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November 14, 2018

Via Hand Delivery and E-mail

Mr. Darrell Nitschke
Executive Director
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

E-mail: ndpsc@nd.gov

In re: Burke Wind, LLC
PU-18-344 - Burke County Wind Energy Center
Amended Application for Certificate of Site Compatibility
Our File No. 035218-000045

Dear Mr. Nitschke:

Enclosed for filing in the above-referenced matter, please find an original and ten copies of the following:

1. Amended Application of Buke Wind, LLC for a Certificate of Site Compatibility for the Burke County Wind Energy Center located in Burke County, North Dakota (“Amended Application”);
2. Amended Map for publication;
3. Amended Shadow Flicker Analysis Report; and
4. Amended Sound Level Assessment Report.

Also enclosed, are two CDs containing an electronic copy of the Amended Application and GIS shapefiles.

Please feel free to call should you have any questions.

**Amended Application to the
North Dakota Public Service Commission for a
Certificate of Site Compatibility**

**Burke County Wind Energy Center
Burke Wind, LLC
Burke County, North Dakota**

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November 2018
PSC Docket Number PU-18-344

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1.0 INTRODUCTION

Burke Wind, LLC (Burke Wind or Applicant), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NEER) is submitting this amended Application for a Certificate of Site Compatibility (Certificate) to construct and operate the proposed Burke County Wind Energy Center (Project) in Burke County, North Dakota. The Applicant is an independent power producer that will develop, construct, own, and operate the Project pursuant to a Power Purchase Agreement (PPA) with Basin Electric Power Cooperative (Basin). Construction of the Project is scheduled to start in May 2019, with commercial operation anticipated to begin in December 2019. The original Application (Docket Entry No. 1 in Case No. PU-18-344) was submitted on September 14, 2018. Pursuant to North Dakota Administrative Code (N.D. Admin. Code) Section 69-06-04-01(5), this amended Application replaces the September 14, 2018 Application.

The Project was originally designed to produce up to approximately 300 megawatts (MW) of renewable wind energy. The Applicant has recently reduced the Project size from 300 MW to 200 MW. This has resulted in a smaller Project Area and the elimination of 38 wind turbines. The main drivers of the Project size reduction include an effort to address environmental concerns with the Project's initial proximity to Lostwood National Wildlife Refuge and feedback from local political subdivisions. To reflect the revised Project size, Burke Wind is filing this amended Application.

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 wind turbines (total of 76 wind turbines). The Project will also include Project access roads, underground electrical collection lines, one (1) permanent meteorological evaluation tower (MET), one (1) temporary Power Performance Testing (PPT) MET, a Supervisory Control and Data Acquisitions (SCADA) system, transformers, an operations and maintenance (O&M) building, and a proposed Project substation that will interconnect at the existing Tande Substation owned by Basin. An additional five (5) alternate turbine locations and one (1) alternate permanent MET location have been included in the Project layout to provide siting flexibility based on environmental studies and landowner preferences; however, only up to 76 wind turbines and one (1) permanent MET will be constructed. During construction, a 20-acre laydown yard area and a four (4)-acre concrete batch plant area will be used.

The Project will interconnect to the electrical transmission grid through an approximately 37-mile 345 kilovolt (kV) overhead generation tie line, which will begin at the south-central edge of the Project Area and will tie into the existing Tande Substation owned by Basin. Burke Wind filed a separate application with the North Dakota Public Service Commission (Commission) for the Burke Wind Transmission Line (the Transmission Line) in Burke and Mountrail Counties on August 9, 2018 (Docket No. PU-18-302). Revisions to the Project contained in this amended Application are specific to the Project and do not impact the Transmission Line application. Burke Wind respectfully requests that, pursuant to North Dakota Century Code (N.D.C.C.) § 49-22-13, the Commission issue notice for a consolidated hearing on this Application to be held in

Burke County, North Dakota, and additionally, consolidate the Project’s hearing with the separate application for the Transmission Line.

NEER develops power throughout the United States and is the largest generator of wind powered electricity in North America, with over 46,790 MW of net generating capacity throughout 33 states and Canada as of year-end 2017. In North Dakota specifically, NEER and associated affiliates own and operate approximately 1,250 MW of wind generation. NEER designs, constructs, and operates its facilities in an environmentally sound and responsible manner. NEER’s 2017 Corporate Responsibility Report (**Appendix A**) describes NEER’s environmental accountability, management, and stewardship policies that are intended to:

- Design, construct, operate, and maintain facilities in an environmentally sound and responsible manner;
- Prevent pollution, minimize waste, and conserve natural resources;
- Avoid, minimize, and/or mitigate impacts to habitat and wildlife; and
- Engage stakeholders to build trust and partner toward common goals for environmental stewardship and protection.

1.1. Compliance with the Energy Conversion and Transmission Facility Siting Act

As required by the North Dakota Energy Conversion and Transmission Facility Siting Act, an application for a Certificate must meet the criteria set forth in the North Dakota Century Code Chapter 49-22 and the N.D. Admin. Code Article 69-06. The siting of an energy conversion facility is to be made in an orderly manner compatible with environmental preservation and the efficient use of resources per N.D.C.C. Section 49-22-02.

As demonstrated in this Application, Burke Wind has designed the Project to comply with the exclusion and avoidance areas as well as the selection and policy criteria set forth in N.D. Admin. Code Section 69-06-08-01. Details regarding Project design, technical details, studies, and wind resource are provided to support a thorough evaluation of the Project. **Table 1-1** lists the information that is necessary to satisfy the requirements for a Certificate with the Commission and indicates where these requirements are discussed in this Application.

Table 1-1: Certificate Completion Checklist

State Authority	Description	Section
N.D. Admin. Code § 69-06-04-01	Certificate of Site Compatibility Application	
Section 2	Contents	
a.	A description of:	
	(1) The type of energy conversion facility proposed	1.0, 4.0
(a.)	(2) The gross design capacity	1.0

State Authority	Description	Section
N.D. Admin. Code § 69-06-04-01	Certificate of Site Compatibility Application	
Section 2	Contents	
	(3) The net design capacity	1.3.2
	(4) The estimated thermal efficiency of the energy conversion process and the assumptions upon which the estimate is based	Not applicable
	(5) The number of acres that the proposed facility will occupy	1.3.1, Table 1-4
	(6) The anticipated time schedule for: (a) Obtaining the certificate of site compatibility (b) Completing land acquisition (c) Starting construction (d) Completing construction (e) Testing operations (f) Commencing commercial production (g) Beginning any expansions or additions	1.4
b.	Copies of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal regional, state, or local agency.	Provided under separate cover
c.	An analysis of the need for the proposed facility based on present and projected demand for the product or products to be produced by the proposed facility, including the most recent system studies supporting the analysis of the need.	2.1
d.	A description of any feasible alternative methods of serving the need.	2.2
e.	A study area that includes the proposed facility site, of sufficient size to enable the commission to evaluate the factors addressed in N.D.C.C. Section 49-22-09.	1.3.1, 3.0, 10.0-10.12, Figures 1, 2, and 3

State Authority	Description	Section
N.D. Admin. Code § 69-06-04-01	Certificate of Site Compatibility Application	
Section 2	Contents	
f.	A discussion of the utility’s policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives	Appendix A
g.	A map identifying the criteria that provides the basis for the specific location of the proposed facility within the study area.	Figures 4 and 5
h.	A discussion of the criteria evaluated within the study area, including exclusion areas, avoidance areas, selection criteria, policy criteria, design and construction limitations, and economic considerations.	3.1, 3.2 3.3, 3.4, 3.5, 3.6, Tables 3-1 through 3-4, Figure 5
i.	A discussion of the mitigative measures that the applicant will take to minimize adverse impacts which result from the location, construction, and operation of the proposed facility.	7.2.3, 7.3.3, 7.4.3, 7.5.3, 7.6.3, 7.7.3, 7.8.3, 7.9.3, 7.10.3, 7.11.3, 7.12.3, 7.13.3, 7.14.3, 7.15.3, 7.16.3, 7.17
j.	The qualifications of each person involved in the facility site location study.	11.0
k.	A map of the study area showing the location of the proposed facility and the criteria evaluated.	Figures 1-5
l.	An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area.	Provided on CD
m.	A discussion of present and future natural resource development in the area.	7.3.1
n.	Map and GIS requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the commission.	Figures 1-19

State Authority	Description	Section
N.D. Admin. Code § 69-06-04-01	Certificate of Site Compatibility Application	
Section 2	Contents	
N.D.C.C. 49-22-08	Application for a certificate – Notice of filing – Amendment – Designation of a site or corridor.	
Section 1	An application for a certificate shall be in such form as the commission may prescribe, containing the following information:	
a.	A description of the size and type of facility.	1.3.1, 4.0, Table 1-4
b.	A summary of any studies which have been made of the environmental impact of the facility.	7.0
c.	A statement explaining the need for the facility.	2.1
d.	An identification of the location of the preferred site for any energy conversion facility.	1.3.1, Figures 2 and 3
e.	An identification of the location of the preferred corridor for any transmission facility.	Not applicable
f.	A description of the merits and detriments of any location identified and a comprehensive analysis with supporting data showing the reasons why the preferred location is best suited for the facility.	7.0
g.	A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility.	7.2.3, 7.3.3, 7.4.3, 7.5.3, 7.6.3, 7.7.3, 7.8.3, 7.9.3, 7.10.3, 7.11.3, 7.12.3, 7.13.3, 7.14.3, 7.15.3, 7.16.3, 7.17
h.	An evaluation of the proposed site or corridor with regard to the applicable considerations set out in N.D.C.C. § 49-22-09 and the criteria established pursuant to N.D.C.C. § 49-22-05.1.	4.2, 10.0
i.	Such other information as the applicant may consider relevant or the commission may require.	Appendix C

State Authority	Description	Section
N.D. Admin. Code § 69-06-04-01	Certificate of Site Compatibility Application	
Section 2	Contents	
N.D.C.C. 49-22-09	Factors to be considered in evaluated applications and designation of sites, corridors, and routes.	10.0
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	10.1
2.	The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	10.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	10.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	10.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	10.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	10.6
7.	The direct and indirect economic impacts of the proposed facility.	10.7
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	10.8
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	10.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	10.10

State Authority	Description	Section
N.D. Admin. Code § 69-06-04-01	Certificate of Site Compatibility Application	
Section 2	Contents	
11.	Problems raised by federal agencies, other state agencies, and local entities.	10.12

1.2. Flexibility in Siting

In order to identify the optimal site for the Project, various factors were taken into consideration during Project development. Initially, the Project Area (**Figures 1, 2, and 3**) was selected based upon identification of the optimal wind resource area and potential locations where the Project could connect to the electric transmission grid for a potential offtaker. Next, discussions with landowners began to identify areas where Project development would be feasible. In tandem, environmental desktop and field studies were conducted to identify areas where development may be constrained or feasible. Finally, recommendations from entities and agencies, required setbacks, exclusion and avoidance areas, and siting criteria were accounted for to further identify and refine a suitable Project Area.

