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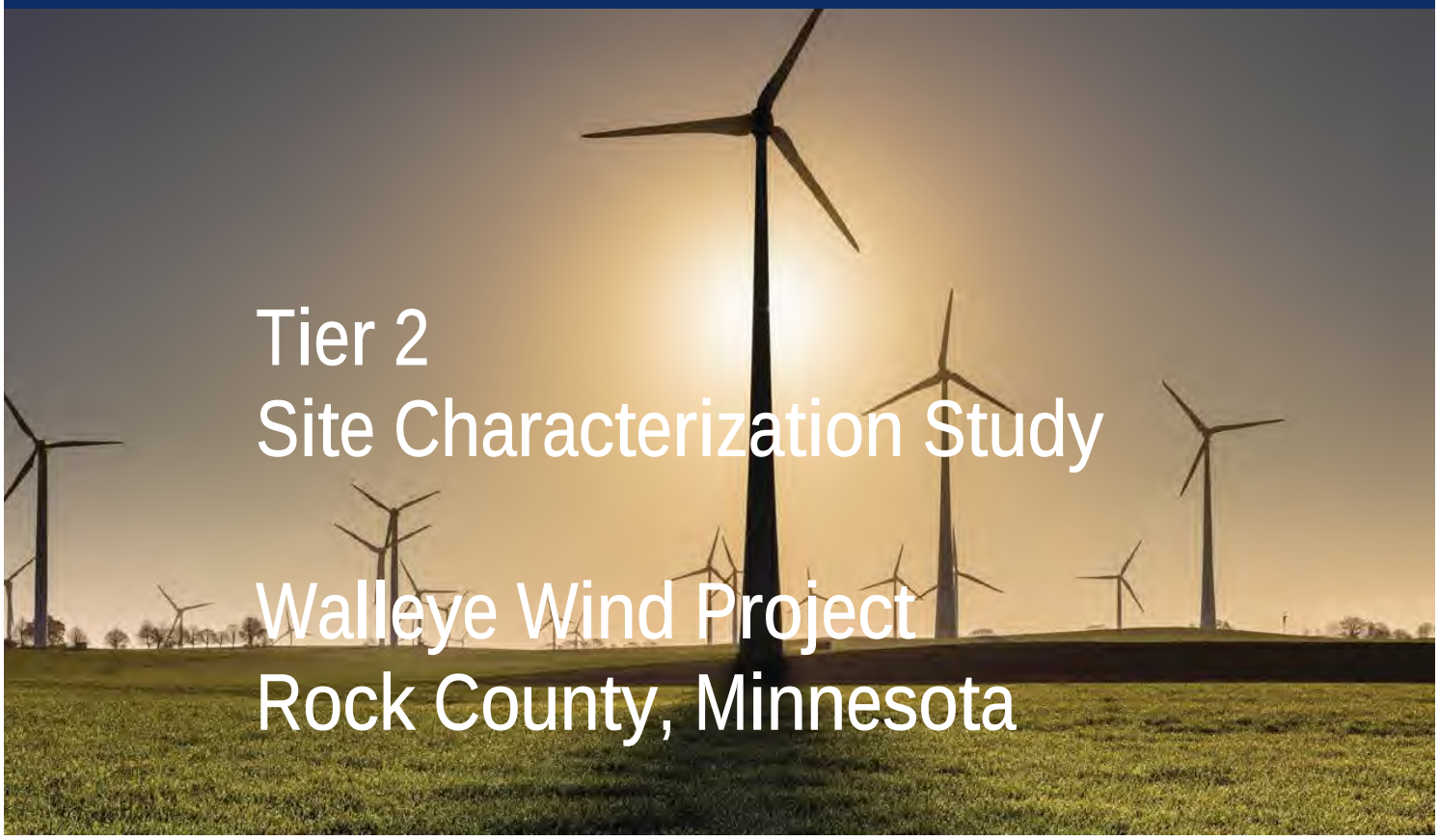
APPENDIX H

Site Characterization Study

161 East Aurora Road, Northfield OH, 44067



Tier 2
Site Characterization Study

Walleye Wind Project
Rock County, Minnesota

Walleye Wind, LLC
Juno Beach, Florida

June 2020
ECT No. 190497-0300

Complex Challenges . . . *PRACTICAL SOLUTIONS*

Document Review

The dual signatory process is an integral part of Environmental Consulting & Technology, Inc.'s (ECT's) Document Review Policy No. 9.03. All ECT documents undergo technical/peer review prior to dispatching these documents to any outside entity.

This document has been authored and reviewed by the following employees:

Alyssa Dietz-Oergel	Jessica Miller
Author	Reviewer
Signature	Signature
05/27/2020	05/28/2020
Date	Date

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List of Acronyms and Abbreviations

BBS	Breeding Bird Survey
BCC	Bird of conservation concern
BCR	Bird conservation region
BMPs	Best management practices
BWSR	Minnesota Board of Water & Soil Resources
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
DBH	Diameter at breast height
ECPG	Eagle Conservation Plan Guidance
ECS	Ecological Classification System
ECT	Environmental Consulting & Technology, Inc.
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
ft	Foot
HUC	Hydrologic Unit Code
IBA	Important Bird Areas
IPaC	Information for Planning and Consultation
kV	Kilovolt
MBBA	Minnesota Breeding Bird Atlas
MBS	Minnesota Biological Survey
MET	Meteorological Evaluation Tower
MNDNR	Minnesota Department of Natural Resources
MN NHIS	Minnesota Natural Heritage Inventory System
NCED	National Conservation Easement Database
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
O&M	Operation and Maintenance
PAD-US	Protected Areas Database of the United States
POI	Point of Interconnection
Project	Walleye Wind Project
PWI	Public Waters Inventory
RIM	Reinvest in Minnesota Reserve Program
RSEA	Regionally Significant Ecological Areas
ROW	Right-of-way
SCS	Site Characterization Study
SDBBA	South Dakota Breeding Bird Atlas
SD GFP	South Dakota Game, Fish, & Parks
SD NHDB	South Dakota Natural Heritage Database
SDSU	South Dakota State University
SGCN	Species of greatest conservation need
Substation	Walleye Wind Substation
SWCD	Soil & Water Conservation District

T&E	Threatened and endangered
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Walleye Wind	Walleye Wind Project, LLC
WEG	Wind Energy Guidelines
WEST	West Consultants, Inc.
WMA	Wildlife Management Area
WMD	Wetland Management District
WRA	Wind resource area

Executive Summary

Walleye Wind, LLC (Walleye Wind), contracted Environmental Consulting & Technology, Inc. (ECT), to prepare a Site Characterization Study (SCS) for the Walleye Wind Project (Project) in Springwater, Beaver Creek, Luverne, and Martin Townships, Rock County, Minnesota. Project facilities will include turbines, collection lines, an operation and maintenance (O&M) building, a construction laydown yard, crane paths, gravel access roads, a meteorological (MET) tower, a new Project collection substation and a less than 500-ft generation tie in line connecting to an existing substation. The point of interconnection (POI) of the Project to the transmission system will be the existing 161 kilovolt (kV) Rock County Substation (Substation). The Substation is located on the east side of 40th Avenue, north of the City of Beaver Creek in Rock County, Minnesota. The Substation will be modified to accommodate the new 110.8 MW transmission line at the POI on the north side of the Substation. This transmission line will extend approximately 500 feet from the Substation to the Project collection substation (Walleye Wind Substation) planned at the north side of proposed POI.

The purpose of an SCS is to identify and evaluate landscape characteristics and biological features occurring within the project site or Wind Resource Area (WRA) as well as a 1-mile buffer surrounding the WRA and to discuss those features in the context of Project development. This SCS is intended to meet the requirements of *Tier 2, Site Characterization*, of the U.S. Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (WEG), which recommend a tiered framework for assessing potential environmental risks at the project scale.

This SCS presents the results of a desktop review of governmental and nongovernmental publicly available sources, including but not limited to the USFWS Information for Planning and Consultation (IPaC) tool, the Minnesota Natural Heritage Information System (MN NHIS), and results from a preliminary windshield survey conducted of an initial WRA boundary on November 18 through 23, 2019 and May 18 through 22, 2020.

The revised WRA spans approximately 31,095-acres (49 square miles) in Rock County, Minnesota. The WRA and 1-mile buffer are located in a mostly rural landscape dominated by cropland and pastures typical of southwestern Minnesota and southeastern South Dakota. Undeveloped natural habitat (e.g., woodlots, narrow tree-lined ditches, grassy areas and old fields, grasslands, wetlands, ponds, and water bodies) remain in the landscape mostly as isolated

features. These natural areas constitute a matrix of land cover types that provide suitable habitat for avian resources, bat resources, and potentially, threatened and endangered (T&E) species within the WRA, and surrounding areas (i.e., 1-mile buffer).

Notable avian species discussed in this SCS include the state-listed burrowing owl (*Athene cunicularia*) that has the potential to occur within the vicinity of the WRA and 1-mile buffer within Rock County. Additional sensitive raptor species that have the potential to be found within the WRA and 1-mile buffer include bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), short-eared owl (*Asio flammeus*), peregrine falcon (*Falco peregrinus*), and osprey (*Pandion haliaetus*).

The Touch the Sky Prairie portion of the Northern Tallgrass Prairie National Wildlife Refuge (NWR), Blue Mounds State Park, and the Prairie Coteau Complex Important Bird Area (IBA) are located within 4 miles of the northwestern boundary of the WRA and 1-mile buffer. These areas have records of several state and federal listed avian species, including grassland species. However, much of the WRA and 1-mile buffer is currently under agricultural use and is unlikely to provide the same quality habitat as public and native lands within the surrounding region.

Based on the known distribution, publicly available occurrence records, and previous Tier 3 bat acoustic surveys within the region, bat species that may have the potential to occur within the WRA and 1-mile buffer either as summer residents or during migratory periods include: northern long-eared bat (*Myotis septentrionalis*), little brown myotis (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), tri-colored bat (*Perimyotis subflavus*), silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), and hoary bat (*Lasiurus cinereus*). These species use tree-lined river corridors and forested habitat. The lack of forested habitat within the WRA and 1-mile buffer suggest that bat species are unlikely to be found on-site. Additionally, previous bat acoustic surveys within the vicinity of the WRA and 1-mile buffer indicate that sensitive bat species may use portions of the WRA but are rare.

Information gathered during this SCS provided relevant information to answer most of the *Tier 2 – Site Characterization* questions. Still, it is not enough to assess the probability of adverse impacts to wildlife or impairment of species. Therefore, further *Tier 3* studies are recommended to further and accurately evaluate the WRA and 1-mile buffer in terms of avian and bat use as well as the potential occurrence of T&E species. This SCS should be used to guide further *Tier 3* studies

and as a tool during micrositing, to avoid to the extent practicable, sensitive habitats that may support T&E species.

1.0 Introduction

Walleye Wind, LLC (Walleye Wind) is developing a 111.5 MW wind energy facility within Rock County, Minnesota. Walleye Wind contracted Environmental Consulting & Technology, Inc. (ECT), to prepare a Site Characterization Study (SCS) for the proposed Walleye Wind Project (Project) Wind Resource Area (WRA) in Rock County, Minnesota (**Figure 1**). The purpose of the SCS is to identify and discuss landscape characteristics and biological features, such as the potential presence of threatened and endangered (T&E) species, avian and eagle use, bat use, wetland and woodland habitat, and sensitive and rare habitats occurring within the WRA.

This SCS will fulfill the *Tier 2 Site Characterization Study* for the WRA as recommended in the U.S. Fish and Wildlife Service (USFWS) Land-based Wind Energy Guidelines (WEG; USFWS 2012) tiered approach, which assists developers in identifying wildlife species of concern and minimizing impacts from wind energy development.

This SCS involved a desktop review of publicly available information and geospatial data from federal, state, and nongovernmental organizations. A preliminary windshield survey of an initial WRA boundary and surrounding areas was conducted on November 18 through 23, 2019 and May 18 through 22, 2020. This SCS evaluates the revised WRA and a surrounding 1-mile buffer area.

2.0 Wind Resource Area Description

The WRA encompasses approximately 31,095-acres (approximately 49 square miles) in Springwater (T103N R47W and R46W), Beaver Creek (T102N R47W and R46W), Luverne (T102N R45W), and Martin (T101N R46W) Townships, in Rock County, Minnesota. Proposed Project facilities within the footprint of the WRA include turbines, collection lines, an operation and maintenance (O&M) building, a construction laydown yard, crane paths, gravel access roads, a meteorological (MET) tower, Project collection substation, and a less than 500-ft gen-tie line connecting to an existing substation. The point of interconnection (POI) of the Project to the transmission system will be the existing 161 kilovolt (kV) Walleye Wind Substation (Substation). The Substation is located on the east side of 40th Avenue, north of the City of Beaver Creek in Rock County, Minnesota. The Substation will be modified to accommodate the new 111.5 MW transmission line at the POI on the north side of the Substation. This transmission line will extend approximately 500 feet from the Substation to the Project collection substation planned at the north side of proposed POI.

The WRA is located along the southwestern border of Minnesota with its western boundary along the Minnesota and South Dakota state line. The largest city near the WRA is Sioux Falls, South Dakota, and is located approximately 14 miles southwest of the WRA. The WRA is also located approximately 4miles west of the City of Luverne, Minnesota, and encompasses the City of Beaver Creek, Minnesota (**Figure 1**). It should be noted that while the entire WRA is located within Rock County, Minnesota, the 1-mile buffer area utilized in evaluating resources for this SCS extends into South Dakota since the WRA boundary is on the Minnesota/South Dakota state line. No Project facilities would be located in South Dakota.

The WRA and 1-mile buffer are in a largely rural area dominated by cultivated cropland and pastures. Development in the WRA and 1-mile buffer is low-density and generally concentrated along rural roads and highways. Undeveloped, natural areas within the WRA, such as woodland, wetlands, and grasslands, are not dominant features in the landscape. A notable network of watercourses covers the entire WRA and 1-mile buffer. Topography of the region is generally flat but contains undulating terrain typical of Minnesota and eastern South Dakota, with approximate elevations ranging between 1,380-1,620 feet above mean sea level (USGS 2019c; 2017a; 2019b; 2019a; 2017b) (**Figure 2**).

The WRA and 1-mile buffer overlaps the Loess Prairies section (Level IV) of the Western Corn Belt Plains Region (Level III) of Minnesota (USEPA 2015). This area of Minnesota was historically dominated by extensive tallgrass prairie communities, but today much of the region is currently under agricultural use for row cropping. This region is characterized by undulating plains with thick layers of windswept deposits called loess. Historically, woodlands in the region were primarily confined to riparian areas along Rock Creek (Albert 1995).

Minnesota Department of Natural Resources (MNDNR) Ecological Classification System (ECS) data indicates that the WRA and 1-mile buffer are located within the Prairie Parkland Province (251). The Prairie Parkland Province spans much of western Minnesota and extends into the surrounding states of North Dakota, South Dakota, and Iowa. Each ECS Province is divided further into sections and subsections. The WRA is within the North Central Glaciated Plains (251B) section and the inner Coteau Moraines (251Bb) subsection. The North Central Glaciated Plains is characterized by rolling calcareous till soils. The Inner Coteau Subsection is characterized by areas of dissected moraines capped by thick wind-blown loess deposits (MNDNR 2020d)

The western portions of the 1-mile buffer also overlap portions of the Tall-grass subunit of the South Dakota Eastern Prairie Ecoregion (Stukel 2006). Land within the Tall-grass subunit is highly influenced by past glaciers that left behind thick layers of glacial sediments and wetland areas known as “potholes.” Historically, forests within the region were rare. Today, nearly 70% of the Tall-grass subunit has been replaced with croplands.

3.0 Site Characterization Methods

The USFWS WEG (USFWS 2012) provides a recommended tiered framework for assessing risk to wildlife through a preliminary site evaluation, site characterization, field studies of potentially affected species and their habitats, and post-construction studies to determine the fatality risk posed by wind energy projects. Each tier helps determine potential environmental risks at the landscape scale (Tier 1) and the project scale (Tiers 2, 3, and 4).

This SCS is intended to meet the requirements of *Tier 2 Site Characterization* of USFWS WEG. The objective of a *Tier 2 Site Characterization* is to comprehensively and systematically assess a site within a landscape context to determine whether a potential development poses significant risk to species of concern or their habitats. According to USFWS WEG, *Tier 2* uses existing information (e.g., scientific literature, published studies, technical reports, and information from wildlife agencies) and a minimum of one site visit from a knowledgeable biologist to confirm habitats present and findings from available information (USFWS 2012).

Tier 2 Site Characterization includes seven specific questions (USFWS 2012):

1. Are there species of concern present on the potential site(s), or is habitat (including designated critical habitat) present for these species?
2. Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information?
3. Are there plant communities of concern present or likely to be present at the site(s)?
4. Are there known critical areas of wildlife congregation, including, but not limited to, maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers, or corridors, leks, or other areas of seasonal importance?
5. Using best available scientific information, has the developer or relevant federal, state, tribal, and local agency identified the potential presence of a population of a species of habitat fragmentation concern?
6. Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes?
7. Is there potential for significant adverse impacts to species of concern based on the answers to the previous questions, and considering the design of the proposed project?

Because the WRA boundary is ecologically arbitrary, this SCS evaluates the WRA as well as a 1-mile buffer around its boundary. *Sections 4.0* through *7.0* of this SCS describe site characteristics of the WRA and 1-mile buffer, and *Section 8.0* summarizes answers to the seven specific *Tier 2* questions.

3.1 Desktop Review

Publicly available information and geospatial data from multiple sources, including federal, state, local, and nongovernmental organizations, were used for preparation of this SCS. Datasets and resources reviewed include, but are not limited to:

- 2016 National Land Use/Land Cover Database
- U.S. Geological Survey (USGS) topographic maps
- USGS North American Breeding Birds Survey
- USGS Protected Areas Database of the United States (PAD-US)
- USFWS National Wetland Inventory (NWI) maps
- USFWS Information for Planning and Consultation (IPaC) tool (accessed January 15, 2020)
- MNDNR Endangered Species List
- MNDNR Natural Heritage Information System (MN NHIS) (accessed January 8, 2020)
- eBird
- Minnesota Breeding Bird Atlas (MBBA)
- South Dakota Breeding Bird Atlas (SDBBA)
- South Dakota Game, Fish & Parks (SD GFP) Endangered Species List
- South Dakota Natural Heritage Database (SD NHDB)

Selected datasets were used to display critical environmental and ecological features. The datasets were then processed, projected, and clipped to the WRA and a 1-mile buffer for acreage calculations, percentages, as well as to visually display critical features.

