Appendix J
Bird and Bat Conservation Strategy

Rose Creek Wind, LLC
MPUC Docket No. IP7065/WS-21-643
January 2022

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Rose Creek Wind Project

Bird and Bat Conservation Strategy

conEdison
Clean Energy Businesses

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January 2022

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ACRONYMS AND ABBREVIATIONS

ac	acre
Audubon	National Audubon Society
BBCS	Bird and Bat Conservation Strategy
BGEPA	Bald and Golden Eagle Protection Act of 1940
BMP	best management practices
CED	Consolidated Edison Development, Inc.
CFR	Code of Federal Regulations
ECPG	USFWS *Eagle Conservation Plan Guidance*
EERA	Energy Environmental Review Analysis
ESA	Endangered Species Act of 1973
ft	foot
FR	Federal Register
GE	General Electric
ha	hectare
km	kilometer
LWECS	Large Wind Energy Conversion System
m	meter
MBS	Minnesota Biological Survey
MBTA	Migratory Bird Treaty Act of 1918
NHIS	Natural Heritage Information System
mi	mile
MNDNR	Minnesota Department of Natural Resources
MNDOC	Minnesota Department of Commerce
MW	megawatt
NEG	Nordtank Energy Group

NLEB	northern long-eared bat
NPCs	Native Plant Communities
NWI	National Wetland Inventory
PCM	post-construction monitoring
Project	Rose Creek Wind Project
PUC	Minnesota Public Utilities Commission
RD	rotor diameter
Rose Creek	Rose Creek Wind, LLC
SBS	Sites of Biodiversity Significance
SGCN	Minnesota Species in Greatest Conservation Need
SPC	Minnesota species of special concern
U.S.	United States
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Society
WEG	USFWS *Land-based Wind Energy Guidelines*
WEST	Western EcoSystems Technology, Inc.

1.0 INTRODUCTION

Consolidated Edison Development, Inc. ("**CED**"), a renewable energy development and operations company doing business as Rose Creek Wind, LLC ("**Rose Creek**"), is planning to re-power the existing 17.4-megawatt (MW) Rose Wind Project in Mower County, Minnesota. The new wind facility will be called the Rose Creek Wind Project ("**Project**"; Figure 1).

The existing Rose Wind Project, owned by CED via a holding company (Rose Wind Holdings, LLC), contains 11 currently operational Nordtank Energy Group (NEG) Micon turbines originally developed by seven separate limited liability companies and connected to a Project-owned substation and to Dairyland Power's transmission system. The turbines were built in 2004 and 2005, pursuant to Conditional Use Permits issued by Mower County. Prior to constructing the Project, CED will decommission the 11 existing Rose Wind Project turbines. The Project will involve constructing up to seven new, larger turbines to deliver up to 17.4 MW of electricity to Dairyland Power Cooperative (Dairyland). In accordance with Minnesota Statute 216F, the proposed Project will require a Large Wind Energy Conversion System (LWECS) site permit.

Rose Creek, with support from Western EcoSystems Technology, Inc. (WEST), has prepared this Bird and Bat Conservation Strategy (BBCS) to describe Rose Creek's approach to avoid and/or minimize potential impacts to birds and bats that may result from constructing, operating, and decommissioning the proposed Project. This BBCS has been prepared in accordance with guidance from the U.S. Fish and Wildlife Service (USFWS), including the *Land-Based Wind Energy Guidelines* (WEG, USFWS 2012), the *Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy, Version 2* (ECPG, USFWS 2013), and the *4(d) Rule for the Northern Long-eared Bat* (USFWS 2016). The decommissioning of the existing Rose Wind Project is not subject to oversight by the Minnesota Public Utilities Commission (PUC) and thus is not addressed in this document.

Specifically, this BBCS was developed to:

- Provide a framework for fulfilling the application requirements for a LWECS site permit issued by the PUC, in accordance with Chapter 216F of the Minnesota Statutes.
- Adhere to recommendations in the USFWS WEG and state wind energy guidelines for completion of a BBCS and a post-construction fatality monitoring (PCM) protocol. The BBCS is required in Minnesota per the LWECS site permit application guidance.
- Consolidate the documentation of steps already taken to identify, avoid, and minimize potential effects on birds and bats during Project planning and development.
- Identify and implement steps to further reduce the potential for bird and bat fatalities or other potential adverse effects on birds and bats at the Project during operation after repowering, including the implementation of adaptive management measures, if deemed necessary.

In addition to agency guidance and industry operational standards, this BBCS also draws on Project-specific survey reports, relevant scientific literature, and published reports from nearby wind energy projects. This BBCS will be updated as pertinent survey reports and Project infrastructure details are finalized and will remain in effect throughout the Project's 30-year operational life. As such, this document is subject to revision at any time, if deemed necessary by Rose Creek based on biological, fiscal, or regulatory circumstances.

