Report Addendum

TO: Burke Wind, LLC

FROM: Atwell, LLC

DATE: November 27, 2018

RE: Burke County Wind Energy Center – Bat Habitat Assessment Addendum

Burke Wind, LLC (Burke Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC, contracted Atwell, LLC (Atwell) to conduct a habitat assessment for bat species for the proposed Burke County Wind Energy Center (Project). This addendum provides an update to the Bat Habitat Assessment[1] report dated May 15, 2018, revised July 24, 2018, and submitted under Docket PU-18-344 on September 14, 2018. The Project was originally designed to produce up to 300 megawatts (MW) of renewable wind energy. Burke Wind has recently reduced the Project size from 300 MW to 200 MW. This has resulted in a reduced Project Area and the elimination of 38 wind turbine generators (WTGs) from the proposed Project. As revised, the Project will consist of the construction and operation of up to 68 General Electric (GE) 2.72 MW and eight (8) GE 1.715 MW WTGs (total of 76 WTGs). The GE 2.72-MW WTGs will have a 295-foot (90-meter) hub height and a 381-foot (116-meter) rotor diameter; and the GE 1.715-MW WTGs will have a 262-foot (80-meter) hub height and a 337-foot (103-meter) rotor diameter.

The reduced 200 MW Project Area covers 23,933 acres and remains fully within the former 300 MW Project Area. As the reduced Project Area is encompassed within the area evaluated in the Bat Habitat Assessment report, the discussion and results of the report are still reflective of the reduced Project Area and therefore, information contained within the original report is still applicable.

Within the 200 MW Project Area, forested habitat and riparian corridors are limited, fragmented, and occur primarily along the northern boundary of the Project Area near intermittent drainages. According to the 2011 National Land Cover Dataset[2], deciduous forest comprises approximately 332 acres or 1.6 percent of the participating landowner parcels within the reduced Project Area. Wooded wetlands comprise 40.6 acres or 0.2 percent of the participating parcels within the reduced Project Area. Together, deciduous forest and wooded wetlands encompass roughly 1.8 percent of the total land use/land cover mapped within the participating landowner parcels of the reduced Project Area.

As stated in the Bat Habitat Assessment dated July 24, 2018, minimal impact to bat habitat is expected to occur as a result of the Project.

[1] Atwell, "Bat Habitat Assessment for Burke County Wind Energy Center, Burke County, North Dakota, Prepared for Burke Wind, LLC" (Atwell, LLC, July 2018).

[2] CG Homer et al., "Completion of the 2011 National Land Cover Database for the Conterminous United States-Representing a Decade of Land Cover Change Information," *Photogrammetric Engineering & Remote Sensing* 81, no. 5 (2015): 345–54.

BAT HABITAT ASSESSMENT

for

Burke County Wind Energy Center
Burke County, North Dakota

Prepared for:

Burke Wind, LLC
700 Universe Boulevard
Juno Beach, Florida 33408

Prepared by: Atwell, LLC (#16000947)

May 15, 2018

(Revision: July 24, 2018)

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EXECUTIVE SUMMARY

Burke Wind, LLC (Burke) contracted Atwell, LLC (Atwell) to conduct a habitat assessment for bat species for the proposed 300 megawatt (MW) Burke County Wind Energy Center (Project). The Project is located in Burke County, in northwestern North Dakota. The land within the Project's boundary (hereafter referred to as the Project Area) covers 46,515 acres within Burke County. The purpose of this report is to evaluate the potential existence of habitat for state or federally listed threatened and endangered bat species, as well as species of concern, within the Project Area based on a desktop and literature review.

Data acquisition was conducted through publicly available information from a variety of sources including federal and state agencies, local government offices, GIS, and literature reviews. The information obtained during this habitat assessment will be utilized during initial desktop analysis in an effort to design project infrastructure to avoid and/or minimize impacts to potential bat habitat.

Within the Project Area, grasslands, wetlands, and agricultural lands dominate the landscape. Scattered throughout these grasslands and agricultural lands is an extensive prairie pothole wetland system. Intermittent streams and forested riparian corridors are limited and concentrated along the northern boundary of the Project Area. Due to the relatively small proportion of forested habitat present, the Project Area has the limited potential to support bats and other species typically associated with forest/shrub community types.

Habitat characteristics within the Project Area, literature review, and state-wide acoustic and mist-netting surveys indicate that northern long-eared bat (*Myotis septentrionalis*) occurrence is unlikely, but may occur within the Project Area during migration and summer. In addition, the bat community within the Project Area is likely to include the big brown bat (*Eptesicus fuscus)*, little brown bat (*Myotis lucifugus)*, eastern red bat *(Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and silver-haired bat (*Lasionycteris noctivagans*). The big brown bat has the potential to be a year-long resident of the Project Area, most likely overwintering in the Badlands region. The migratory tree bats (hoary bat, eastern red bat, and silver-haired bat) may also occur in the Project Area during summer and are likely to occur during migration.

It is unclear how frequent *Myotis* groups, including the northern long-eared bat, migrate through this region of North Dakota. However, it is reasonable to assume that there is a low possibility of the species movement through the area during migration. Although suitable habitat for *Myotis* species may exist within the Project Area, it is outside of areas affected by WNS. Therefore, the Project is not subject to prohibitions on incidental take for the northern long-eared bat under the final 4(d) rule nor will the Project impact or pose significant risk to the northern long-eared bat or habitat.

1.0 INTRODUCTION

Burke Wind, LLC (Burke) contracted Atwell, LLC (Atwell) to conduct a habitat assessment for bat species for the proposed 300 megawatt (MW) Burke County Wind Energy Center (Project). The Project is located in Burke County, in northwestern North Dakota. The land within the Project's boundary (hereafter referred to as the Project Area) covers 46,515 acres within Burke County. Refer to the *Aerial Overview Map* and *Topographic Overview Map* in **Appendix I**.

The purpose of this report is to evaluate the potential existence of, and/or habitat for state species of conservation priority and federally listed bat species within the Project Area. This document presents information regarding habitat descriptions and review of bat species that may exist within the Project Area obtained through desktop and literature review and previous surveys conducted within the general vicinity of the Project Area.

2.0 PROJECT DESCRIPTION

The approximately 46,515-acre Project Area is located in northwest North Dakota in Burke County. The Project Area is approximately 11.5 miles southwest of Bowbells, North Dakota. Refer to the *Site Location Map* in **Appendix I**. Overall the Project Area and surrounding vicinity is sparsely populated and supports a mix of grasslands and cultivated cropland/hayfields/pasturelands within an extensive prairie pothole wetland system. Agricultural use (cultivated crops and hay/pasture) is the primary land use within the Project Area.

The Project will consist of a 300 megawatt (MW) wind energy facility that will include the construction of up to 114 Wind Turbine Generators (WTGs) including alternates. The Project assumes the use of two (2) turbine types: 2.7-MW GE-WTGs with 295-foot (90-meter) hub heights and with a 381-foot (116-meter) rotor diameter; and 1.715 MW GE-WTGs with 262-foot (80-meter) hub heights with a 337-foot (103-meter) rotor diameter, respectively. The Project will also include associated access roads, buried underground electrical collection lines, temporary laydown, an overhead electric transmission line, electric substation, and an operations and maintenance building.

3.0 BACKGROUND RESEARCH

Data acquisition was conducted through publicly available information from a variety of sources including federal and state agencies, local government offices, GIS, and literature reviews. Sources reviewed include, but are not limited to the following:

- National Hydrography Dataset (NHD) (USGS 2017)
- United States Geological Survey (USGS) USFWS Threatened and Endangered Species (TES) Data (USFWS 2017a)
- National Wetlands Inventory (NWI) Data (USFWS 2017b)

- National Land Cover Database (NLCD) (Homer et al. 2015)
- North Dakota Game and Fish Department (NDGFD)
- North Dakota Statewide datasets available through the North Dakota Geographic Data Library's GIS Open Data Portal

The information obtained during this habitat assessment and the desktop analysis review will be utilized during initial desktop analysis in an effort to design project infrastructure to avoid and/or minimize impacts to potential bat habitat. A detailed discussion of the geologic and ecoregion characteristics and current land cover within the Project Area from the USGS Land Cover Database is provided below.