Landowners within the Project Area have entered into agreements with Burke Wind for wind turbines and associated facilities to be built on their properties. Burke Wind identified wind turbine locations based on required setbacks; environmentally sensitive areas; site studies; topographic maps; exclusion and avoidance areas; landowner preferences; and communications with local, state, and federal agencies.

Burke Wind is seeking a Certificate for the Project Area as indicated in **Figures 1, 2, and 3**, instead of seeking a permit for the specific location of each individual turbine. Extensive studies and micrositing efforts have been completed to confirm that all turbines have been sited in locations with optimal wind resources and where known environmental or regulatory siting issues have been avoided, minimized, or can be mitigated. Burke Wind proposes that conditions be included in the Certificate to allow the Project to be built within the Project Area with the specification that final turbine placement be subject to required setbacks from environmentally sensitive areas and be sufficient to meet required sound limits. As such, selections of turbine models are subject to change to ensure that the turbine models ultimately used are both cost effective and optimize land and wind resources.

Burke Wind has completed required and additional Project studies, including but not limited to cultural resource surveys, wetland resource assessment and delineation, and wildlife and habitat surveys. The Applicant has also evaluated the Project Area based on efficient construction of the Project. As the wind turbine locations have been evaluated via desktop and field review, only small changes to turbines, access roads, and crane paths are anticipated. If changes to the site plan occur after the submission of this Application, Burke Wind will resubmit a final site plan to the Commission prior to construction and a pre-construction

conference call will be requested with Commission staff to ensure compliance with Certificate conditions.

This siting process and request for a Certificate for the Project Area are consistent with North Dakota siting rules and will provide Burke Wind with the flexibility necessary to develop a timely, cost-effective project in an environmentally responsible manner.

1.3. Project Summary

The Project Area was selected by Burke Wind due to its optimal wind resources for siting a 200-MW wind facility, the presence of landowners willing to participate in the Project, environmental suitability, access to transmission interconnection, and economic feasibility. Burke Wind coordinated with stakeholders and government entities to identify and avoid or minimize known concerns during siting. The Project Area is consistent with the exclusion and avoidance criteria outline in N.D. Admin. Code Section 69-06-08-01.

1.3.1 Project Area

The Project Area is located entirely within Burke County, North Dakota, approximately fifteen (15) miles southwest of Bowbells, North Dakota. Burke Wind has negotiated easements with landowners within the Project Area; however, not all lands within the Project Area are under lease for the Project. Project construction activities and Project facilities will only be planned and built on lands where lease agreements are in place. Lands within the Project Area were targeted to optimize the wind resource while avoiding and minimizing impacts to environmental resources. **Table 1-2** summarizes Public Land Survey System (PLSS) sections that are included within the Project Area.

Table 1-2: Project Area Location

Township	Range	Sections
160N	93W	1,2
161N	92W	7,8,9,15,16,17,18,19,20,21,22,23,26,27,28,29,30,31,32,33
161N	93W	5,6,7,8,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26
161N	94W	1,2,3,4,5,6,8,9,10,11,12,13,14,15,16,22,23,24
162N	93W	31
162N	94W	25,26,27,28,31,32,33,34,35,36

The Project Area encompasses approximately 22,933 acres (35.8 square miles) in Burke County, North Dakota. Turbines and associated infrastructure will be placed throughout participating land parcels and will occupy up to approximately 65.9 acres of permanent impacts during operation (see **Figure 4**), or less than one (1) percent of the overall Project Area (approximately 0.9 acres of total permanent disturbance per turbine). Burke Wind has secured voluntary land agreements with 100% of the landowners necessary to develop the Project.

Table 1-3 provides information on Project impacts broken out by specific facility type. **Table 1-4** provides impact calculations in acres for each facility type.

Table 1-3: Project Impact Assumptions

Project Component	Temporary Construction Disturbance	Construction Disturbance to be Reclaimed	Permanent Disturbance during Operations
Wind Turbines ¹	4.50 acres per turbine	4.44 acres per turbine	0.06 acres per turbine
Access Roads ²	200 feet wide per linear foot of road	184 feet wide per linear foot of road	16 feet wide per linear foot of road
Collection Lines ³	50 feet wide per linear foot	50 feet wide per linear foot minus 12 feet by 8 feet per junction box	0 feet wide per linear foot for collection lines 12 feet by 8 feet for each junction box (22 junction boxes anticipated)
Crane Path ⁴	50 feet wide per linear foot	50 feet wide per linear foot	0 feet wide per linear foot
SCADA Permanent MET Tower ⁵	1.25 acres	1.25 acres minus 5 square feet	5 square feet
PPT Temporary MET Tower ⁵	1.25 acres	1.25 acres	0.0 acres ⁶
O&M Building	5.0 acres	3.5 acres	1.5 acres
Collection Substation	5.0 acres	2.9 acres	2.1 acres
Laydown Area	20.0 acres	20.0 acres	0.0 acres
Batch Plant	4.0 acres	4.0 acres	0.0 acres

¹ Construction impacts assumed a 250-foot construction radius around each turbine (approximately 4.50 acres per turbine). Impacts during operation account for an eighteen (18)-foot diameter turbine base with a 20-foot buffer for the gravel pad, or 0.06 acres per turbine.

² Access Road construction easement width is 200 feet wide to account for potential maximum impact and is a conservative estimate of disturbance. Access roads are anticipated to temporarily be 50 feet or less in width during construction and will reduced later to a permanent sixteen (16) feet width for operation. Access road impacts also assume all proposed roads are new access roads and do not consider improvements to existing roads separately.

³ Collection line impacts are based on proposed collection corridors that vary in width. Where collection line corridors overlap access road construction easements, the respective impact buffers generally overlap. Once collection lines are further defined, final impacts will be less than those currently calculated.

⁴ Crane Path width is based upon the turbine types. Temporary impacts are a conservative estimate of disturbance. Crane Paths required to support crane access to turbines are up to 50 feet wide. Where Crane Paths overlap access road construction easements, the respective impact buffers generally overlap.

⁵ Area of impact is 1.25 acres for one (1) guyed tower during installation. Once installed, the tower has a one (1) square-foot base plate and four (4) one (1) square-foot anchor points, or five (5) square feet.

⁶ One (1) temporary PPT MET tower will be constructed and will then be removed following initial project operations and data collection. This PPT MET tower is included in the temporary impact calculations.

Table 1-4: Total Project Impacts

Project Component	Temporary Construction Disturbance	Construction Disturbance to be Reclaimed	Permanent Disturbance during Operations
Wind Turbines (76 turbines excluding alternates) ¹	364.5 acres	359.7 acres	4.8 acres
Access Roads ²	735.9 acres	678.5 acres	57.4 acres
Collection Lines ³	448.9 acres	448.8 acres	12 feet by 8 feet for each junction box (22 junction boxes anticipated) 0.1 acres
Crane Path ⁴	15.0 acres	15.0 acres	0.0 acres
SCADA Permanent MET Tower ⁵	1.25 acres	1.25 acres minus 5 square feet	5 square feet (0.0001 acre)
PPT Temporary MET Tower	1.25 acres	1.25 acres	0.0 acres
O&M Building/Substation	10.0 acres	6.4 acres	3.6 acres
Batch Plant	4.0 acres	4.0 acres	0.0 acres
Construction Laydown Area	20.0 acres	20.0 acres	0.0 acres
Total⁶:	1,360.6 acres	1,294.8 acres	65.9 acres

¹Assumes 76 turbines x 4.8 acres of ground disturbance during construction. Approximately 0.06 acre/turbine of ground disturbance will remain permanent. Five (5) alternate turbine locations have been identified to allow siting flexibility, but were not included in the calculation.

²Assumes a 200-foot wide construction easement for potential maximum construction impact. Access roads are anticipated to be up to 50 feet in width during construction (sixteen [16] feet will remain during operation) and a total of approximately 29.7 linear miles of service roads. The overlapping areas for turbines were excluded from the road impact calculations to avoid double counting the same footprint.

³Collection line impacts are based on collection line centerlines plus 25 feet on each side of centerline (50-foot width). The overlapping areas between the collection line corridor buffer and the access road corridor buffer were removed from impact calculation. Junction boxes will be located on the ground throughout the Project Area and will each require an approximate twelve (12) feet by eight (8) feet area. Currently, 22 junction boxes are anticipated to be required.

⁴Assumes a 50-foot wide easement for crane paths during construction. The overlapping areas for access road and collection line corridors were excluded from the crane path impact calculations to avoid double counting the same footprint.

⁵One (1) permanent MET towers = 1.25 acres disturbance during construction; assumes guyed tower and five (5) square feet of disturbance. One (1) permanent MET tower alternate location has been identified to allow siting flexibility, but was not included in the calculation since only one (1) permanent MET tower will be constructed.

⁶Total provides acreage derived by removing overlap of individual features to avoid double counting the same footprint.

1.3.2 Projected Output

The Project will have a total nameplate capacity of approximately 200 MW with a net capacity factor of 49.5 percent. The total output is dependent upon the wind resource, equipment, site design, and site-specific features.

1.4. Project Schedule

Project construction is anticipated to start as soon as weather permits in the spring of 2019 and commercial operation is scheduled to start in December 2019. The anticipated schedule is dependent upon various factors including permitting, equipment deliveries, and other development activities. Key schedule milestones include the following:

- **Certificate of Site Compatibility** - Burke Wind is requesting that the Commission issue the Certificate by the end of 2018.
- **Land acquisition** - All land easements agreements needed for construction have been secured.
- **Permits** - All required permits and approvals will be obtained prior to construction.
- **Equipment Procurement, Manufacture, and Delivery** - Burke Wind is in the process of ordering long-lead equipment (i.e., transformers and turbines) for the Project.
- **Construction** - Burke Wind anticipates construction activities starting as early as spring 2019, but the official start date is dependent upon permitting, weather conditions, and road restrictions. The engineering, procurement, and construction (EPC) contractor will be responsible for completing Project construction.
- **Testing Operations** - Testing operations will begin after construction activities are largely complete and are anticipated to begin in fall 2019.
- **Commercial Operations** - Burke Wind anticipates commercial operations to begin in December 2019.
- **Expansions or Additions** - At this time, Burke Wind does not have specific plans for expansions or additions.