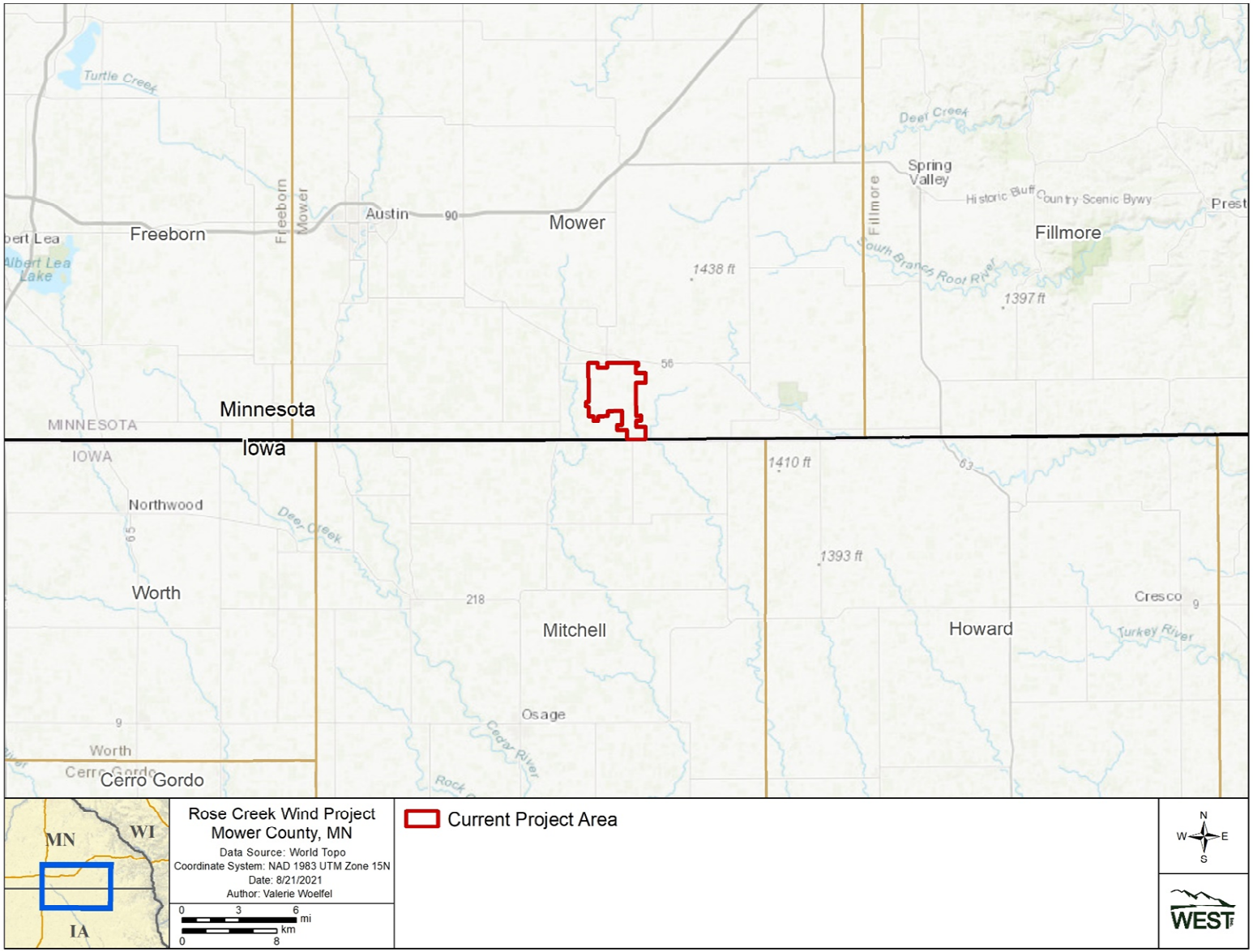

Figure 1. Location of the Rose Creek Wind Project in Mower County, Minnesota

1.1 Project Description

The current Project boundary ("**current Project area**") encompasses approximately 5,258 acres (ac; 2,128 hectares [ha]) and is located approximately 0.5 mile (mi; 0.8 kilometer [km]) south of the City of Adams, Minnesota (Figure 1). The current Project area has been refined over time as part of the siting and design process, and all Project facilities, as described below, have been sited within this smaller area. The original Project boundary ("**original Project area**") was larger, covering 12,745 ac (5,158 ha); this larger Project area was utilized for the Project baseline surveys, as described in Section 2.2, and is utilized throughout this BBCS to describe Project survey efforts (Figure 2).

The Project's total capacity will be up to 17.4 MW, which will be generated using up to seven wind turbines. Due to the larger rotor diameter and setback requirements, the new turbines will not be built in the same locations as the existing turbines, but will be in the general vicinity. Rose Creek has assessed multiple options for turbine models and layout designs, and is considering two scenarios, with multiple turbine models per scenario. Scenario 1 contains six turbines, including one General Electric (GE) 2.3-MW turbine with a 381-foot (ft; 116-meter [m]) rotor diameter (RD) and a 263-ft (80-m) hub height, and five GE 2.82-MW turbines, each with a 417-ft (127-m) RD and a 292-ft (89-m) hub height. Scenario 1 also includes one alternative GE 2.82-MW turbine location. Scenario 2 contains seven turbines, including four Gamesa G97 2.0-MW turbines, each with a 318-ft (97-m) RD and a 328-ft (100-m) hub height; one GE 2.3-MW turbine; and two GE 2.82-MW turbines. The two scenarios will have similar construction footprints, including identical turbine locations, collector lines, access roads, and crane paths.

The current layout (Figure 2) depicts the proposed locations of Project turbines and permanent Project infrastructure such as gravel turbine pads, gravel access roads, and underground electrical collection and communication systems. Due to the size of the Project, no meteorological tower or operations and maintenance (O&M) buildings are planned. The existing Project substation (connected to Dairyland's transmission system) will be upgraded with new equipment and is expected to cover a slightly larger footprint. Modifications to the substation footprint have not been finalized, but will be submitted to the PUC prior to construction.

Temporary construction areas will include a temporary construction laydown yard, crane paths, and temporary construction workspace surrounding permanent Project facilities. Due to obstructions within the current Project area, including high-voltage overhead transmission lines and county drainage ditches, cranes will be broken down between each turbine and transported via Project access roads; therefore, temporary impacts from crane paths are not anticipated. Temporary workspace areas are described in the LWECS site permit application.

As noted above, prior to construction, CED will also be decommissioning the existing Rose Wind Project turbines, which include five NEG Micon 72C 1.5-MW turbines with a 236-ft (72-m) RD and 230-ft (70-m) hub height, six NEG Micon 82 1.65-MW turbines with a 269-ft (82-m) RD and a 230-ft hub height. Associated facilities, such as turbine access roads, turbine pads, and/or underground collection lines may also be removed, per ongoing discussions with landowners and Mower County. The decommissioning of the existing Rose Wind Project is not discussed in detail

in this BBCS. Construction is anticipated to begin in the third quarter of 2022 with commercial operation commencing in the third quarter of 2023.