*3.1 **Ecoregion Characteristics***

The Project Area is located mostly within the Level IV Northern Dark Brown Prairie (46h) ecoregion of the Level III Northern Glaciated Plains-46, and partially within the Level IV Northern Missouri Coteau (42d) ecoregion, of the Level III Northwestern Glaciated Plains ecoregion (Bryce et al. 1996). According to the EPA Ecoregion mapping data, these ecoregions are characterized by the following:

3.1.1 Northern Glaciated Plains

The Northern Glaciated Plains ecoregion- 46 is characterized by a flat to lightly rolling landscape composed primarily of glacial drift. The sub-humid conditions of this region allow for a transitional area between tall and shortgrass prairies. High concentrations of temporary and seasonal wetlands produce optimal conditions for nesting and migration for variety of waterfowl. Although till is typically very fertile, overall agricultural production depends on annual climatic fluctuations. This Northern Dark Brown Prairie ecoregion (46h) differs in precipitation, soil, and vegetation characteristics. The soils developed under dry conditions and they have low organic material, which gives them a lighter color. Crop and native grass production is generally lower than in ecoregions farther east (Bryce et al. 1996).

3.1.2 Northwestern Glaciated Plains

The Northwestern Glaciated Plains ecoregion- 42 marks the westernmost extent of continental glaciation. The young morainal landscape has significant microtopography with high wetland concentrations throughout this region. The Northern Missouri Coteau (42d) lies in a transition zone between a more boreal climate to the north and a more arid climate to the west. Willows (*Salix sp.*), trembling aspen (*Populus tremuloides*), and southern outliers of aspen parkland may occur at wetland margins. Rough fescue (*Festuca sp.*), also a northern species, appears in grassland associations throughout this region. Wetlands in this region typically dry out earlier in the summer than on the Missouri Coteau (42d) ecoregion located to the south and east. Mixed dryland agriculture is the major land use for this region (Bryce et al. 1996).

3.2 Land Cover Analysis

The Project Area is located within a rural area with small farmsteads scattered throughout. The dominant land cover types identified throughout the Project Area, according to the 2011 National Land Cover Database, is summarized in **Table 1**, below (Homer et al. 2015).

Table 1. Land Cover Acreage within the Project Area

Classification Type	Project Area (ac)	1-Mile Project Area Buffer (ac)	Project Area %Total	1-Mile Buffer %Total
Open Water	2520.07	1392.36	5.42%	3.22%
Developed, Open Space	1337.66	1094.46	2.88%	2.53%
Developed, Low Intensity	146.88	211.01	0.32%	0.49%
Developed, Medium Intensity	--	2.44	--	0.01%
Barren Land	2.89	1.58	0.01%	0.00%
Deciduous Forest	686.23	749.46	1.48%	1.73%
Shrub/Scrub	3.55	--	0.01%	--
Herbaceous	22675.88	21966.91	48.75%	50.80%
Hay/Pasture	2075.78	1585.78	4.46%	3.67%
Cultivated Crops	14744.92	14478.48	31.70%	33.48%
Woody Wetlands	187.22	131.07	0.40%	0.30%
Emergent Herbaceous Wetlands	2134.36	1626.53	4.59%	3.76%
Totals:	**46515.44**	**43240.09**	**100.00%**	**100.00%**

Overall the Project Area and surrounding vicinity can be characterized as rural, low density residential with a dominant land cover of grasslands, hayfields, and cultivated crops within an extensive prairie pothole wetland system. The very low percentage of forested area indicates a low availability of bat habitat within the Project Area. Refer to the *Land Cover Map* in **Appendix I**.

3.3 Grassland Habitat

Grassland habitat, which NLCD and **Table 1** refers to as "herbaceous", is the dominant land cover within the Project Area, totaling approximately 48.8 percent.

3.4 Agriculture

Agricultural land cover accounts for approximately 36.2 percent of the overall Project Area (Homer et al. 2015). Agricultural lands are further broken down into cultivated crops and hay/pasture land cover types.

3.4.1 Cultivated Croplands

Cultivated croplands comprise the dominant land use within the agricultural land cover accounting for approximately 31.7 percent of the overall Project Area. This agricultural landscape contains croplands traversed by tile drainage, and a generally grid-like network of roadways with a north-south and east-west orientation (Homer et al. 2015).

3.4.2 Hay/Pasture

Land used for hay cultivation and pasture use within the Project Area, totals approximately 4.5 percent. Areas included in this land cover type are grasses, legumes, or mixed grass-legume for livestock and grazing and land utilized for the production of seed or hay crops, on a perennial cycle (Homer et al. 2015).

3.5 Wetland Habitat and Open Water

The USFWS generates NWI maps based on aerial photograph interpretation. A review of NWI data was conducted to obtain broad-scale information regarding potential wetlands within the Project Area. This review indicated that numerous scattered wetlands are mapped throughout the Project Area and within the one-mile buffer. Wetlands within the Project Area and surrounding areas are associated with a formerly glaciated landscape. Fewer wetlands appear to occur along the northern Project Area boundary. Refer to the *NWI & Surface Water Map* in **Appendix I**.

Atwell conducted an aerial interpretation and wetland desktop analysis, which identified approximately 4,326 individual potential wetland features totaling approximately 7,297 acres (Atwell 2017). Refer to the *NWI & Surface Water Map* in **Appendix I**.

3.6 Developed, Open Space and Disturbed Areas

Developed, Open Space, and Disturbed Areas (low, medium, high, open space, non-specific) account for approximately 1,484.5 acres (3.2%) of the Project Area. Open space and low density development include landscapes with some constructed materials but mostly vegetation (e.g., large-plot single family housing, lawns, parks, vegetation planted in developed settings for recreation, erosion control or aesthetic purposes) and limited amounts of impervious surfaces (Homer et al. 2015). This land cover type within the Project Area coincides particularly with farmsteads. Low and medium density development coincides with areas of impervious surfaces that account for approximately 50-100 percent of the total cover and minimal vegetation cover (i.e., row houses, commercial and/or industrial areas; Homer et al. 2015).

3.7 Deciduous Forest

Overall deciduous forest cover within the Project Area is moderately low and accounts for approximately 686.2 acres (1.5%) of the entire Project Area. Within the Project Area, forested habitat and riparian corridors are limited, fragmented, and occur primarily along the northern boundary of the Project Area near intermittent drainages and small isolated tracts of woodland. Dominant forest systems appear to include aspen-oak forests and dry-mesic oak forests.

3.8 Federal and Public Lands

One (1) Burke County Waterfowl Production Area (WPA) was identified within the southeast corner of the Project Area located in Diamond Township; which is owned by the USFWS and managed to establish and protect waterfowl breeding and nesting habitat. Additionally, there

are several other federal public lands located in the vicinity of the Project Area including Lostwood National Wildlife Refuge (Lostwood NWR) and several other WPAs (USFWS 2015c). The Lostwood NWR is located approximately one (1) mile southeast of the Project Area. Lostwood NWR is one of the largest tracts of northern mixed grass prairie that is publically owned in the United States. It is managed by the USFWS as a refuge and breeding ground for migratory birds and other wildlife (USFWS 2016a). The WPAs vary in size, are scattered within the vicinity of the Project Area, and could potentially provide habitat for bat species. The Lostwood NWR and WPAs found in the vicinity of the Project Area are depicted in the *Public Lands Map* provided in **Appendix I**.