3.2 Site Reconnaissance

A windshield survey was conducted on November 18 through 23, 2019 and May 18 through 22, 2020, to evaluate landscape conditions within an initial WRA boundary and a surrounding 1-mile buffer. The initial survey area included northern and central portions of the revised WRA and 1-mile buffer. The survey revealed most of the initial WRA and the surrounding region was dominated by agricultural fields with riparian corridors associated with creeks and streams, limited wetland habitat, grassy buffers between these features, grasslands, and forested habitat. Representative photos are included in the Photographic Log (**Appendix A**).

4.0 Site Characteristics

4.1 Land Use/Land Cover

The WRA and 1-mile buffer are within a largely rural landscape dominated by agriculture (**Figure 1**). According to the 2016 National Land Cover Database (Yang et al. 2018; MRLC Consortium 2019), land cover and land use in the WRA and 1-mile buffer is dominated by agricultural areas. Land cover and land use in the WRA includes primarily cultivated crops (approximately 87%) and pastures and hay (approximately 6%) (**Table 1**, **Figure 3**). Land which is not developed or under agricultural use is relatively limited within the WRA. Other land cover types (e.g., deciduous forest, wetlands, grasslands) account for low percentages of the WRA (approximately 2% total, **Table 1**, **Figure 3**). Landcover characteristics within the WRA and the 1-mile buffer are relatively similar.

Table 1. Land Cover Types within WRA and 1-mile Buffer

Land Cover Type	Acres within WRA*	% of WRA	Acres within 1-mile buffer *	% within 1-mile buffer
Cultivated Crops	27,040.7	87.0%	50,317.9	87.4%
Pasture / Hay	1,796.1	5.8%	3,192.3	5.5%
Developed, Open Space	1,121.8	3.6%	2,093.3	3.6%
Grassland / Herbaceous	384.0	1.2%	726.2	1.3%
Developed, Low Intensity	279.00	0.9%	409.9	0.7%
Emergent Herbaceous Wetlands	249.8	0.8%	472.9	0.8%
Deciduous Forest	87.0	0.3%	176.4	0.3%
Developed, Medium Intensity	70.6	0.2%	119.8	0.2%
Barren Land (Rock/Sand/Clay)	32.5	0.1%	47.3	0.1%
Open Water	17.8	0.1%	28.9	<0.01%
Shrub/Scrub	10.2	<0.1%	11.3	<0.01%
Developed, High Intensity	5.6	<0.1%	9.1	<0.01%
Mixed Forest	0.00	0.0%	2.2	<0.01%
Total	31,095.1	100.0%	57,607.5	100.0%

*Data obtained from the 2016 National Land Cover Database rounded to the nearest whole acre. (MRLC Consortium 2019; Yang et al. 2018).

4.1.1 Grasslands and Pastures

In addition to farmed fields, agricultural regions also include idle lands, pastures, and grasslands, and herbaceous habitats. Approximately 1,796 -acres of pastures (approximately 6%) and approximately 384 -acres (approximately 1%) of grasslands and herbaceous habitat are mapped within the WRA. Grasslands and herbaceous cover and pastures in the WRA and the 1-mile buffer are generally similar (**Table 1**, **Figure 3**).

The grasslands and herbaceous category defines areas dominated by graminoid or herbaceous vegetation, which are not subject to intense management such as tilling but can be used for grazing. Conversely, the pastures and hay category defines areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or production of seed or hay crops, typically on a perennial cycle (Homer et al. 2015). Areas used as pastures, those not actively farmed, and buffer strips (i.e., vegetated strips along streams that protect surface water from agricultural runoff) can have the ecological functions of grasslands. Grassy habitats are important features in agricultural landscapes because they provide critical cover, foraging, and nesting habitat for wildlife and potentially T&E species (see *Sections 5.0* and *6.0*).

Based on desktop review, native and intact prairie habitat within the WRA and 1-mile buffer are limited to a few non-contiguous areas along the edges of the fields, roadways, and railroads. Small areas of grassland habitat are located within protected lands (*Section 4.3.2.1*). The windshield survey also confirmed the limited extent of natural grassland habitats within the WRA and 1-mile buffer. Identified grasslands mainly consisted of heavily grazed pastureland and grassland strips between extensive agricultural areas. Representative photos of these habitats are included in the Photographic Log (**Appendix A**).

4.1.2 Forested Habitat

The 2016 National Land Cover Database (NLCD) indicates the WRA contains limited forest cover (Yang et al. 2018; MRLC Consortium 2019). Approximately 87 -acres of deciduous forest (less than 0.3% of the WRA) are mapped by the NLCD within the WRA. The 1-mile buffer contains a similar amount of mapped NLCD forest cover to the WRA **(Table 1, Figure 3).** In April, 2020, ECT completed an aerial map review to manually identify and digitize forested areas within the WRA. The result of this desktop review indicated a total of 362 acres (1.16% of WRA) of forested area is present within the WRA. These is proportionally small amount of forest cover is present as isolated woodlots which are less than 10 acres and, to a lesser extent, narrow tree lines and shrubby corridors along streams, rivers, and within residential areas. In agricultural landscapes,

isolated woodlots, tree lines, and narrow corridors provide critical ecological functions and habitat for wildlife, flora, and potentially T&E species (see *Sections 5.0* and *6.0*).

The windshield survey confirmed forested habitat within the WRA and 1-mile buffer is limited to a few small woodlots along streams and residential properties. Representative photos of forest habitats are included in the Photographic Log (**Appendix A**).

4.2 Wetlands, Streams, and Riparian Areas

The WRA and 1-mile buffer are within the Rock (Hydrologic Unite Code [HUC] 10170204) and Lower Big Sioux (HUC 10170203) watersheds. Both watersheds are part of the larger Missouri River Basin (Onsrud et al. 2014). In Minnesota, the Missouri River Basin drains approximately 1,783 square miles (1,141,120-acres) of Lincoln, Murray, Nobles, Jackson, and Rock Counties. This water basin is significant to the agricultural industry in Minnesota due to its highly rich soils. This basin also provides some of the only remaining habitat for the federally- listed Topeka shiner (*Notropis topeka)* within the state. Approximately 60% of the watershed is currently under cropland land use (Onsrud et al. 2014).

USFWS NWI data (USFWS 2020a) indicate that the WRA contains approximately 1,655 -acres of wetlands (approximately 5% of the total WRA acreage, **Table 2**, **Figure 4**). The majority of the water resources mapped within the WRA and 1-mile buffer are freshwater emergent and riverine wetlands. Freshwater emergent wetlands are wetlands where rooted, upright, emergent plants such as *Equisetum* and *Scirpus* spp. account for at least 30% of the areal coverage of wetland vegetation. Riverine wetlands are "all wetlands and deepwater habitats contained within a channel" (Cowardin et al. 1979).

Table 2. NWI Mapped Wetlands in WRA and 1-mile Buffer

Wetland Type	WRA (ac)*	WRA** (%)	1-mile buffer (ac)	1-mile buffer*** (%)
Freshwater emergent wetlands	1,367.3	4.4%	1,057.1	4.0%
Riverine	35.8	0.1%	36.7	0.1%
Freshwater Pond	32.4	0.1%	19.0	0.1%
Freshwater Forested/ Shrub Wetland	220.2	0.7%	192.7	0.7%
Total	1,655.7	5.3%	1,305.5	4.9%

*Rounded to the nearest whole acre
**Percent of wetland type in the in the entire WRA
***Percent of wetland type in the entire 1-mile buffer
Source: (USFWS 2020a)

ECT conducted an aerial interpretation of NWI data following the U.S. Army Corps of Engineers (USACE) St. Paul District's *Guidance for Offsite Hydrology/Wetland Determinations* (USACE and MBWSR 2016) to preliminary assess the location and size of streams, wetlands, and floodplains within the WRA and 1-mile buffer. Data available from the MNDNR Public Waters Inventory (PWI) was also reviewed for Minnesota mapped water resources within the WRA. The western portions of the 1-mile buffer were only evaluated using NWI data as no state-level water resource mapping is publicly available for South Dakota. Within areas of agricultural fields, ECT reviewed at least five years' worth of Google Earth aerial imagery for the presence of crop stress, standing water, and drowned crops that would suggest the presence of wetland hydrology within areas of mapped NWI and PWI wetlands. The aerial imagery interpretation technique provides a valuable method for developing preliminary information regarding the location, size, and potential regulatory status of streams, wetlands, and floodplains within the WRA and 1-mile buffer.

Potential wetland areas identified by aerial interpretation are similar to mapped NWI features; this review indicated that the WRA contains approximately 1,058.55-acres of potential wetlands (approximately 3% of land within the WRA, **Figure 5**). Aerial interpretation indicated that emergent wetland systems are the dominant wetland type and that potential wetland areas are also primarily associated with mapped streams and drainages. The aerial review also identified potential seasonal wetland areas within agricultural fields.

Based on aerial interpretation of the National Hydrography Dataset (NHD) and PWI, the approximate mileage of mapped streams within the entire WRA and 1-mile buffer as 101.11 miles (65.48 miles in the WRA with an additional 35.63 miles in the 1-mile buffer). Several large named streams are found throughout the WRA and 1-mile buffer. Beaver Creek and its tributary Little Beaver Creek flow northeast to southwest across the southeastern portions of the WRA and 1-mile buffer. Other named streams within the WRA and 1-mile buffer include Springwater Creek, which drains central portions of the WRA southwest to Beaver Creek, and Mud Creek which drains southern portions of the WRA and 1-mile buffer.

Streams, associated riparian corridors, and wetland systems have the potential to support a diverse assembly of wetland and riverine dependent fauna, serve as essential movement corridors for wildlife (e.g., bats, mammals, amphibians), and provide potential migratory stopover habitat for birds (refer to *Sections 5.0* and *6.0*). However, streams within the WRA and 1-mile buffer are likely impacted by the surrounding agricultural land use, limiting available habitat for aquatic

T&E species on-site. Representative photos of riparian corridors are included in the Photographic Log (**Appendix A**).

Floodplains of large rivers and streams may provide beneficial habitat for sensitive flora and fauna species, as these areas frequently contain wetland habitats. Federal Emergency Management Agency (FEMA) floodplain data (FEMA 2020) indicates a 100-year floodplain is present within the WRA along Beaver Creek. A floodplain associated with Annie Anderson Creek also overlaps the western portion of the 1-mile buffer (**Figure 4**).

4.3 Protected Areas

4.3.1 Public Lands and Conservation Easements

4.3.1.1 Public Lands

The USGS PAD-US (USGS 2016) indicates the WRA and 1-mile buffer contains two (2) publicly managed lands (**Figure 6**, **Appendix A**):

- Springwater Wildlife Management Area (WMA): This 152-acre site is located within northern portions of the 1-mile buffer adjacent to the WRA boundary at the intersection of 40th Avenue and 141st Street and is managed by MNDNR. Natural communities within the Springwater WMA include fen habitats, creeks, and wetlands (MNDNR 2020i). The site is not likely to be impacted by Project development.
- Rooster Ridge WMA: This 92-acre site is located within the southern portion of the WRA, south of Interstate 90 near the town of Beaver Creek, Minnesota, and is managed by MNDNR. Habitat on-site includes areas of planted prairie (MNDNR 2020i). This site is not likely to be impacted by Project development.

4.3.1.2 Conservation Easements

The U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) Conservation Reserve Program (CRP) is a federally funded conservation program that provides farmers with assistance and resources to convert highly erodible land to resource-conserving vegetative cover to enhance the environmental quality of the surrounding region (USDA-FSA 2020). The Minnesota Conservation Reserve Enhancement Programs (CREP) is a partnership between USDA and Minnesota Board of Water and Soil Resources (BWSR) that implements programs to improve water quality and habitat within agricultural areas of Minnesota (BWSR 2020a). Similarly, the South Dakota CREP is focused on increasing pheasant habitat in addition to improving water quality and flood control within the James River watershed in South Dakota (South Dakota Habitat Pays 2020).

Land cannot be enrolled in the CREP without first being enrolled in the CRP. The CREP is a partnership between county, state, and federal governments, while the CRP is a federal government program. Both programs are voluntary and focus on conserving environmentally sensitive land, with CRP contracts ranging from 10-15 years in length and Minnesota CREP contracts being a 15-year agreement or a perpetual easement (USDA-FSA 2020; BWSR 2020a). South Dakota CREP programs are limited to a maximum of 15 years (USDA FSA 2011).

The National Conservation Easement Database (NCED) located three (3) areas within the eastern portion of the WRA totaling approximately 22-acres, which are enrolled in the Minnesota CREP. Two (2) Minnesota CREP easement areas are located adjacent to each other along Beaver Creek. They comprise 7.40 acres and 10.20 acres and have an expiration year of 2052. An additional CREP property is also mapped within the WRA south of County Highway 4 and north of I-90. This area comprises 4.7 acres and also has an expiration date of 2052. No enrolled South Dakota or Minnesota CREP properties are located within the 1-mile buffer (**Figure 6**).

In addition, the CRP and CREP registered property, under the BWSR Reinvest in Minnesota (RIM) Reserve Program, BWSR acquires conservation easements to permanently protect and restore natural resources within the state (BWSR 2020b). Under the RIM, conservation easements remain under private ownership, but landowners receive financial assistance to establish conservation practices following plans developed by county Soil & Water Conservation Districts (SWCD). One (1) 39- acre property enrolled with the RIM program is located within the southern portion of the WRA near the town of Beaver Creek, Minnesota. (BWSR 2020b). No properties within the 1-mile buffer are enrolled in the RIM program (**Figure 6**).

4.3.2 Sensitive Habitats

4.3.2.1 Minnesota Native Plant Communities

The MNDNR defines native plant communities as communities in which native plants have not been greatly altered by human activity or by introduced organisms (e.g., invasive species) (MNDNR 2020f). Data available from the MN NHIS indicated one (1) small area of native community within the WRA (MNDNR NHIS 2020): Dry Hill Prairie (Southern) (UPs13d). One (1) native community is also mapped by MNDNR within the 1-mile buffer: Seepage Meadow/Carr, Tussock Sedge Subtype (WMs83a1).

The MNDNR ranks Seepage Meadow/ Carr communities as vulnerable to extirpation within Minnesota (MNDNR 2020f). Seepage Meadow/Carr communities are wetland communities commonly found within areas with ground water seepage such as streams, drainage ways, and bases of slopes. Within the Tussock Sedge subtype, vegetation is dominated by tussock sedge (*Carex stricta*) (MNDNR 2020f). One small 0.54-acre area within northern portions of the 1-mile buffer is mapped as Seepage Meadow/Carr community, Tussock Sedge Subtype. A discussion on native prairie communities, including Dry Hill Prairie (Southern) communities, is provided in *Section 4.3.2.3*.

Known areas of native plant communities within the WRA and Minnesota portion of the 1-mile buffer are small and offer limited habitat for T&E species. Equivalent state information on rare and native plant communities within South Dakota portions of the 1-mile buffer is not publicly available and was not reviewed for this report. Limiting Project development to agricultural areas of the WRA should limit impacts to remnant or vulnerable plant communities.

4.3.2.2 Minnesota Biological Survey Sites of Biodiversity Significance

The Minnesota Biological Survey (MBS) evaluates sites across Minnesota to assess the quality and condition of native habitats (MBS 2020). Following the assessment, MBS staff assigns the site a rank based on the presence of rare species, size and conditions of plant communities, and landscape context. Sites may be ranked into one of four categories: *Outstanding*, *High*, *Moderate*, or *Below*. *Outstanding* sites include areas with the highest occurrence of rare species or large intact areas of native plant communities. Sites ranked as *High* contain areas of good habitat or occurrences of rare species. *Moderate* sites may contain occurrences of rare species but are often moderately disturbed or landscapes that may potentially recover. *Below* sites include areas without rare species and native communities or sites surrounding high quality habitat that do not meet the standards of another MBS rank (MBS 2020; 2009).

Data received from MN NHIS indicated that 39 areas throughout the WRA and Minnesota portions of the 1-mile buffer have been reviewed by MBS and assigned a rank of *Moderate* or *Below* (MNDNR NHIS 2020). No areas within the WRA and Minnesota portions of the 1-mile buffer were ranked as *High* or *Outstanding*. Five (5) areas throughout the WRA and Minnesota portions of the 1-mile buffer have been ranked by MBS as *Moderate* including public and private lands (**Figure 7**). One (1) *Moderate* area is associated within portions of the Springwater WMA in the northern portion of the 1-mile buffer.

The remaining 34 ranked sites have been ranked as *Below* by MBS, including portions of the Rooster Ridge WMA located in the southern WRA near Beaver Creek, Minnesota (**Figures 6 & 7**). These areas may serve as wildlife corridors, but likely lack high quality or suitable habitat for rare or T&E species. No equivalent mapping and classifications of vegetation communities are publicly available for the South Dakota portions of the 1-mile buffer and were not included in the review for this report. Limiting Project development and impacts on areas of agricultural fields will likely avoid or reduce impacts to T&E species within the WRA.

4.3.2.3 Minnesota Native Prairies

The MNDNR monitors the location of intact native prairies as a subset of native plant community types within Minnesota. Currently, much of the native prairie habitat within southwestern Minnesota has been lost from the spread of agricultural areas. Disturbances from livestock grazing can also lead to the further spread of introduced grass species such as Kentucky bluegrass (*Poa pratensis*) and smooth brome (*Bromus inermis*) (Ehlke and Undersander 1990). Additionally, routine suppression of woody growth through frequent fires is needed to prevent succession of these communities into forested habitats. No equivalent mapping of native prairies is publicly available within South Dakota.

Known native prairie ecosystems on-site of the WRA are limited to one (1), 1.37-acre area within the southern WRA near Beaver Creek, Minnesota. This prairie habitat is classified by MNDNR as a Dry Hill Prairie (Southern) (UPs13d) native plant community and also overlaps a *Moderate* ranked MBS site. The Dry Hill Prairie (Southern) plant community is typically dominated by grass species but are also known for high densities of forbs. Common plant species include prairie phlox (*Phlox pilosa*), northern bedstraw (*Galium boreale*), and the small shrub wolfberry (*Symphoricarpos occidentalis*) (MNDNR 2020f). Avoidance of native prairie communities within the WRA and Minnesota portions of the 1-mile buffer and buffer should limit impacts to T&E species that may utilize these areas. If avoidance of native prairie communities is not possible, the development of a *Native Prairie Protection Plan* would determine steps to minimize impacts to grasslands within the WRA and 1-mile.

4.3.2.4 Minnesota Railroad Right-of-Way Prairies

The MBS also monitors native prairie remnants along active railroad rights-of-way (ROW) within the state of Minnesota. Railroad ROW prairies are important sites as they conserve natural plant communities and provide habitat for several rare species in a landscape now dominated by agriculture (Merchant and Biederman 1999). No equivalent mapping is available for review of South Dakota portions of the 1-mile buffer.

