacts to the ESA-listed Lepidoptera (butterfly) species. Foxtail went beyond this analysis, however, and focused additional efforts on identifying habitat of high quality for grassland bird species in coordination with USFWS. These overlapping efforts are summarized in Sections 3.2.2, 3.2.3, 4.1.1, 4.2.1, 5.1.1, 5.1.2, 5.2.2, 5.4, 6.1.1.3, 6.1.1.4, 6.1.3, 6.2.1, 7.1, and 7.4 of the WCS.

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
85	5.1.2	page 35 - paragraph 4	NDGFD	As for the topic of quality, it is important to remember that the prairie changes both seasonally and annually. Climate, natural disturbance, and grazing pressure all impact the physical and biological aspects of the prairie, in both negative and positive ways. A prairie is not a stagnant ecosystem and a single assessment of its 'quality' tells us little to nothing of its true value to wildlife.	We discussed this comment with NDGFD and acknowledged that grassland ecosystems are very dynamic. We noted, however, that we have assessed the status of the grassland over multiple seasons and have information from multiple years, that this is more effort than is typical during development, and that the assessment represents the best available dataset in such a situation. We state in the document that we think we have good "snapshot" in time for a development project, and we believe the data are a good representation of variation over the time during which development was undertaken.
86	5.2	page 40 - paragraph 1	NDGFD	The spring avian survey period (17-March to 11 June) was insufficient for detecting breeding birds. The key time frame for detecting breeding grassland birds is May 1 – July 15. For example, Sprague's Pipits have a bimodal display period, with two general time frames of late April – mid May and again from mid-June – early August.	We acknowledged this comment but Foxtail notes that criticism of the 2015 avian survey methodology is useful for designing future bird surveys in North Dakota, but is provided at too late a stage of development to reasonably be applied to the Foxtail Project. The timing of avian surveys for Foxtail was designed in accordance with industry best practices commonly conducted to address the research questions contained in the USFWS voluntary Wind Energy Guidelines (WEGs). Foxtail is not currently aware of any state guidance, but has been actively participating in the voluntary industry-led collaborative to help develop such an approach. The avian survey techniques are designed based on the research question to be answered as specified in the USFWS WEGs. The primary research questions for pre-construction surveys at proposed wind farms are: (1) what is the species composition of the bird community at the Project and (2) what are the average rates of use of these species. In the case of a species like Sprague's pipit, the most likely result of surveying for a period that misses the second mode (peak) of display timing would not be missing the existence the species on the site (question 1) or the average rates of use of the site (question 2). Rather, the shorter survey period would most likely result in the under counting of individuals, which does not directly impact either of the two research questions.
87	5.2.2	page 56 - paragraph 1	NDGFD	For assessing risk to Whooping Crane, also utilize the Pearse et. al 2015 map of Whooping Crane stopover site use intensity: https://www.sciencebase.gov/catalog/item/56253ce5e4b0fb9a11dd3d2b. Pearse, A.T., Brandt, D.A., Harrell, W.C., Metzger, K.L., Baasch, D.M., and Hefley, T.J., 2015, Whooping crane stopover site use intensity within the Great Plains: U.S. Geological Survey Open-File eport 2015–1166, 12 p., http://dx.doi.org/10.3133/ofr20151166	Foxtail notes that the Pearse et al. (2015) stopover use intensity study was used (and cited) in the development of the WCS and in the development of the 2017 Whooping Crane Assessment prepared by Tetra Tech, Inc. Foxtail also notes that the map referenced by the NDGFD comments shows Dickey County to be in a portion of the migration corridor not used by the whooping cranes used for the Pearse et al. study, further supporting the conclusion that there is a low likelihood of use of the Project Area by the species. Section 5.2.2 of the WCS has been revised to incorporate conclusions of Pearse et al. (2015) regarding whooping crane use intensity as compared to wind farm locations.
88	6.1.1	page 75 - paragraph 4	NDGFD	Throughout the WCS, much emphasis is placed on Sprague's Pipit and Baird's Sparrow, but not Chestnut-collared Longspur. The Chestnut-collared Longspur is another grassland obligate species that federal and state agencies have prioritized. The Chestnut-collared Longspur has experienced steeper population declines (-85% from 1974-2014, Rosenberg et. al 2016) than Sprague's Pipit (-75%) and Baird's Sparrow (-71%). At the rate of decline, it is estimated that in 17 years the population will be half of what it is now in the Prairie Pothole landscape. Chestnut-collareds prefer moderately to heavily grazed native prairie.	Foxtail discussed this comment with NDGFD during the 19 September 2017 conference call and explained to NDGFD that Sprague's pipit and Baird's sparrow were used in the WCS to identify habitat characteristics important to all grassland birds. These species were chosen because of their conservation status and the fact that habitat needs for the species were well understood and documented. The intent of the analysis based on these two species was not to exclude other species, but rather to identify a reasonably inclusive set of habitat needs in the analysis for all grassland birds that are sensitive to the area of habitat available. Foxtail and NDGFD agreed during the conference call that the chestnut-collared longspur would be added to the group of species used to identify important habitat for grassland birds and, subsequently, Sections 4.1.1, 4.2.1, 5.1.2, 5.2.2, 6.1.1.3, and 6.1.1.4 of the WCS were revised to incorporate information regarding the chestnut-collared longspur and to clarify the use of these species to identify valuable habitat for all grassland bird species.