North Dakota Department of Trust Lands School Trust Lands parcels are scattered within the Project Area and the surrounding vicinity (North Dakota Department of Trust Lands 2017). The trust lands are often leased for agricultural purposes and are often open to walk-in hunting. State Wildlife Management Areas (WMAs) area also located within and in the vicinity of the Project Area. WMAs are open to the public for hunting, fishing, and trapping and other compatible public uses. Private Land Open to Sportsmen (PLOTS) lands are located within and in the vicinity of the Project Area (NDGFD 2016f). PLOTS are usually on private land and are open for public walk-in access for the purpose of hunting. The aforementioned managed public areas could potentially provide habitat for bat species in the vicinity of the Project Area. Refer to the *Public Lands Map* in **Appendix I Mapping**.

The USFWS land acquisition program grants wetland, grassland, and habitat easements for the purpose of protecting wetlands, grasslands, and habitat that provides nesting cover and surface habitat for waterfowl and other grassland-nesting bird species (USFWS 2008). Landowners agree to maintain the areas under easement as wildlife management areas by not draining, filling, leveling, or burning the wetland areas. When these wetland areas dry out naturally, general farming practices such as haying, plowing, and harvesting are allowed. Similarly, grassland easement holders agree to maintain permanent vegetative cover, consisting of grasses, forbs and low-growing shrubs on the easement lands. The timing of mowing, haying, and seed harvesting activities is restricted and alteration and/or destroying grassland vegetation is prohibited unless prior approval in writing is granted by the USFWS.

4.0 BAT HABITAT ASSESSMENT

4.1 Bats of North Dakota

According to North Dakota Game and Fish Department (NDGFD 2016d) eleven (11) species of bats are known to occur in North Dakota.

- Big brown bat (*Eptesicus fuscus*)*,
- Northern long-eared bat (*Myotis septentrionalis*),
- Little brown bat (*Myotis lucifugus*),
- Long-legged bat (*Myotis volans*)*,

- Long-eared bat (*Myotis evotis*)*,
- Fringed bat (*Myotis thysanodes*),
- Townsend's big-eared bat (*Corynorhinus townsendii),*
- Western Small-footed bat (*Myotis ciliolabrum*),
- Eastern red bat (*Lasiurus borealis*),
- Hoary bat (*Lasiurus cinereus*), and
- Silver-haired bat (*Lasionycteris noctivagans*)

*Possibly year-round residents in North Dakota

For a comprehensive list of North Dakota bat species and their occurrence within Burke County, please refer to the *Summary of Bat Species with Distribution in North Dakota* table in **Appendix II**.

The northern long-eared bat is the only federally listed bat species (threatened) within North Dakota and has a low potential to utilize the Project Area. According to the North Dakota State Wildlife Action Plan (SWAP), Townsend's big-eared bat, big brown bat, little brown bat, and northern long-eared bat are categorized as Level I Species of Conservation Priority. Level I is defined as the highest level of conservation priority in the state where there is clear obligation to use State Wildlife Grant (SWG) funding to implement conservation actions that directly benefit these species (Dyke et al. 2015). The western small-footed bat, long-eared bat, and long-legged bat are listed as Level III Species of Conservation Priority (having a moderate level of conservation priority, but believed to be non-breeding in North Dakota and is on the edge of their overall continental range).

4.2 North Dakota Bat Habitat & Availability Assessment

Preferred bat roosting and foraging habitat in North Dakota consists of woodlands (primarily coniferous) with a nearby water source, riparian corridors, and rock crevices (Gillam et al. 2012) Snags and trees with loose bark to roost under are commonly used; large cottonwood trees (>1 m diameter at breast height) tend to be a preferred tree of choice for several roosting species (Gillam et al. 2012). Some species will also utilize buildings and bridges for roosting. Preferred hibernaculum habitat includes caves, abandoned mines, rock outcrops, or crevices.

Within the Project Area, forested habitat and riparian corridors are limited, fragmented, and occur primarily along the northern boundary of the Project Area near NHD mapped intermittent drainages. According to the 2011 National Land Use-Land Cover Database, deciduous forest approximately- 686.2 acres (1.5%) and wooded wetlands- 187.2 acres (0.4%) encompass roughly 1.9% of the total land use/land cover mapped within the Project Area (Homer et al. 2015). Nevertheless, these woodland habitat cover types may provide suitable roosting and foraging habitat for bats within the Project Area. Prairie potholes (i.e., emergent wetlands, freshwater ponds) scattered throughout the Project Area are fringed with a variety of vegetative cover types including wooded habitat (cottonwoods and dead snags were observed within the Project Area). These prairie potholes, particularly those near drainages/riparian

corridors, have potential to afford bats a water source, foraging habitat, and occasionally roosting habitat.

4.3 Previous State-wide Bat Studies

Multiple mist netting and acoustic surveys were conducted by North Dakota and Dickinson State Universities at a total of 68 survey sites across five (5) ecological regions within North Dakota (i.e., Red River Valley- approximately 224 miles east, Pembina Gorge- approximately 208 miles east, Turtle Mountains-approximately 104 miles east/northeast, Missouri River Valley-approximately 66 miles southwest, and the Badlands- approximately 77 miles south/southwest of the Project Area)(Nelson, Barnhart, and Gillam 2015). Species presence at each location based on those surveys is summarized in **Table 2**.

Table 2. Presence of North Dakota Bat Species Detected at Five Ecological Regions (Nelson et al. 2015)

Species	Badlands	Missouri River Valley	Turtle Mountains	Pembina Gorge	Red River Valley
Big Brown Bat	X	X	X	X	X
Northern Long-eared Bat	X	X			
Little Brown Bat	X	X	X		
Long-legged Bat	X	X			
Long-eared Bat	X	X			
Fringed Bat	X				
Townsend's Big-eared Bat	X	X			X
Western Small-footed Bat	X	X			
Eastern Red Bat	X	X	X		X
Hoary Bat	X	X	X	X	X
Silver-haired Bat	X	X	X	X	X

Based on these studies, 11 bat species were confirmed in the state; approximately 85% of the 333 captured bats were in the Badlands (n=143) and Missouri River Valley (n=140). The Missouri River Valley, which is the closest region to the Project Area, had confirmed captures of four (4) species (i.e., big brown, silver-haired, little brown, and northern long-eared bats) during mist-netting efforts (Nelson, Barnhart, and Gillam 2015).

State-wide acoustic bat surveys conducted by North Dakota and Dickinson State Universities confirmed the presence of 10 bat species in the five (5) regions of North Dakota. Approximately 97% of the echolocation calls consisted of little brown bat, big brown, silver-haired bat, eastern red, western small-footed bat, and hoary bat. Northern long-eared bat calls were not detected in this study.

Therefore, based on this study, several regions in the state provide forested habitat needed to support foliage and tree roosting bats within the overall agricultural landscape of North Dakota, and more specifically the Missouri River Valley may provide habitat for conservation concern and listed species including little brown, big brown, and northern long-eared bats (Nelson, Barnhart, and Gillam 2015).

There is little information available that focuses on species presence, distributions, and habitat use of bats in the Great Plains of North America, particularly wintering bats and hibernacula use. A study of the presence of overwintering bat species and hibernacula use in the Badlands region of North Dakota positively identified overwintering by big brown bat, silver-haired bat, little brown bat, long-eared bat, Townsend's big-eared bat, and western small-footed bat (Barnhart and Gillam 2017). However, to date no hibernacula for the northern long-eared bat have been documented in the state of North Dakota (USFWS, pers. comm. 2017).

4.4 Federally Listed Threatened and Endangered Species

Federally listed species are protected under federal law by the Endangered Species Act (ESA) of 1973 (16 U.S.C §1531-1544). The USFWS IPaC System provides information regarding federally threatened, endangered, proposed, and candidate species on a county-by-county basis. IPaC results indicate that the Project Area is within the range (i.e., contains documented records and/or has the potential to harbor critical habitat) of one (1) bat species: northern long-eared bat (federally threatened). According to the IPaC results and other North Dakota bat studies conducted to date, the northern long-eared bat is the only federally listed bat species that may occur in the Project Area. Based on previous land cover data analysis, there does not appear to be specific habitat resources in sufficient quantity or concentrations that would inordinately attract this federally threatened species to the Project Area.