Data available from the MN NHIS indicated two (2) areas of railroad ROW prairies along the Nobles Rock Railroad along County Highway 4 near Beaver Creek, Minnesota within the southern WRA (MNDNR NHIS 2020). One (1) area of mapped railroad ROW prairie also overlaps the Dry Hill Prairie (Southern) area designated by MNDNR. Railroad ROW prairie remnants could provide habitat for sensitive species within the WRA and 1-mile buffer, especially T&E plant species. These areas will not be impacted by Project development. If avoidance of native prairie communities is not possible, the development of a *Native Prairie Protection Plan* would determine steps to minimize impacts to grasslands within the WRA and 1-mile buffer.

4.3.2.5 Potentially Undisturbed Land (Virgin Sod)

South Dakota State University (SDSU) has developed a system for identifying areas of undisturbed land (virgin sod) within eastern South Dakota and the Prairie Coteau and Lac Qui Parle landscapes in southwestern Minnesota. This system "identifies and removes all tillage and physical land disturbance history to accurately identify the location of lands with the highest probability of being truly native (virgin) sod" (MNDNR 2017; Bauman, Carlson, and Butler 2016).

Review of SDSU data indicates that one (1) area of protected potentially undisturbed lands is associated with portions of the Springwater WMA within northern portions of the 1-mile buffer. Additional mapped areas of potentially undisturbed lands are scattered throughout the WRA and 1-mile buffer and are generally associated with riparian, and MBS evaluated areas. The majority of the WRA is likely to be frequently disturbed by agricultural use.

4.3.2.6 Regionally Significant Ecological Areas

Regionally Significant Ecological Areas (RSEA) are MNDNR identified areas of natural communities/habitat that provide important ecological functions such as habitat connectivity, T&E species habitat, and groundwater recharge (MNDNR 2020g). The WRA and 1-mile buffer does not contain areas designated as RSEA. No equivalent areas were identified by publicly available information for portions of the 1-mile buffer within South Dakota.

4.3.2.7 Designated Critical Habitat

The USFWS Critical Habitat portal provides information regarding T&E Species Critical Habitat designation. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a T&E species, and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but is critical to its recovery (USFWS 2017).

USFWS designated critical habitat for the Topeka shiner is located in Rock County, Minnesota, along the border with Minnehaha County, South Dakota (USFWS 2004). Portions of Springwater Creek, Beaver Creek, Little Beaver Creek, Mud Creek, as well as their tributaries have been designated as critical habitat within sections of the WRA and 1-mile buffer (**Figure 7**). Primary threats to the Topeka shiner in this region of Minnesota and South Dakota include sedimentation and agricultural practices from surrounding areas (USFWS 2004). Development of the Project and 1-mile buffer would be sited to avoid areas of Topeka shiner critical habitat to the greatest extent practicable. If temporary impacts (e.g., crane walks) within waterways that are designated critical habitat or with Topeka shiner occurrences are unavoidable, adherence to best management practices (BMPs) during construction will minimize effects to the Topeka shiner.

4.3.2.8 Habitat of Fragmentation Concern

Habitat fragmentation occurs when large tracks of land are converted to other vegetation types, such that only scattered fragments of such habitat remains, resulting in overall habitat loss, increase in edge habitat and edge effects, and isolation effects (Faaborg et al. 1993). Ecological impacts of habitat fragmentation may include interruption or alterations to natural processes, reduction in habitat connectivity, and stress on species and natural communities (Pearsall 2012).

Effects of fragmentation on the ecology of forest ecosystems have been widely examined, but much of the literature focuses on a larger spatial scale than that represented by the extent of most wind energy projects (National Research Council 2007). Loss and fragmentation of native prairies and grasslands and displacement of grassland-associated species is a concern, particularly for area-sensitive species (Fletcher 2005; Ribic et al. 2009; Shaffer and Buhl 2015; Sliwinski and Koper 2012).

The USFWS WEG defines habitat fragmentation as, "the separation of a block of habitat for species into segments, such that the genetic or demographic viability of the populations surviving in the remaining habitat segments is reduced [...]" Habitat fragmentation is of particular concern when species require large expanses of habitat for activities such as breeding or foraging (USFWS 2012).

The WRA and 1-mile buffer are located in a region of Minnesota and South Dakota where wooded habitat is often scarce, and much of the natural tallgrass prairie community has been replaced by agriculture or small isolated patches of forest, tree rows, and patches of functional grassland. Much of the WRA and 1-mile buffer contains cultivated cropland. Woodlands are scarce within

the WRA and 1-mile buffer. Wetland areas of the WRA are mainly limited to emergent areas along riparian corridors, and functional grasslands are typically limited to a few small sites within publicly managed lands (e.g., Springwater WMA), railroad ROWs, and MBS reviewed areas. Large contiguous areas of prairie are unlikely to occur within the WRA.

Facility development in the areas that contain less grasslands, wetlands, and woodlands would likely have lower direct (e.g., habitat loss) and indirect (e.g., displacement) impacts to wildlife. Limiting the footprint of proposed developments to cropland, avoiding clearing of undeveloped land to the maximum extent feasible, as well as using previously developed roads and transmission corridors could help to minimize additional fragmentation.

5.0 Threatened and Endangered Species

5.1 Federally Listed Species

Federally listed species are protected under federal law by the Endangered Species Act of 1973 (ESA) (United States Code [U.S.C.], Title 16, Chapter 35, Sections 1531 through 1544). The USFWS IPaC tool provides information regarding federally listed T&E, proposed, and candidate species on a county-by-county basis. The unofficial list of species from IPaC (accessed January 15, 2020) indicates that the WRA and 1-mile buffer is within the range (i.e., contain documented records and have the potential to harbor critical habitat) of one (1) endangered and five (5) threatened species (USFWS 2020b) (**Table 3**, **Appendix B**). No proposed or candidate species were listed.

Table 3. USFWS IPaC Result for Rock County, Minnesota and Minnehaha County, South Dakota

Common Name	Scientific Name	Status*		Suitable Habitat	Potential to Impact
		Federal	State (MN/SD)		
Northern long-eared bat	*Myotis septentrionalis*	LT	SC/-	Summer roosts within forest systems often associated within riparian areas for foraging. Overwinters within cave systems.	Low
Red knot	*Calidris canutus rufa*	LT	-/-	Shoreland habitats including tidal flats, mudflats, and open sandy beaches	Low
Topeka shiner	*Notropis topeka*	LE	SC/-	Prefer slow moving waters of midsize prairie streams including oxbows and tributaries outside of the main river channel	Low
Dakota skipper	*Hesperia dacotae*	LT	SE/-	Moist bluestem prairies as well as upland dry prairies	Low
Prairie bush-clover	*Lespedeza leptostachya*	LT	ST/-	Commonly found within mesic to dry-mesic prairies with course textured soils of gravel and sand	Low
Western prairie fringed orchid	*Platanthera praeclara*	LT	SE/-	Remnant prairies and sedge meadow habitats with limited livestock grazing	Low

* LE = federally endangered
LT= federally threatened
SE= state endangered
ST= state threatened
SC= state species of special concern

Source: (USFWS 2020b; MNDNR 2013; South Dakota Department of Game, Fish & Parks 2016).

5.1.1 Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is a migratory bat species that forages and travels within forested habitat, including upland forest, lowland forest, forested linear elements such as tree-lined hedgerows and stream corridors, and occasionally adjacent and interspersed emergent wetlands, old fields, and agricultural fields (USFWS 2014b). During summer, this species roosts singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags (typically 3 inches or greater diameter at breast height [DBH]) in upland and lowland woodlots and tree-lined corridors (USFWS 2014b). Studies by Henderson and Broders (2008) determined that the northern-long eared bat prefers areas of intact forested habitats and did not travel more than 255 feet (28 meters) from the edge of intact forest stands. Studies of female northern long-eared bats in West Virginia also determined that this species forages within forested stands between 114-161 acres (Owen et al. 2002). However, in areas dominated by agriculture, northern long-eared bats have been found to use woodlots and riparian areas as little as 15-49 acres (Henderson and Broders 2008; Foster and Kurta 1999). Generally, northern long-eared bats migrate between summer roosting habitat and winter hibernacula between mid-August and mid-October in the fall, and between mid-March and mid-May in the spring. Fall swarming and spring staging habitat for the northern long-eared bat generally consists of a variety of forested habitats for roosting, foraging, and travel and are typically within 5-miles of a hibernaculum (USFWS 2014b).

This species occurs throughout Minnesota and is known to overwinter within caves and mine systems of the state (MNDNR 2020e). In South Dakota, the northern long-eared bat is more common along the western boundary of the state near the black hills, but it has also been observed within eastern regions of the state (South Dakota Bat Working Group 2004). Based on publicly available records, the closest known northern long-eared bat hibernacula is located within Kasota, Oshawa, and Traverse Townships in Le Sueur County, Minnesota, over 120 miles northeast of the WRA and 1-mile buffer. There are no known maternity roost trees or hibernacula within Rock County for northern long-eared bat (MNDNR and USFWS 2018).

Forest cover is scarce in the WRA and 1-mile buffer (approximately 362 acres or 1.16% of the WRA) and is present mostly as small isolated woodlots which are less than 10 acres. The absence of large tracts of high-quality woodlands and/or floodplain forests within the WRA limit the likelihood of northern long-eared bats occurring within the WRA and 1-mile buffer. Additionally, previous acoustic and fatality surveys have indicated that northern long-eared bat presence is rare within the region, including portions of the WRA and 1-mile buffer (Kreger, Hyzy, and Solick

2019; Bishop-Boros, Solick, and Kreger 2017; Chodachek et al. 2015; 2017; Chodachek and Gustafson 2018; Chodachek, Adachi, and DiDonato 2015; G. D. Johnson et al. 2000). Therefore, based on the lack of habitat within the WRA and lack of positive identification of northern long-eared bats in regional studies, the potential to impact this species would be considered low.

5.1.2 Red Knot

The red knot (*Calidris canutus rufa*) is a species of shorebird most commonly found along tidal flats shores of large water bodies during migratory and winter periods. The red knot breeds outside of Minnesota within the tundra of the Artic (Audubon Society 2020). Red knots are rare within the state of Minnesota and are most commonly seen near Duluth, Minnesota, approximately 300 miles northeast of the WRA. In southern Minnesota, some red knots have been known to use sewage treatment plants in the southern portion of the state. In South Dakota this species is considered uncommon and sporadic, with observations mainly known from LaCreek NWR in southwestern South Dakota and Lake Preston in eastern South Dakota located approximately 259 miles southwest and 60 miles northeast of the WRA and 1-mile buffer respectively (USFWS 2014c).

Wetland areas comprise a minimal portion, approximately 3%, of the WRA and 1-mile buffer. Additionally, these wetland areas are predominately limited to emergent riparian areas along streams or seasonally flooded agricultural fields and the Beaver Creek waste management ponds located approximately 0.30 miles north of the intersection of I-90 and 60th Avenue. Large lakes containing mudflats that would provide high quality suitable shoreland habitat for the red knot, are not present within the WRA or 1-mile buffer. It is unlikely that the red knot would be found within the WRA and 1-mile buffer, and thus the potential to impact the red knot would be considered low.

5.1.3 Topeka Shiner

The Topeka shiner (*Notropis topeka*) is found within river systems of the central prairie region of the U.S., including Minnesota and South Dakota. Topeka shiners are typically found within small to mid-sized rivers with perennial, or year-round flow, but have been known to tolerate intermittent streams, oxbows, and side channel habitats during dry times such as summer months or times of drought. Topeka shiners breed within pool areas of streams and have been known to spawn in areas surrounding green sunfish (*Lepomis cyanellus*) and orangespotted sunfish (*Lepomis cyanellus*) nests as well as in areas of rubble and boulder substrates (USFWS 2004).

Several large perennial streams systems including Springwater Creek, Beaver Creek, Little Beaver Creek, and Mud Creek cross through portions of the WRA and 1-mile buffer (**Figures 4 & 5**). Portions of these stream systems and their associated tributaries have been designated by USFWS as critical habitat (USFWS 2004). Additionally, data available from the MN NHIS indicated known occurrences of Topeka shiner throughout the WRA and 1-mile buffer within larger streams and their tributaries with the most recent records within the WRA and 1-mile buffer being from 2017 (MNDNR NHIS 2020). Avoidance of impacts to stream systems to the extent practicable, and particularly critical habitat, will limit impacts to Topeka shiner within the WRA.

Walleye Wind has sited facility infrastructure such as turbine pads and access roads to avoid crossing streams that have designated critical habitat and known occurrences of the Topeka shiner. Additionally, collection lines will be bored underneath stream systems designated as critical habitat or with occurrences to avoid direct impacts to Topeka shiner. If crane walks are to occur close to or within waterways that are designated critical habitat or may have Topeka shiner occurrences, Walleye Wind will employ BMPs, where practicable, to ensure that impacts to any potential Topeka shiner populations are minimized. The potential to impact the Topeka shiner is considered to be low.

5.1.4 Dakota Skipper

The Dakota skipper (*Hesperia dacotae*) is a threatened species of butterfly historically found from northeast Illinois to southern Saskatchewan, Canada. Currently, much of the Dakota skipper's preferred habitats of moist bluestem prairie and upland tallgrass prairie habitat has been lost to the spread of agriculture within the region (USFWS 2014a). Designated critical habitat for the Dakota skipper is not located within the vicinity of the WRA and 1-mile buffer. The closest area of designated critical habitat is located in Pipestone County, Minnesota, approximately 23 miles north of the WRA and 1-mile buffer near Holland, Minnesota (USFWS 2018).

Based on available MNDNR mapping, native prairie habitat within the WRA and 1-mile buffer is isolated to a few areas of remnant prairies along railroads (totaling no more than 9 acres) and MNDNR WMAs. Dakota skippers are sensitive to habitat degradation and are almost always absent from overgrazed or otherwise degraded prairies (USFWS 2014a). The windshield survey indicated that the available grassland habitat of the WRA and 1-mile buffer is comprised mostly of grazed pasturelands, further limiting the availability of suitable habitat with the WRA. It is unlikely that Dakota skipper would occur within the WRA and 1-mile buffer, and thus the potential to impact this species is considered to be low.

5.1.5 Prairie Bush Clover

The prairie bush clover (*Lespedeza leptostachya*) is a federally threated species of clover endemic to the tallgrass prairie region of the Upper Mississippi River Valley (USFWS 2009). This species is most commonly found within areas of thin soils over limestone, sandstone, and quartzite bedrocks (USFWS 1988). Large populations of prairie bush clover are known to occur within northern Iowa and Southern Minnesota within the Des Moines River and Little Sioux River Basins (USFWS 1988). Within Minnesota, prairie bush clover populations are found within the southwestern portions of the state near the Des Moines River Valley (MNDNR 2020e). Prairie bush clover is not common within prairies of southeastern South Dakota (South Daokta Natural Heritage Program 2018).

Functional grassland habitat within the WRA and 1-mile buffer is limited to only a few small areas along railroad ROW and MNDNR WMAs. Grasslands within the WRA and 1-mile buffer are not likely to provide suitable habitat for prairie bush clover. It is unlikely that prairie bush clover would occur within the WRA and 1-mile buffer and thus the potential impact to this species is considered to be low.

5.1.6 Western Prairie Fringed Orchid

Western prairie fringed orchid (*Platanthera praeclara*) grows within a variety of grassland systems including tallgrass prairies and meadows as well as along old fields and un-mowed roadside ditches (USFWS 2003). Within Minnesota, populations of western prairie fringed orchid are known to occur within 10 counties, including Rock County as well as Pipestone County and Nobles County which border Rock County to the north and east, respectively. Historic populations within Houston, Freeborn, and Kandiyohi Counties are assumed to have been extirpated (MNDNR 2020e). The western prairie fringed orchid is not known to occur in South Dakota (USFWS 2003; 1996).

Data available from the MN NHIS did not indicate occurrences of this species within the WRA and 1-mile buffer (MNDNR NHIS 2020). Though western prairie fringed orchids may occur within undisturbed fallow fields, the windshield survey indicated that pastures and fields within the WRA and 1-mile buffer were observed to be frequently disturbed and grazed. Suitable habitat for the western prairie fringed orchid species is likely limited to only a few small areas within MNDNR WMAs and mapped MNDNR prairies along railroad ROWs and thus the potential to impact this species is considered to be low.

5.2 State-listed Species

Chapter 6134 of the Minnesota Administrative Rules and Chapter 34A-8 of the South Dakota Codified Laws both confer legal protection to state endangered and threatened species, including plants and animals, within the states of Minnesota and South Dakota respectively. Under Minnesota law, a person "may not take, import, or sell any portion of an endangered or threatened species." However, species listed as special concern and watchlist are exempt from these conditions, though their designations are usually a reflection of dwindling populations in the state.

The MNDNR maintains historical records and known locations of Minnesota's rare, threatened, and endangered species. The MN NHIS provides electronic records and data on rare resources within the state, including records on the location of endangered, threatened, and special concern plant and animal species. MN NHIS provides data in both public and confidential formats. Under MNDNR license agreement LA-930, on January 8, 2020 and June 30, 2020, ECT accessed the MN NHIS rare features database to review element occurrence records of T&E species known within the WRA and surrounding 1-mile buffer.

SD GFP also maintains a publicly available list of state and federally-listed threatened, endangered, and candidate species with documented occurrences in South Dakota on a county by county basis. This list is compiled from the SD NHDB and is published by the SD GFP; the list was last updated in 2016 (South Dakota Department of Game, Fish & Parks 2016).

The MN NHIS data for Rock County, Minnesota and the SD GFP list for Minnehaha County, South Dakota identified one (1) state endangered and one (1) state threatened species with the potential to occur within or near the WRA and 1-mile buffer. (**Table 3**, **Appendix B**). In addition, MN NHIS data identified three (3) species of special concern. One (1) of these species, the Topeka shiner, is also federally listed as endangered. One (1) watch list species and five (5) mussel species were also identified by MN NHIS. Though mussel species are not listed as state T&E species in Minnesota, MNDNR tracks mussel populations throughout the state through the Minnesota Statewide Mussel Survey (MNDNR 2020c). Mussel occurrence records documented by MN NHIS within the WRA and 1-mile buffer may indicate high water quality and suitable aquatic habitat for T&E species.

Table 4 below provides a summary of species within known occurrences within the WRA and 1-mile buffer based on data from MN NHIS received on January 8, 2020 and June 30, 2020 and the SD NHDB county list. **Figure 7** depicts the results of the MH NHIS data request.