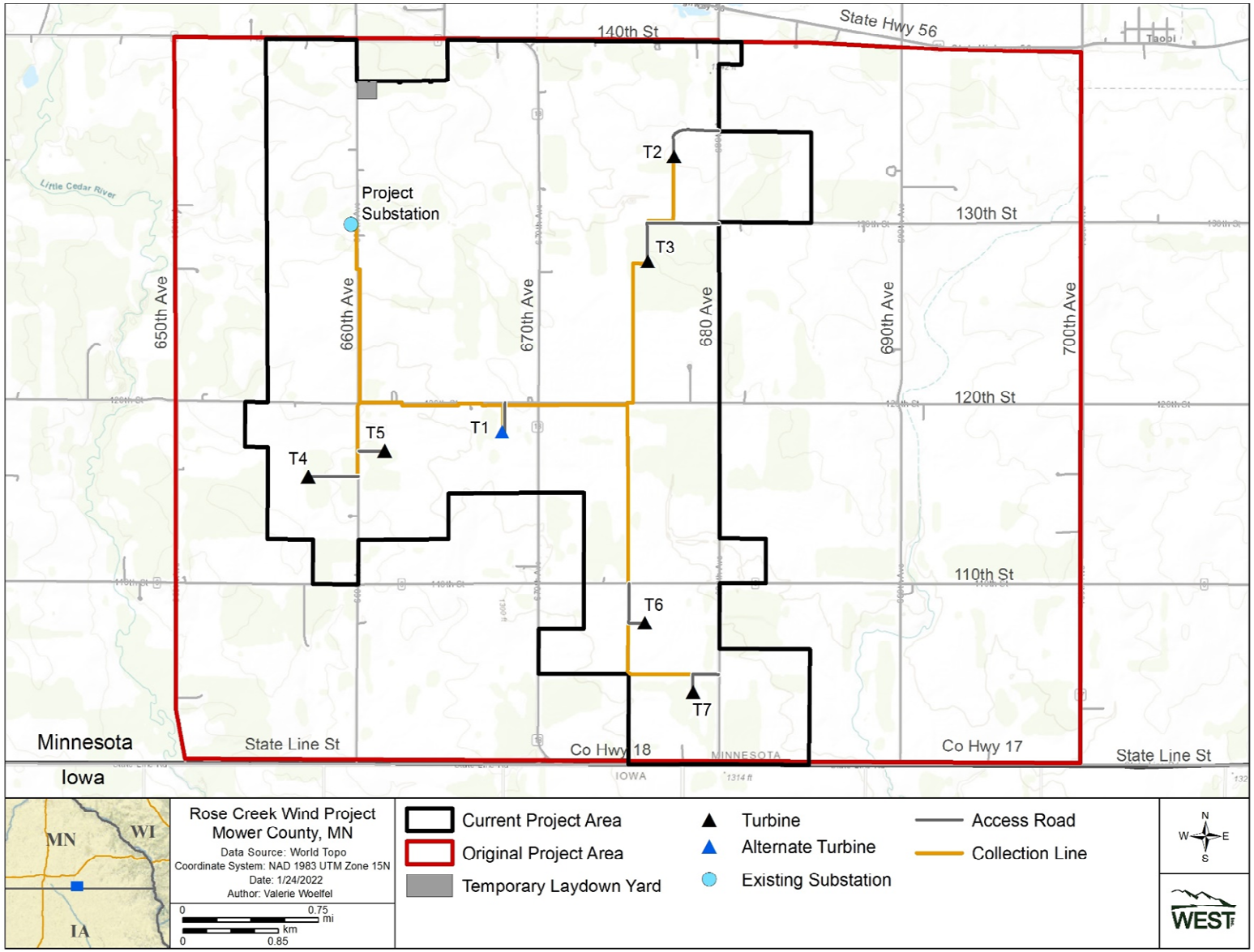

Figure 2. Proposed layout with the Rose Creek Wind Project

1.2 Regulatory Framework

1.2.1 *Endangered Species Act*

Certain species at risk of extinction, including many birds and bats, are protected under the Endangered Species Act of 1973 (ESA), as amended (16 U.S. Code [USC] 1531 et seq., as amended [1973]). The ESA authorizes the USFWS (while working cooperatively with states) to identify, list, and monitor qualifying species, and provides both regulatory protection and a program for the conservation and recovery of listed species. Species that are designated as either endangered or threatened are afforded protection from possession, sale, transport, and take. The definition of "take" under the ESA is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct," including incidental take or significant habitat modification (16 USC 1532 [1973]). Section 10(a) of the federal ESA includes provisions for the authorization of take that is incidental to, but not the purpose of, otherwise lawful activities. Take, however, can be permitted by the USFWS through the ESA Section 7 consultation process among federal agencies or by individual permit under ESA Section 10(a)(1)(B) and an accompanying habitat conservation plan, if the proposed take is incidental and does not jeopardize the survival or recovery of the species. For species that are listed as threatened under the ESA, 4(d) rules can be implemented to incentivize conservation actions and streamline the regulatory process for minor impacts, and usually include descriptions of what types of take are and are not prohibited.

1.2.2 *Migratory Bird Treaty Act*

The Migratory Bird Treaty Act of 1918 (MBTA; 16 USC 703 et seq. [1918]) integrates and implements four international treaties that provide for the protection of migratory birds against hunters and poachers. MBTA prohibits the taking, killing, possession, transportation, and import and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior (16 USC 703 [1918]). The word "take" in MBTA is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] 10.12 [1973]). The USFWS maintains a list of all species protected by the MBTA at 50 CFR 10.13 (1973). This list includes over 1,000 species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

Most birds (except for introduced species and non-migratory game birds) within the U.S. and the Project area are protected under the MBTA. The birds, occupied nests, and the contents of the nest (eggs or chicks) within the Project area are afforded protection pursuant to the MBTA. Due to the potential occurrence of resident and migratory birds within the Project area, compliance with the MBTA has been considered in the development of this BBCS. Unlike the ESA and the Bald and Golden Eagle Protection Act of 1940 (BGEPA), no permits are currently available to authorize incidental take of birds under the MBTA.

1.2.3 *Bald and Golden Eagle Protection Act*

The purpose of the BGEPA (16 USC 668–668c, as amended [1940]), administered by the USFWS, is to protect bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), including their nests, eggs, and parts. The BGEPA states that "no person shall knowingly, or with wanton disregard for the consequences of his act, take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner, any bald eagle…or any golden eagle, alive or dead, or any part, nest, or egg thereof" without a valid permit to do so.

The BGEPA defines the "take" of an eagle to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb" (16 USC 668c [1940]; 50 CFR 22.3 [1974]), and includes criminal and civil penalties for violating the statute (see 16 USC 668 [1940]). The term "disturb" is defined in regulations found at 50 CFR 22.3 (1974) to include agitating or bothering "a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle, (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

The USFWS published a rule (Eagle Permit Rule) on September 11, 2009, under the BGEPA authorizing limited issuance of permits to take bald eagles and golden eagles ''for the protection of other interests in any particular locality.'' (74 Federal Register [FR] 46836 [September 11, 2009]). The USFWS published a proposed rule to revise the Eagle Permit Rule on May 6, 2016 (81 FR 27933), which was finalized on August 30, 2017 (82 FR 41177). The revisions included changes to the permit issuance criteria and permit duration, compensatory mitigation standards, criteria for eagle nest removal permits, and permit application requirements and fees, as well as definitions intended to add clarity to the Eagle Permit Rule.

The Eagle Permit Rule authorizes take of bald eagles and golden eagles where take: (1) is compatible with the preservation of the bald and golden eagle; (2) is associated with and not the purpose of an otherwise lawful activity; and (3) cannot practicably be avoided (50 CFR 22.26 [2009]). Specific to wind energy operations, the USFWS issued its ECPG to provide recommendations on assessing eagle risk and steps to avoid, minimize, and mitigate potential impacts to eagles consistent with the BGEPA.

1.2.4 *Minnesota Threatened and Endangered Species Laws*

Minnesota's Endangered Species Statute (Minnesota Statutes Section 84.0895) establishes protections for species designated as endangered or threatened in Minnesota and imposes restrictions pertaining to possession, take, and management (Minnesota Administrative Rules Parts 6212.1800 to 6212.2300 [2008]). The statute directs the Commissioner of the Minnesota Department of Natural Resources (MNDNR) to develop and maintain lists of endangered species, threatened species, and species of special concern (Minnesota Administrative Rules Chapter 6134 [1980]). Minnesota Administrative Rules Part 6212.1800 (2008) does allow for issuance of regulated taking for threatened and endangered species in situations when the social and economic benefits outweigh the harm caused by it (Minnesota Statutes Section 84.0895

Subdivision 7(4)). Designated species of special concern are typically either extremely uncommon in Minnesota, or possess unique or highly specific habitat requirements warranting monitoring; however, this status confers no protection under Minnesota's Endangered Species Statute.

1.2.5 *U.S. Fish and Wildlife Service Wind Energy Guidelines and Eagle Conservation Plan Guidance*

USFWS WEG framework provides a voluntary, structured process for wind energy developers to assess and address potential wildlife concerns related to the federal and state regulations described above. Similar to the WEG, the ECPG recommends a broad evaluation of a project's landscape and habitats, followed by site-specific surveys and assessments. Both culminate with PCM surveys to refine risk assessment through observed impacts. The tiered approach outlined in the WEG aligns with the stages outlined in the ECPG[1].

With publication of the final WEG, the USFWS recommended that wind energy companies develop a BBCS to facilitate communication with state and federal agencies and to document the studies, analyses, agency coordination, and decisions made while navigating through the WEG and ECPG processes to avoid and minimize impacts to protected species. In Minnesota, the development of a BBCS is a standard requirement of LWECS site permits used to document compliance with the MNDNR and Minnesota Department of Commerce (MNDOC) Energy Environmental Review Analysis (EERA) wind energy guidelines.

The existing Rose Wind Project was developed in 2004 and 2005, prior to the WEG and ECPG; therefore, no pre-construction wildlife studies or formal PCM surveys were conducted. This BBCS briefly describes the pre-construction assessments and recent and ongoing biological surveys associated with the repowering Project (generally corresponding to Tiers 1 – 3 of the WEG). Survey results and any associated changes to the expected Project impacts will be revised when surveys are complete.

This BBCS also addresses the recommendations included in the USFWS's ECPG and WEG, as applicable to the construction, operation, and decommissioning of the Project. Rose Creek's commitments to assess risk, avoid and minimize impacts, monitor for potential effects, and respond to potential concerns related to eagles, birds, and bats are clearly described throughout this BBCS (see Sections 3, 4, 5, and 6).

[1] Tiers 1 and 2 of the WEG align with Stage 1 of the ECPG; Tier 3 of the WEG aligns with Stages 2, 3, and 4 of the ECPG, and Tiers 4 and 5 of the WEG align with Stage 5 of the ECPG.