4.4.1 Northern Long-eared Bat (Federally Threatened)

The northern long-eared bat (NLEB) is a federally threatened species and considered a rare species in North Dakota (NDGFD 2016e). During late spring and summer, this species roosts and forages in forested habitats (Owen et al. 2003). The NLEB roosts under loose or peeling bark or in cavities and crevices of dead and living trees (USFWS 2015a). Their preferred tree species in North Dakota are silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and eastern cottonwood (*Populus deltoides*) (Gillam and Barnhart 2011). The NLEB utilizes caves, crevices, and abandoned mines for hibernacula and trees as maternal roosts. However, no hibernacula or maternity trees have been identified in North Dakota (USFWS *pers. comm*. 2016).

Acoustic monitoring studies were conducted in 2010 at Des Lacs NWR (approximately 17 miles east/northeast of the Project Area within adjacent Ward County), J Clark Slayer (approximately 80 miles east/southeast of the Project Area within Bottineau and McHenry counties), and Upper Souris (approximately 50 miles southeast of the Project Area within adjacent Ward County) National Wildlife Refuges. These acoustic studies indicated that concentrations of NLEB

were highest in riparian corridors compared to agricultural lands by the species (Coberly, O'Farrell, and Walsh 2011). Recent bat studies in the region have documented the NLEB in forested habitat in the Turtle Mountains (approximately 104 miles east/northeast of Project Area) and in the riparian corridors of the Little Missouri and Missouri Rivers (approximately 66 miles southwest of Project Area) (Dyke, Johnson, and Isakson 2015).

Forested habitat and riparian corridors are limited, fragmented, and occur primarily along the northern boundary near intermittent drainages. Patches of riparian habitat (e.g., N48.80208°, W102.76545°) at the northern periphery of the Project may harbor this species, but it is unlikely that they would venture far from preferred summer roosts during foraging forays (Carter and Feldhamer 2005). Other *Myotis* species have been documented foraging relatively close to the ground during summer roosting periods, and this pattern may hold true for NLEB as well (Fenton and Bell 1979). Thus, exposure of summering northern long-eared bats to operational turbines is unlikely. In addition, there may be potential for this species to occur within the Project Area at isolated locations since they will occasionally utilize manmade structures, such as abandoned barns (e.g., N48.71979°, W102.64795°) for roosting, especially if habitat configuration is suitable to this species' ecological requirements.

The northern long-eared bat is listed as federally threatened by the USFWS, primarily due to the threat posed by the white-nose syndrome (WNS), a fungal disease that has affected several bat populations (USFWS 2016b). The decision to list the bat as threatened with a 4(d) rule provides sufficient protection to address conservation needs of this bat species (USFWS 2016b). The major provisions of the 4(d) rule prohibit the purposeful "take" (defined under the federal ESA as harming, harassing, or killing) of this species throughout the species' range. In areas not yet affected by WNS, there are no prohibitions on incidental take resulting from lawful activities. In counties/districts that have confirmed WNS records and in U.S. counties within 150 miles of confirmed WNS records, incidental take is prohibited under the following circumstances:

1) If it occurs within a hibernacula.
2) If it results from tree removal activities and
    a. The activity occurs within 0.25-miles of a known, occupied hibernacula; or
    b. The activity cuts or destroys a known, occupied maternity roost tree or other trees within a 150-foot radius from the maternity roost tree during the pup season from June 1 through July 31(USFWS 2016b).

Overall use of the Project Area by NLEB is unlikely because of the fragmented and relatively limited amounts of forested habitat and riparian corridors located primarily along the northern boundary of the Project Area. The Project Area is approximately 245 miles west of the western edge of the northern long-eared bat WNS zone, per the USFWS WNS Zone Final 4(d) Rule (05/01/2017) (USFWS 2017c). In areas not yet affected by WNS, there are no prohibitions on incidental take resulting from lawful activities. Although habitat may exist within the Project Area, it is outside of areas affected by WNS and; therefore, it is not anticipated that the Project

would be subject to prohibitions on incidental take for the northern long-eared bat under the final 4 (d) rule. Therefore, it is Atwell's professional opinion that the Project will not likely impact the northern long-eared bat or that species' summer habitat.

4.5 North Dakota State Wildlife Action Plan- State Species of Conservation Priority

The SWAP is the principal document for safe guarding rare and declining species of fish and wildlife within the state. The SWAP utilizes eight (8) essential elements that focus on species of greatest conservation need:

1) information on the distribution and abundance of wildlife species, particularly low and declining populations;
2) descriptions of locations and relative condition of habitat and community types;
3) problems affecting species and priority research or survey efforts needed;
4) conservation actions needed to conserve the identified species;
5) plans for monitoring species and the effectiveness of conservation actions;
6) plans for periodic review of the SWAP;
7) plans for coordinating with federal, state, local agencies and Tribal government on the development and implementation of the plan;
8) and involves broad public participation.

The plan places an emphasis on the protection of diverse native habitats in order to maximize the preservation of native wildlife diversity. The SWAP covers 115 species, 47 birds, two (2) amphibians, nine (9) reptiles, 21 mammals, 22 fish, ten (10) freshwater mussels, and four (4) insects (Dyke, Johnson, and Isakson 2015). **Table 3** presents a list of federally TES and state species of conservation priority bat species, with their potential to occur in the area of the Project based on data from the USFWS and SWAP.

The SWAP is a NDGFD tool that could assist in informing design to avoid or minimize impacts to state species of conservation priority on public lands. Should project development potentially impact state species of conservation priority on public lands, the SWAP could assist in providing steps to reduce or minimize these impacts.

4.6 State Listed Threatened and Endangered Species

North Dakota does not have a state threatened or endangered species list. Only those species listed by the ESA of 1973 are considered threatened or endangered (NDGFD 2015). However, North Dakota identifies state species of conservation priority through the state's SWAP, which are not afforded regulatory protection, but are closely monitored in the state. The SWAP identifies the little brown, big brown bat, and Townsend's big-eared bat, as level I species of conservation priority. Each species is discussed in more detail in the following sections.

4.6.1 Little Brown Bat (State Species of Conservation Priority Level 1)

The little brown bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015 (NDGFD 2016b). Although currently secure in North Dakota,

WNS threatens this species in much of its eastern range (NDGFD 2016b). The little brown bat used to be abundant throughout forested areas for much of eastern U.S. and as far north as Alaska. This bat's range extends from Alaska to Labrador and Newfoundland (Canada), south to southern California, northern Arizona, and northern New Mexico (BCI 2017b). This species is especially associated with man-made structures such as buildings, attics, barns, etc., and often form nursery colonies containing hundreds, sometimes thousands of individuals in buildings and attics (BCI 2017b). Currently, North Dakota State University is trying to identify potential roosting and hibernacula habitat in western North Dakota and developing a Bat Management/White-nose Syndrome Response plan (NDGFD 2016b). State-wide acoustic monitoring studies were completed in 2009-2012 and documented little brown bat calls in the Missouri River Valley (approximately 66 miles southwest of Project Area, Badlands (approximately 77 miles south/southwest of Project Area), and Turtle Mountains (approximately 104 miles east/northeast of Project Area)(Nelson, Barnhart, and Gillam 2015).

Forested habitat and riparian corridors are limited, fragmented, and occur primarily along the northern boundary of the Project Area near intermittent drainages. Patches of riparian habitat (e.g., N48.80208°, W102.76545°) at the northern periphery of the Project Area may harbor this species. Additionally, there may be potential for this species to occur within the Project Area at isolated locations since they will occasionally utilize manmade structures, such as abandoned barns (e.g., N48.71979°, W102.64795°) for roosting, especially if habitat configuration is suitable to this species' ecological requirements.