Table 4. MN NHIS and SD NHDB List Results

Common Name	Scientific Name	Status* (MN/SD/FED)	Location Detail†	Habitat Requirements	Potential for Impact‡	Element Category
Threeridge	*Amblema plicata*	-/-/-	WRA	Variety of stream habitat including small to streams to large river systems with various currents. Most often prefers areas of sand and gravel substrates.	Moderate	Mussel
Cylindrical papershell	*Anodontoides ferussacianus*	-/-/-	WRA	Silt substrates of shallow waters	Moderate	Mussel
Short-eared owl	*Asio flammeus*	SC/-/-	WRA	Found with a variety of open community habitats including prairies, pastures, sedge meadows, and peatlands. Prefers areas with large spaces of habitat.	Moderate	Bird
Western foxsnake	*Elaphe vulpina*	W/-/-	1-mile buffer	Forest edge habitats. May also use manmade structures such as barns and sheds.	Low	Reptile
White heelsplitter	*Lasmigona complanata*	-/-/-	WRA	Found in medium to large rivers as well as open waters such as lakes and bays. Prefers quiet currents and substrates of mud and fine sand.	Moderate	Mussel
Mudwort	*Limosella aquatica*	SC/-/-	1-mile buffer	Most commonly occurs along edges of lowland prairie pools and rock outcrops.	Moderate	Plant
Northern river otter	*Lontra canadensis*	-/ST/-	1-mile buffer	Riparian areas and wetland margins with vegetation for foraging. Commonly den within beaver dens, fall trees, and logjams.	Low	Mammal
Topeka shiner	*Notropis topeka*	SC/ - /LE	WRA & 1-mile buffer	Prefers slow moving waters of midsize prairie streams including oxbows and tributaries outside of the main river channel.	Low	Fish
Giant floater	*Pyganodon grandis*	-/-/-	WRA	Mud substrates of pools, creeks, and rivers.	Moderate	Mussel
Lined snake	*Tropidoclonion lineatum*	SC/SE/-	1-mile buffer	Variety of habitats including prairies/grasslands and residential properties.	Low	Reptile

Common Name	Scientific Name	Status* (MN/SD/FED)	Location Detail†	Habitat Requirements	Potential for Impact‡	Element Category
Lilliput	*Toxolasma parvums*	-/-/-	WRA	Sands, gravel, and mud of shallow lakes, ponds, and rivers.	Moderate	Mussel

* SE = state endangered.
ST = state threatened
SC = state special concern.
W =state watch list, state monitored but no legal protection
LE= federally endangered
LT= federally threatened

†Indicates whether the element occurrence overlaps the WRA boundary, or 1-mile buffer boundary.
‡Potential for impact based on preliminary review and does not preclude the need for further review of potential impacts if suitable habitat is targeted for development or during focused Tier 3 surveys.

Source: (MNDNR NHIS 2020; South Dakota Department of Game, Fish & Parks 2016).

The WRA and 1-mile buffer may contain suitable habitat for the species included in the MN NHIS results and the SD GFP list (**Table 4**). The WRA and 1-mile buffer are generally dominated by land under agricultural use such as row crops and open cattle pastures not undisturbed grasslands and prairies and various aquatic habitats, such as wetlands, streams, and open water, which are more suitable habitats for these species. Appropriate planning and strategic siting of turbines, roads, and infrastructure to avoid disturbing undeveloped habitats (e.g., grasslands or wetland pockets) or constructing new crossings across large ditches, would likely reduce or eliminate the potential risks to state listed species if found within these remnant habitats. The following paragraphs detail the specific habitats for the state listed species with the greatest potential to occur within the WRA and the 1-mile buffer.

5.2.1 Northern River Otter

The northern river otter (*Lontra canadensis*) is listed as threatened in South Dakota. This species occurs in a variety of habitats but is mostly associated with areas with abundant riparian vegetation. Typically, northern river otters den within beaver bank dens, fallen trees, and logjams (South Dakota Department of Game, Fish & Parks 2012b). Within the Northern Great Plains of Minnesota and South Dakota, river otters are generally limited to stream and river systems with abundant populations of beaver. Beaver dams provide suitable ponds and lakes for otter foraging and access to water in winter (South Dakota Department of Game, Fish & Parks 2012b).

Once common throughout North America, otter populations have declined due to the loss of habitat from wetland loss and degradation, as well as overhunting and harvest. Populations of northern river otters are known from the Big Sioux River in South Dakota, approximately 16 miles west of the WRA and 1-mile buffer (South Dakota Department of Game, Fish & Parks 2012b). In

Minnesota, river otters are more commonly found within the northern areas of the state, but have been known to occur within southern river systems as well (MNDNR 2020h).

Studies of suitable stream systems for river otters in South Dakota indicated that stream systems with high levels of phosphorus and nitrogen as well as high turbidity, were generally associated with agricultural areas and unsuitable for the northern river otter (Kiesow and Dieter 2005). Additionally, the largest stream system within the vicinity of the WRA and 1-mile buffer is the Rock River approximately 4 miles east near the City of Luverne, Minnesota. The northern river otter is more likely to occur within the areas of the Rock River than the WRA and 1-mile buffer due to the greater probability for larger wetland areas to occur along the Rock River than within streams of the WRA.

The dominant agricultural landscape of the WRA and1-mile buffer may influence suitability of streams and rivers; thus, the likelihood of river otters occurring within the WRA and 1-mile buffer is low. Also, though the river otter is state-listed as threatened within South Dakota, this species is not afforded protection under Minnesota T&E species laws. Project development will occur within the WRA in Minnesota and not in the 1-mile buffer, in South Dakota. Potential impacts to the river otter are considered to be low.

5.2.2 Lined Snake

The lined snake (*Tropidoclonion lineatum*) is a small snake most commonly found in undisturbed prairie habitats along woodland edges and corridors (South Dakota Herps 2020). The nearest known populations of lined snake occur located along the Big Sioux River corridor and Palisades State Park 13 and 3 miles west of the WRA and 1-mile buffer respectively (South Dakota Herps 2020). Within Minnesota, populations of lined snake are only known to occur with Blue Mounds State Park located approximately 4 miles northeast of the WRA and 1-mile buffer (MNDNR 2020e).

Undisturbed prairie and woodland habitat is limited within the WRA and 1-mile buffer, reducing the likelihood of the lined snake to occur on-site. The lined snake is not afforded protection under Minnesota T&E species laws. Impacts from project development to lined snake populations within the vicinity of the WRA and 1-mile buffer, if present, are not anticipated and thus potential impact to this species are considered to be low.

6.0 Avian Resources

6.1 Birds of Conservation Concern

Although not protected under the ESA, numerous bird species have been identified by USFWS as birds of conservation concern (BCC). These are "species, subspecies, and populations of migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS 2008). IPaC results for Rock County, Minnesota and Minnehaha County list 16 BCCs: American golden-plover (*Pluvialis dominica*), black tern (*Chlidonias niger*), black-billed cuckoo (*Coccyzus erythropthalmus*), bobolink (*Dolichonyx oryzivorus*), Franklin's gull (*Leucophaeus pipixcan*), Henslow's sparrow (*Ammodramus henslowii*), Hudsonian godwit (*Limosa haemastica*), lesser yellowlegs (*Tringa flavipes*), marbled godwit (*Limosa fedoa*), Nelson's sparrow (*Ammodramus nelsoni*), red-headed woodpecker (*Malenerped erythrocephalus*), rusty blackbird (*Euphagus carolinus*), semipalmated sandpiper (*Calidris pusilla*), and wood thrush (*Hylocichla muestelina*). Though not a BCC, the IPaC results also listed the bald eagle (*Haliaeetus leucocephalus*). Both the bald and golden eagle are protected throughout the United States under the Bald and Golden Eagle Protection Act (BGEPA 1940).

Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The WRA and 1-mile buffer are in BCR #22, the eastern tall grass prairie (Birds Studies Canada 2014; NABCI 2000). BCR #22 includes what was formerly tall and lush grasslands of the Great Plains, but the modern landscape is dominated by agriculture.

6.2 Avian Migration

The IPaC tool identified select migratory birds, protected under the Migratory Bird Treaty Act (MBTA 1918), which may seasonally migrate within the WRA and 1-mile buffer. Flooded agricultural fields are seasonally common in largely agricultural landscapes and may occur throughout the WRA and 1-mile buffer. These ephemeral wet areas are noteworthy because they can provide a critical resource to migrant shorebirds, waterfowl, and other avian species as stopover locations during migration. Review of aerial imagery indicated some fields that have the

potential to be wet seasonally and could provide stopover locations for migrants. However, these wetland areas represent only a small portion of the WRA (approximately 3% of the WRA).

Review of publicly available eBird data revealed that migratory avian species have been observed within the vicinity of the WRA and 1-mile buffer. Several species listed as BCC within BCR #22, including the American golden-plover, are associated with the Touch the Sky Prairie located approximately 2miles northeast of the WRA and 1-mile buffer. Blue Mounds State Park, approximately 3 miles northeast of the WRA and 1-mile buffer, may also attract large numbers of migratory species (eBird 2020). However, suitable grassland and prairie habitat within the boundary of the WRA and 1-mile buffer is limited.

6.3 Local Occurrence Records

Publicly available data from eBird indicates that 258 species have been recorded in Rock County, Minnesota and 282 species have been recorded within Minnehaha County, South Dakota (eBird 2020). These data also show that many state T&E avian species, as well as bald and golden eagles, have been documented within the vicinity of the WRA and 1-mile buffer. Touch the Sky Prairie, Blue Mounds State Park, and Palisades State Park are located approximately 2 and 3 miles northeast and 2 miles west of the WRA and 1-mile buffer respectively. These natural areas attract a wide variety of avian species and nearly 220 species have been observed within Blue Mounds State Park alone (eBird 2020). The following paragraphs detail Minnesota T&E avian species with known occurrences within the WRA and 1-mile buffer. No South Dakota T&E species had records within the WRA and 1-mile buffer.

The horned grebe (*Podiceps auritis*), a Minnesota state endangered species, has one (1) occurrence record from 2005 within the southern portion of the WRA. This record is associated with the Beaver Creek wastewater treatment ponds, approximately 0.30 miles north of the intersection of Interstate 90 and 60th Avenue. Wetlands and open water in which the horned grebe may utilize as stopover habitat make up only 3% of the WRA. Project impacts to horned grebe are not anticipated.

Wilson's phalarope (*Phalaropus tricolor*) a Minnesota state threatened species, has ten (10) occurrence records within the WRA; these points are associated with the Beaver Creek wastewater treatment ponds, approximately 0.30 miles north of the intersection of Highway 90 and 60th Avenue. Wetland areas, including open water habitat, in which Wilson's phalarope use as potential stopover habitat comprise approximately 3% of the WRA.

Multiple Minnesota species of special concern have occurrence records from Touch the Sky Prairie NWR and Blue Mounds State Park: Nelson's sparrow (*Ammodramus nelsoni)*, short-eared owl, lark sparrow (*Chondestes grammacus*), trumpeter swan (*Cygnus buccinator*), peregrine falcon, Franklin's gull (*Leucophaeus pipixcan*), marbled godwit (*Limosa fedoa*), American white pelican (*Pelicanus erythrorhynchos*), purple martin (*Progne subis*), Forster's tern (*Sterna forsteri*), and Bell's vireo (*Vireo belli*). Species of special concern observed within Palisades State park include the lark sparrow, Franklin's gull, purple martin, and Forester's tern (eBird 2020). Of these species, only lark sparrow, American white pelican and Forster's tern have public records within the WRA and 1-mile buffer (eBird 2020).

Data from the Breeding bird survey (BBS) conducted by the USGS Patuxent Wildlife Research Center (Pardieck et al. 2018) were available for BBS routes within 5 miles of the WRA. The Ash Creek BBS route is located approximately 3 miles east of the WRA and 1-mile buffer near Luverne, Minnesota. A total of 115 breeding and nonbreeding bird species have been detected along the Ash Creek BBS route; many species documented along the route are listed as BCC by USFWS for BCR #22 (USFWS 2008). The MBBA reports a total of 105 species with confirmed, probable, or possible breeding status in Rock County, Minnesota (Pfannmuller et al. 2017). The SDBBA also lists a total of 200 species within confirmed, probable, or possible breeding status in Minnehaha County, South Dakota (South Dakota Department of Game, Fish & Parks 2012a).

Habitat for bird species of concern is limited within the WRA. Together, cropland and developed space comprise approximately 97% of the WRA (Yang et al. 2018; MRLC Consortium 2019) and likely limits the relative attractiveness of the WRA for bird species of concern given the limited amount and connectivity of natural landcover types. Franklin's gull uses cropland for foraging; however, Tier 3 site-specific studies are needed to accurately assess avian species that use the WRA and 1-mile buffer throughout the year.

6.4 Eagles and Other Raptors

6.4.1 Eagle Occurrence

Bald eagle occurrence in Rock County, Minnehaha County, and the regional vicinity of the WRA and 1-mile buffer is well documented (eBird 2020). Two (2) public occurrence records have been reported within portions of the WRA. Most of the occurrence records for bald eagles within the WRA are along Interstate 90, but there is likely a detection bias of observers traveling along the interstate. One (1) record from 2011 indicated two (2) birds, approximately 0.50 miles east of

intersection of Interstate 90 and 60th Avenue. The other record from 2014, is located approximately 1.50 miles west of the intersection of Interstate 90 and 60th Avenue (eBird 2020).

Bald eagle breeding has been documented in 700 locations within Minnesota, and it is estimated that approximately 1,300 nests occur within the state (MNDNR 2020e; 2020a). A nest survey conducted by MNDNR in 2005 indicated large numbers of eagle nests within Chippewa National Forest (150 nests) over approximately 280 miles northeast of the WRA and 1-mile buffer (MNDNR 2006). Within Rock County, a greater number of bald eagles observations have been recorded near Blue Mounds State Park near the vicinity of the WRA and 1-mile buffer (eBird 2020). Additionally, the Rock River, located approximately 5 miles east of the WRA at its nearest point, likely attracts foraging bald eagles within the region.

Bald eagles will nest in non-forested areas if there are large enough trees to hold the nest (Buehler 2000). Previous studies conducted by Western EcoSystems Technology, Inc (WEST) in 2016 indicated that there are two (2) known active bald eagle nests within the 10-mile buffer, southwest of the WRA along the Big Sioux River in South Dakota (Pickle, Rittenhouse, and Kreger 2016). Both eagle nests identified during the 2016 surveys along the Big Sioux River to the southwest of the current WRA were included and considered active during the 2018 survey period (**Figure 8**). There were also five (5) unidentified raptor nests that WEST considered to be consistent in size and structure of a bald eagle nests more than 6.5 miles away from the project area, as defined by West at the time of the survey. Three (3) of these potential bald eagle nests were located east and southeast of the reviewed Project area along the Rock River, and the remaining two (2) nests were located to the southwest along the Big Sioux River. One (1) nest was classified by WEST as occupied, inactive and the other four (4) nests were classified by WEST as inactive.

Additional avian surveys conducted by ECT in the spring of 2020 reviewed the current WRA boundary and 10-mile buffer, which was set based on the initial 12/30/19 WRA boundary, for potential bald eagle nests. ECT identified 10 active bald eagle nests within 10-miles of the current WRA. Six (6) of these identified active nests were previously identified by WEST in 2016 and 2018. One (1) historic eagle nest structure was identified by WEST in 2018 approximately 8.5 miles southwest of the current WRA boundary. However, this nest was not relocated during surveys in 2020 (**Figure 8**). ECT also identified one (1) alternate eagle nest within 1-mile of the WRA. However, further site visits in May 2020 showed that this nest had failed (**Figure 8**).

Winter habitat suitability for bald eagles is defined by food availability, presence of roost sites that provide protection from inclement weather, and absence of human disturbance (Buehler 2000).

Large concentrations of overwintering bald eagles have been documented in Minnesota near Red Wing and Wabasha, Minnesota, approximately 200 miles northeast of the WRA and 1-mile buffer (MNDNR 2020a). Though southwestern Minnesota has smaller concentrations of bald eagles than other parts of the state, publicly available data indicate that bald eagles have been observed within and near the WRA and 1-mile buffer during the winter months (December- February) especially along sections of Interstate 90 and the Rock River corridor (eBird 2020).

Forested areas account for approximately 1% of the WRA, limiting suitable habitat for nesting eagles within the WRA itself (Yang et al. 2018; MRLC Consortium 2019). Additionally, limited open bodies of water and water bodies, which bald eagles use for feeding, comprise a small portion of the WRA and 1-mile buffer greatly limiting foraging habitat for bald eagles. Larger river systems such as the Big Sioux and Rock Rivers located 14 miles west and 4 miles east of the WRA, respectively, are likely to attract a higher number of foraging and nesting eagles as evidenced by a larger concentration of previously identified nests along these rivers during past surveys. Additionally, siting of all Project facilities away from the one (1) identified alternate eagle within the 1-mile buffer, will avoid impacts to bald eagles within the WRA.

Golden eagles do not breed in Minnesota or South Dakota and occur infrequently during the winter and migratory periods (Kochert et al. 2002). One (1) observation of a golden eagle has been reported within the vicinity of the WRA, near Blue Mounds State Park, outside the eastern 1-mile buffer boundary (eBird 2020). Limited, potential grassland and herbaceous habitats comprise approximately 1% of the WRA (Yang et al. 2018; MRLC Consortium 2019). Some golden eagles in the eastern extent of their range will nest in forested landcover; however, forested areas only comprise approximately 1% of the WRA. Given the rarity of the golden eagle within the region and the lack of suitable habitat, it is unlikely that golden eagles would use the WRA and 1-mile buffer.

Both eagle species are protected by the Bald and Golden Eagle Protection Act of 1940. The bald and golden eagle are not currently listed by MNDNR or SD GFP within their respective states (MNDNR 2013; South Dakota Department of Game, Fish & Parks 2016).

6.4.2 Other Raptors of Concern

Data from eBird and MN NHIS indicate several raptor species (e.g., hawks, eagles, owls) have been documented in Rock County and Minnehaha County (eBird 2020). State-listed species included in those observations consist of:

- Burrowing owl, state-listed endangered (MN)
- Short-eared owl, state-listed special concern (MN)
- Peregrine falcon, state-listed threated (SD) and special concern (MN)
- Osprey, state-listed endangered (SD)

Several of these species could potentially use habitats near the WRA and 1-mile buffer and migrate through the region. The burrowing owl is a small ground nesting species. Burrowing owls nest in abandoned burrows of mammal species (e.g., badgers, prairie dogs, skunks) and prefer areas of open pastures and prairies. MN NHIS data indicated an occurrence of burrowing owls in 1990 in an area approximately 1.5 miles north of the WRA (MNDNR NHIS 2020). Much of the WRA is currently under active agricultural use and is likely unsuitable for use by burrowing owls and undisturbed pastures and fallow fields within WMAs, CREP, and RIM properties are small and uncommon within the landscape. Given the highly agricultural use of the site and the lack of evidence of owls in areas of previous occurrences, it is unlikely that burrowing owls would be currently found within the WRA and 1-mile buffer.