1.5. Project Ownership

Burke Wind will own and operate the Project and will procure wind turbine and wind turbine components directly from a manufacturer.

2.0 NEED FOR FACILITY

2.1. Need Analysis

Additional electrical generation is required to keep up with demand within North Dakota due to population expansion and growth associated with oil and gas development, as well as the high demand for heat in winter. As of 2015, the most recent data available, per capita energy consumption in North Dakota ranked fourth highest in the United States (U.S. Energy Information Administration 2018). Electricity is the primary energy source utilized by North Dakota residents and accounts for approximately 39 percent of all energy consumed, primarily for home heating. Coal-based generating plants have been the dominant form of electricity generation in the region until recent expansion of renewable energy generation (33.4 percent as of February 2018). Midcontinent Independent System Operator (MISO) predicts a compound annual growth rate in energy consumption of 2.06 percent for North Dakota between 2018 and 2022 (State Utility Forecasting Group 2017).

Burke Wind has a PPA with Basin to supply power for 30 years from the Burke County Wind Energy Center to the electrical grid via connection to the existing Tande Substation, owned by Basin. The existing Tande Substation was constructed in 2017 to meet the projected future electricity demand and to maintain electric transmission reliability standards in accordance with the requirements of the North American Electric Reliability Corporation (NERC). Many utilities, including Basin, have internal or public initiatives to increase the amount of wind power in their overall portfolio due to environmental, economic, and consumer driven issues. Preliminary Basin interconnection studies determined that Tande Substation was the optimized point of interconnection for the Project based on the proximity of the Project Area.

In 2010, the North Dakota Department of Commerce, EmPower ND Commission, published the Comprehensive State Energy Policy 2010-2025 (EmPower ND Commission 2010), which recommended a capacity of wind generation up to 5,000 megawatts by 2020. The study also strongly supported research and development of cleaner technologies, while later reports (EmPower ND Commission 2016) recommended removing the sunset provision on the sales tax exemption provided for the construction of wind powered electrical generating facilities. North Dakota has a higher wind capacity factor, typically between 40 to 50 percent, than the national average of 34.5 percent (EmPower ND Commission 2017), allowing for more efficient energy generation.

The need for development of the Project is thus tied to electricity demand and the stated goal to increase wind energy within North Dakota.

2.2. Alternatives

Alternatives to the Project include use of coal, natural gas, solar, biomass, and hydro-powered electrical generation plants. Though potentially viable, these alternatives were not evaluated due to the stated goals of the EmPower 2010-2025 Plan of increasing the capacity of wind generation up to 5,000 megawatts by 2020. The Project contributes to the renewable wind energy in North Dakota.

The Project will be built to include up to 76 turbines; however, the Project design includes an additional five (5) alternate turbines to provide flexibility that ongoing environmental studies, landowner preferences, and other factors can be considered prior to design finalization.

2.3. Ten-Year Plan

As required by N.D.C.C. Section 49-22-04, Burke Wind will file a Ten-Year Plan with the Commission.

3.0 SITE SELECTION CRITERIA

Burke Wind has carefully evaluated the 22,933-acre Project Area to determine the best locations for up to 76 wind turbines. An additional five (5) alternate turbine locations have been included in the Project layout and were also evaluated to provide siting flexibility based on environmental studies and landowner preferences; however, only up to 76 wind turbines will be constructed. The Project Area was identified as an optimal site from a wind resource, transmission, landowner participation, economic, and environmental perspective. Burke Wind has secured voluntary wind option agreements with landowners and identified preliminary wind turbine locations based on:

- in-field inspection of the site;
- review of topographic maps;
- known environmentally sensitive areas;
- review of the Commission's Energy conversion facility siting criteria exclusion and avoidance areas (N.D. Admin. Code § 69-06-08-01);
- review of Burke County Zoning Regulations; and
- communication with local, state, and federal agencies.

NEER subsidiaries have used a turbine siting process to develop recent wind energy projects, including fourteen (14) existing projects in North Dakota. The turbine siting process incorporates input from several entities. Through this process, NEER addresses environmental issues that commonly arise during Project development and works within the parameters of the state administrative code. North Dakota has several site selection criteria that are considered by the Commission to determine site suitability. Burke Wind has reviewed the N.D. Admin. Code Chapter 69-06-08 and has considered these criteria in Project design. The Commission's siting criteria exclusion and avoidance areas are discussed in this section.

3.1. Exclusion Areas

In accordance with N.D. Admin. Code § 69-06-08-01(1) and (2), the geographical areas identified in **Table 3-1** shall be excluded during the Project siting process. Exclusion areas within the Project Area are mapped in **Figure 5**.

Table 3-1: Exclusion Areas

Exclusion Area	Present within Project Area?	Description	Section Addressed
Designated or registered national: parks; memorial parks; historic sites; landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	None	Not Applicable	3.5, 7.3, 7.8, Figure 5
Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild scenic, or recreational rivers; game refuges; game management areas; management areas; and nature preserves.	Present	A Class III archaeological inventory has been completed. A Class I cultural resources inventory identified known archaeological sites. Known archaeological sites are not depicted on Figure 5 because of confidentiality. However, as discussed in Section 7.7 , impacts to archaeological sites will be avoided.	7.7, 7.8, 7.9, 7.15 , Figure 5
County parks and recreational areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands.	None	Not Applicable	7.8 and 7.14

Exclusion Area	Present within Project Area?	Description	Section Addressed
Prime farmland and unique farmland, as defined by the land inventory and monitoring division of the soil conservation service, USDA, in 7 C.F.R. part 657; provided, however, that if the commission finds that the prime farmland and unique farmland that will be removed from use for the life of the facility is of such small acreage as to be of negligible impact on agricultural productions, this exclusion does not apply.	Present	<p>Prime farmland is not present within the Project Area.</p> <p>Approximately 3,225.3 acres (14.1 percent) of the Project Area is classified as farmland of statewide importance. Approximately 12.8 acres (0.16 percent of the Project Area) of farmland of statewide importance would be permanently impacted by the Project and this amount of impact is negligible.</p>	7.9, 7.10, Figure 5
Irrigated Land	None	Not Applicable	7.9
Areas critical to the life stages of threatened or endangered animal or plant species.	None	The Project is located within the migratory corridor for the federally endangered whooping crane, but there is not federally designated critical habitat for any federally listed species in the Project Area.	7.16
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	None	Not Applicable	7.13, 7.14, 7.15, 7.16
Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile launch or launch control facility.	None	Not Applicable	7.3.1

Exclusion Area	Present within Project Area?	Description	Section Addressed
Wind energy specific exclusion areas	Not Applicable	<p>The Project complies with the following exclusion areas:</p> <ul style="list-style-type: none"> ○ x height of turbine from interstate or state roadway right-of-way (ROW) ○ x height of turbine + 75 feet from county or maintained township roadway ○ x height of turbine from railroad ROW ○ x height of the turbine from a 115 kV or higher transmission line ○ x height of turbine from property line of non-participating landowners ○ 3 x height of turbine from residences of non-participating landowners 	4.1.1

3.2. Avoidance Areas

In accordance with N.D. Admin. Code § 69-06-08-01(3) and (4), the geographical areas listed in **Table 3-2** may not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative. Avoidance areas within the Project Area are also depicted on **Figure 5**. The avoidance areas will include a buffer zone of a reasonable width to protect the integrity of the area. In determining whether an avoidance area should be designated for a facility, the Commission may consider, among other things:

- the proposed management of adverse impacts;
- the orderly siting of facilities;
- system reliability and integrity;
- the efficient use of resources; and
- alternative sites.

Table 3-2: Avoidance Areas

Avoidance Area	Present within Project Area?	Description and Buffer	Section Addressed
Historical resources which are not designated as exclusion areas	Present	Historical cemeteries are present within the Project Area. Burke Wind will avoid directly impacting all historical cemeteries within the Project Area.	7.7, Figure 5
Areas within the city limits of a city or the boundaries of a military installation	None	Not Applicable	7.3, Figures 1, 2, and 3
Areas within known floodplains as defined by the geographical boundaries of the hundred-year flood	None	Not Applicable	7.12
Areas that are geologically unstable	None	Sand and gravel extraction areas and historic mines are present within the Project Area. Historic mining was limited to surface mining and underground mining is not known to have taken place. Seismic risk is very low and active tectonic features or faults are not known. The North Dakota Geological Survey landslide mapping program has not identified landslide deposits within the Project Area.	7.11

Avoidance Area	Present within Project Area?	Description and Buffer	Section Addressed
Woodlands and wetlands	Present	<p>Woodland areas are present within the Project Area in the form of windbreaks surrounding farmsteads, small isolated woodlots, and wooded drainage corridors and will be avoided and minimized to the extent practicable. Few impacts to woodlands are anticipated. Trees and shrubs will be replaced according to the Commission’s Tree and Shrub Mitigation Specifications.</p> <p>Wetlands are present within the Project Area. Impacts to jurisdictional wetlands will be avoided and impacts to isolated, non-jurisdictional wetlands will be avoided and minimized to the extent practicable. .</p>	7.13, 7.14, Figures 10 and 14
Areas of recreational significance which are not designated as exclusion areas	None	Not Applicable	7.3, 7.8
Geographic area where, due to operation of the facility, the sound levels within 100 feet of an inhabited residence or a community building will exceed 50 A-weighted decibels (dBA).	None	<p>Sound modeling results indicated that all occupied receptors are expected to experience less than 50 dBA 100 feet from their residence. The maximum modeled Leq sound level at 100 feet from a participating receptor was 47 dBA. The maximum modeled Leq sound level at 100 feet from a non-participating receptor was 46 dBA. The Sound Level Assessment Report will be provided under separate cover to the Commission.</p>	7.6

3.3. Selection Criteria

In accordance with N.D. Admin. Code § 69-06-08-01(5), a site may be approved in an area only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility, as they relate to the criteria listed in Table 3-3, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