2.0 PRE-CONSTRUCTION ACTIVITIES (TIERS 1 – 3)

The WEG outlines a tiered approach to assessing suitability and risks to wildlife at a potential wind resource area. The "tiered" approach ensures that sufficient data are collected to enable project proponents to make informed decisions about continued development of a proposed project. At each tier, potential issues associated with the development and/or operation of a project are identified and questions are formulated to guide the decision process. Information gathered during Tier 1, 2, and 3 studies will be used to minimize potential impacts to bird and bat species and potential habitats during the turbine and infrastructure siting process.

2.1 Preliminary Site Evaluation and Characterization (Tiers 1 and 2)

As described in the WEG, the Tier 1 and 2 assessments evaluate potential issues that may need to be considered prior to development or operation of a project. Tier 1 studies provide a preliminary evaluation or screening of public data from federal, state, and tribal entities and offer early guidance about the sensitivity of the site, in regards to sensitive species and habitat. The objective of Tier 2 studies is to determine the effects of the proposed project on any federal and state-listed species.

As previously mentioned, the existing Rose Wind Project was sited prior to the publication of the WEG and ECPG. The existing 11 turbines were originally developed by seven separate limited liability companies and granted Conditional Use Permits by Mower County. Thus, the Rose Wind Project does not have an existing LWECS site permit, and limited information regarding the original siting or environmental reviews is available. However, pre-construction siting by the Rose Wind Project was intended to avoid and minimize impacts to wildlife and sensitive habitats, including avoidance of public waters and wetlands (Mower County 2003). All 11 of the original turbines were placed in cultivated agricultural fields to avoid impacts to high-quality wildlife habitat. Tower lighting was also designed to minimize visual impacts, per the Mower County Zoning Ordinance (Mower County 2003).

Although this Project is a repower, the proposed modern turbines are larger than the existing turbines, and the turbine locations are being re-sited to accommodate LWECS setback requirements and other applicable permitting guidance. The siting and development process for the new Project turbines and associated facilities followed the tiered review process described in the WEG.

Consultation with state and federal agencies, including the MNDNR, MNDOC-EERA, and USFWS, was initiated in February 2021 to obtain information regarding sensitive resources in the Project area and to discuss the proposed Project and its potential impacts. These agency consultations will continue as the Project is developed and biological studies progress.

Various information from publicly available sources, agency communications, and desktop reviews was used during the Tier 1 and Tier 2 evaluations to identify potentially sensitive resources, such as habitat for rare species and other environmental constraints for the siting of the Project facilities. These data were also used to develop a scope for further field and desktop

studies to be conducted in Tier 3. For additional detail regarding the 2021 Tier 1 and Tier 2 assessments, please see the *Tier 1 and 2 Report* prepared by Merjent on behalf of Rose Creek, which was submitted to the MNDNR, MNDOC-EERA, and PUC as a part of the LWECS site permit application.

The *Tier 1 and 2 Report* identified several sensitive and or protected habitat areas within 1.0 mi (1.6 km) of the original 12,745-acre Project area and provided a review of federally and state-listed and rare species with the potential to occur within the original Project area (Merjent 2021). The following sections provide a general overview of the Tier 1 and 2 reviews; however, additional information relevant to this BBCS was added to place a greater focus on bird and bat species and sensitive habitats within the Project area and to compare the current proposed Project area against the original Project area.

2.1.1 *Project Area Characterization and Land Cover*

The Project lies within the Western Corn Belt Plains Level III Ecoregion and the Eastern Iowa and Minnesota Drift Plains Level IV Ecoregion (U.S. Environmental Protection Agency 2012a, 2012b), which are characterized by undulating to relatively flat topography. Historically, tallgrass prairies and oak (*Quercus* spp.) savannas were the primary land covers in the region, although the majority of the area has since been converted to row-crop agriculture (White 2020). Waterbodies within the original Project area include several tributaries to the Little Cedar River, Wapsipinicon River and its tributaries, and a tributary to the North Branch Upper Iowa River; waterbodies within the current Project area are more limited, and include tributaries to the Little Cedar River and Wapsipinicon River (Figure 3). Emergent, forested/scrub shrub, and riverine wetlands within the original and current Project boundaries are primarily concentrated adjacent to waterbodies.

Based on the National Land Cover Database (2016), the majority of the land cover within the both the current and original Project areas is cultivated crops (95.8% and 93.9%, respectively); land cover acreages and percentages within both the current and original Project areas are shown in Table 1. The current Project also contains developed open space (2.4%); all other land cover types each comprise less than 1% of the current Project area (Figure 4, Table 1).

Table 1. Land cover types present within the Rose Creek Wind Project.

	Original Project Area		Current Project Area	
Cover Type	**Acres**	**Percent (%)**	**Acres**	**Percent (%)**
Cultivated Crops	11,970	93.9	5,038	95.8
Developed, Open Space	340	2.7	125	2.4
Developed, Low Intensity	106	0.8	45	0.9
Hay/Pasture	147	1.2	14	0.3
Herbaceous	80	0.6	13	0.3
Emergent Herbaceous Wetlands	40	0.3	10	0.2
Developed, Medium Intensity	25	0.2	10	0.2
Deciduous Forest	18	0.1	1	<0.1
Mixed Forest	5	<0.1	1	<0.1
Developed, High Intensity	4	<0.1	1	<0.1
Barren Land	10	0.1	<1	<0.1
Total	**12,745**	**100**	**5,258**	**100**

Source: National Land Cover Database 2016; Tier 1 and 2 Report (Merjent 2021).
Values rounded and may not match the totals.

The Project is located in the Mississippi Flyway migration corridor (National Audubon Society [Audubon] 2021) and within the Eastern Tallgrass Prairie Bird Conservation Region (Birds Studies Canada and North American Bird Conservation Initiative 2014), which historically contained an abundance of grassland and woodland habitats suitable for migratory birds. No county, state, or federally protected areas such as state or county parks, scientific natural areas, wildlife refuges, or wildlife management areas are located within the original or current Project areas (U.S. Geological Survey [USGS] 2020, Minnesota Board of Water and Soil Resources 2019). No state or federal conservation easement lands (such as Reinvest In Minnesota Reserve or Conservation Reserve Enhancement Program lands) are located within the original or current Project areas (Minnesota Board of Water and Soil Resources 2019).

In addition to the 11 turbines from the existing Rose Wind Project, this region in southeastern Minnesota and northeastern Iowa contains numerous existing wind projects. Over 380 turbines from 10 existing projects are located within 10 mi of the current Project boundary. Based on the United States Wind Turbine Database (USWTD; Hoen et al. 2018), neighboring wind projects to the south in Iowa include Pioneer Prairie I and II (182 turbines, 0.4 mi from the Project), Turtle Creek (36 turbines, 3.8 mi), Little Cedar (one turbine, 8.6 mi), and Crane Creek (12 turbines, 8.9 mi). To the north, nearby projects include Adams Wind Project (four turbines, <0.1 mi), Mower County (43 turbines, 1.2 mi), Prairie Star (48 turbines, 3.9 mi), Grand Meadow (46 turbines, 7.3 mi), and Pleasant Valley (eight turbines, 9.4 mi). The most recently constructed sites include Pleasant Valley (operational as of 2015) and Turtle Creek (operational as of 2018); the remaining projects began operating between 2003 and 2011 (Hoen et al. 2018).