Comment Number	Section	WCS Page Reference	Agency	Comment	NEER Response
89	6.1.1	page 76 - paragraph 2	NDGFD	Language implies that grazing has a negative impact on grassland bird habitats - not necessarily true as grazing has historically been used as a method for maintaining grasslands. Also important to note that impacts are dependent on grazing intensity. Language implies that re-seeding will be the only mitigation measure applied.	Foxtail discussed this comment with NDGFD during the 19 September conference call, and clarified that the intent was to identify excessive disturbance in the form of mowing or overgrazing can be detrimental to grassland habitat quality for wildlife. However, disturbance by grazing and fire was historically important to maintaining native prairie, and moderate mowing or grazing can serve the same function. There was general agreement between Foxtail and NDGFD on this interpretation, and Sections 6.1.1.4, and 6.2.2.1 of the WCS have been modified to clarify this.
90	6.1.1	page 76 - paragraph 3	NDGFD	The WCS states that: "Much of the land in the Project area is used for cattle ranching and agriculture and is thus already disturbed or fragmented." At face value this comment suggests that grazing causes fragmentation of the landscape. If that is the intended message, we do not agree. We suggest this statement be rewritten or fleshed out to explain its intent.	Foxtail discussed this comment with NDGFD during the 19 September conference call, and clarified that the intent was to identify excessive disturbance in the form of mowing or overgrazing can be detrimental to grassland habitat quality for wildlife. However, disturbance by grazing and fire was historically important to maintaining native prairie, and moderate mowing or grazing can serve the same function. There was general agreement between Foxtail and NDGFD on this interpretation, and Sections 6.1.1.4, and 6.2.2.1 of the WCS have been modified to clarify this.
91	6.2.1	page 84 - paragraph 1	NDGFD	Language implies that grazing has a negative impact on grassland bird habitats - not necessarily true as grazing has historically been used as a method for maintaining grasslands. Also important to note that impacts are dependent on grazing intensity. Lan	Foxtail discussed this comment with NDGFD during the 19 September conference call, and clarified that the intent was to identify excessive disturbance in the form of mowing or overgrazing can be detrimental to grassland habitat quality for wildlife. However, disturbance by grazing and fire was historically important to maintaining native prairie, and moderate mowing or grazing can serve the same function. There was general agreement between Foxtail and NDGFD on this interpretation, and Sections 6.1.1.4, and 6.2.2.1 of the WCS have been modified to clarify this.
92	7.4	page 88 - paragraph 2	NDGFD	Figure 8 is the most important map in the document. This map illustrates the vast amount of contiguous, unbroken grassland in the project area. It is nearly an exact match to where we have spatially modeled remaining unbroken grassland. We recommend an offset package be developed for the permanent impact of roads and turbine pads that will be constructed within "Native Prairie Habitat ≥ 160 acres" and any CRP-SAFE tracts. The offset package should include indirect effects of the fragmentation of the native prairie habitat of up to 100 meters from new or improved roads and 200 meters of turbine site.	Foxtail was surprised to receive information regarding NDGFD's recommended distances for infrastructure for calculating offsets for the first time in written comments following the 19 September 2017 conference call. Although the Project infrastructure layout has already been finalized, Foxtail is working in coordination with USFWS to develop an offsetting mitigation approach that will provide for preservation of areas of native prairie proportional to the Project's impacts identified in Section 7.4 of the WCS. The approach used to calculate impacts to be offset incorporates Dakota skipper habitat as well as contiguous native prairie habitat ≥ 160 acres, as recommended in the NDGFD comment. As discussed above, Foxtail has been actively collaborating with the USFWS to develop the voluntary offset.
93	7.4	page 88 - paragraph 2	NDGFD	Moving forward, it will be important to know exactly how much unbroken prairie is going to be impacted by development. Subjective statements such as "high quality prairie could be avoided" don't help quantify the actual loss of the resources.	The methods and results for identifying habitat that Foxtail describes as high quality native prairie are described in detail in the WCS, Sections 3.2.2, 3.2.3, 4.1.1, 4.2.1, 5.1.1, 5.1.2, 5.2.2, 5.4, 6.1.1.3, 6.1.1.4, 6.1.3, 6.2.1, 7.1, and 7.4. Foxtail, in coordination with USFWS, chose explicit criteria based on habitat suitability for Dakota skipper and grassland birds to screen areas that appeared to be native prairie for their value to wildlife. As a result, Foxtail believes this approach incorporates best scientific knowledge to defining the representation of high quality prairie that is specific and avoids reference to any undefined or subjective approach. These criteria included plant community composition and the size of contiguous ("unbroken") parcels of native prairie. Use of the term "high quality prairie" refers to native prairie identified following these objective and scientific methods.
94	7.4	page 88 - paragraph 2	NDGFD	The offsets mentioned only included re-seeding temporary disturbance with native species and replacing any tree or shrub lost due to development according to PSC; however, here is no mention of any type of offset for the permanent loss of the resources.	The initial draft of the WCS did not contain a description of the native prairie offsetting mitigation approach that Foxtail is developing in coordination with USFWS. Section 7.4 of the WCS has been revised to describe the approach being taken and to make clear Foxtail's commitment to provide offsetting mitigation. In addition, Foxtail has verbally discussed our intent to provide a voluntary native prairie offset with NDGFD subsequent to the issuance of the letter and WCS comments.