Table 3-3: Selection Criteria

Selection Criteria	Potential Adverse Effects	Section Addressed
The impact upon agriculture:		
Agricultural production	<p>Temporary impacts during construction for turbine installation, road construction, cable trenching, laydown, and construction staging would be up to 1,360.6 acres. Of this acreage, up to 65.9 acres of land will be permanently affected by the turbines, associated access roads, and other infrastructure during operation. Up to 41.6 acres (33.6 acres of cropland and 8.0 acres of pastureland) of the permanent impact acreage would be permanently removed from production. These impacts represent a minor portion of the land area available for agricultural production. Landowner agreements include compensation for crop damage, if any, during surveys and construction. Revenues lost from the removal of land from agricultural production will be offset by lease payments to landowners according to their respective contracts with Burke Wind.</p> <p>As a result, the Project will not result in significant impacts to agricultural production. Overall, the Project will positively impact the region and agricultural producers by adding infrastructure, temporary and permanent jobs, increasing the Burke and Mountrail Counties' tax base by an estimated at \$30 million dollars for the Project and the Transmission Line, and providing lease payments to Project participants for the Project and Transmission Line amounting to \$40 million dollars.</p>	7.3, 7.9

Selection Criteria	Potential Adverse Effects	Section Addressed
Family farms and ranches	<p>The Project will comply with state setbacks. Although some land area will be converted to wind turbine foundations and pads, access roads, an O&M building, and a substation, wind lease payments to farmers will provide a supplemental source of income. As stated above, landowner agreements also include compensation for crop damage, if any, during surveys and construction. Revenues lost from the removal of land from agricultural production will be offset by lease payments to landowners according to their respective contracts with Burke Wind.</p> <p>Wind development is a compatible use with existing family farms and ranches and will not displace any farms or ranches.</p>	4.1, 7.2, 7.3, 7.10, Table 4-1, Figure 5
Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	Participating landowners have not expressed concerns related to economically suitable irrigation on their land. Currently no irrigation is occurring within the Project Area.	7.9, 7.10
Surface drainage patterns and ground water flow patterns	A wetland delineation was conducted in Fall 2017 and Spring, Summer, and Fall 2018. Project infrastructure has been sited to avoid impacts to jurisdictional surface waters to the extent practical and will be designed in a manner that allows runoff to flow unimpeded through the watershed. A construction stormwater permit will be obtained that requires proper stormwater controls are in place during construction and until site stabilization. Temporarily disturbed areas will be returned to their original contours.	7.11, 7.12, 7.13, Figure 14

Selection Criteria	Potential Adverse Effects	Section Addressed
The agricultural quality of cropland	Minimal impacts to the agricultural quality of cropland are anticipated. Landowner agreements include compensation for crop damage and alleviation of compacted soils, if any occur during surveys and construction.	7.9, 7.10
The impact upon the availability and adequacy of:		
Law enforcement	No adverse impacts to law enforcement are anticipated.	7.4
School systems and education programs	No adverse impacts to school systems and educational programs are anticipated.	7.4
Governmental services and facilities	No adverse impacts to governmental services and facilities are anticipated.	7.4
General and mental health care facilities	No adverse impacts to general and mental health care facilities are anticipated.	7.4
Recreational programs and facilities	No recreational programs or facilities will be directly impacted. Recreational impacts would be auditory or visual in nature and limited to the individuals hunting, fishing, or observing nature in and near the Project Area.	7.4, 7.8
Transportation facilities and networks	During Project construction, an increase of vehicle trips per day is anticipated, but is expected to be temporary and not significant. No significant impacts to transportation facilities and networks are anticipated during Project operation.	7.4, Figure 13
Retail service facilities	No adverse impacts to retail service facilities are anticipated. Local retail services such as restaurants, stores, and lodging in the vicinity of the Project Area will likely experience an increase in business during construction of the Project.	7.4
Utility services	The Project will interconnect with the Basin Tande Substation utilizing the Burke Transmission Line associated with the Project. Basin will recommend appropriate electrical system configurations and Burke Wind will utilize Basin's recommendations to prevent impacts to the transmission system.	1.0, 2.0, 6.0, 7.4

Selection Criteria	Potential Adverse Effects	Section Addressed
The impact upon:		
Local institutions	No adverse impacts are anticipated.	7.4
Noise sensitive land uses	Noise sensitive land uses within the Project Area consist of inhabited residences near turbine locations. The sound impacts from the Project will be within the Commission’s limit at inhabited residences or Burke Wind will pursue a waiver.	7.6
Rural residences and businesses	The Project complies with state and local setbacks. Burke Wind will utilize a commercially viable lighting mitigation system in compliance with Commission requirements in N.D. Admin. Code Ch. 69-06-11 and Federal Aviation Administration (FAA) regulations.	4.1, 7.2, 7.3, Figure 5
Aquifers	The Project will likely have minimal impacts to regional groundwater recharge based on the small amount of increased impervious surface area created by Project infrastructure, distance between infrastructure, and the size of the Project Area.	7.11
Human health and safety	No impacts to human health and safety are anticipated based on the implementation of mitigative measures discussed in Section 7.5.3 and maintenance schedules.	4.1, 6.3, 6.5, 7.5
Animal health and safety	No impacts to livestock or other domesticated animals are anticipated as a result of construction or operation of the Project. Potential effects to health and safety of wildlife populations are being addressed through a series of pre-construction wildlife use studies. Burke Wind will implement measures to avoid and minimize effects to wildlife by siting turbines away from valuable wildlife resources to the extent practical. A Wildlife Conservation Strategy is being prepared specific to this Project, which will implement a standardized one (1) year post-construction bird and bat mortality monitoring study.	7.15, 7.16

Selection Criteria	Potential Adverse Effects	Section Addressed
Plant life	The Project will result in up to 65.9 acres of permanent impact. Land where the turbines will be sited is primarily undeveloped pasture/hay, cropland, and grassland. Temporarily disturbed land will be restored to either crop or grassland pending original condition and landowner preferences.	7.14, Figure 10
Temporary and permanent housing	No adverse impacts are anticipated. Existing temporary housing and lodging will be utilized during construction.	7.2
Temporary and permanent skilled and unskilled labor	No adverse impacts are anticipated. Local contractors employed for construction will result in increased demand for local skilled and unskilled labor.	7.2
The cumulative effects of the location of the facility in relation to existing and planned facilities and other industrial development	Wind energy development is anticipated to have a positive cumulative impact on air quality and minimal impacts to geology, soils water, sound, safety and health issues, and cultural resources. Socioeconomic impacts are anticipated to be positive through diversification of the rural economy in the form of increased income for landowners, employment during construction, and new property tax revenue. A 2015 study of property values in North Dakota concluded that property values were not diminished by wind energy projects (Hoefs 2015).	7.2, 10.11

3.4. Policy Criteria

In accordance with N.D. Admin. Code § 69-06-08-01(6), the Commission may give preference to an applicant that will maximize benefits that result from the adoption of the policies and practices listed in **Table 3-4**, and in a proper case may require the adoption of such policies and practices as a condition of the Certificate.

Table 3-4: Policy Criteria

Policy Criteria	Potential Adverse Effects	Section Addressed
Recycling of the conversion byproducts and effluents	Not applicable	N/A
Energy conservation through location, process, and design	Burke Wind is developing the site to maximize energy output and to optimize wind resources while minimizing the impact on land resources and potentially sensitive areas.	4.2
Training and utilization of available labor in this state for the general and specialized skills required	Burke Wind will use local labor to the extent practical.	7.2
Use of a primary energy source or raw material located within the state	The wind resources of the State of North Dakota will be utilized to generate energy at the site.	5.2
Not relocating residents	No residents will be relocated as a result of the Project.	7.2.2
The dedication of an area adjacent to the facility to land uses such as recreation, agriculture, or wildlife management	The Project will not interfere with adjacent land uses and, as a result, dedication of adjacent land to recreation, agriculture, or wildlife management is not anticipated.	7.3, 7.8, 7.9, 7.15, Figure 5
Economies of construction and operation	Burke Wind will utilize local contractors to the extent practical.	7.2
Secondary uses of appropriate associated facilities for recreation and the enhancement of wildlife	None	N/A

Policy Criteria	Potential Adverse Effects	Section Addressed
Use of citizen coordinating committees	No citizen coordinating committees were used for the development of the Project. Burke Wind has worked with landowners within the region and local governments to solicit input regarding the Project. Events were held to provide participating landowners with Project updates in March 2017, June 2017 and June 2018. Letters to provide Project updates required for the Burke County CUP public hearings were mailed in June 2018. Local County meetings with the Planning and Zoning Department and County Commissioners have been held on a bi-monthly basis. A public open house for the Project was held on March 9, 2018 in Bowbells, North Dakota and a landowner dinner was held on June 26, 2018.	8.0
A commitment of a portion of the energy produced for use in this state	The energy generated from the Project will interconnect with the electrical grid at the existing Tande Substation owned by Basin. Burke Wind has a PPA with Basin and expects that the energy generated from the Project will serve Basin customers that include North Dakota residents.	6.3
Labor relations	Some trades may be part of unions. No labor relations will be affected.	6.5, 7.2
The coordination of facilities	Existing facilities and facility corridors were considered in the selection of the Project Area.	3.0, 3.6

Policy Criteria	Potential Adverse Effects	Section Addressed
Monitoring of impacts	Burke Wind and the EPC contractor will employ Best Management Practices (BMPs) during construction, such as topsoil storage and handling as required by the Commission. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the Project which will include the monitoring of revegetated areas until revegetation has been reestablished. Burke Wind will employ a Wildlife Response and Reporting System for the duration of the Project operation and conduct one (1) year of post-construction bird and bat mortality monitoring.	7.10, 7.11, 7.12, 7.15, 7.16
A commitment to install lighting mitigation technology subject to commercial availability and in accordance with Federal Aviation Administration regulations and with Commission requirements in N.D. Admin. Code § 69-06-11.	Burke Wind will use commercially reasonable efforts to install a light-mitigating technology system in accordance with N.D. Admin. Code Ch. 69-06-11, subject to FAA approval, to reduce visual impacts.	6.2.4, 7.5.2

3.5. Design and Construction Limitations

Wind resources, landowner easements, internal and regulatory setbacks (local and state), environmental avoidance areas, and available transmission interconnection options are key design and construction limitations when developing a wind energy center. Burke Wind has conducted an analysis of the Project Area to ensure the site has ample wind energy to generate revenue for the Project because wind resources are essential to site selection and design. Burke Wind has also secured all the voluntary land agreements needed for development of the Project as land easements are critical to development of the Project. The Project complies with all Commission setbacks and exclusion areas and Burke County setback requirements (see **Section 4.2**). Additionally, the Project will utilize the Transmission Line that will be permitted separately through the Commission to connect to the existing Tande Substation owned by Basin.