4.6.2 Big Brown Bat (State Species of Conservation Priority Level 1)

The big brown bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015 (NDGFD 2016a). The big brown bat is one of the most widespread mammals in North America; found in a variety of habitats ranging from timberline meadows to lowland deserts, though it is most abundant in deciduous forest areas (Agosta 2002; BCI 2017a). Big brown bats' preferred roosting areas are beneath loose bark and in small cavities of pine (*Pinus spp.),* oak (*Quercus spp*.), beech (*Fagus spp*.), and bald cypress (*Taxodium distichum*) trees. Big brown bat roosts can also be found in buildings, barns, and bridges (BCI 2017a). This species likely overwinters in the Badlands region of North Dakota (Barnhart and Gillam 2017).

NDGFD recognizes that the big brown bat's primary range encompasses every county in North Dakota (NDGFD 2016a). Based on previous study findings(i.e., (Nelson, Barnhart, and Gillam 2015), it is likely that big brown bats occur within the Project Area. However, overall use of the Project Area by big brown bats is not expected to be widespread due to the fragmented habitat and lack of concentrated forested areas, except for the more forested northern boundary region of the Project Area**.**

4.6.3 Townsend's Big-eared Bat (State Species of Conservation Priority Level 1)

The Townsends's big-eared bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015 (NDGFD 2016b). Two disjunct groups of this species occur within North Dakota, including within the Badlands of the Little Missouri River and, more recently, in the Turtle Mountains region (NDGFD 2016g).

This species is considered a habitat generalist, but most commonly is associated with forest and riparian areas during summer months. In the spring and summer, females form maternity colonies in mines, caves, or buildings, while males generally roost alone. Winter hibernacula include caves and mines throughout its range; however, hibernacula have not been documented to date in North Dakota (NDGFD 2016d; BCI 2014b).

Because of this species localized distribution in North Dakota and its specialized habitat requirements (***not likely*** present within the Project Area), the Townsend's big-eared bat is unlikely to occur within the Project Area.

4.7 Other Myotis species (State Species of Conservation Priority Level III)

The western small-footed bat is considered a year-round/resident of North Dakota. This species typically roosts alone or in small groups in rock crevices, cracks, and/or under tree bark, primarily coniferous trees. This species utilizes deep crevices found in rock cliffs, buttes, and/or caves for hibernacula (BCI 2014a; NDGFD 2016h).

4.7.1 Western Small-footed Bat (Myotis ciliolabrum)

The western small-footed bat is considered a year-round/resident of North Dakota. This species typically roosts alone or in small groups in rock crevices, cracks, and/or under tree bark, primarily coniferous trees. This species utilizes deep crevices found in rock cliffs, buttes, and/or caves for hibernacula (BCI 2014a; NDGFD 2016h).

4.7.2 Long-eared Bat (Myotis evotis)

The long-eared bat is a possible year-round resident of North Dakota. This bat species utilizes caves and crevices for hibernacula and prefers broken rock outcrop and cliffs for roosting sites. The ponderosa pines (*Pinus ponderosa*) of the Badlands region are identified a as a prime area for this species within the state. However, this species is also known to utilize deciduous stands and sagebrush flats as roosting sites (NDGFD 2016c).

4.7.3 Long-legged Bat (Myotis volans)

The long-legged bat is a possible year-round resident of North Dakota, however, appears to be relatively rare throughout the state (Nelson, Barnhart, and Gillam 2015). In North Dakota, this bat species typically roosts alone or in small groups in rock crevices and under tree bark. This bat is often associated with conifer stands, particularly in the ponderosa pine area of the Badlands region. In addition, this species has been documented along the Missouri River in central North Dakota.

4.7.4 Evaluation of Potential Occurrence of SCP Level III Species

Within the Project Area, deciduous forest dominates woodland habitat with very little coniferous forest being present (see **Table 1**). Rock cliffs or rocky face substrates were also not identified within the Project Area. The closest ecological feature that may harbor species such as the western small-footed bat, long-eared bat, and long-legged bat would be the wooded ravines along a ridge that is near the northern project boundary. However, the known distribution for these species in North Dakota (i.e., the Badlands and Missouri River Valley regions) occurs more than 77 miles from the Project Area. In addition, these species are not considered long distance migrants (NatureServe 2016).

Therefore, because of the localized distribution of these species in North Dakota and their specialized and preferred habitat requirements (not likely present within the Project Area), the western small-footed bat, long-eared bat, and long-legged bat are unlikely to occur within the Project Area. Refer to **Table 3** (on page 15 of this report)**,** *Federally Listed and SWAP Listed Bat Species with the Potential to Occur within or in the Vicinity of the* Project Area*,* for a list of state listed bat species and their potential to occur within the Project Area.

4.8 Evaluation of Potential Occurrence of Non-Listed Species

Based on state-wide mist-netting studies in North Dakota, the areas with the greatest chiropteran diversity include: the Badlands region, Missouri River Valley, Turtle Mountains, Pembino Gorge, and Red River Valley. These areas appear to provide suitable forested habitat for foliage and tree roosting bats in North Dakota's overall agricultural landscape (Nelson, Barnhart, and Gillam 2015), however, the closest region (i.e., Missouri River Valley) is located approximately 66 miles southwest of the Project Area.

The fringed bat is rare in North Dakota, with the first documented occurrence recorded in 2015 (Nelson, Barnhart, and Gillam 2015). Roost habitats for this species include caves, mines, cliff faces, rock crevices, outcrops, abandoned buildings, bridges, snags, and other sheltered sites (P. Cryan, Bogan, and Yanega 2001). The Project Area contains isolated, old building structures; however, based on the distribution of this species and its scarcity in North Dakota, the fringed bat is unlikely to occur within the Project Area.

Three (3) additional species; the hoary bat, eastern red bat, and silver-haired bat, are known to occur throughout the entire state of North Dakota, and are likely to occur in a variety of habitats. Habitat for all three (3) migratory tree bat species consists of forested areas, including areas altered by humans (e.g., city parks, residential areas, hedgerows, etc.). Landscapes containing open habitats (e.g., grassland, cropland, old fields, etc.) with scattered woodlands, drainages, and man-made structures (e.g., abandoned barns, buildings, etc.), which are present throughout the Project Area, have potential to be used by these species.

In North Dakota, silver-haired bats occur throughout the state during migration. Of additional note was the presence of the species in the Badlands region of North Dakota during pre-

hibernation and winter hibernation periods (Barnhart and Gillam 2017). The other two (2) migratory bat species, the eastern red bat and hoary bat both migrate much farther south for the winter, hibernating in southeastern areas, California, and Mexico respectively (P. M. Cryan 2003). As such, it is Atwell's opinion that hoary bat, eastern red bat, and silver-haired bat are likely to occur within the Project Area in summer and/or during migration. Refer to the *Summary of Bat Species Known to Occur in North Dakota* in **Appendix II**.

Table 3. Federally Listed and SWAP Listed Bat Species with the Potential to Occur within or in the Vicinity of the Project Area

Common Name	Scientific Name	State Conservation Priority Species Level	Federal Status	Project Area Occurrence Potential	Resident/ Transient Status	Habitat Association
Northern Long-eared Bat	*Myotis septentrionalis*	Level I	FT	Unlikely	Migrant; Summer	Hibernates in caves and mines, swarming in surrounding wooded areas. Roosts and forages in forested and riparian habitats.
Big Brown Bat	*Eptesicus fuscus*	Level I	--	Likely	Year-round Resident	This species is a habitat generalist and will often utilize buildings, bridges, and dead trees as roosting habitat.
Little Brown Bat	*Myotis lucifugus*	Level I	--	Likely	Migrant; Summer	Little brown bats are generally associated with buildings which they use as roosts. Hibernacula are generally caves, mines and rock crevices.
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Level I	--	Unlikely	Migrant; Summer	Habitat generalist; commonly associated with forest and riparian areas during summer months. Winter hibernacula include caves and mines throughout its range.
Western Small-footed Bat	*Myotis ciliolabrum*	Level III	--	Unlikely	Year-round Resident	Documented in the riparian corridors of the Little Missouri and Missouri Rivers. Roosts alone or in small groups in rock crevices and under tree bark, particularly coniferous forests. Crevices found in rock outcrops, cliffs, buttes, and/or caves are needed for hibernation.
Long-eared Bat	*Myotis evotis*	Level III	--	Unlikely	Possible year-round resident	Found in western North Dakota. Normally found in rugged terrain and they roost alone or in small groups in rock crevices and under tree bark. This species is associated with coniferous trees. Hibernates in caves and abandoned mines. May migrate short distances to find suitable hibernacula in winter.
Long-legged Bat	*Myotis novans*	Level III	--	Unlikely	Possible year-round resident	Found in the Badlands region of western North Dakota and along the Missouri River. Typically roosts alone or in small groups in rock crevices and/or under tree bark, particularly coniferous trees.