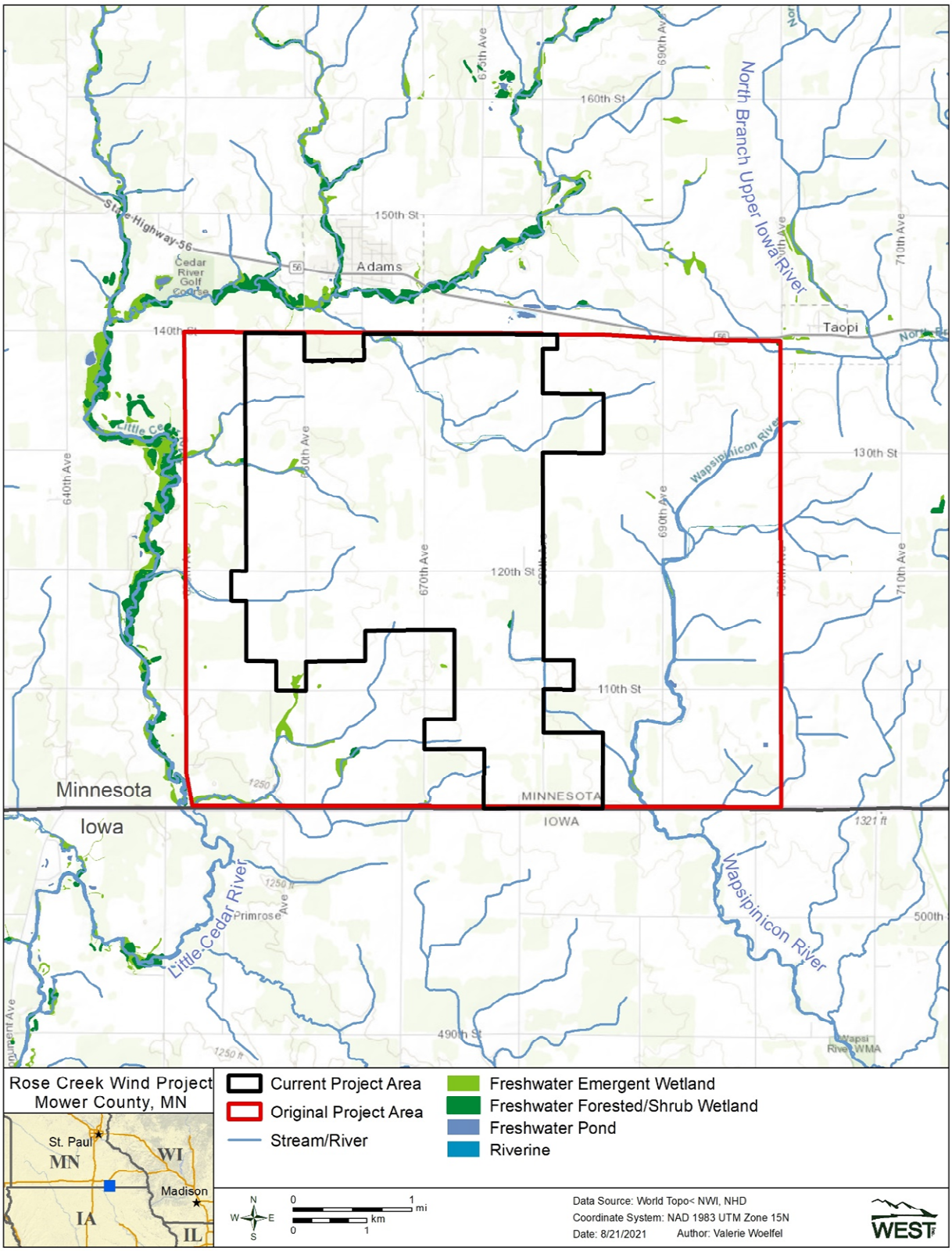

Figure 3. Wetlands and waterbodies at the Rose Creek Wind Project.

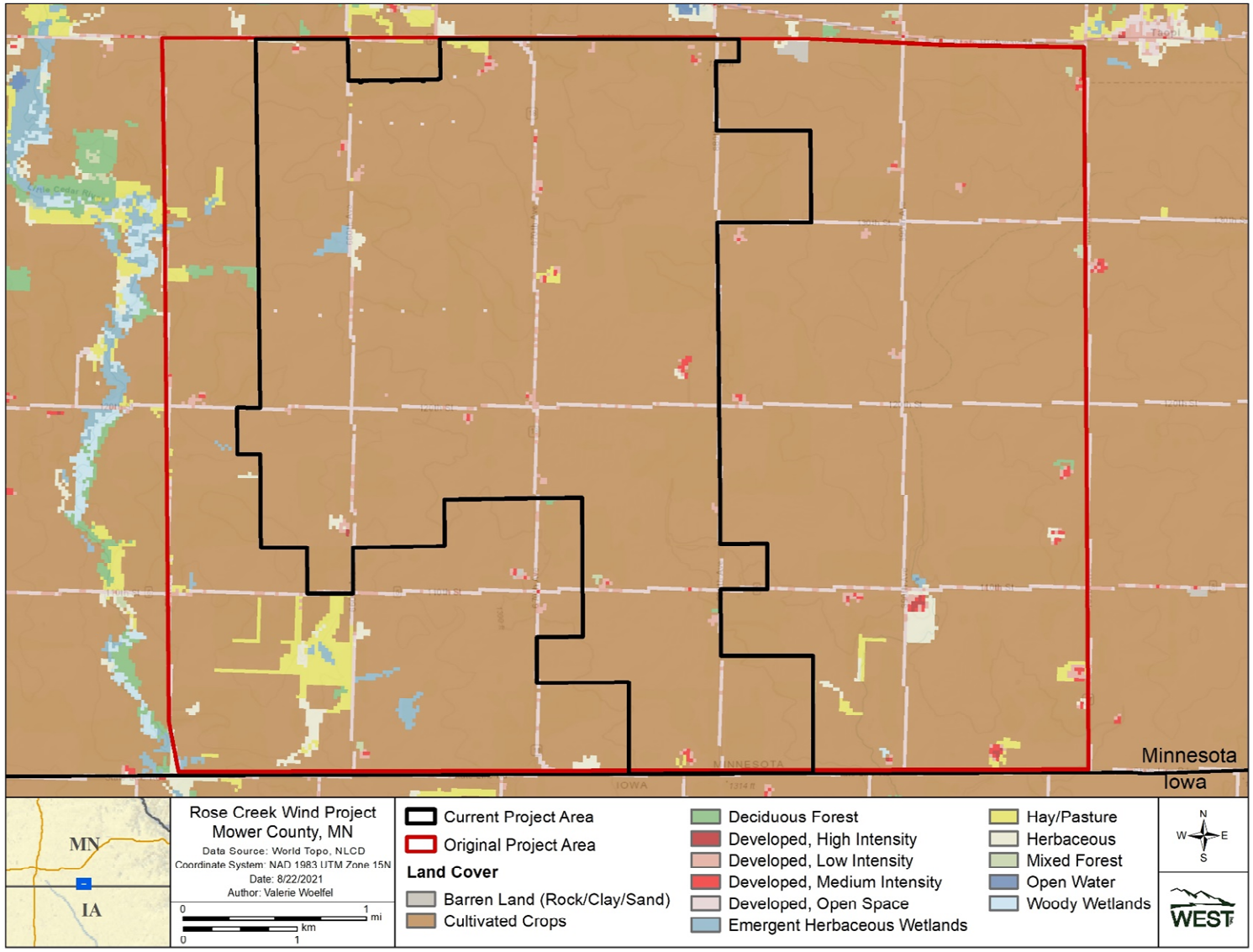

Figure 4. Land cover types at the Rose Creek Wind Project.