The short-eared owl is associated with grassland and herbaceous landcovers and has been observed within eastern portions of the WRA in 1978 (MNDNR NHIS 2020), but the current agricultural landscape of the WRA and 1-mile reduces the likely hood of this species occurring on-site. Peregrine falcon has been reported within Blue Mounds State Park and may migrate through or hunt in the WRA, but this species is not likely to nest in the WRA due to a lack of high cliffs or tall structures suitable for nesting (eBird 2020; Audubon Society 2020). Osprey's may also hunt along streams within region but are unlikely to nest or breed within the WRA and 1-mile buffer due to the lack of suitable forested habitat along river systems (Audubon Society 2020).

Turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and Swainson's hawk (*Buteo swainsoni*) constitute the highest fatalities of raptors at wind farms in the Prairie Avifaunal Biome of North America (AWWI 2019). Although none of these species have a federal or state-listed status, the American kestrel and Swainson's hawk are listed as Species of Greatest Conservation Need (SGCN) in the Minnesota Wildlife Action Plan (MNDNR 2016a). These species are commonly associated with open agricultural landscapes and have known occurrences within the WRA and 1-mile buffer (eBird 2020; Audubon Society 2020).

6.4.3 Raptor Migration

Several factors influence the migratory pathways of raptors, including weather and geographical features such as ridgelines and the shorelines of large bodies of water (Seeland et al. 2012). Raptors are likely to migrate through the WRA and 1-mile buffer in a broad front pattern, meaning birds spread over a wide area as opposed to a narrow or specific migration corridor. Given the lack of topographic features across the WRA, raptor migration is not expected to be more pronounced in the WRA compared to the surrounding region.

Undeveloped land and natural habitats in the regional vicinity of the WRA and 1-mile buffer provide habitat for raptors, including eagles. Migrant bald eagles are likely to occur within the WRA and in the regional vicinity; golden eagles may occur occasionally during winter and/or migration periods. Resident populations of bald eagle are not likely within the WRA and 1-mile buffer.

6.4.4 Stage 1 Eagle Conservation Plan Guidance Questions

The USFWS's Eagle Conservation Plan Guidance (ECPG) (USFWS 2013) lists questions that should be considered as part of the avian due diligence efforts associated with Stage 1 site assessment of the ECPG and corresponds to Tiers 1 and 2 of the USFWS WEG. Stage 1 of the ECPG is intended to evaluate broad geographic areas and assess the relative importance of various areas to resident breeding and nonbreeding eagles and migrant and wintering eagles. The ECPG questions regarding placing a prospective project site or alternate site(s) into the appropriate risk category include the following.

1. ***Does existing or historical information indicate that eagles or eagle habitat (including breeding, migration, dispersal, and wintering habitats) may be present within the geographic region under development consideration?***

Public records indicate that bald eagles may be frequently seen within the WRA and 1-mile buffer (eBird 2020). Additionally, one (1) alternate bald eagle nest has been identified within the 1-mile buffer to the east of the WRA. However, the absence of large rivers and forested areas within the WRA suggests that eagles are unlikely to use the WRA for nesting as frequently as the surrounding region.

One observation of golden eagles was recorded in March 2019 within the Blue Mounds State Park to the northeast of the WRA and 1-mile buffer (eBird 2020). Golden eagles are rare within the region of the WRA and 1-mile buffer and are not likely to be impacted by the Project.

2. Within a prospective project site, are there areas of habitat known to be or potentially valuable to eagles that would be destroyed or degraded due to the project?

High-quality habitat is not present in the WRA, therefore, potentially valuable eagle habitat will not be destroyed or degraded due to the Project.

3. Are there important eagle use areas or migration concentration sites documented or thought to occur in the project area?

Previous avian use studies and existing public data indicate bald and golden eagles have been observed within the region of the WRA and 1-mile buffer (eBird 2020; Kreger and Suehring 2019), but these species are not likely residents of the WRA.

Further studies to obtain information regarding eagle use, winter roost, or migration concentration sites within the WRA and 1-mile buffer commenced in late August 2019 and will continue through mid-August 2020. Additional coordination with the USFWS and MNDNR is also planned to acquire this information.

4. Does existing or historical information indicate that habitat supporting abundant prey for eagles may be present within the geographic region under development consideration?

Existing or historical information does not indicate an extraordinary abundance of prey for eagles within the geographic region of the project.

5. For a given prospective site, is there potential for significant adverse impacts to eagles based on answers to above questions and considering the design of the proposed project?

Previous avian preconstruction due diligence studies (including but not limited to eagle nest surveys and winter use studies) conducted by WEST in 2016/2018 and ECT in 2020 did not locate active or alternate eagle nests within the WRA but did locate one (1) alternate nest within the 1-mile buffer and 10 active nests within the 10-mile buffer of the WRA.

Though bald and golden eagles have the potential to occur within the vicinity of the WRA and 1-mile buffer as migratory species, limited foraging and roosting habitat within the WRA limit the likelihood of these species occurring on-site of the Project. Additionally, the siting of all turbines greater than 1.6 miles from all known nests within the vicinity of the WRA should avoid impacts

to nesting eagles present within the 1-mile buffer. Adverse impacts to eagles are not anticipated. Furthermore, previous avian use surveys within the vicinity of the WRA and 1-mile buffer had no golden eagle observations and only documented low use of the study area by bald eagles (Kreger and Suehring 2019). Further Tier 3 site studies to assess the potential and magnitude of potential impacts to eagles at the WRA and 1-mile buffer are underway.

6.5 Sensitive Avian Habitat

Sensitive avian habitat is limited within the WRA and 1-mile buffer as cultivated cropland and pastures dominate the landscape. Although development (e.g., roads, fence lines, residences, and existing transmission lines) decreases quality of habitat, scattered woodlots, narrow tree-lined ditches, grassy areas and old fields, riparian corridors, etc., provide cover and resources to avian species typically found in agricultural areas.

Limited areas within the WRA may contain avian habitat and offer protection from disturbance. Portions of the Rooster Ridge WMA within the WRA may contain limited suitable prairie habitat for grassland-dependent species and foraging raptors. Additionally, inactive agricultural fields, pastures that are not actively farmed, remnant native grasslands (i.e., CREP and RIM parcels), and/or vegetated buffer strips often have the ecological functions of grasslands and can provide habitat for avian species, but these areas are small and sparse within the WRA and 1-mile buffer. It is difficult to predict which species may be attracted or persist throughout the entire nesting period within the WRA and 1-mile buffer.

6.5.1 Important Bird Areas

The National Audubon Society's Important Bird Areas (IBA) Program identifies, designates, and monitors what is believed to be important places for avian species. IBAs do not have legal status and are not reviewed by public entities prior to being established.

The Prairie Coteau Complex IBA is a designated IBA of state importance within Rock County. No IBAs of global or state importance are designated within Minnehaha County. The Prairie Coteau Complex IBA is located approximately 2 miles northeast of the WRA boundary at its closest point. The Prairie Coteau IBA is recognized for providing grasslands and prairie habitats for 71 Minnesota SGCN. This IBA is known to support populations of T&E species including the Minnesota state endangered Henslow's sparrow and loggerhead shrike (*Lanius ludovivianus*) (Audubon Minnesota 2015).

The majority of the WRA and 1-mile buffer is currently under agricultural use. Suitable grassland habitat is likely limited to idle fields, roadsides, and small areas of managed and protected lands (i.e., MNDNR WMAs, CREP registered properties [**Figure 6**]). Though high-quality habitat associated with these IBAs in the vicinity of theWRA and 1-mile area may attract sensitive avian species to the region, species are less likely to utilize lands within the WRA and 1-mile buffer.

6.5.2 Waterfowl Production Areas and Habitat

Waterfowl production areas are public lands managed by USFWS to protect and restore waterfowl habitat within the prairie pothole regions of the Dakotas, Minnesota, and Montana. These areas include wetland and grassland areas and are maintained under Wetland Management Districts (WMDs) (USFWS 2007). The Rock County Waterfowl Production Area is located approximately 6 miles northeast of the WRA and 1-mile buffer along the Rock River east of Blue Mounds State Park. Additionally, the Windom WMD also maintains the Touch the Sky Prairie Unit of the Northern Tallgrass Prairie NWR (USFWS 2020c)(**Figure 6**).

Year-round waterfowl habitat within the boundary of the WRA and 1-mile buffer is limited. However, aerial review indicated that seasonal wetland areas do occur throughout agricultural fields within portions of the WRA and 1-mile buffer (**Figure 5**). These ephemeral wet areas are noteworthy because they can provide a critical resource to migrant shorebirds, waterfowl, and other avian species within the region. These areas could provide adequate stopover locations but comprise only a small portion of the WRA (approximately 3%). Impacts to seasonal wetlands within the WRA is not likely to have a significant effect on the amount of suitable waterfowl habitat within the vicinity of the Project. Additionally, limiting development to upland and agricultural areas will further reduce impacts to waterfowl that may use the WRA and 1-mile buffer.

7.0 Bat Resources

A total of 13 species of bats are known in Minnesota and/or South Dakota (MNDNR 2020b; South Dakota Bat Working Group 2004):

- Northern long-eared bat, federal-listed threatened and MN state-listed special concern
- Evening bat (*Nycticeius humeralis*)
- Eastern red bat (*Lasiurus borealis*)
- Little brown myotis (*Myotis lucifugus*), state-listed special concern (MN)
- Hoary bat (*Lasiurus cinereus*)
- Silver-haired bat (*Lasionycteris noctivagans*)
- Tri-colored bat (formerly known as the eastern pipistrelle [*Perimyotis subflavus*]), state-listed special concern (MN)
- Big brown bat (*Eptesicus fuscus*), state-listed special concern (MN)
- Fringed myotis (*Myotis thysanodes*)
- Long-eared myotis (*Myotis evotis*)
- Long-legged myotis (*Myotis volans*)
- Towsend's big-eared bat (*Corynorhinus towsendii*)
- Western small-footed myotis (*Myotis ciliolabrum*)

The ranges of fringed myotis, long-eared myotis, long-legged myotis, Townsend's big-eared bat, and western small-footed myotis span western portions of South Dakota and these species are not likely to occur within the vicinity of the WRA and 1-mile buffer (South Dakota Bat Working Group 2004). Bat species that have geographic distributions or migratory paths that include southwestern Minnesota and southeastern South Dakota (BCI 2020), including the WRA and 1-mile buffer are the northern-long eared bat, evening bat, little brown myotis, eastern red bat, tri-colored bat, hoary bat, silver-haired bat, and big brown bat.

The federally-listed northern long-eared bat, also listed as a species of special concern in Minnesota, is discussed in *Section 5.1.1*; further details on the distribution and habitat needs of the other bat species listed as species of special concern in Minnesota and South Dakota is provided in *Sections 7.1- 7.3* below.

7.1 Little Brown Myotis

The little brown myotis, also known as the little brown bat, is listed as a species of special concern in Minnesota. Little brown myotis are not listed within South Dakota. Of the eight bat species in Minnesota, little brown myotis is the most commonly observed (MNDNR 2020e). Little brown myotis are frequently seen throughout South Dakota except for the south central portions of the state (South Dakota Bat Working Group 2004).

During the summer months female bats form maternity colonies within tree snags and shaggy bark. Though riparian forested areas are preferred, little brown myotis has also been known to roost within man-made structures such as attics of buildings (MNDNR 2020e; South Dakota Bat Working Group 2004). During the winter months this species overwinters within cave and tunnel systems alongside big brown and tri-colored bats in areas of high humidity and specific temperature range (MNDNR 2020e; South Dakota Bat Working Group 2004). Suitable summer roosting habitat for the little brown myotis is limited within the vicinity of the WRA (e.g., lack of large tracks of forested habitat). Results of previous bat acoustic surveys indicate that little brown myotis may be present within the region and portions of the WRA and 1-mile buffer based on previous acoustic surveys (Bishop-Boros, Solick, and Kreger 2017; Kreger, Hyzy, and Solick 2019). However, given the limited amount of suitable roosting habitat within the WRA and 1-mile buffer, it unlikely that little brown myotis would occur on-site of the WRA or be impacted by Project development (Bishop-Boros, Solick, and Kreger 2017; Kreger, Hyzy, and Solick 2019).

7.2 Big Brown Bat

The big brown bat, listed as a state species of special concern, is the second most common bat species found in Minnesota (MNDNR 2020e). In South Dakota, due to its common occurrence, the big brown bat is not listed as a state T&E or special concern species (South Dakota Bat Working Group 2004).

Like the little brown myotis, the big brown bat's habitat use is influenced by seasonal changes. Little brown bats typically summer roost within the cavities and loose bark of trees near water resources but have been known to roost within attics of buildings and underneath bridges (MNDNR 2020e). Within eastern South Dakota, big brown bats have been known to prefer cottonwood floodplain forests but are most abundantly found within urban areas (South Dakota Bat Working Group 2004). Big brown bats use the same overwintering habitat, hibernaculum, of

little brown myotis and tri-colored bat, with big brown bats preferring colder areas of cave systems. (MNDNR 2020e). Results of previous bat acoustic surveys within the region of the WRA and 1-mile buffer indicates that occurrences of big brown bat are rare (Bishop-Boros, Solick, and Kreger 2017; Kreger, Hyzy, and Solick 2019). It is unlikely that big brown bats would use the WRA and 1-mile buffer given the lack of suitable roosting habitat on-site.

7.3 Tri-colored Bat

Tri-colored bats, formerly known as the eastern pipistrelle, are listed as a species of special concern in Minnesota. This species is not listed as threatened, endangered, or as a species of special concern within South Dakota. Tri-colored bats are regularly found within the Minnesota, but occur at much smaller numbers than the little brown myotis and big brown bat (MNDNR 2020e). The tri-colored bat is not considered a migratory or resident species within South Dakota with only three (3) observations of the species within the state in 2003 (South Dakota Bat Working Group 2004).

Tri-colored bats summer roost singularly within forested areas. Maternity roosts for tri-colored bats have not been identified within Minnesota (MNDNR 2020e). During the winter months this species overwinters within the same cave and mine systems as big brown bats and little myotis but prefers warmer and more humid areas (MNDNR 2020e). Known hibernaculum sites for tri-colored bat include the Heinrich Brewery Cave and Brightsdale Tunnel located over 150 miles northeast and 200 miles east of the WRA respectively. Suitable summer habitat for the tri-colored bat is limited within the WRA and 1-mile buffer and suitable winter habitat is unknown within Rock County. Results of previous bat acoustic surveys within the vicinity of the WRA and 1-mile buffer indicates that tri-colored may occur within the WRA and 1-mile buffer, although rarely (Bishop-Boros, Solick, and Kreger 2017; Kreger, Hyzy, and Solick 2019). It is unlikely that tri-colored bats would use the WRA and 1-mile buffer given the lack of suitable roosting habitat on-site.

7.4 Hibernaculum

Bat hibernaculum are typically associated with karst terrains. Karst terrains in Minnesota includes caves, sink holes, and springs. These features often occur within areas of carbonate or sandstone bedrocks within southeastern portions of the state (MPCA 2020; Alexander, Gao, and Green 2006). Surveys conducted by MNDNR indicate that there are no known hibernaculum within Rock County (MNDNR and USFWS 2018). In South Dakota, suitable karst topography

such as caves and mines, is more commonly associated with western portions of the state near the Black Hills (South Dakota Bat Working Group 2004).

7.5 Summer Roosting Habitat

Isolated woodlots which are less than 10 acres in size, narrow tree-lined corridors along ditches, ponds, riparian corridors, etc., provide potentially suitable foraging and roosting habitat for bats. In addition, farmsteads and large outbuildings may provide roosting habitat to species associated with human structures (i.e., big brown bat, little brown myotis). This matrix of habitats has the potential to attract bats to the WRA and 1-mile buffer but comprises a small percentage of the total WRA (approximately 1% of WRA is forested).

7.6 Regional Bat Occurrence

Most bat fatalities at wind energy facilities in North America are composed of tree-roosting bats such as hoary bat, eastern red bat, and silver-haired bat (Arnett et al. 2008). Most bat fatalities at wind energy facilities in the Midwest are documented to be higher during the fall migratory period (late August through October) when bats travel through the landscape between summer roosts and winter hibernacula (Arnett et al. 2008; G. Johnson 2004). Reported estimates of bat mortality at wind energy facilities through North America average 17.20 fatalities/MW/year (Smallwood 2013). Among these studies, bat fatality rates at wind farms located specifically in the Midwest have ranged from 0.40 to 32.0 bat fatalities/MW/year (Taber D. Allison and Ryan Butryn 2019). Bat fatality rates reported for Minnesota specific wind energy facilities range from 0.41 to 8.56 bats/MW/year (**Table 5**), which are less compared to the National and Midwest averages listed above.

Table 5. Bat Fatality at Minnesota Wind Farms

Project	Bat Fatality Rate	Year of Study	Study Citation
Lakefield	0.87 bats/MW/year	2016	(Chodachek et al. 2017)
Prairie Rose	0.41 bats/ MW/ study period	2014	(Chodachek, Adachi, and DiDonato 2015)
Big Blue	2.25 bats/ MW/ study period	2014	(Chodachek et al. 2015)
Grand Meadow	1.05 bats/ MW/ study period	2014	(Chodachek et al. 2015)
Oak Glen	2.03 bats/ MW/ study period	2014	(Chodachek et al. 2015)
Odell	8.56 bats/ MW/ study period	2016-2017	(Chodachek and Gustafson 2018)
Buffalo Ridge	0.76-2.72 bats/MW/year	1996-1999	(G. D. Johnson et al. 2000)

General acoustic bat surveys were conducted by WEST in the spring, summer, and fall of 2016 at stations within the WRA and 1-mile buffer located in cropland habitat, representing potential turbine locations, and forest edge habitat containing features attractive to bats. Approximately 77% of bat passes at the cropland station were classified by WEST as low-frequency, which potentially includes species such as big brown bats, hoary bats, or silver-haired bats. However, only 23% of the bat passes at the cropland station were identified as high frequency, which potentially includes species such as the eastern red bat, little brown bat, or the northern long-eared bat. WEST's bat biologists reviewed the high-frequency passes and determined that no protected bat species calls (northern long-eared bat) were identified during the 2016 survey (Bishop-Boros, Solick, and Kreger 2017).