FT = Federally Threatened, SCP Level I = State Conservation Priority Species Level I, SCP Level III = State Conservation Priority Species Level III

5.0 CONCLUSIONS

Bat species richness is expected to be relatively low within the Project Area. According to the National Land Cover Database, approximately 84.9% of the landscape within the Project Area is grassland and agriculture (Homer et al. 2015). Overall, minimal impact to bat habitat is expected to occur as a result of project development and operation within the Project Area. Though small, isolated woodlots and old, dilapidated structures may exist throughout the project area, possible bat habitat impacts could be more likely to occur along the northern boundary of the Project Area due to the presence of wooded ravines and sheltered hills with large mature trees that could potentially support summer bat roosts and maternity colonies.

Habitat characteristics within the Project Area, literature review, and state-wide acoustic and mist-netting surveys indicate that there it is unlikely that the northern long-eared bat will occur within the Project Area during migration and summer. In addition, the bat community within the Project Area is likely to include the big brown bat, little brown bat, eastern red bat, hoary bat, and silver-haired bat. The big brown bat has the potential to be a year-long resident of the Project Area, most likely overwintering in the Badlands region (Barnhart and Gillam 2017). The migratory tree bats (hoary bat, eastern red bat, and silver-haired bat) may also occur in the Project Area during summer and are likely to occur during migration.

It is unclear how commonly *Myotis* groups, including the northern long-eared bat, migrate through this region of North Dakota. However, it is reasonable to assume that there is an unlikely possibility of the species movement through the area during migration. Although suitable habitat for *Myotis* species may exist within the Project Area, the Project Area is outside of areas affected by WNS. Therefore, the Project is not subject to prohibitions on incidental take for the northern long-eared bat under the final 4(d) rule nor will the Project impact or pose significant risk to the northern long-eared bat or habitat.

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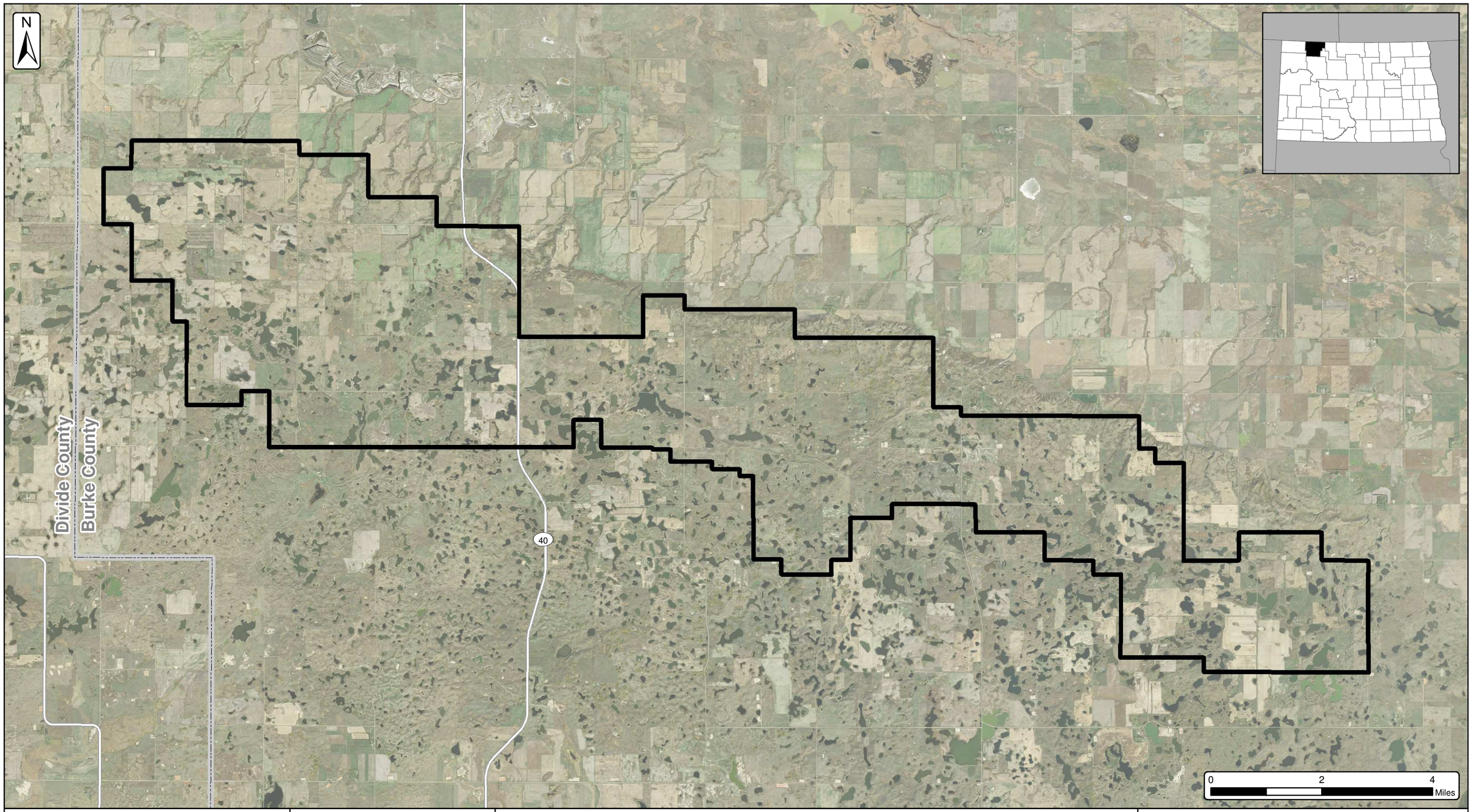
APPENDIX I

Mapping

Aerial Overview Map
Topographic Overview Map/Site Location Map
USGS Land Cover Map
NWI & Surface Water Map
Public Lands Map



Burke County Wind Energy Center

Aerial Overview Map

Burke County, North Dakota

Date: 7/19/2018

Client:

Burke Wind, LLC

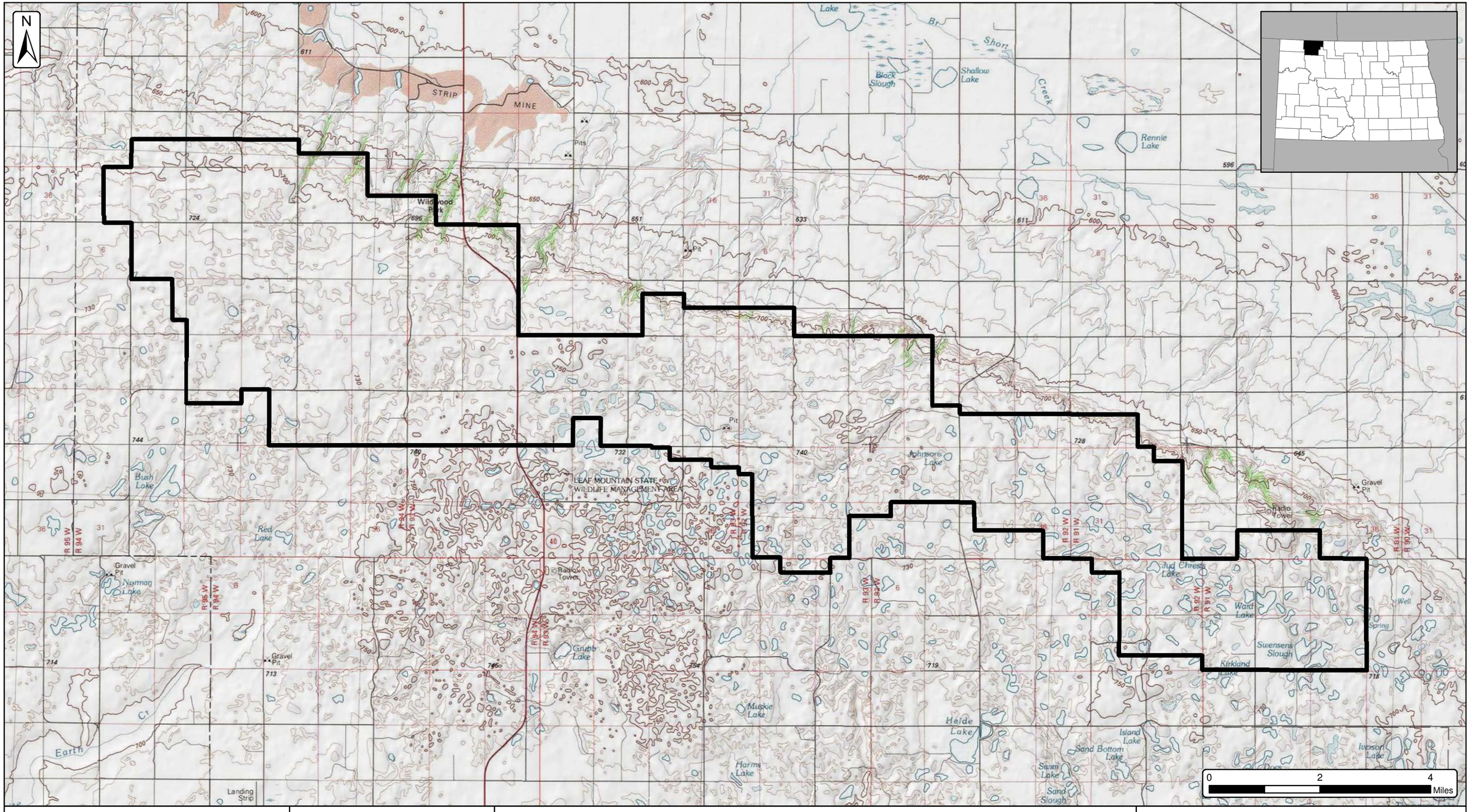
Atwell, LLC Project: 16000947

Project Area 07/18/2018 (±46,515 Ac.)

Counties

SOURCE: USDA NAIP 2017

ATWELL



Burke County Wind Energy Center

Site Location Map

Burke County, North Dakota

Date: 7/19/2018

Client:

Burke Wind, LLC

Atwell, LLC Project: 16000947

Project Area 07/18/2018
(±46,515 Ac.)

SOURCE: USGS TOPO QUADS
COLUMBUS SW (1949), COLUMBUS SE (1981), HELDE LAKE (1974), THOMPSON LAKE (1974), RENNIE LAKE (1949), GRUBB LAKE (1974), BEAVER LAKE (1948)

ATWELL

N

Burke County

Divide County

40

Land Cover Type (2011 NLCD)
Percent of Project Area

- Barren Land (0.01%)
- Cultivated Crops (31.7%)
- Deciduous Forest (1.48%)
- Developed, High Intensity (0.00%)
- Developed, Medium Intensity (0.00%)
- Developed, Low Intensity (0.32%)
- Developed, Open Space (2.88%)
- Emergent Herbaceous Wetlands (4.59%)
- Evergreen Forest (0.00%)
- Hay/Pasture (4.46%)
- Herbaceous (48.75%)
- Mixed Forest (0.00%)
- Open Water (5.42%)
- Shrub/Scrub (0.01%)
- Unclassified (0.00%)
- Woody Wetlands (0.40%)

0 2 4 Miles

Burke County Wind Energy Center

Land Cover Map

Burke County, North Dakota

Date: 7/19/2018

Client:

Burke Wind, LLC

Atwell, LLC Project: 16000947

Project Area 07/18/2018 (±46,515 Ac.)

Counties

SOURCE: 2011 NATIONAL LAND COVER DATABASE (USGS)

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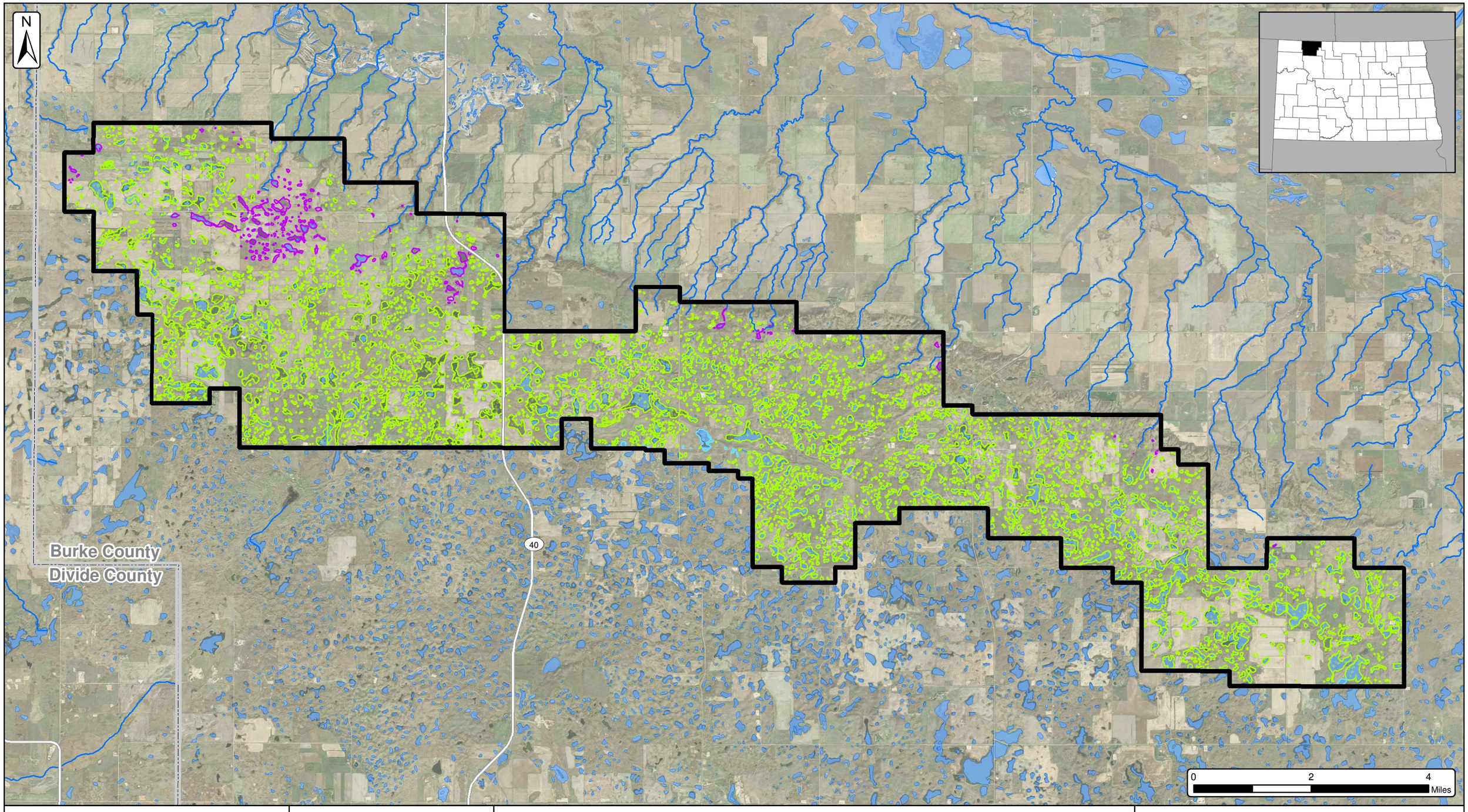

Burke County Wind Energy Center

NWI & Surface Water Map

Burke County, North Dakota

Date: 7/19/2018

Client:

Burke Wind, LLC

Atwell, LLC Project: 16000947

Watercourses (NHD)

Waterbodies (NHD)

Wetlands (Atwell Field Verified and Desktop Review)

Isolated Wetlands (4,151 within Project Area)

Jurisdictional Wetlands (185 within Project Area)

Unclassified Wetlands (66 within Project Area)

Project Area 07/18/2018 (±46,515 Ac.)