3.6. Economic Considerations

Economics were considered during selection of the Project Area. The Project Area utilizes the wind resources in the area to ensure that the Project is capable of generating energy.

Additional information on wind resources within the Project Area is discussed in **Sections 5.2 and 5.3.**

The need to qualify for a Federal Production Tax Credit (PTC) is an important economic consideration for the Project. The PTC is an income tax credit of 1.9 cents/kilowatt-hour allowed for production of electricity from utility-scale wind facilities that commenced construction in 2017 (USDOE 2018). This amount will be reduced by 60 percent for wind facilities that commence construction in 2019. The Project will be eligible for the PTC if construction is started before December 31, 2019.

4.0 GENERAL DESCRIPTION OF THE FACILITY

4.1. Wind Power Technology

Wind passing over the blades of a wind turbine creates lift and causes the rotor to turn. The rotor is connected by a hub and main shaft to a system of gears connected to a generator. Burke Wind is proposing to install up to 76 wind turbines including 68 GE 2.72 MW and eight (8) GE 1.715 MW turbines; however, selections of turbine models are subject to change to ensure that the turbine models ultimately used are both cost effective and optimize land and wind resources. Burke Wind is seeking flexibility from the Commission to select the most appropriate technology for the Project at the time of construction to ensure optimization of wind and land resources and cost efficiency.

The GE 2.72 MW wind turbine has a nominal nameplate rating of 2.72 MW. Each 2.72 MW turbine will have a 295-foot hub height (90 meters) and a 381-foot rotor diameter (116 meters; **Figures 6(a) and 6(b)**). The GE 1.715 MW wind turbine has a nominal nameplate rating of 1.715 MW. Each 1.715 MW turbine will have a 262-foot hub height (80 meters) and a 338-foot rotor diameter (103 meters). Both turbine models have a minimum operating speed of 6.7 miles per hour (mph; three [3] meters per second [m/s]). The 2.72 MW wind turbine can operate in wind speeds up to 91.71 mph (41 m/s) but only for a three (3)-second time interval (GE Renewable Energy 2018) while the 1.715 MW wind turbine can operate in wind speeds of 45 mph (20 m/s; GE Renewable Energy 2016).

A concrete Patrick and Henderson (P&H) cylindrical style foundation will be the preferred foundation to secure each tower pending soil types and depth to water during geotechnical studies. Where a P&H cylindrical style foundation is not feasible, an octagonal foundation will be utilized. The P&H cylindrical style foundation typically has a smaller footprint than the traditional supporting structure. It differs from conventional supporting structures by using a pier constructed from concentric corrugated metal pipes filled with concrete that is compressed by post-tensioned rods to support the foundation loads. Turbine foundation design can vary depending on soil conditions. A control panel inside the base of each turbine tower houses communication and electronic circuitry. Each turbine is equipped with a wind speed and direction sensor that communicates to the turbine's control system to signal when wind speeds are sufficient for operation. Each turbine contains variable-speed control and independent blade pitch to assure aerodynamic efficiency. Electricity generated by each turbine is brought to a pad-mounted transformer at the base of the turbine where the voltage will be transferred (stepped up) to a power collection line voltage of 34.5 kV. Underground power collection lines will collect the electricity and transfer it to the substation (**Figure 7**). All power collection lines and communication cables will be buried on private property or public ROW along public roads where allowed by the local or County authority.

Burke Wind will use commercially reasonable efforts to install a light-mitigating technology system in compliance with N.D. Admin. Code Ch. 69-06-11 and subject to FAA approval.

Each turbine and associated transformer will be accessible via all-weather aggregate-surfaced access roads that will connect to public roads. Permanent access roads will be 16 feet wide; however, they may be wider (up to 50 feet wide) during construction. **Figure 7** is a diagram that depicts the path of energy from a wind farm to energy users and **Figure 8** shows a typical wind farm facility layout. Energy generated by the Project will be stepped up to 345 kV at a Project collection substation (**Figure 9**) that will be constructed on Section 25, Township 161 North, and Range 93 West near the intersection of 92nd St. NW and 91st Avenue NW (**Figure 5m**). An O&M building will also be constructed at this location adjacent to the Project collection substation (**Figure 9**).

4.2. Wind Energy Center Layout

Burke Wind is developing a wind farm layout that focuses on minimizing the impact on land resources and potentially sensitive areas while optimizing wind resources. Generation of wind power is entirely dependent on the availability and quality of the wind resource at each location. The energy content from wind varies with the cube (the third power) of the wind speed; meaning, a doubling of the wind speed will increase the available energy by a factor of eight (8) times. Analysis of wind direction data within the Project Area suggests that the optimal turbine string alignments would occur when turbines are situated generally from northwest to southeast. Design of the turbine array and collection system will minimize energy loss due to wind turbine wakes (the adverse impacts of one (1) turbine on an adjacent turbine), turbulence, and electrical line losses.

Setbacks used in the design of the Project comply with or are larger than those required by the Commission. The Project at a minimum complies with the following wind energy-specific exclusion areas provided in N.D. Admin. Code § 69-06-08-01(2):

- 1.1 times the height of the turbine from interstate or roadway ROW;
- 1.1 times the height of the turbine plus 75 feet from the centerline of any county or maintained township roadway;
- 1.1 times the height of the turbine from any railroad ROW;
- 1.1 times the height of the turbine from a 115 kV or higher transmission line; and
- 1.1 times the height of the turbine from the property line of a non-participating landowner, unless a variance is granted.
- 3 times the height of the turbine or more from an inhabited rural residence on a non-participating parcel.

The Project also complies with the N.D.C.C. Section 49-22-05.1 requirement that turbines be placed further away than three (3) times the height of the turbine or more from an inhabited rural residence on a non-participating parcel.

Burke County Zoning Regulations also have established setbacks relevant to the components of the wind energy facility. The Project at minimum complies with the following Burke County setbacks:

- Each wind turbine must be set back at least one-half (0.5) mile from any occupied structure;
- Each wind turbine must be set back at least 1.1 times the height of the turbine from each antenna tower, unoccupied structure, or improvement with an estimated value over \$25,000; and
- Each wind turbine must be set back at least 1.1 times the height from the property line of non-participating landowners.

Table 4-1 lists the setbacks utilized in designing the Project layout, which in many cases are more restrictive than the setbacks listed above. At a minimum, Burke Wind will comply with the most restrictive setback. For example, Commission regulations require that a turbine be located no closer to an occupied non-participating residence than a setback of three (3) x turbine height (1,458 feet) unless a variance is granted, but Burke County requires a 0.5-mile setback (2,640 feet) which is more restrictive. Therefore, the more restrictive Burke County requirement was adopted by Burke Wind.

Setback distances are based on the tallest proposed turbine model, the GE 2.72 MW (see Section 4.1), that has a 295-foot (90-meter) hub height and a 381-foot (116-meter) rotor diameter. Thus, the height of turbine (measured from the bottom of the turbine tower to the tip of the blade when vertical) used for the setback analysis is 486 feet (148 meters). The most restrictive setback that was adopted by Burke Wind for each category is highlighted using bold text in Table 4-1.

Table 4-1: Setback Distances for Wind Turbines

Public Service Commission Exclusion Areas	
Setback Type	Setback Distance
Property line of non-participating landowners	1.1 x height of turbine unless a variance is granted (534.1 feet)
Non-participating inhabited rural residences	3 x height of turbine unless a variance is granted (1,457 feet)
Centerline of any county road or maintained township roadway	1.1 x height of turbine plus 75 feet (609.1 feet)
Interstate or state road ROW	1.1 x height of turbine (534.1 feet)
Railroad ROW	1.1 x height of turbine (534.1 feet)
115kV or higher transmission lines	1.1 x height of turbine (534.1 feet)

Burke County and Burke Wind Setback Siting Standards		
Setback Type	Burke County Setback Distance	Burke Wind Setback Distance
Occupied Structure	2,640 feet (1/2 mile)	
Public Road - Measured from ROW	1.1 x height of turbine (534.1 feet)	
Rail Line - Measured from ROW	1.1 x height of turbine (534.1 feet)	
Above Ground Electrical or Communication Line - Measured from ROW	1.1 x height of turbine (534.1 feet)	
Antenna Tower	1.1 x height of turbine (534.1 feet)	
Barns	1.1 x height of turbine (534.1 feet)	$1.5HH^1 + 1.5RD^2$ (1,013.8 feet)
State Roads (Public) - Measured from ROW	N/A	$1.5HH + 1.5RD$ (1,013.8 feet)
Boundary Between Host Property and any Adjoining Property that is Non-Participating - Measured from ROW or fence	1.1 x height of turbine (534.1 feet)	1.1 x height of turbine (534.1 feet)
Participating Parcels - Measured from ROW or fence	1.1 x height of turbine (534.1 feet)	0.5RD + 10 meters (223.1 feet)
Beam Paths - (As provided on Desktop)	N/A	0.5RD + 10 meters (223.1 feet)
Underground Cable or Pipeline	150 feet	200 feet (for gas pipelines)
Section Lines	150 feet	1.1 x height of turbine + 38 feet (610.1 feet)
County Line	N/A	1.1 x height of turbine (534.1 feet)
Oil Wells – (As provided on Desktop)	N/A	1.1 x height of turbine (534.1 feet)

¹ HH = Hub Height

² RR = Rotor Diameter

4.3. Associated Facilities

In addition to the wind turbines, transformer, and access roads, the Project will also include the following associated facilities: a Project substation, an O&M facility, one (1) permanent MET tower, one (1) temporary MET tower, SCADA system, and collection lines. Energy from the turbines will be routed through underground electrical collection systems that will deliver power to the Project collector substation. The Project will use 34.5 kV electrical power lines to collect power from the turbines and transmit it to the collector substation. The entire collection system will be buried using underground cable. The underground cables are installed in a trench and are co-located with the SCADA system. Underground paths will typically take the shortest path to minimize potential impacts. The power will be stepped up at the Project substation from 34.5 kV to a 345 kV transmission line so the electricity can be reliably and efficiently interconnected to the surrounding power grid. Burke Wind is applying for approval to build the Transmission Line in a separate application. Project substation components will be installed on concrete foundations and will consist of a graveled footprint area.