Additional general acoustic bat surveys were conducted by WEST in the summer and fall of 2018 at forest edge and cropland stations within the general vicinity of the WRA and 1-mile buffer. Within the cropland stations, peak bat activity was recorded during the summer during the middle of July, with 88.7% of the bat passes identified as low frequency and 11.2% of bat passes identified as high frequency (Kreger, Hyzy, and Solick 2019). WEST's review of high-frequency calls recorded during the 2018 acoustic survey indicated that no acoustic evidence of northern long-eared bat was observed within the WRA or 1-mile buffer.

Based on previous studies completed within the region of the WRA , bat fatality risk for the Project is expected to be highest during the late summer or early fall migration. There is relatively low potential for the federally listed northern long-eared bat to utilize the WRA for roosting or foraging since there is limited suitable forested habitat within the WRA (approximately 358 acres broken into isolated woodlots less than 10 acres in size, mainly associated with farmsteads, with limited riparian connectivity). Since previous acoustic studies did not indicate that the northern long-eared bat was present within the region of the WRA and regional wind energy facility post-construction fatality bat studies did not identify any northern-long eared bats, it is very unlikely that this species would be impacted by this Project.

8.0 USFWS Land-based Wind Energy Guidelines

The objective of Tier 2 is to determine the likelihood of significant threats to wildlife from development of a wind energy project at a specific location. Such assessment is based on the potential presence of species of concern and their habitats, potential presence of critical concentration areas for species of concern, and site visits to ground-truth findings (USFWS 2012). This SCS systematically evaluated the WRA and 1-mile buffer based on these guidelines to answer seven specific questions.

8.1 Tier 2 Evaluation Summary

1. ***Are there species of concern present on the potential site(s), or is habitat (including designated critical habitat) present for these species?***

Data from the IPaC, MN NHIS, and SD GFP lists indicate six (6) federally listed species and two (2) state listed T&E species have been documented nearby and/or within the WRA and 1-mile buffer: federally-threatened northern long-eared bat, federally-threatened red knot, federally-endangered Topeka shiner, federally-threatened Dakota skipper, federally-threatened western prairie fringed orchid, federally-threatened prairie bush clover, , the South Dakota state-threatened northern river otter, and the South Dakota state-endangered lined snake.

The WRA and 1-mile buffer is currently dominated by agricultural fields and provides limited wetland, grassland, and forested habitats for the red knot, northern long-eared bat, Dakota skipper, prairie bush clover, western prairie fringed orchid, and lined snake. Additionally, the lower water quality of streams in the WRA and 1-mile buffer likely resulting from such agricultural land use, limit suitable habitat for the northern river otter.

Designated critical habitat for the Topeka shiner is found within the WRA and 1-mile buffer (**Figure 7**). This critical habitat is associated with portions of, Springwater Creek, Beaver Creek, Little Beaver Creek, Mud Creek, and their associated tributaries. Habitat suitable for this species may also be found in other large streams on-site.

2. ***Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information?***

Protected areas occur within the WRA and 1-mile buffer. Springwater WMA, Rooster Ridge WMA, and three (3) conservation easement including CREP and RIM enrolled properties are found within the WRA and 1-mile buffer. These managed lands are protected under state and/or federal laws.

3. Are there plant communities of concern present or likely to be present at the site(s)?

Data received from MN NHIS did not indicate high-quality natural communities and natural areas in the WRA and 1-mile buffer. MBS designated sites of *Moderate* and *Below* ranking Biodiversity Significance occur within the WRA and 1-mile buffer and are associated with Springwater WMA and Rooster Ridge WMA respectively (**Figures 6 & 7**). The WRA and 1-mile buffer offer limited suitable habitat for all federally and state-listed plant species in areas of managed lands, idle fields, and remnant prairies.

4. Are there known critical areas of wildlife congregation, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers, or corridors, leks, or other areas of seasonal importance?

Critical habitat for the Topeka shiner has been designated within the portions of WRA and 1-mile buffer along portions of, Springwater Creek, Beaver Creek, Little Beaver Creek, Mud Creek and their associated tributaries (**Figure 7**).

No areas within the WRA and 1-mile buffer are known for large concentrations of wildlife. The WRA and 1-mile buffer itself offers limited suitable prairie and grassland habitat compared to other areas within the region such as Touch the Sky Prairie and Blue Mounds State Park. Also, though the bald eagle has known nesting sites within 1-mile of the WRA, suitable habitat is limited on-site; suggesting that bald eagles are less likely to use the WRA than the surrounding area.

Additionally, known maternity roosts and hibernacula for the northern long-eared bat do not occur within the vicinity of the WRA and 1-mile buffer or Rock County. The available summer roosting habitat within the WRA is limited to isolated woodlots less than 10 acres in size with little to no riparian connectivity.

5. Using best available scientific information, has the developer or relevant federal, state, tribal, and/or local agency identified the potential presence of a population of a species of habitat fragmentation concern?

The USFWS does not maintain a list of species of habitat fragmentation concern for Minnesota or South Dakota. The Minnesota and South Dakota Wildlife Action Plans identify a combined total of 447 SGCN, which represent species whose populations are rare, declining, or vulnerable within the state including federally-listed species, state-listed species, and species of special concern within Minnesota and South Dakota (MNDNR 2016a; South Dakota Department of Game, Fish and Parks 2014). The Minnesota Wildlife Action Plan designates habitat fragmentation as one of the main stressors currently facing SGCN in Minnesota and is one of the many criteria considered when designating SGCN status for a species in that State.

The WRA is in a region where much of the contiguous tallgrass prairie has been replaced with agriculture or by smaller patches of remnant prairie and functional grassland. Much of the WRA contains cultivated cropland (approximately 87%). The remaining natural land cover pockets of streams, wetlands, and riparian areas are already highly fragmented by existing agriculture to the point where it is unlikely that additional proposed wind-related infrastructure will adversely impact species of fragmentation concern.

6. Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes?

Tier 3 site-specific field studies are needed to accurately assess avian species that use the WRA and 1-mile buffer during breeding, migratory, or winter seasons and their frequency of occurrence. Various avian species that use tilled agricultural fields, as well as forest edges, isolated woodlots, hedgerows, pockets of emergent wetlands, vegetated ditches, and flooded agricultural fields, are expected to use available habitats in the WRA and 1-mile buffer throughout the year.

Bald eagles may also occur within the WRA and 1-mile buffer. Bald eagles are likely to occur within the region and have been documented nesting within 10-miles of the WRA. Golden eagles are not likely regular residents but have been reported in the region and may be present in or near the WRA and 1-mile buffer during winter or migration periods.

Migratory and tree-roosting bat species, including hoary bat, eastern red bat, and silver-haired bat, as well as little brown myotis, are the most commonly killed at North American wind developments (Arnett et al. 2008). However, bat fatalities from other Minnesota Wind Energy

facilities within the state of Minnesota and within the surrounding region are fewer compared to the national average of 17.20 bats/MW/year (Smallwood 2013). In addition, previous acoustic studies noted federal or state listed T&E bat species were not identified within the WRA (Kreger, Hyzy, and Solick 2019; Bishop-Boros, Solick, and Kreger 2017) or within other Minnesota wind energy facilities (Chodachek and Gustafson 2018; Chodachek et al. 2015; G. D. Johnson et al. 2000; Chodachek, Adachi, and DiDonato 2015).

Publicly available information did not reveal the presence of known bat maternity roosts or hibernacula within the WRA and 1-mile buffer. However, the absence of records does not preclude the potential presence of T&E species at a specific site. Previous bat acoustic surveys determined that northern long-eared bat and state listed bat species of special concern are rare within the region, including portions of the WRA and 1-mile buffer. Given the limited amount of forested habitat within the WRA (small isolated woodlots less than 10 acres in size) and 1-mile buffer it is unlikely that listed bat species would occur on-site or be impacted by Project activities.

7. Is there a potential for significant adverse impacts to species of concern based on the answers to the questions above, and considering the design of the proposed project?

The WRA and 1-mile buffer is comprised of approximately 87% cultivated agriculture with only small pockets of natural land cover remaining. Given the relatively small geographic footprint of the remaining natural land cover, it is unlikely that significant population-level impacts will occur to listed T&E species or species of concern as a result of the proposed Project. Additionally, previous Tier 3 studies evaluating the WRA in terms of avian and bat use indicated that these species are not likely to be adversely impacted.

8.2 Tier 2 Decision Process and Outcome

The following details the possible outcomes of Tier 2 studies and are taken from the USFWS 2012 WEGs.

1. The most likely outcome of Tier 2 is that the answer to one or more Tier 2 questions is inconclusive to address wildlife risk, either due to insufficient data to answer the question or because of uncertainty about what the answers indicate. The developer proceeds to Tier 3, formulating questions, methods, and assessment of potential mitigation measures based on issues raised in Tier 2 results.

2. Sufficient information is available to answer all Tier 2 questions, and the answer to each Tier 2 question indicates a low probability of significant adverse impact to wildlife (for example, infill or expansion of an existing facility where impacts have been low and Tier 2 results indicate that conditions are similar, therefore wildlife risk is low). The developer may then decide to proceed to obtain state and local permit (if required), design, and construction following best management practices

3. Sufficient information is available to answer all Tier 2 questions, and the answer to each Tier 2 question indicates a moderate probability of significant adverse impacts to species of concern or their habitats. The developer should proceed to Tier 3 and identify measures to mitigate potential significant adverse impacts to species of concern.

4. The answers to one or more Tier 2 questions indicate a high probability of significant adverse impacts to species of concern or their habitats that:
    a. Cannot be adequately mitigated. The proposed site should be abandoned.
    b. Can be adequately mitigated. The developer should proceed to Tier 3 and identify measures to mitigate potential significant adverse impacts to species of concern or their habitats.

Information gathered during this SCS provided relevant information to answer most of the *Tier 2 Site Characterization* questions (*Section 8.1*). Previous Tier 3 studies within the region of the WRA and 1-mile buffer also provide sufficient data to assess the probability of adverse impacts to wildlife and impairment of species. However, further *Tier 3, Field Studies to Document Wildlife and Habitat and Predict Project Impacts*, are planned to further and specifically evaluate the WRA in terms of avian use and potential presence of T&E species.

9.0 Conclusions

Six (6) federally-listed species have the potential to occur in Rock and Minnehaha Counties: the northern long-eared bat, red knot, Topeka shiner, Dakota skipper, prairie bush clover, and the western prairie fringed orchid (**Table 3**). Both the northern long-eared bat and the red knot have limited potential to occur in the WRA and 1-mile buffer. The Topeka shiner has designated critical habitat within the WRA and 1-mile buffer along Split Rock Creek, Springwater, Beaver Creek, Little Beaver Creek, Mud Creek, and their tributaries. Avoiding these designated areas times or employing recommended BMPs will avoid impacts to this species. Suitable habitat for the Dakota skipper, prairie bush clover, and western prairie fringed orchid is limited to only a few remnant prairie and functional grasslands of the WRA. It is unlikely these species would be found on-site of the WRA or be adversely impacted by Project activities.

Two (2) South Dakota listed species, the state-threatened northern river otter and the state-endangered lined snake, have the potential to occur within portions of the 1-mile buffer. Habitat for these species is limited within the WRA and 1-mile buffer.

Due to the lack of suitable forest stands on-site, suggests that bald eagles are unlikely to nest within the WRA. Golden eagles are not likely regular winter residents; however, because they have been documented within the vicinity of the WRA and 1-mile buffer, they could potentially occur in the WRA and 1-mile buffer during winter and migration periods.

Due to the low bat activity within the WRA and 1-mile, lack of suitable habitat, and lack of protected bat species during past regional surveys, no further bat surveys are recommended.

Evaluation of the WRA and 1-mile buffer through the USFWS WEG tier approach indicates that further Tier 3 studies may be able to further evaluate the project in terms of avian use and for the potential presence of T&E species. The Tier 3 field studies which are recommended based on the USFWS Wind Energy Guidelines and results of this Tier 2 screening include:

- A one-year pre-construction avian use study to document avian use across all seasons (spring, summer, fall, and winter use)
- Development of a Wildlife Conservation Strategy

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Figures

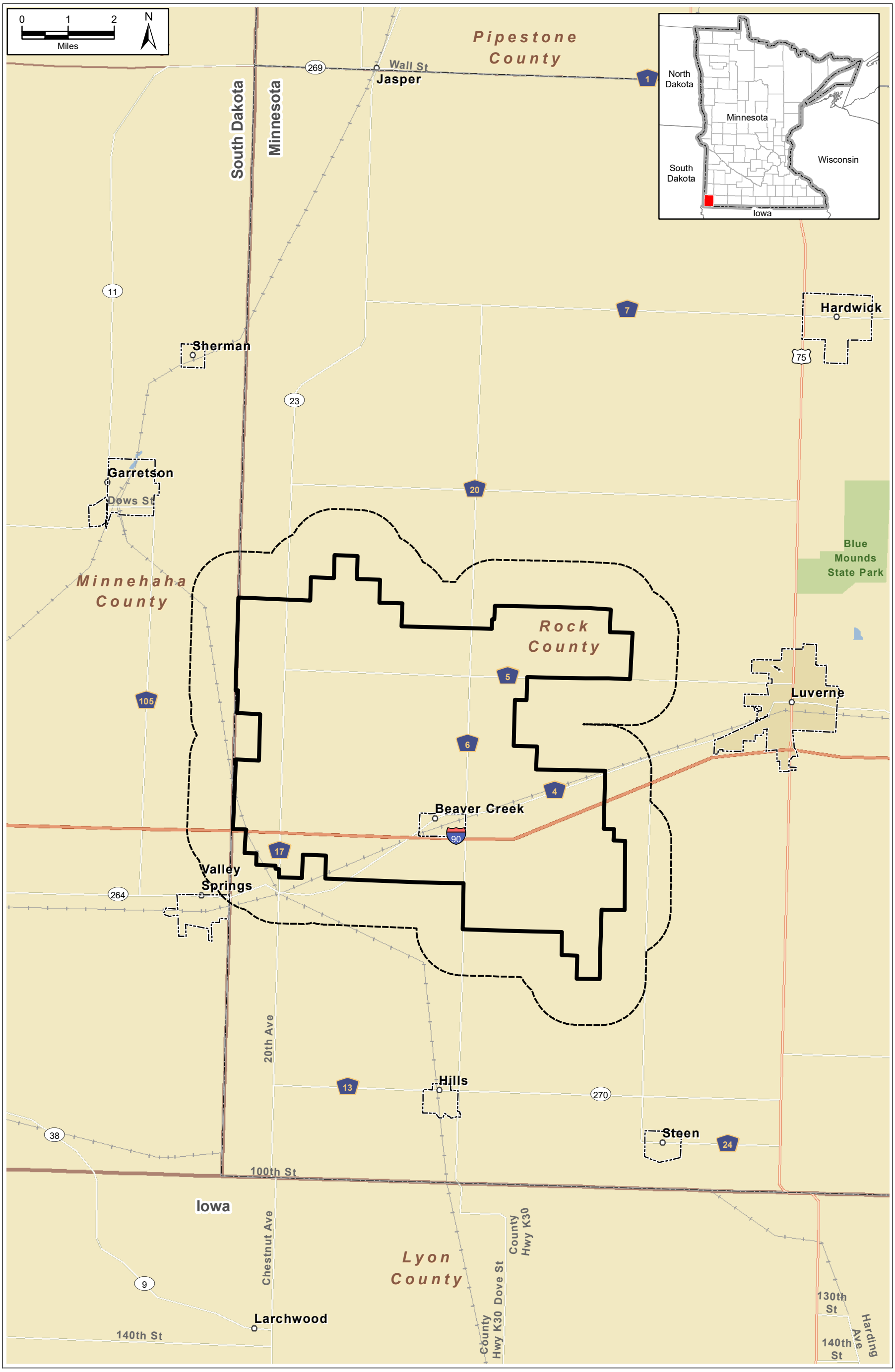


FIGURE 1.
SITE LOCATION MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary (±31,095 Ac.)
1 Mile Buffer
City Boundary

Sources: ESRI StreetMap, 2018; ECT, 2020.

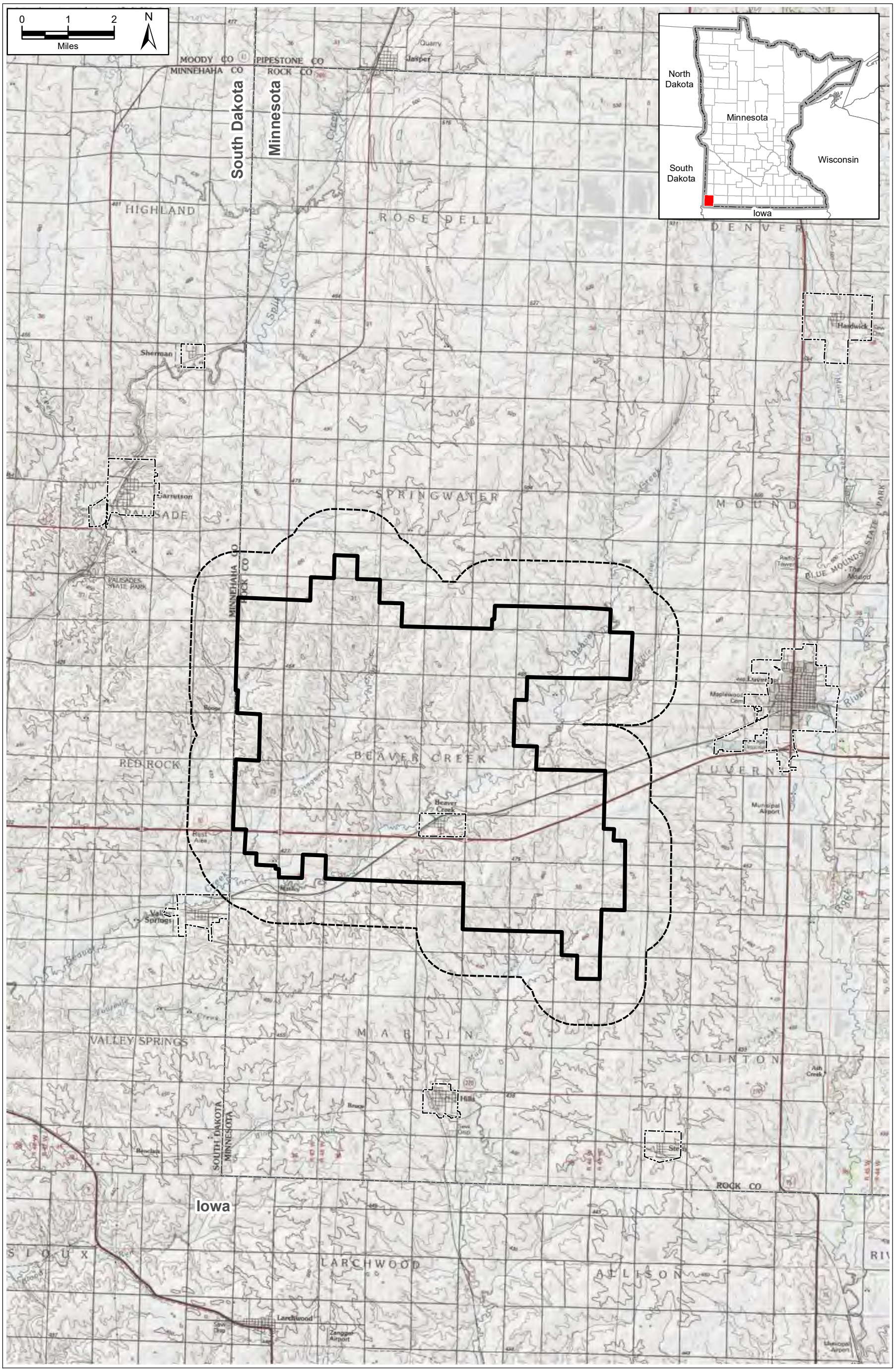


FIGURE 2.
TOPOGRAPHIC MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary (±31,095 Ac.)
1 Mile Buffer
City Boundary

Sources: USGS; ECT, 2020.