2.1.2 *Rare and Protected Species*

The Tier 1 and 2 reviews indicated that several protected and/or rare species have the potential to occur within or near the original and current Project areas. The MNDNR Natural Heritage Information System (NHIS) database and USFWS Information for Planning and Consultation database were queried to identify federally or state-listed wildlife and plant taxa with the potential to occur within 1.0 mi of the original Project area (which also encompasses a 1.0 mi buffer of the current Project area). Any rare or protected species with a range overlapping the Project or with known occurrences within 1.0 mi of the original or current Project boundaries were considered to have the potential to occur in the Project area (MNDNR 2020a; USFWS 2021b). In addition, as this BBCS is specifically designed to highlight potential impacts to highly-mobile, volant bird and bat species during the operational phase of the Project, the MNDNR rare species guide for Mower County, eBird, Bat Conservation International bat ranges, and nearby PCM project bat fatality data were also searched for bird and bat species relevant to the Project area (BCI 2021, eBird 2021, MNDNR 2021a).

Based on the available datasets, 23 species have the potential to occur within 1.0 mi of the Project areas, including 10 birds, four mammals, six plants, and three aquatic species (two fish and one mussel). Of these, three species are federally listed or BGEPA-protected and 20 are state-listed, including 13 designated as Minnesota species of special concern (SPC; Table 2). No designated critical habitats for federally listed species were identified near the Project.

Bald eagles are federally protected under the BGEPA and bald eagle observations were documented within the Project vicinity during avian use surveys (see Section 2.2.1). The remaining nine bird species with potential to occur in the original or current Project areas state-listed and have occurrences documented in Mower County. State-listed endangered species include Henslow's sparrow (*Centronyx henslowii*), loggerhead shrike (*Lanius ludovicianus*), and horned grebe (*Podiceps auritus*); state-listed SPC include Forster's tern (*Sterna forsteri*), American white pelican (*Pelecanus erythrorhynchos*), red-shouldered hawk (*Buteo lineatus*), lark sparrow (*Chondestes grammacus*), Bell's vireo (*Vireo bellii),* and purple martin (*Progne subis*). Due to the relatively high mobility of all bird species, particularly during migration periods, this list may not encompass all protected bird species with potential to occur within the original or current Project areas; however, additional species would be considered unlikely to occur outside of migration seasons (Audubon 2021).

The four listed mammals with potential to occur in the original or current Project areas are all bat species; of these, NLEB is federally listed as threatened and the remaining three (big brown bat [*Eptesicus fuscus*], little brown bat [*Myotis lucifugus*], and tri-colored bat [*Perimyotis subflavus*]) are state-listed SPC (BCI 2021). Like birds, migratory bats will disperse to and from summer habitats in the spring; however, bats generally migrate over shorter distances than birds and the presence of additional protected species is unlikely.

Six plant species have known occurrences documented or have potential to occur within 1.0 mi of the original or current Project areas. These include federally and state-listed threatened prairie bush-clover (*Lespedeza leptostachya*), state-endangered wild quinine (*Parthenium integrifolium*),

state-threatened Sullivant's milkweed (*Asclepias sullivantii*), three-leaved coneflower (*Rudbeckia triloba* var. *triloba*), and edible valerian (*Valeriana edulis* var. *ciliata*), and state-listed SPC rattlesnake master (*Eryngium yuccifolium*). Additionally, three aquatic species (two fish and one mussel) were identified by the NHIS query; however, these observations are all associated with the Little Cedar River outside of the Project area (Table 2).

Species listing status and survey observations are included in Table 2. Habitat descriptions and species occurrence observations are discussed in more detail below.

Table 2. Species protected by federal or state law with potential to occur within 1.0 mile of the Rose Creek Wind Project.

Common Name	Scientific Name	Status[1]	Habitat	Known Occurrences (Yes/No) / Proximity to the Original Project Area[2]	Detected During Project Surveys
Mammals					
northern long-eared bat	*Myotis septentrionalis*	FT	winter: caves and mines; summer: wooded areas	No – within species range	Not confirmed[3]
big brown bat	*Eptesicus fuscus*	SPC		No – within species range	Yes[3]
little brown bat	*Myotis lucifugus*	SPC		No – within species range	Yes[3]
tri-colored bat	*Perimyotis subflavus*	SPC		No – within species range	Yes[3]
Birds					
bald eagle	*Haliaeetus leucocephalus*	BGEPA	forested areas near waterbodies	Yes – within Project area	Yes
red-shouldered hawk	*Buteo lineatus*	SPC		Yes – 8 miles from Project	No
Henslow's sparrow	*Centronyx henslowii*	SE	upland prairie	Yes – 8 miles from Project	No
loggerhead shrike	*Lanius ludovicianus*	SE		Yes – 8 miles from Project	No
horned grebe	*Podiceps auritus*	SE	open water bodies and marshes	Yes – 8 miles from Project	No
Forster's tern	*Sterna forsteri*	SPC	herbaceous wetlands	Yes – 8 miles from Project	No
American white pelican	*Pelecanus erythrorhynchos*	SPC		Yes – within Project area	Yes
purple martin	*Progne subis*	SPC		Yes – Mower County; greater than 1 mile from Project	No
lark sparrow	*Chondestes grammacus*	SPC	woodlands and open habitats with shrubs	Yes – Mower County; greater than 1 mile from Project	No
Bell's vireo	*Vireo bellii*	SPC		Yes – Mower County; greater than 1 mile from Project	No
Vascular Plants					
prairie bush-clover	*Lespedeza leptostachya*	FT; ST	mesic to dry native prairies	No – within species range	N/A[4]
rattlesnake master	*Eryngium yuccifolium*	SPC		Yes – within Project area	No[5]
wild quinine	*Parthenium integrifolium*	SE	prairies along railroad rights-of-ways	Yes – within Project area	No[5]
edible valerian	*Valeriana edulis* var. *ciliata*	ST		Yes – within Project area	No[5]
Sullivant's milkweed	*Asclepias sullivantii*	ST		Yes – within Project area	No[5]
three-leaved coneflower	*Rudbeckia triloba* var. *triloba*	ST	hardwood and floodplain forests	Yes – within Project area	N/A[4]
Fish					
redfin shiner	*Lythrurus umbratilis*	SPC	small- to medium-sized streams and rivers	Yes – within 1 mile of Project	N/A[4]
suckermouth minnow	*Phenacobius mirabilis*	SPC		Yes – within 1 mile of Project	N/A[4]

Table 2. Species protected by federal or state law with potential to occur within 1.0 mile of the Rose Creek Wind Project.

Common Name	Scientific Name	Status[1]	Habitat	Known Occurrences (Yes/No) / Proximity to the Original Project Area[2]	Detected During Project Surveys
Mussels					
creek heelsplitter	*Lasmigona compressa*	SPC	creeks and small rivers with mud, sand, or fine gravel substrates	Yes – within 1 mile of Project	N/A[4]

Sources: Bat Conservation International 2021; eBird 2021; Minnesota Department of Natural Resources (MNDNR) Natural Heritage Information System Database (MNDNR 2020a), MNDNR Rare Species Guide (MNDNR 2021a); U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (USFWS 2021b).

[1] FE = Federally Endangered, FT= Federally Threatened, BGEPA= Bald and Golden Eagle Protection Act of 1940, ST = State Threatened, SE= State Endangered, SPC = Species of Special Concern

[2] Distances based on the original Project area, which encompasses current Project area.

[3] Automated detection software utilized for acoustic bat surveys initially detected northern long-eared bat calls; however, none of these calls were confirmed during manual vetting. Manual vetting was not conducted to confirm calls from non-federally listed species, though little brown bat calls were confirmed during the manual vetting for northern long-eared bat.

[4] N/A – Not applicable. Surveys for these species are not planned.

[5] Surveys for four plant species were conducted in 2021 near Project infrastructure within the current Project area. These included presence/absence surveys for Sullivant's milkweed and edible valerian and habitat assessment surveys for wild quinine and rattlesnake master.