A Project O&M facility will be the base of operations for Project maintenance and operation. The O&M facility will provide office space for the crews, as well as a shop/storage area for spare parts and vehicles. It will also house the central monitoring equipment for the generating facility where the turbines are monitored and controlled.

One (1) permanent MET tower will be installed within the Project Area and will contain instruments such as anemometers, data loggers, wind direction sensors, temperature probes, and a communication system for providing the information of the data that is being collected. In addition, one (1) temporary PPT MET tower will be constructed and will then be removed following initial project operations and data collection. The anticipated locations of the permanent MET tower and the PPT temporary MET tower are included in the Site Plan; however, the precise locations will be based on the final locations of the wind turbines to ensure proper operation of wind assessment equipment. The location of the MET towers will follow appropriate setback requirements and federal and state regulations.

In addition to the permanent facilities listed above, during construction, a temporary laydown yard and one (1) temporary batch plant may be used to facilitate construction. The laydown yard will include a temporary construction office, parking area for construction personnel, and a staging area for turbine components. The temporary batch plant will be needed on-site to supply concrete for the construction of turbine pads and other associated infrastructure.

4.4. Land Rights

Burke Wind has negotiated voluntary easement agreements with all of the necessary landowners for the Project. The secured agreements will ensure access for construction and operation of the Project. The easement agreements identify the obligations and responsibilities of the landowners and Burke Wind. Project facilities have been sited on leased land and the current leasehold is sufficient to accommodate the Project in compliance with the setback requirements identified in **Table 4-1** above.

5.0 PROPOSED SITE

5.1. Identification of Project Area

Burke Wind selected the Project Area based on the viability of the wind resource, the site location in relation to existing transmission infrastructure, the willingness of landowners to participate in the Project, the existing land use and environmental features, and the ability to meet Burke County and the Commission's siting and setback requirements. The Project Area boundary encompasses an area of 22,933 acres (35.8 square miles). However, less than one (1) percent of this area will be occupied by permanent facility infrastructure. Proposed total permanent land use during operation will be up to 65.9 acres where infrastructure will be present including the footprint of turbines, access roads, a permanent MET tower, the Project substation, the O&M facility, and junction boxes. The total temporary land disturbance during construction of the Project is projected to be up to 1,360.6 acres. This temporary disturbance includes all of the areas that will be used to construct the facility including a laydown area, batch plant area, crane walk paths, and the temporary workspace necessary to install the collection lines, permanent MET tower, temporary PPT MET tower, turbines, access roads, Project substation, and O&M facility. See **Table 1-3** and **Table 1-4** in **Section 1.3.1** for a detailed description of the Project Area impacts. **Figure 4** depicts the proposed turbine locations. Final proposed facility specific locations may be shifted to avoid sensitive resources in the area.

5.2. Wind Resource Areas

North Dakota has wind resources that have the potential to generate utility-scale energy production. A wind resource map for the State of North Dakota was published by the U.S. Department of Energy's Wind Exchange and the National Renewable Energy Laboratory (NREL) in 2011. The wind resource map identifies resources that could be used for utility-scale wind development by depicting wind speed estimates at an elevation of 80 meters above ground level (NREL 2011). Wind, as a renewable resource, is categorized by typical wind speeds. In most cases, wind speeds of 6.5 m/s or greater can be efficient in generating power with large turbines at a height of 80 meters. Winds within the vicinity of the Project Area range between 8.0 and 8.5 m/s and thus the wind resource is viable for the Project.

5.3. Wind Characteristics in Study Area

Burke Wind has used wind data from temporary MET tower and sonic detection and ranging (SODAR) devices in the Project Area to quantify and analyze the wind resource. Burke Wind also secured information from other long-term references, including 30-year re-analysis data processed by the National Aeronautics and Space Administration (NASA) and processed by NEER's internal wind resource group, WindLogics, Inc. (WindLogics), to assist in correlating wind data from the Project Area. Wind data was analyzed using industry standard software, such as Windographer, Openwind, Weather Research and Forecasting, and ArcGIS in addition to internal NEER tools. This software allowed corrections for local effects (topography, surface roughness, and obstacles) to independently characterize the local wind climate. The local wind climate and Project Area effects were used to predict spatial wind variations within the Project Area. Various wind turbine layouts and wind turbine generator parameters were tested to predict energy production and array efficiency so that turbine layout could be optimized. The

Project Area wind data was compared to regional wind data for a parallel time period. Based on analysis by WindLogics, the Project Area demonstrates viable correlation between long-term wind measurements and short-term Project-specific wind.

6.0 ENGINEERING AND OPERATIONAL DESIGN ANALYSIS

This section includes a description of the Project layout, turbines, electrical system, and associated facilities and provides an overview of construction, the Project schedule, operations and decommissioning of the site. While the details provided in this Application are related to the GE 2.72 and GE 1.715 turbine models, Burke Wind reserves the right to select alternate turbines similar to these models. If an alternate turbine type is selected, the engineering and operation design considerations and procedures are expected to be generally similar to the description below for the GE 1.715 MW and 2.72 MW turbines. Turbine type selected may impact the number and configuration of the turbine array.

6.1. Project Layout and Associated Facilities

The Project will consist of the wind turbine array, transformers, access roads, a Project substation, an O&M facility, one (1) permanent MET tower, one (1) temporary MET tower, a SCADA system, and collection lines. The Project layout of the facilities is depicted on **Figure 4**.

6.2. Description of Wind Turbines

Currently the Project is designed to include 68 GE 2.72 MW turbines and eight (8) GE 1.715 MW turbines. Burke Wind is seeking flexibility from the Commission to select the most appropriate turbines and technology for the Project at the time of construction to ensure optimization of land and wind resources as well as cost efficiency.

6.2.1. Turbine

The GE 2.72 MW wind turbine has a nominal nameplate rating of 2.72 MW. Each of the 2.72 MW turbines will have a 295-foot (90 meter) hub height and a 381-foot (116 meter) rotor diameter. The GE 1.715 MW wind turbine has a nominal nameplate rating of 1.715 MW. Each of the 1.715 MW turbines will have a 262-foot (80 meter) hub height and a 338-foot (103 meter) rotor diameter.

The turbines employ active yaw control which is designed to steer the machine with respect to the wind direction; active blade pitch control which is designed to regulate turbine rotor speed; and a generator/power electronic converter system. The wind turbine generator features a distributed drive train design consisting of a main shaft bearing, gearbox, and generator.

Turbines use SCADA communication technology to allow control and monitoring of the wind farm. The SCADA communications system allows for automatic and manual operation, and remote supervision with local lockout capability provided at the turbine controller. Service switches at the tower top prevent service personnel at the bottom of the tower from operating certain systems of the turbine while service personnel are in the nacelle. In case of an emergency, emergency-stop controls located in the tower base and in the nacelle can be activated to stop the turbine. The main functions of the SCADA system are to:

- Monitor wind farm status;
- Allow for autonomous turbine operation;

- Alert operations personnel to wind farm conditions requiring resolution;
- Provide a user/operator interface for controlling and monitoring wind turbines;
- Collect meteorological performance data from turbines;
- Monitor field communications;
- Provide diagnostic capabilities of wind turbine performance for operators and maintenance personnel;
- Collect wind turbine and wind farm material and labor resource information;
- Provide information archive capabilities;
- Provide inventory control capabilities; and
- Provide information reporting on a regular basis.

The computerized data network will provide for timely and efficient operations and detailed operating and performance information for each wind turbine. Burke Wind will maintain a computer program and database for tracking each wind turbine's operational history.

Burke Wind will use commercially reasonable efforts to install a light-mitigating technology system, consistent with Commission requirements in N.D. Admin. Code Ch. 69-06-11 and subject to FAA approval.

The turbines also include the following components:

- Rotor blade control system;
- Gearbox with multi-stage planetary/helical system;
- Bearings (blade pitch bearing, main shaft bearing, and the bearings used inside the gearbox);
- Brake system (the electrically actuated individual blade pitch systems act as the main braking system for the wind turbine generator);
- Double fed generator;
- Flexible coupling (designed to protect the drive train from excessive torque loads);
- Electromechanically driven yaw system;
- Anemometer, wind vane and lightening rod; and
- Power converter.

6.2.2. Rotor

Each turbine generator has a rotor that consists of three (3) blades mounted to a rotor hub. The hub is attached to the nacelle, which houses the gearbox, generator, brake system, yaw drive, bedplate, and other electrical and mechanical systems. The GE 2.72 MW turbines have a 116-meter (approximately 381-foot) rotor diameter, with a swept area of 114,743 square feet. The rotor for the GE 2.72 MW turbine is designed to operate between eight (8) and 15.7 revolutions-per-minute (rpm; GE Renewable Energy 2017). The GE 1.715 MW turbine has a 103-meter (approximately 338-foot) rotor diameter, with a swept area of 89,685 square feet. The GE 1.715 MW turbine is designed to operate between ten (10) and 17.4 rpm (GE Renewable Energy 2015).

The GE 2.72 MW turbine requires a minimum wind speed for operation of three (3) m/s (6.71 mph) and will cut out when an average wind speed exceeds the following:

- 32 m/s (71.58 mph) in a 600-second time interval;
- 37 m/s (82.77 mph) in a 30-second time interval; or
- 41 m/s (91.71 mph) in a three (3)-second time interval.

If the four (4)-minute rolling average wind speed drops below 29 m/s (64.87 mph), the wind turbine generator system will cut in again (GE Renewable Energy 2018).

The GE 1.715 MW turbine requires a minimum wind speed for operation of three (3) m/s (6.71 mph) and will cut out when an average wind speed exceeds the following:

- 20 m/s (44.74 mph) in a 600-second time interval;
- 23 m/s (51.45 mph) in a 30-second time interval; or
- 25 m/s (55.92 mph) in a three (3)-second time interval.

If the four (4)-minute rolling average wind speed drops below seventeen (17) m/s (38.03 mph), the wind turbine generator system will cut in again (GE Renewable Energy 2016).