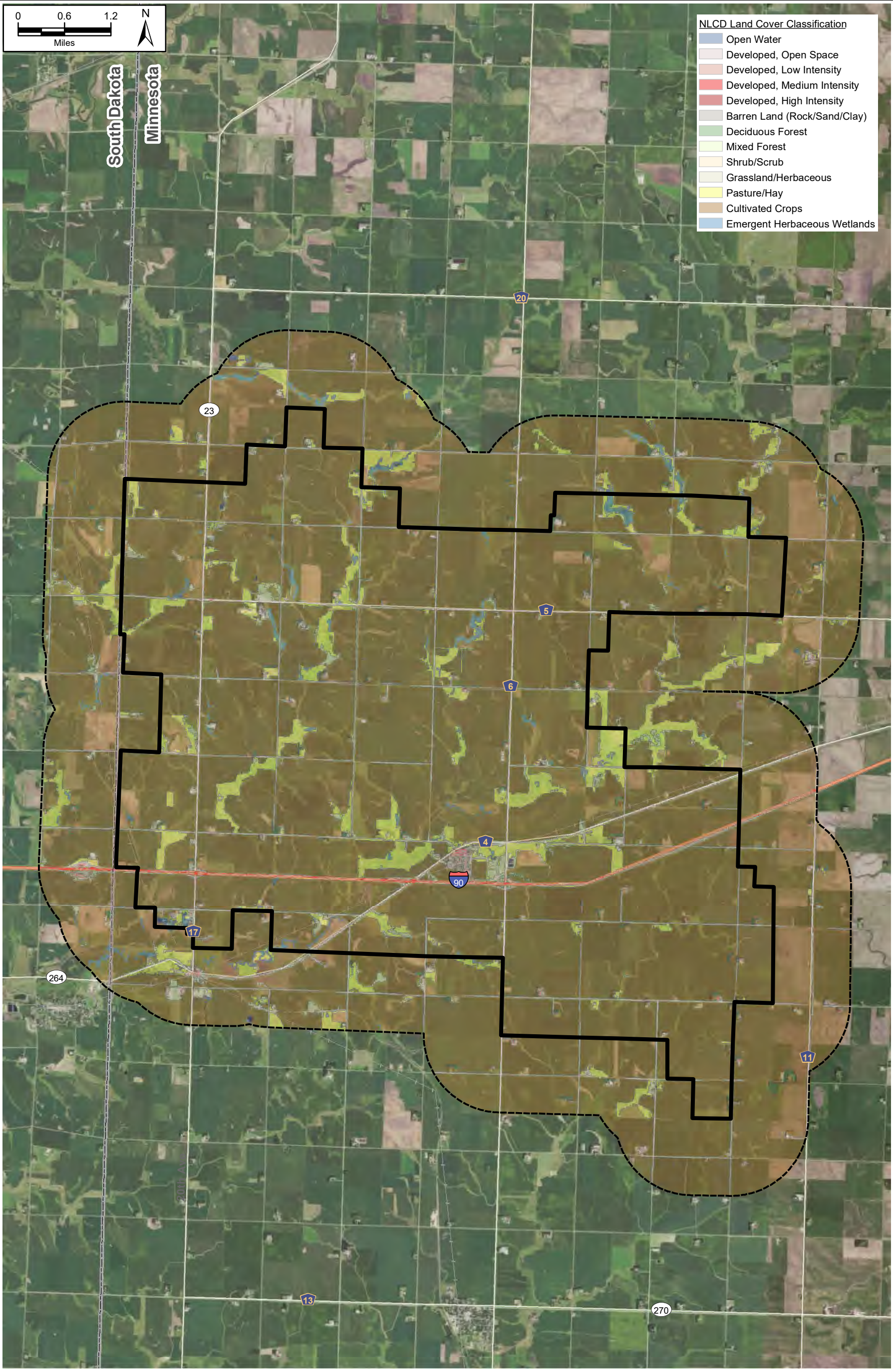


FIGURE 3.
LAND USE / LAND COVER MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary
1 Mile Buffer

Sources: USGS NLCD, 2016; ECT, 2020.

ECT Environmental Consulting & Technology, Inc.

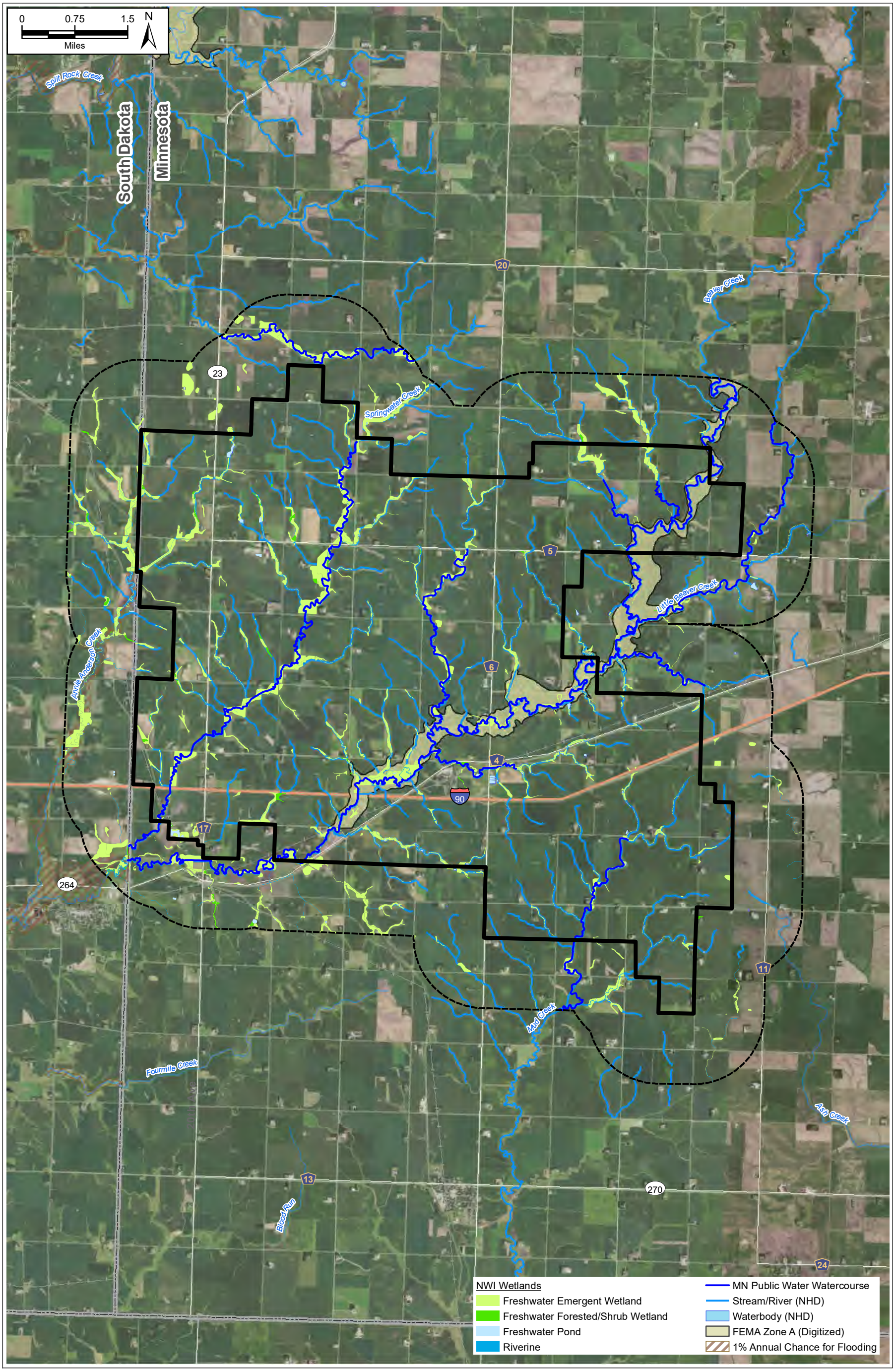


FIGURE 4.
WETLANDS AND SURFACE WATERS MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary (±31,095 Ac.)
1 Mile Buffer

Sources: MnDNR, USGS, USFWS, FEMA, 2019; ECT, 2020.

ECT Environmental Consulting & Technology, Inc.

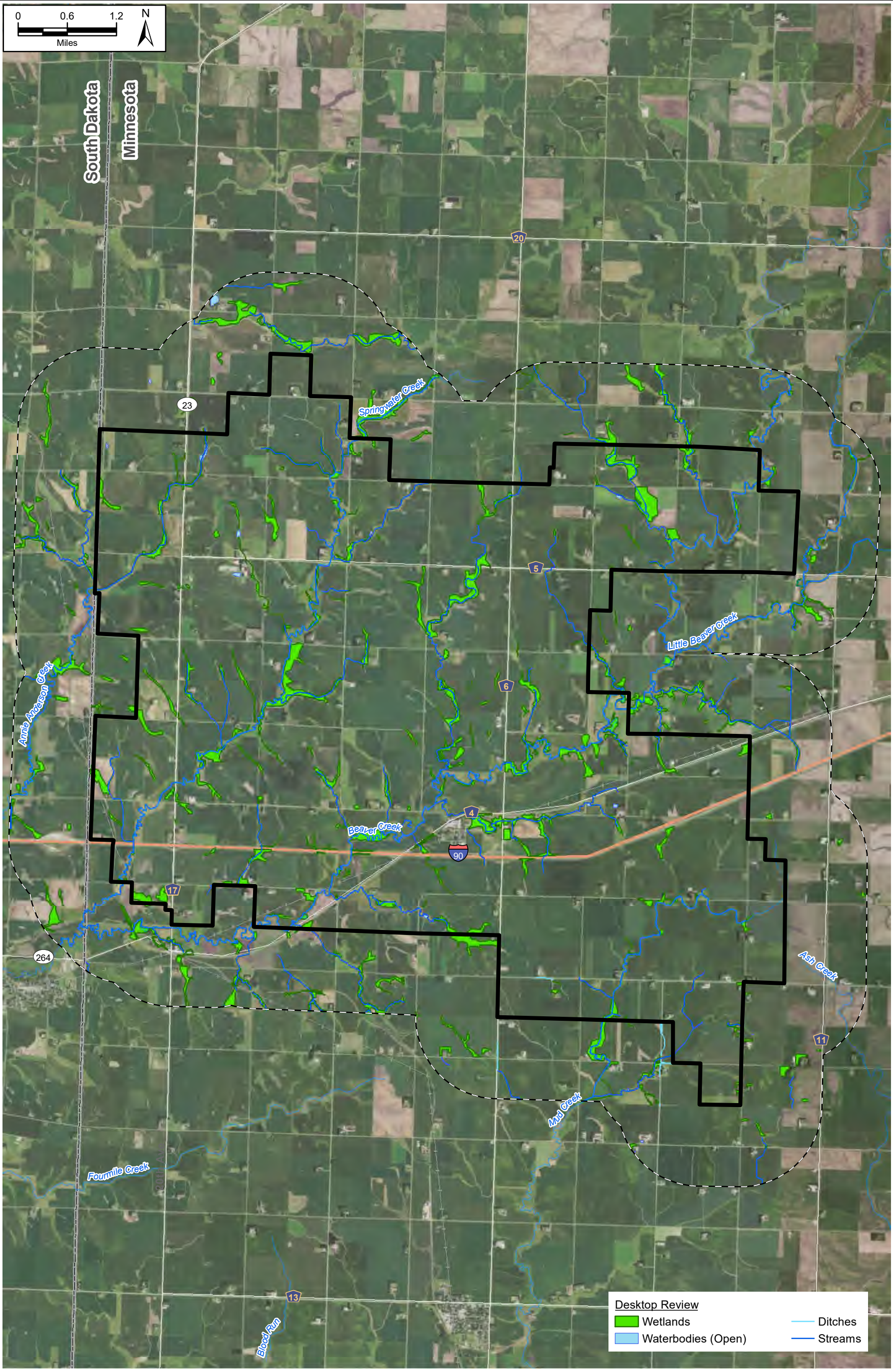


FIGURE 5.
WETLANDS REVIEW MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary (±31,095 Ac.)
1 Mile Buffer

Sources: USDA Imagery, 2019; ECT, 2020.

ECT Environmental Consulting & Technology, Inc.

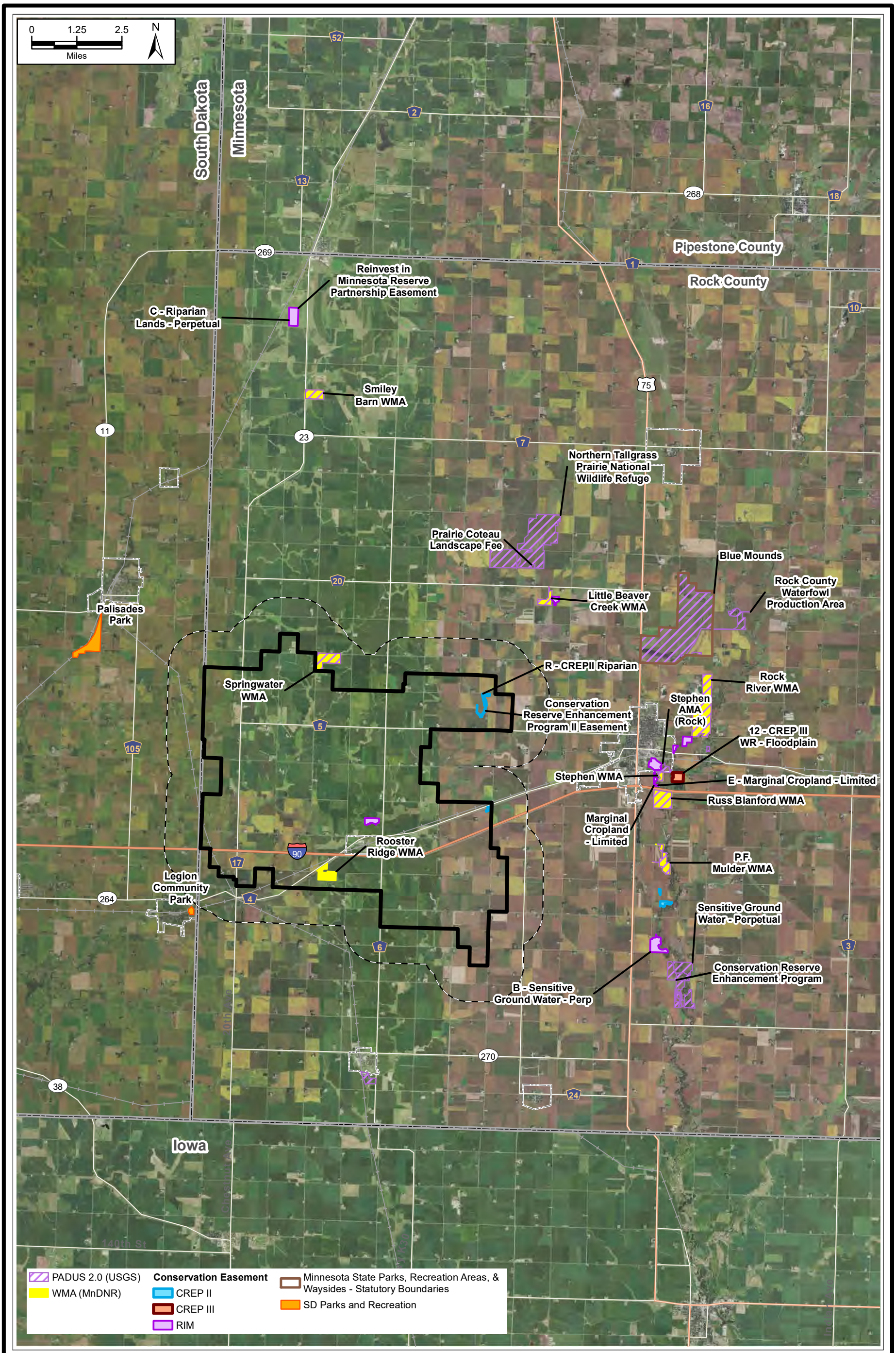


FIGURE 6.
PUBLIC LANDS MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary (±31,095 Ac.)
1 Mile Buffer
City Boundary

Sources: MN DNR; USGS PADUS2; ECT, 2020.

ECT Environmental Consulting & Technology, Inc.