2.1.2.1 Birds

Federally Protected Birds

In Minnesota, bald eagles are regular breeding residents and can be found in the state year-round. Bald eagle relative abundance in Minnesota is greatest during spring and fall migration periods (eBird, 2021), when migrant populations travel along the Mississippi River to/from breeding ranges in Minnesota and Canada (Buehler 2020). During the breeding season, bald eagles favor forested riparian corridors or open water bodies for foraging and nesting (Buehler 2020), but as populations continue to increase, bald eagles can also be found nesting in agricultural areas with trees large enough to support massive eagle nests (Foo et al. 2020). In winter, bald eagles often utilize communal roost sites that are protected from prevailing winds and are in close proximity to ice-free waters, such as the Mississippi River, where they can hunt for fish and waterfowl. Forest stands and open water resources within the Project are limited; however, the Little Cedar River just west of the original Project boundary contains typical nesting and foraging habitat for bald eagles. The current Project boundary has shifted east, and now lies approximately 0.4 mi further away from Little Cedar River and its surrounding habitat.

Thirty bald eagle observations were recorded in the original Project area during avian use surveys in 2021, including 28 observations recorded during standardized surveys and two observed incidentally. In addition, raptor nest surveys at the Project identified three occupied and active bald eagle nests outside the original Project boundary, but within a 2.0-mi (3.2-km) survey buffer. Two eagle nests are located to the west along Little Cedar River, approximately 0.6 mi (1.0 km) and 0.7 mi (1.1 km) from the original Project boundary. The third nest is within 1.2 mi (1.9 km) along a tributary of the Wapsipinicon River, south of the original Project area (WEST 2021b). Due to the Project boundary revisions, these nests are now located 1.7, 1.2, and 2.1 mi (2.7, 1.9, and 3.4 km) from the current Project area, respectively, and over 2 mi from all the proposed turbines.

State-listed Threatened and Endangered Birds

State-endangered Henslow's sparrows prefer upland prairie habitats; 247 ac (100 ha) or larger uncultivated grasslands and retired fields with leaf litter for foraging are favored (MNDNR 2021b). No native prairies exist within the Project area; however, two native upland prairies occur within 0.2 mi of the Project and could potentially provide suitable Henslow's sparrow habitat (Merjent 2021). State-endangered loggerhead shrikes prefer upland prairie habitats, but can also be found in agricultural areas, pasturelands, and farmyards (MN DNR 2021c). State-endangered horned grebes inhabit open water bodies and marshes, which are not present in the original or current Project areas (MNDNR 2021d). None of these state-listed species has been recorded within one mile of the Project areas; however, observations have been recorded at the Lake Louise State Park hotspot, approximately 8.0 mi (12.9 km) east of the Project in Mower County (eBird 2021).

Species of Special Concern

Six additional bird species have potential to occur within the original and current Project areas. Three were identified in the MNDNR rare species guide for Mower County: lark sparrow, Bell's vireo, and purple martin (all SPC species). The remaining three species (American white pelican,

red-shouldered hawk, and Forster's tern) have been recorded on eBird checklists at the Lake Louise State Park hotspot, approximately 8.0 miles east of the Project (eBird 2021). American white pelicans were also observed during Project avian use surveys (see Section 2.2.1).

In contrast to the primarily cultivated croplands within the current Project area, available habitats within Lake Louise State Park are diverse, containing grasslands, native prairies, forested riparian corridors, and wetlands. Higher quality habitats within the current Project area are small and fragmented, typically associated with shelterbelts or farmsteads. The Little Cedar River, which runs west of the original Project boundary and approximately 0.6 mi (1.0 km) west of the current Project boundary, provides a forested riparian corridor with associated wetlands that could provide foraging or nesting opportunities for several SPC birds, including red-shouldered hawks (Dykstra et al. 2020). Forster's tern, American white pelican, and purple martin prefer herbaceous wetlands, which are present in the Project area (MNDNR 2021e, 2021f, 2021g). Lark sparrow and Bell's vireo prefer open habitats adjacent to woodlands with a shrub component, such as those found in agricultural areas (MNDNR 2021h, 2021i); suitable habitat for these species present in the original and current Project areas.

2.1.2.2 Mammals

Federally Listed Bats

Federally threatened NLEBs have the potential to occur throughout Minnesota; however, no NLEB capture records, maternity roosts, or hibernacula have been documented in Mower County (MNDNR 2020a, MNDNR and USFWS 2020). Multiple NLEB hibernacula and at least one maternity roost tree have been documented in Fillmore County to the east, including one hibernacula approximately 17 mi (27 km) northeast of the Project in Spring Valley, Minnesota (MNDNR and USFWS 2020). No NLEB calls were confirmed during qualitative review of bat acoustic activity data collected from surveys at the Project between April and October 2021 (see Section 2.2.3).

NLEBs typically overwinter in hibernacula such as caves and abandoned mines, and occupy forested summer habitats between mid-May and mid-August, depending on latitude (USFWS 2014). NLEBs prefer mature-growth upland hardwood forests, where available (Broders and Forbes 2004, USFWS 2015), but will utilize a wide range of upland and wetland forest types for roosting, foraging, and travel during the summer. Suitable summer roosting and foraging habitats include dense forest patches, loose aggregates of trees, or linear features (e.g., tree lines or riparian corridors) with variable amounts of canopy closure (USFWS 2014). Individual, isolated trees may be considered potential roosts if they fall within 1,000 ft (305 m) of other potentially suitable forested habitat and meet the definition of a potential roost tree (Henderson and Broders 2008). Human-made structures, such as bridges and barns, may also provide potential summer roosting habitat (Foster and Kurta 1999). NLEBs switch roosts frequently, every two to three days on average, and per USFWS guidance, foraging distances can range up to 2.5 mi (4.0 km) from roost sites (USFWS 2014).

Based on the Project NLEB habitat assessment (see Section 2.2.4), 2.0 ac (0.8 ha) of potentially suitable NLEB summer habitat is located within the current Project area, primarily along the

western border and connecting to the Little Cedar River riparian corridor outside the Project boundary (reduced from 30.4 ac [12.3 ha] within the original Project area). An additional 2,123 ac (862.8 ha) of potentially suitable NLEB summer habitat was mapped within the assessment area and primarily situated within the riparian areas of the Little Cedar River, Wapsipinicon River, Iowa River, and their tributaries. For more information on NLEB habitats, see WEST's *Rose Creek Wind Project Northern Long-eared Bat Habitat Assessment* (WEST 2021a) submitted to the MNDNR and MNDOC-EERA as a part of the LWECS site permit application.

Species of Special Concern

Big brown bat, little brown bat, and tri-colored bat are Minnesota SPC. These three bat species are not included in the rare species list for Mower County, nor are occurrences recorded in the NHIS; however, the range of each species overlaps the original and current Project areas and all three species have been recently documented as wind project fatalities in southeastern Minnesota and northeastern Iowa (WEST 2019, BCI 2021). Big brown and little brown bat calls were detected during pre-construction acoustic surveys for the Mower County Wind Project; the closest turbines this project are located 1.2 mi (1.9 km) north of the Project boundary (Tetra Tech 2020). Calls from all three species were also detected during acoustic bat activity surveys at the Project between April and October 2021 (see Section 2.2.3).

2.1.2.3 Vascular Plants

Federally Listed Plants

Prairie bush clover is a federally and state-threatened species. Although there are no documented occurrences in the original or current Project areas, the species has the potential to occur in mesic to dry native prairies in the county (MNDNR 2021j).

State-listed Threatened and Endangered Plants

Wild quinine is a state-listed endangered species with known occurrences within the original and current Project areas. In Minnesota, the only surviving populations are limited to remnant prairies associated with railroad rights-of-way, as these areas have yet to be converted to crop production (MNDNR 2021k).