6.2.3. Turbine Tower

The turbine towers will be conical or cylindrical tubular steel. The GE 2.72 MW turbine will have a hub height of 295 feet (90 meters), and the GE 1.715 MW turbine will have a hub height of 262 feet (80 meters). The portion of the foundation that is above ground will be approximately sixteen (16) to eighteen (18) feet wide at the base of the tower. The tubular tower is manufactured in sections from steel plate. Access to the turbine is through a lockable steel door at the base of the tower. Per American National Standards Institute specifications, all welds will be made by automatically controlled power welding machines and ultrasonically inspected during manufacturing. Corrosion Protection Classification for external areas of tower components includes C-3 for the tower shell coating and the automatic lubrication system; C-4 for the tower internal fasteners, tower stair fasteners, hub, bedplate, generator frame, mainshaft, pillowblock, generator, nacelle and hub fasteners; and C-5 for the blades (as defined by ISO 12944-2:1988). Service platforms are provided. Access to the nacelle is provided by a ladder and a fall arresting safety system is included. Interior lights are installed at critical points from the base of the tower to the tower top.

6.2.4. Turbine Lighting

The Project will be equipped with obstruction lighting in accordance with FAA requirements to provide night conspicuity sufficient to assist aircraft in identifying and avoiding collision with the Project. Burke Wind will use commercially reasonable efforts to install a light-mitigating technology system in accordance with N.D. Admin. Code Ch. 69-06-11 and subject to FAA approval. Burke Wind anticipates utilizing the Aircraft Detection Lighting System (ADLS) or another comparable technology that receives FAA approval. The ADLS uses a continuous 360-degree radar system to allow avian obstruction lighting to operate only when aircraft are present within the vicinity of the Project. The ADLS minimizes lighting while ensuring safe aviation operation.

6.2.5. Lightning Protection

The rotor blades are equipped with lightning receptors mounted in the blade. Each turbine will be grounded and shielded to protect against lightning. The grounding system will be installed during foundation work, will be designed for local soil conditions, and will be in accordance with local utility or code requirements. Lightning receptors will be placed in each rotor blade and in the turbine tower. The electrical components will also be protected.

6.3. Description of Electrical System

A pad-mounted transformer next to each turbine will step up the voltage produced by the turbine to the power collection line voltage of 34.5 kV. The power from these transformers will be run through an underground collection system consisting of various sized buried cables. Collection lines will be buried a minimum of 48 inches and is not anticipated to affect farming activities or equipment. The collection system cables will terminate at the Project substation, where additional substation equipment will be installed. The substation will include power transformers to step up the voltage from 34.5 kV to 345 kV and provide the necessary protection and control for interconnection to the transmission grid. The facility will be designed and constructed to meet or exceed the standards of the National Electrical Safety Code.

6.4. Project Construction

Various activities must be completed before commercial operation of the Project. Primary activities include procurement of the equipment, project design, and construction of the Project. Construction activities generally will follow these steps and timelines:

- Mobilization;
- Road construction typically begins within two (2) weeks of the start of mobilization;
- Construction of the Project substation will begin within approximately two (2) weeks of start of mobilization;
- Installation of turbine foundations will begin approximately four (4) weeks after road construction begins;
- Installation of the collection system will begin approximately six (6) weeks after road construction begins;
- Turbine delivery will occur approximately eight (8) weeks after road construction begins;
- Turbine erection will begin approximately one (1) week after turbine deliveries begin;
- Acceptance testing of the substation and each turbine will then occur; and
- Commercial operation will commence upon completion of acceptance testing.

Access roads are necessary to connect the public roadway network to each turbine location. Permanent roadways will be gravel and approximately sixteen (16) feet wide. After erection of turbines is complete, a 20-foot-wide gravel pad will be installed around the base of each turbine to prevent erosion associated with water running off the turbine. The typical cross section of access roads will be dependent on terrain, grade, and drainage considerations. Access roads

may incorporate geotechnical fabric and cement stabilization measures beneath the aggregate roadway cap. Also, if necessary, a final aggregate dressing may be placed on some of the turbine access roads.

The installation of access roads may require gates, fences, or other existing landscape modifications. Modifications will be discussed with the landowners and gates and fences will be repaired, replaced, or reconfigured, as needed and in coordination with the landowner. Burke Wind will work with landowners to ensure the location of access roads minimize adjacent land use disruptions to the extent practicable. Access roads will include appropriate drainage and culverts as necessary and permits for drainage and culvert installation will be obtained as required.

Cranes are used to install the turbines and crane paths are used to facilitate crane movement and equipment delivery during construction. Crane paths will be finalized based upon final turbine and road layout; landowner requests; avoidance of environmental constraints, such as wetlands, prairies, sensitive habitat; and other factors.

Temporary roadways during construction are expected to be up to 50 feet in total width, but will have a 200-foot-wide construction easement that will include all temporary construction impacts. Access roads widened for crane paths and equipment deliveries will be reduced to their permanent width of approximately sixteen (16) feet upon completion of construction. Where temporary installations are removed and in areas of temporary disturbance associated with roads, areas will be graded to natural contours, soil de-compaction and re-seeding will occur.

6.4.1. Construction Management

Local contractors, suppliers, and laborers will be utilized for the Project as applicable and where feasible during construction and operations. The selected EPC contractor will be responsible for the construction management of the Project. The EPC contractor will use the services of local contractors, where possible, to assist in construction. The EPC contractor, in coordination with other contractors, will perform the following activities:

- Securing permits (such as building, electrical, grading, road, and utility permits);
- Performing detailed civil, structural, and electrical engineering;
- Scheduling and executing construction activities;
- Complying with setback and sensitive resource avoidance requirements; and
- Budgeting and forecasting labor requirements.

The EPC contractor serves as the key contact and interface for subcontractor coordination and will oversee the installation of communication and power collection lines as well as substation modifications. The EPC contractor will oversee the installation process as well as the coordination of materials receiving, inventory, and distribution. The Project will be constructed under the direct supervision of an on-site construction manager with the assistance of contractors.

The construction team will be on site to handle materials purchasing, construction, quality control, testing, and start-up. The EPC contractor will manage subcontractors to complete all aspects of construction. Ongoing coordination will occur between the Project development and the construction teams throughout the construction phase. The on-site Project construction manager will help to coordinate all aspects of the Project, including ongoing communication with local officials, citizens groups, and landowners. Even before the Project becomes fully operational, the O&M staff will be integrated into the construction phase of the Project. The construction manager and the O&M staff manager will work together to ensure a smooth transition between the construction and operation phases.

6.4.2. Foundation Design

A free-standing 295-foot (90-meter) cylindrical tube (GE 2.72 MW turbine) and a 262-foot (80-meter) cylindrical tube (GE 1.715 MW turbine) will be anchored to an underground concrete foundation by anchor bolts. The final design of turbine foundations will be based on geotechnical surveys, turbine tower load specifications, and cost considerations. For turbines of similar size, the foundations are generally cylindrical or octagonal in shape. Foundation dimensions will depend on foundation type, but typical dimensions will be approximately 40-60 feet across at the base and seven (7) to ten (10) feet below grade (octagonal foundation), or approximately 20 feet in diameter and 30 feet below grade (cylindrical foundation). All turbine foundation designs will be prepared by a professional engineer licensed to practice within the State of North Dakota.

6.4.3. Civil Works

Before the Project is complete there will need to be various types of physical land improvements and civil works required. Civil works may include, but are not limited to:

- Improvements to existing public roads going to and from the Project Area;
- Construction and ongoing maintenance of turbine access roads;
- Construction and continued operation of wind turbines;
- Clearing and grading for the wind turbine tower foundations;
- Installation of underground SCADA connecting individual wind turbines;
- Installation of collection lines that will connect wind turbine strings and will be used for delivery to the Project collection substation;
- Installation of security and site fencing; and
- Restoration and revegetation of temporary disturbed areas.

Road improvements to existing public roads and construction of access roads would consist of grading and surfacing with an aggregate or crushed rock surface to allow travel in inclement weather. No asphalt or paving is anticipated. Landowners will be consulted when considering road placement and all Burke County requirements will be adhered to where these roads intersect with public roads. Constructed roads will be used for access during construction and for O&M access after the Project becomes operational. All roads will include appropriate drainage and culverts while still allowing for farm equipment passage. Once construction is complete, roads will be re-graded, filled, and dressed as needed for continued operation of the Project.

Areas temporarily disturbed by construction activities will be re-graded to original contours. Excavated soil will be used as backfill and for the construction of access roads. Any remaining soil will be spread over temporary construction areas. Where excavated soil is spread and grading occurs, topsoil will be placed atop the excavated spoils and the areas will be revegetated following requirements of the Commission and the stormwater construction permits.

Restored temporary construction areas will be reseeded unless the area is in a tillable cropland field. In these cases, temporary construction areas will be returned to agricultural use. Restoration and reseeded will follow the terms and conditions of the stormwater construction permit and may include several BMPs, such as silt fence and straw wattle, along with restoration targets and success/stabilization criteria before the permit can be closed out.

6.4.4. Commissioning

Commissioning and operation of the Project will begin after construction is complete. The Project will undergo inspection and testing prior to final turbine commissioning. Testing and inspections will occur for turbine components, communication systems, meteorological system, obstruction lighting, high voltage collection feeder systems and SCADA systems.

6.4.5. Project Operation and Maintenance

Burke Wind will own and operate the facility for the life of the Project. Seven (7) to nine (9) full time employees based in North Dakota will operate and maintain the facility. These employees will be responsible for ensuring that Project operations and maintenance activities are conducted consistent with the applicable permits, prudent industry practice, and equipment manufacturer recommendations for turbines. Remote staff will control, monitor, operate, and maintain the Project by means of a SCADA computer software program. The operation of the entire wind farm, including discrete settings for individual turbines, will be managed by the on-site operations staff and remotely via the SCADA system.

Burke Wind's on-site operations staff will be responsible for all maintenance required for the Project on a daily basis. The operations staff will also be responsible for visual inspections and daily checks, especially within the first few months of operations, to ensure that the Project is operating within expected parameters.

Once construction is complete, industry standard practices will be employed to service and maintain the Project. Maintenance inspections of each turbine will be completed after turbine commissioning. After this initial inspection, annual visits will occur to assess and inspect the various systems and components such as the gearbox, generator, brake, pitch, lubricant, bolts, and transformer.