[TRADE SECRET DATA BEGINS

TRADE SECRET DATA ENDS]

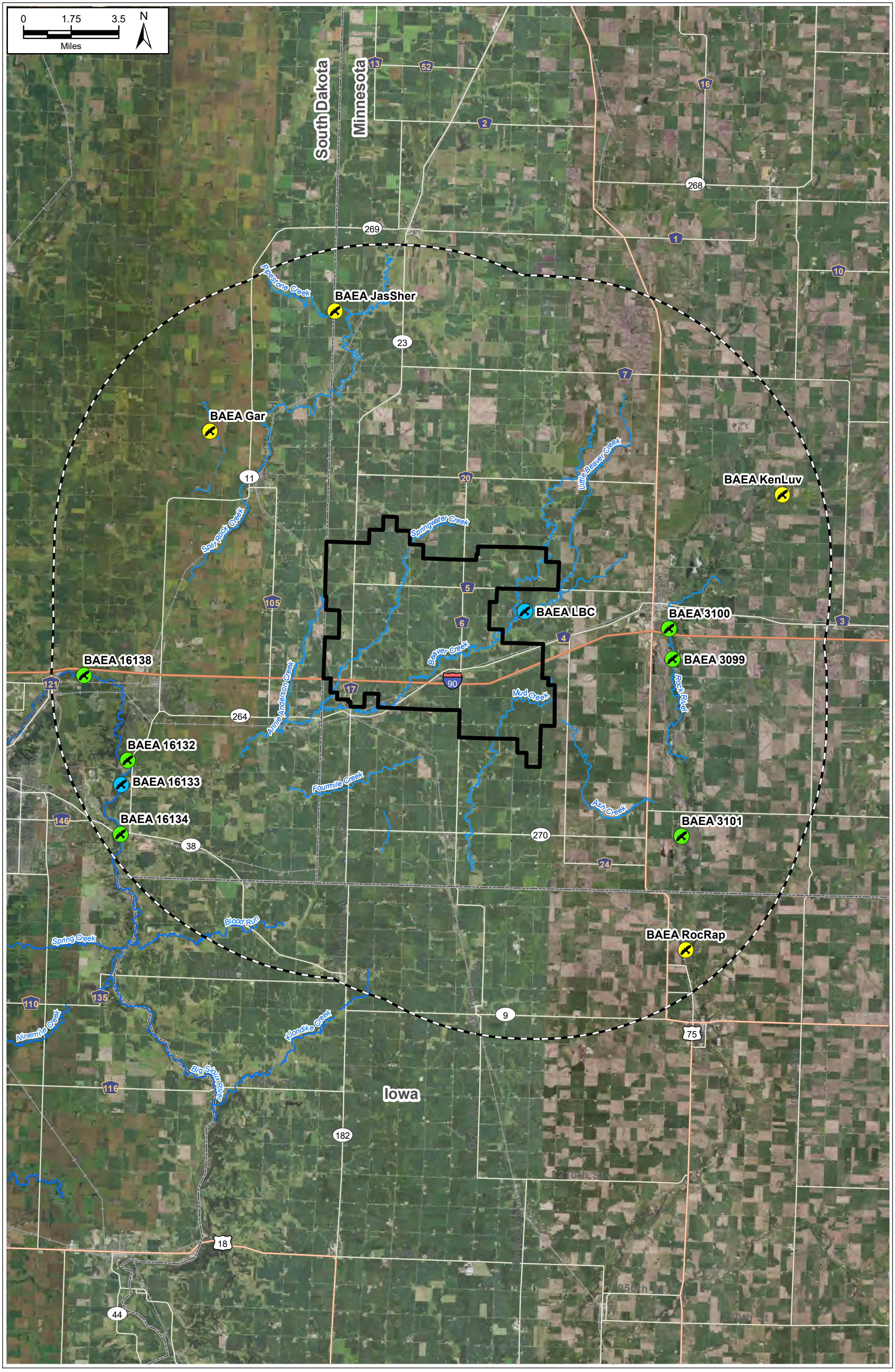


FIGURE 8.
BALD EAGLE NEST LOCATIONS
WALLEYE WIND PROJECT
WALLEYE WIND PROJECT, LLC

Project Boundary
10 Mile Buffer
State Boundary

Eagle Nest Status

2020/Active 2020
2018/Active 2020
Alternate 2020

Sources: NAIP 2019 Imagery; ECT, 2020.

Appendix A

Representative Photographs

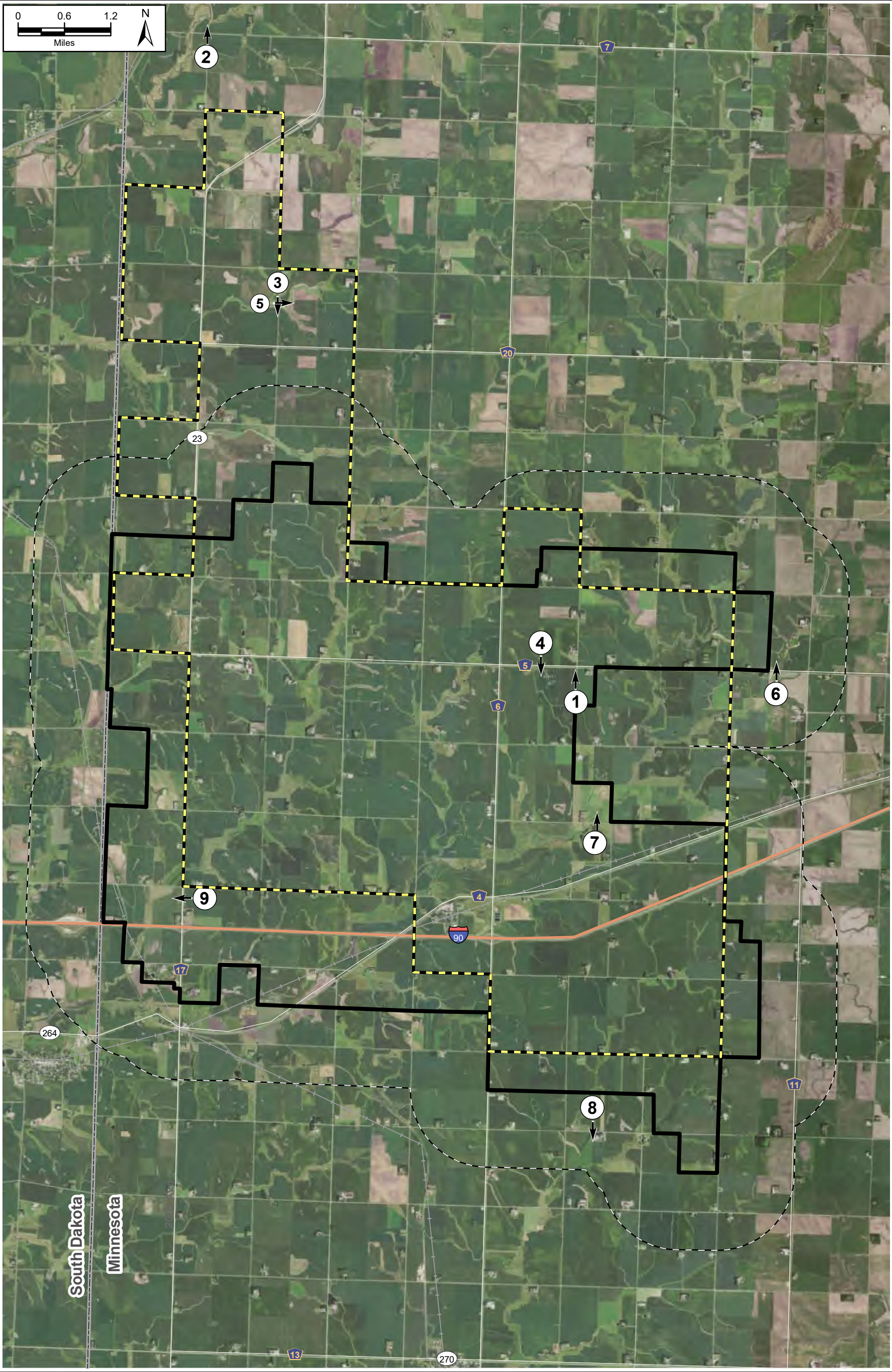


PHOTO LOCATIONS MAP
WALLEYE WIND PROJECT
WALLEYE WIND, LLC

Project Boundary (±31,095 Ac.)
1 Mile Buffer
Project Boundary (01-21-2020)
Photo Direction
1 Photo ID

Sources: NAIP 2019 Imagery; ECT, 2020.

PHOTOGRAPHIC LOG

Photo # 1	
Date: 11/19/2019	
Feature: Agricultural Field	
Direction: South East	
Lat/Long: 43.657383°, -96.332542°	
Description: The majority of the WRA/1-mile buffer is comprised of agricultural lands currently used for row cropping.	

Photo # 2	
Date: 11/19/2019	
Feature: Pastureland	
Direction: North	
Lat/Long: 43.776287°, -96.432613°	
Description: Grassland habitat within the WRA/1-mile buffer is limited to the routinely disturbed (e.g.; grazed) pasturelands.	

PHOTOGRAPHIC LOG

Photo # 3	
Date: 11/19/2019	
Feature: Agricultural Field	
Direction: South	
Lat/Long: 43.726426°, -96.412206°	
Description: Typical agricultural field within the WRA. This photo was taken in the vicinity of previous occurrences of a federally listed species. No evidence of current populations was observed during the windshield survey.	

Photo # 4	
Date: 11/19/2019	
Feature: Agricultural Areas	
Direction: South	
Lat/Long: 43.659837°, -96.341497°	
Description: Areas with previous records of state threatened avian species are currently dominated within agricultural lands. Suitable habitat for grassland dependent species on-site of the WRA/1-mile buffer are limited.	

PHOTOGRAPHIC LOG

Photo # 5	
Date: 11/19/2019	
Feature: Perennial Stream	
Direction: East	
Lat/Long: 43.726426°, -96.412206°	
Description: Perennial and intermittent streams cross through numerous portions of the WRA and 1-mile buffer. Perennial Streams may offer habitat for the federally listed Topeka shiner on-site of the WRA/1-mile buffer.	

Photo # 6	
Date: 11/21/2019	
Feature: Stream	
Direction: North	
Lat/Long: 43.660069°, -96.280700°	
Description: Agricultural practices of the area appear to affect stream quality including stream turbidity and increased erosion along stream channels. This greatly reduces the suitability of streams within the WRA to provide habitat for aquatic T&E species.	

PHOTOGRAPHIC LOG

Photo # 7	
Date: 11/21/2019	
Feature: Wetland Areas	
Direction: North	
Lat/Long: 43.630899°, -96.325947°	
Description: Wetland areas within the WRA were mainly concentrated along riparian edges of streams and were dominated by emergent vegetation.	

Photo # 8	
Date: 11/21/2019	
Feature: Forested Lot and Riparian Areas	
Direction: South	
Lat/Long: 43.572814°, -96.324708°	
Description: Forested areas within the WRA and 1-mile buffer were limited to a few areas along streams, agricultural fields, and residential properties. Forested areas were small and offer limited habitat for sensitive avian and bat species within the WRA/1-mile buffer.	

PHOTOGRAPHIC LOG

Photo # 9	
Date: 11/21/2019	
Feature: Residential Property	
Direction: West	
Lat/Long: 43.614298°, -96.432394°	
Description: Rural residential properties are located throughout the WRA. These properties contain areas of maintained lawns and small wooded areas. These areas are unlikely to offer suitable habitat for sensitive species within the vicinity of the WRA/1-mile buffer.	

Photo # 10	
Date: 11/21/2019	
Feature: Wastewater Ponds	
Direction: East	
Lat/Long: 43.613006°, -96.352342°	
Description: Waterbodies within the WRA/1-mile buffer are limited. A series of wastewater ponds near the city of Beaver Creek, Minnesota may provide habitat for waterfowl species, but represent only a small percentage of the WRA/1-mile buffer.	

Appendix B

IPaC Results

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Minnesota and South Dakota

Local offices

Minnesota-Wisconsin Ecological Services Field Office

(952) 252-0092
(952) 646-2873

MAILING ADDRESS
4101 American Blvd E
Bloomington, MN 55425-1665

PHYSICAL ADDRESS
4101 American Blvd E
-
Bloomington, MN 55425-1665

http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

South Dakota Ecological Services Field Office

(605) 224-8693
(605) 224-9974

420 South Garfield Avenue, Suite 400
Pierre, SD 57501-5408

http://www.fws.gov/southdakotafieldoffice/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened

Fishes

NAME	STATUS
Topeka Shiner *Notropis topeka (=tristis)* There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/4122	Endangered

Insects

NAME	STATUS
Dakota Skipper *Hesperia dacotae* There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1028	Threatened

Flowering Plants

NAME	STATUS
Prairie Bush-clover Lespedeza leptostachya No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4458	Threatened
Western Prairie Fringed Orchid Platanthera praeclara No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1669	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Topeka Shiner Notropis topeka (=tristis) https://ecos.fws.gov/ecp/species/4122#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Franklin's Gull Leucophaeus pipixcan This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Henslow's Sparrow Ammodramus henslowii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Hudsonian Godwit Limosa haemastica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds May 1 to Jul 31
Nelson's Sparrow Ammodramus nelsoni This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Sep 5
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

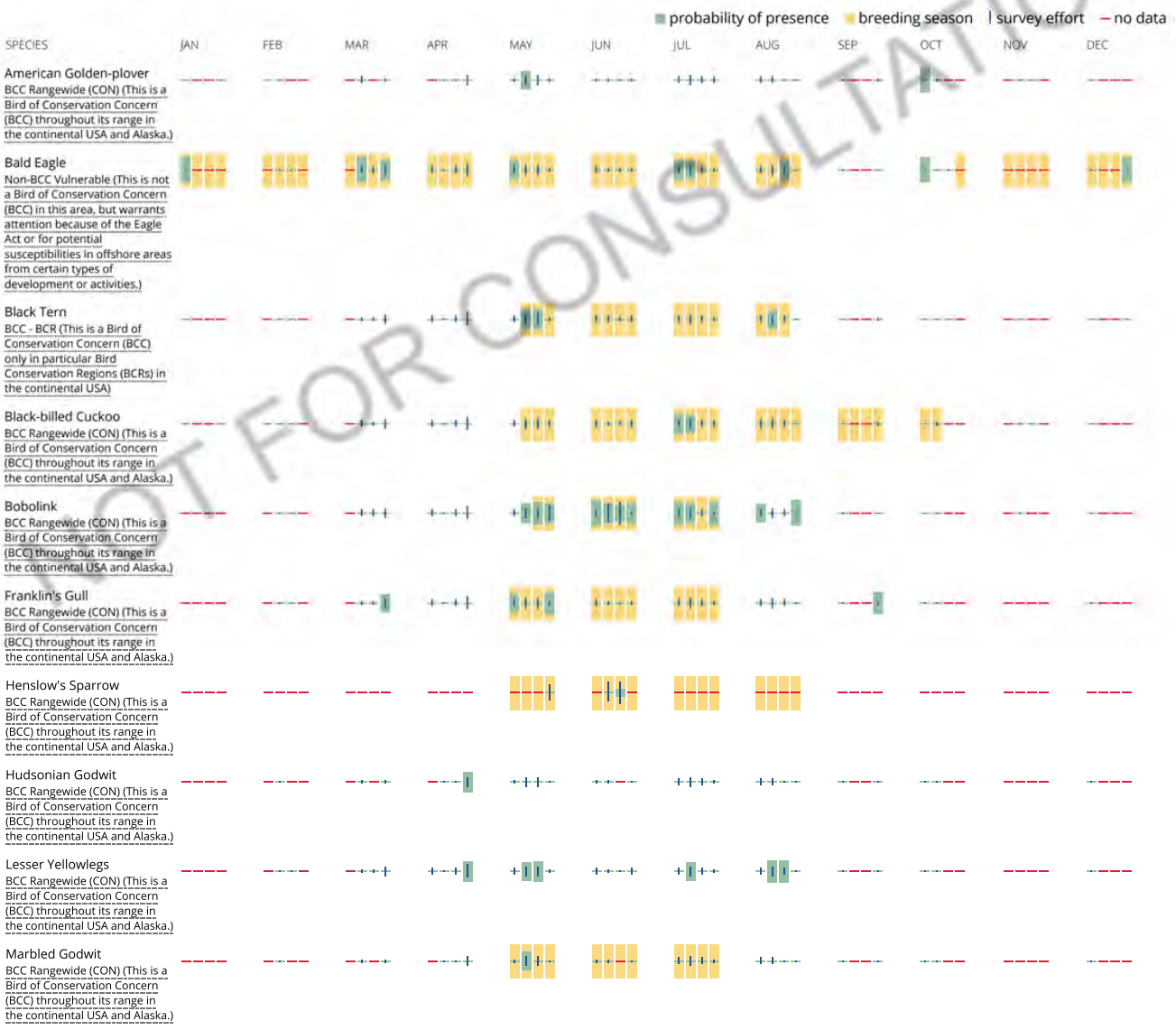
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

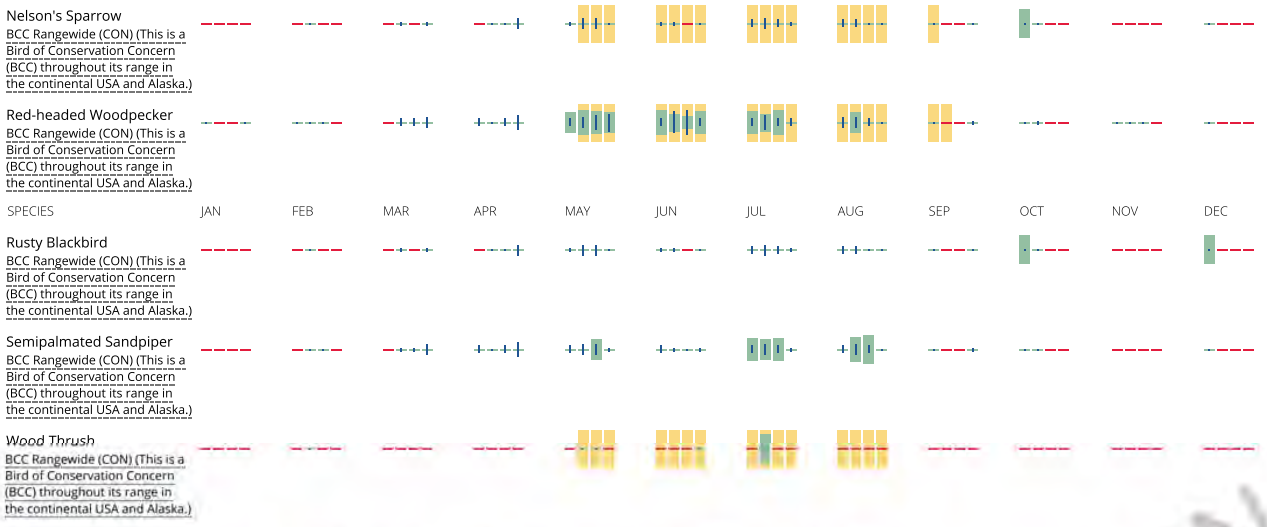
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, *visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds"* at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
Windom Wetland Management District	2,839.88 acres

(507) 831-2220
(507) 831-5524

MAILING ADDRESS
49663 County Road Number 17
Windom, MN 56101-3026

PHYSICAL ADDRESS
49663 County Road Number 17
Windom, MN 56101-3026

https://www.fws.gov/refuges/profiles/index.cfm?id=32587

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME
This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.