Sullivant's milkweed, edible valerian, and three-leaved coneflower are each state-listed threatened species with known occurrences within the original and current Project area. Similar to wild quinine, Sullivant's milkweed and edible valerian are often associated with prairies along railroad rights-of-ways in Minnesota (MNDNR 2021l, 2021m). Three-leaved coneflower, however, is limited to five native populations within hardwood and floodplain forests of Minnesota (MNDNR 2021n).

Species of Special Concern

Rattlesnake master is a state SPC species that is most commonly found in mesic to dry prairies (MNDNR 2021o). Multiple occurrences of rattlesnake master have been documented within 1.0 mi of the original Project area (MNDNR 2020a).

2.1.2.4 Fish and Mussels

Species of Special Concern

Redfin shiner (*Lythrurus umbratilis*) and suckermouth minnow (*Phenacobius mirabilis*) are both SPC fish species in Minnesota. Suitable habitats include small- to medium-sized streams and rivers; though redfin shiners typically occupy pools with low turbidity and silty bottoms, while suckermouth minnows prefer highly turbid streams with gravel substrates (MNDNR 2021p, 2021q). Creek heelsplitter (*Lasmigona compressa*) is an SPC mussel species in Minnesota that prefers creeks and small rivers with mud, sand, or fine gravel substrates (MNDNR 2021r). All three of these aquatic SPC have documented NHIS occurrences in the Little Cedar River west of the original and current Project areas (MNDNR 2020a).

2.1.3 *Sensitive Habitat*

The MNDNR's Minnesota Biological Survey (MBS) has designated areas that contain rare or unique plants and animals as Sites of Biodiversity Significance (SBS; MNDNR 2020b). Each area is ranked based on its functional importance on the landscape and according to the number of rare or unique species that occurs within it. MBS's native plant communities are areas of native vegetation that form distinct ecological units (e.g., oak savannas, pine [*Pinus* spp.] forests; MNDNR 2020c). These areas generally have uniform soil characteristics, topography, and disturbance regimes. Both the SBS and native plant community datasets were queried to determine whether any sensitive habitats exist within the original and current Project areas.

No sites of "high" or "outstanding" biodiversity significance occur within the original or current Project areas. One small southern seepage meadow/carr designated as both a "moderate" SBS and a native plant community is located in the southwest portion of the original and current Project areas. Moderate sites of biodiversity significance typically contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have strong potential for recovery of native plant communities and characteristic ecological processes (MNDNR 2020c). Additionally, one small roadside swale located in the southeast portion of the original and current Project areas is ranked as "below" biodiversity significance and lacked the rare species occurrences necessary to meet the minimum MBS standards for statewide biodiversity significance designation. While these two small areas have the potential for rare plants to occur within the current Project area, the small area size makes them unlikely to provide important habitats for sensitive bird or bat species. Project infrastructure within the current Project boundary was sited to avoid both of these designated sensitive habitats. For additional information on sensitive habitats and protected areas within 1.0 mi of the original Project area, see the *Tier 1 and 2 Report* (Merjent 2021).

Table 3. Sensitive habitats mapped within the Rose Creek Wind Project.

Site of Biodiversity Significance			
Site Name	**Site Ranking**	**Native Plant Community**	**Size (acres)**
Adams 35	Moderate	Southern Seepage Meadow/Carr	9.6 (8.0) [1]
Lodi 32	Below	No	14.4

Sources: Minnesota Department of Natural Resources (MNDNR) Sites of Biodiversity Significance (SBS; MNDNR 2020b), MNDNR Native Plant Communities (MNDNR 2020c)

[1] In many cases, several native plant communities are present within one SBS site. The size of the native plant communities that fall within each SBS within the original and current Project boundaries are indicated in parentheses.

2.2 Baseline Surveys (Tier 3)

Tier 3 baseline studies recommended in the WEG and consistent with the MNDNR's *Avian and Bat Survey Protocols for Large Wind Energy Conversion Systems in Minnesota* (Mixon et al. 2014) were initiated for the proposed Project in January 2021. Since the existing Rose Wind Project is operational during these surveys, data collected is not directly analogous to pre-construction surveys designed to assess wildlife activity on the landscape prior to wind energy development. However, the baseline surveys will still provide site-specific wildlife data that can be used to inform Project siting and other minimization and adaptive management measures discussed in this BBCS. All baseline surveys described in this section were designed to provide survey coverage for the original 12,745-acre Project area and will also provide complete coverage for the current Project area.

2.2.1 *Avian Use Surveys*

WEST conducted one year of avian and eagle use surveys for the Project from January 2021 to December 2021. The objective of avian use surveys was to characterize spatial use of the original 12,745-acre Project area by diurnal birds across seasons, with special attention given to eagles, which are protected by the BGEPA, as well as Minnesota state-listed and Species in Greatest Conservation Need (SGCN; MNDNR 2016). Surveys followed guidance from the WEG and ECPG, as well as the MNDNR and MNDOC-EERA *Avian and Bat Survey Protocols for Large Wind Energy Conversion Systems in Minnesota* (Mixon et al. 2014). Survey methods utilized a fixed-point count methodology similar to Reynolds et al. (1980); this approach was discussed with the MNDNR and MNDOC-EERA and was approved on February 25, 2021 and March 4, 2021, respectively.

To assess eagle use, the ECPG recommends that pre-construction eagle surveys cover at least 30% of the project area as defined by the minimum convex polygon of a project layout. Because Project layout options were still under development when avian use surveys were initiated in January 2021, avian use survey needs were instead calculated using a conservative approach of at least 30% coverage for the entire original Project area. Each fixed-point survey location includes an 800-m (2,625-ft) radius plot, covering approximately 496 ac (201 ha; Figure 5). Nine spatially-balanced survey points were established throughout the original Project area. These

points provide 35% coverage of the original Project area and 41% coverage of the current 5,258-acre Project area discussed in the LWECS application, and thus exceed the ECPG standards.

WEST conducted 70-minute surveys at each of the nine survey points for 12 consecutive months. Each survey was subdivided into two segments. During the initial 10-minute segment, all small birds observed within a 100-m (328-ft) radius of the survey point were recorded; during the subsequent 60-minute segment, all eagles and other large birds observed within an 800-m radius were recorded. Additionally, any special status species (i.e., federally and state-listed species, Minnesota SPC, and Minnesota SGCN) observed incidentally were recorded while in the Project area. In total, monthly bird use surveys equated to 14 survey hours per fixed-point survey location, or 126 total survey hours during the study.

No state-listed threatened or endangered species have been documented during avian use surveys in 2021. Twenty-four large bird species were identified during surveys, including five raptor species: bald eagle (28 observations totaling 18 eagle exposure minutes; federally protected under the BGEPA), red-tailed hawk (22 observations), American kestrel (*Falco sparverius*; five observations), Cooper's hawk (*Accipiter cooperii*; two observations), and northern harrier (*Circus hudsonius*; two observations). Two groups of Minnesota SPC American white pelicans were also observed during surveys (two observations containing 23 and eight individuals). The most abundant large bird species recorded include rock pigeon (*Columba livia*; 435 observations) and American crow (208 observations). Nineteen small bird species were identified during surveys; the most abundant small bird species recorded include red-winged blackbird (95 observations), common grackle (39 observations), and American goldfinch (*Spinus tristis*; 33 observations). Minnesota SGCN small bird species observed during surveys include dickcissel and sedge wren; SGCN large bird species include American kestrel, northern harrier, and upland sandpiper (*Bartramia longicauda*). This section will be updated with additional results after avian use survey results have been compiled (updates anticipated after March 2022).