Counties

SOURCE: USDA NAIP 2017

ATWELL

N

State Lands Surface Ownership

WPA

State Lands Surface Ownership

State Lands Surface Ownership

State Lands Surface Ownership

State Lands Surface Ownership

State Lands Surface Ownership

WMA

Leaf Mountain

40

State Lands Surface Ownership

State Lands Surface Ownership

WMA

WMA

State Lands Surface Ownership

WMA

WMA

WMA

WMA

WPA

State Lands Surface Ownership

Burke County

Divide County

WPA

State Lands Surface Ownership

WPA

State Lands Surface Ownership

Turtle Mountain

State Lands Surface Ownership

WPA

WPA

State Lands Surface Ownership

WPA

State Lands Surface Ownership

Lostwood National Wildlife Refuge

WMA

0 2 4 Miles

Burke County Wind Energy Center

Public Lands Map

Burke County, North Dakota

Date: 7/19/2018

Client:

Burke Wind, LLC

Atwell, LLC Project: 16000947

Protected Areas (USGS)
- Turtle Mountain Trust Land
- Lostwood National Wildlife Refuge
- State Wildlife Management Area
- Waterfowl Production Area
- Wildlife Management Area
- State Lands Surface Ownership

PLOTS (NDGFD)

CRP Easements

Protected Basins within Wetland Easements (USFWS)

Easements (USFWS)
- Wetland Easement
- Wetland/Grassland Easement

Project Area 07/18/2018 (±46,515 Ac.)

Counties

SOURCE: USDA NAIP 2017

ATWELL

APPENDIX II

Summary of Bat Species with Distribution in North Dakota

Appendix II - SUMMARY OF BAT SPECIES WITH DISTRIBUTION IN NORTH DAKOTA

Common Name (Scientific Name) *	Habitat	Behavior	Foraging Habitat & Foraging Distance	Summer Colony Size	Summer Roosts	Migrant	North Dakota Distribution **	Listed Status	Does BCI range include northwestern North Dakota? ***	Occurrence within Project Area
Big brown bat (*Eptesicus fuscus*)	Wooded, semi-open habitats, urban; caves, mines and buildings for hibernation	Sedentary (moves 80 km between summer and winter roosts); nocturnal	1-3 km (0.5-2 mi); generalist in habitat and diet	20-100 (in attics, barns; occasionally tree cavities)	Buildings, hollow trees, rock crevices	No	Statewide	SCP Level 1	Yes (statewide)	Likely
Northern long-eared bat * (*Myotis septentrionalis*)	Riparian corridors, interior deciduous and conifer woodland, caves or mines (winter)	Seasonal movement, nocturnal	2km (1.25 mi); ponds, forest clearings and edges; opportunistic	2 to 30	Hollow trees, exfoliating bark, occasionally old buildings	Yes (not long distance)	Eastern 2/3 of the state; Primary state range: from southwest corner of the State (western Bowman County through Dunn County), and in north-central Bottineau and Rolette Counties.	FT, SCP Level 1	No (Eastern 2/3)	Unlikely
Little brown bat (*Myotis lucifugus*)	Woodland, wetland, riparian, grassland, old field, urban, shrubland/chaparral	Nocturnal	9.5 km (6 mi) woodlands near water, edge habitat; generalist	50-2500 (average 400)	Buildings, hollow trees, caves	Yes	Statewide	SCP Level 1	Yes (statewide)	Likely
Long-legged bat (*Myotis volan* s)	Forest edges, wooded, coniferous, riarian and desert habitats; caves and mines (winter)	Nocturnal	5 km (3.1 mi); ponds, streams, water tanks, and forest clearings.	Solitary or small groups	Standing snag/hollow tree, rock crevices	No (possibly migrates short distances in winter)	Found in the badlands of western North Dakota and along the Missouri River	SCP Level 3	Yes (Western 1/4)	Unlikely
Long-eared bat (*Myotis evotis*)	Riparian, cliff, Woodlands (including conifer and hardwood, mixed), and shrubland.	Nocturnal	N/A; waterbodies, wetlands, and ponds	Maternity Colonies (<30 adults); Roosting females singly or in small groups (2-3)	Standing snag/hollow tree, rock crevices, buildings	No (possibly migrates short distances in winter)	Found in extreme western North Dakota	SCP Level 3	Yes (Western)	Unlikely
Fringed bat (*Myotis thysanodes*)	Riparian, cliff, desert, bar rock/talus, suburban/orchard, woodland (conifer & mixed)	Nocturnal	N/A; waterbodies, wetlands, and ponds	Colony size ranges up to several hundred	Standing snag/hollow tree, rock crevices, buildings	No (possibly migrates short distances in winter)	The fringed bat was not physically captured/confirmed in North Dakota until 2012 (Nelson, Barnhart, and Gillam 2015).		No	Unlikely
Townsend's big-eared bat (*Corynorhinus townsendii*)	Riparian, deserts, old field, grassland, savanna, shrubland, woodland; caves and mines	Sedentary, solitary or small groups, nocturnal	Varies 3.6-10.5 km (2.25-6 mi); near foliage of trees and shrubs, moth specialist	Solitary -small groups but up to 100 (west) 1,000 (east)	Caves and mines; sometimes buildings or cave-like bridges	No	Primary state range: from southwest corner of the State (western Bowman County through Dunn County), and in north-central Bottineau and Rolette Counties.	SCP Level 1	Yes (Southwest corner)	Unlikely
Western small-footed myotis (*Myotis ciliolabrum*)	Desert, badlands, semiarid habitats, grasslands, mountainous wooded areas, riparian	Nocturnal	N/A; over waterbodies	Solitary or small groups (2-6)	Rock crevices in bluffs and badlands, abandoned houses, barns	Yes	Documented in the riparian corridors of the Little Missouri and Missouri rivers.	SCP Level 3	Yes (southwest)	Unlikely
Eastern red bat (*Lasiurus borealis*)	Woodland, riparian, suburban	Solitary; nocturnal; active and feeds throughout the year (when temperatures above 9C)	Variable distances; forages near canopy, edge habitat, and along streams; generalist	Solitary	Tree foliage	Yes	Statewide during summer and migration where suitable habitat is present		Yes (statewide)	Likely
Hoary bat (*Lasiurus cinereus*)	Woodland (deciduous and conifer), riparian, arid deserts in the southwest	Solitary; nocturnal	2 km (1 mi); mainly moths; clearings, along streams or lake edges, around lights; at high elevation	Solitary	Tree foliage	Yes	Statewide during summer and migration where suitable habitat is present		Yes (statewide)	Likely
Silver-haired bat (*Lasionycteris noctivagans*)	Woodland (deciduous and conifer) adjacent to lakes or riparian habitats	Solitary or small groups, nocturnal	Variable long distances; forest edges, open fields, above canopy	3-6	Tree foliage, cavities, exfoliating bark, sometimes buildings	Yes	Statewide, more commonly in southwestern counties.		Yes (statewide)	Likely

Sources: North Dakota Game & Fish Department (NDGFD), Nelson et al 2012, Gillam et al 2015, NatureServe 2017

* State and/or Federal listed

Status Legend: FT = Federally Threatened, SCP = State Conservation Priority Species (Levels 1, 2, & 3)

** Nelson et al. 2012, and Gillam et al 2015; NDGFD 2017 North Dakota Bats website; Accessed here: https://gf.nd.gov/wildlife/id/bats

*** Bat Conservation International: http://www.batcon.org/resources/media-education/species-profiles