6.4.6. General Maintenance Duties

Duties completed by operations and maintenance staff include performing all scheduled and unscheduled maintenance, including:

- Periodic operational tests and checks;
- Preventative maintenance on all turbines;
- Maintenance on mechanical, electrical power, and communications systems;
- Performance of all routine inspections;
- Maintenance of all oil levels and changing oil filters;
- Maintenance of the control systems, all Project structures, access roads, drainage systems and other facilities necessary for operation;
- Maintenance of all O&M field maintenance manuals, service bulletins, revisions, and documentation for the Project;
- Maintenance of all parts, price lists, and computer software;
- Maintenance and operation of the Project substation;
- Provision of all labor, services, consumables, and parts required to perform scheduled and unscheduled maintenance on the Project, including repairs and replacement of parts and removal of failed parts;
- Management of lubricants, solvents, and other hazardous materials as required by local and/or state regulations;
- Maintenance of appropriate levels of spare parts to maintain equipment;
- Provision of all necessary equipment including industrial cranes for removal and reinstallation of turbines;
- Hiring, training, and supervision of a work force necessary to meet the general maintenance requirements;
- Implementation of appropriate security methods;
- Cooperation with avian and other wildlife studies as may be required, to include reporting and monitoring; and
- Daily remote monitoring.

6.5. Decommissioning and Restoration

A Decommissioning Plan, in accordance with N.D. Admin. Code Ch. 69-09-09, will be developed by Burke Wind and filed with the Commission. Burke Wind has a PPA with Basin to bring power for thirty (30) years from the Project to the electrical grid via connecting to the existing Tande Substation owned by Basin. Burke Wind has a contractual obligation to the landowners to remove the wind facilities, including foundations to a depth of four (4) feet below ground, when the wind easement expires. These areas will be restored to their previous physical condition before the construction of the turbines. Burke Wind reserves the right to explore alternatives regarding decommissioning at the completion of the Project's Certificate term. For example, retrofitting the turbines and power system with upgrades based on new technology that would allow the wind farm to produce efficiently and successfully for a longer period of time. Any future changes would be subject to Commission requirements in place at that time.

7.0 ENVIRONMENTAL ANALYSIS

This section describes the environmental conditions that exist within the Project Area. Exclusion and avoidance criteria as well as selection and policy criteria were considered in the selection and design of the Project, consistent with the North Dakota Energy Conversion and Transmission Facility Siting Act. To support the siting process, maps were generated that depict the locations of criteria areas as listed in N.D. Admin. Code Ch. 69-06-08. Impact analysis was based on a layout including GE 2.72 MW and GE 1.715 MW turbine models. However, if a comparable alternative turbine model is selected, as discussed above, environmental impacts would be assumed to be within the range of those discussed herein.

7.1. Description of Environmental Setting

The Project Area is located in the central and northwestern portions of Burke County in northwestern North Dakota. The Project Area is approximately 150 miles northwest of Bismarck, North Dakota and approximately fifteen (15) miles southwest of Bowbells, North Dakota. Overall, the Project Area is dominated by grassland and cropland, with an extensive prairie pothole wetland system. Elevations range from approximately 2,159 to 2,502 feet above mean sea level (amsl), generally sloping along a ridgeline that is oriented southeast-to-northwest.

The U.S. Environmental Protection Agency (USEPA) ecoregion mapping data show the Project Area is located mostly within the Northern Missouri Coteau ecoregion of the Northwestern Glaciated Plains, and partially within the Northern Dark Brown Prairie ecoregion of the Northern Glaciated Plains (Bryce et al. 1996). The Northern Glaciated Plains ecoregion has a flat, gently rolling landscape that is composed of glacial drift. Its geography produces sub-humid conditions that foster a transition from tall to shortgrass prairie. As with the Northwestern Glaciated Plains, it also holds high concentrations of ephemeral and seasonal wetlands. Till soil in this ecoregion is fertile, but crop production depends on annual climatic fluctuations. The Northern Dark Brown Prairie ecoregion soils have lower organic material content, and its soils and climate characteristics result in lower crop and native grass production than in ecoregions farther east (Bryce et al. 1996).

According to the 2011 National Land Cover Database, dominant land cover types include herbaceous habitat (47.8 percent of the Project Area) and cultivated crops (32.0 percent of the Project Area) (Homer et al. 2015) (**Figure 10**). Participating landowner parcels are made up of approximately 46.9 percent herbaceous habitat and 32.9 percent cultivated crops. Other less prominent land cover types include open water, emergent herbaceous wetlands, hay/pasture, deciduous forest, woody wetlands, shrub/scrub, barren land, and developed areas.

7.2. Socioeconomics

7.2.1. Description of Resources

The Project is located in northwestern North Dakota in an agricultural/ rural region of Burke County. The U.S. Census 2017 American Community Survey (ACS) population estimate for Burke County was 2,131, representing an estimated increase of approximately eight (8) percent from the 2010 census population of 1,968 (U.S. Census Bureau 2017, U. S. Census Bureau 2018). The

county seat of Burke County is Bowbells, located approximately fifteen (15) miles northeast of the Project Area (**Figure 1**). The Project Area is approximately 5.5 miles southwest of Columbus, 6.8 miles south of Lignite, 12.3 miles southwest of Flaxton, 9.8 miles northeast of Powers Lake, and 14.7 miles south of Portal, North Dakota. The unincorporated town of Larson is located 4.5 miles north of the Project Area. There are no incorporated or unincorporated cities within the Project Area.

Table 7-1 shows the U.S. Census Bureau 2012-2016 ACS demographic profile data for North Dakota, Burke County, and townships within the Project Area including: Cleary, Fay, Foothills, Harmonious, Keller, and Leaf Mountain (U. S. Census Bureau 2018). The demographic profile summarizes some of the population and economic characteristics of the county and townships in which the Project is located.

Table 7-1: Population and Economic Characteristics

Location	Population	Housing Units (Occupied)	Per Capita Income	Families Below Poverty Line (%)
North Dakota	736,162	305,163	\$33,107	6.9%
Burke County	1,968	1,001	\$35,857	7.4%
Keller Township	33	9	\$54,843	0.0%
Fay Township	30	15	\$149,720	0.0%
Harmonious Township	8	4	\$15,763	0.0%
Leaf Mountain Township	14	6	\$45,736	0.0%
Foothills Township	36	14	\$38,294	0.0%
Cleary Township	62	22	\$44,258	0.0%

U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

According to the ACS 2012-2016 estimates, educational services, health care, and social assistance accounted for 24.5 percent of jobs statewide in North Dakota; followed by retail trade at 11.5 percent; and agriculture, forestry, fishing, hunting and mining at 9.3 percent (U. S. Census Bureau 2018). According to the ACS 2012-2016 estimates, agriculture, forestry, fishing, hunting, and mining accounted for 31.3 percent of jobs in Burke County; followed by retail trade at 14 percent; and educational services, health care and social assistance accounted at 13.1 percent (U. S. Census Bureau 2018).

7.2.2. Impacts

Overall, the Project and the Transmission Line will positively impact the region by adding infrastructure, temporary and permanent jobs, increasing the counties’ tax base in Burke County and Mountrail County, and providing lease payments to Project participants. The communities near the Project are also expected to receive positive economic benefits as construction will necessitate the need for numerous temporary and full-time positions. Burke Wind estimates that the Project, including the Transmission Line, will provide over \$30 million in tax revenue to Burke County and Mountrail County over thirty (30) years. Thus, the Project is

expected to increase Burke County's and Mountrail County's tax bases, thus resulting in a long-term, positive impact.

Approximately 200 to 300 temporary construction jobs and seven (7) to nine (9) full time permanent operations and maintenance jobs will be generated as a result of the Project. A portion of these jobs will be filled by local or regional employees. Specialized labor will be needed for various construction activities and it is anticipated that this labor will be brought in from the greater regional vicinity or from other states. Given the relatively short duration of construction (approximately six [6] months), construction does not warrant special training of local or regional labor.

Out-of-town construction personnel will purchase goods and services (e.g., fuel, lodging, food, etc.) over the duration of construction which will provide revenue for local businesses. Also, to the extent that local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in Burke County will contribute to the total personal income of the region. Operation and maintenance staff are anticipated to reside locally. Sufficient permanent housing is available within the county to accommodate these employees.

Burke County is expected to experience a short-term positive increase in tax payments during the construction phase of the Project due to the purchase of goods and services. Patronage at hotels and restaurants, the purchase of consumer goods and services, and the purchase of construction materials (e.g., fuel, concrete, and gravel) from local vendors will generate tax payments. Income generated and expenditures made for equipment, fuel, supplies, and other products and services will benefit businesses in the county and the state and dollars generated from the Project will be circulated and recirculated within the local and state economy.

No residents will be displaced due to the Project. Employment from the Project, during construction and operation, is not anticipated to significantly change the demographics of Burke County nor is it expected to put strain on existing housing or municipal resources.

Minor short-term impacts to the socioeconomic resources of the area are anticipated. It is likely that 40.0 acres (less than one [1] percent) of cropland (33.6 acres) and pastureland (8.0 acres) will be permanently removed from agricultural production or its current land use for the length of the Project. However, this impact will be offset through annual payments over the life of the Project to those landowners having turbine(s) or other Project infrastructure constructed on their land, which will also help strengthen the local economy. Landowners will be compensated through lease payments for land taken out of agricultural production and lands adjacent to Project infrastructure can remain to be used for agriculture (cropland and pastureland). Burke Wind does not have the authority to exercise eminent domain for the Project. Land lease agreements and wind easement agreements are voluntary and will be mutually agreed upon by all involved parties to ensure the landowners are fairly compensated. In 2015, a study of property values in North Dakota was conducted that concluded that property values were not diminished by wind farms or turbines (Hoefs 2015).

The development of the Project contributes to diversifying and strengthening the economic base of Burke County, Mountrail County and North Dakota and supports establishing North Dakota as an important producer of wind energy.

7.2.3. Mitigative Measures

Adverse economic impacts as a result of the Project are not expected. No mitigation measures are proposed as the Project is expected to have primarily a positive socioeconomic effect on the local community. Increased expenditures and added wages are expected during construction. Payments to participating landowners and an increase in the county's tax base is expected during operations.

7.3. Land Use

7.3.1. Description of Resources

The Project Area is located within rural Burke County in northwestern North Dakota. The Project Area is dominated by cropland and grassland, with an extensive prairie pothole wetland system. **Figure 11** provides photos of the typical landscape in the project Area. The Project Area is not within any city limits or within an area of known military installments. Existing oil and gas and utility infrastructure are present on the landscape. There are 29 permitted oil and gas wells within the Project Area and 68 within the one (1) mile Project Area buffer. There are approximately six (6) miles of existing aboveground transmission line within the Project Area. Other existing utility networks such as electrical distribution and telecommunications were surveyed only where they were located near proposed Project facilities. Based on this data, over 11.6 miles of overhead electrical distribution and over 51.0 miles of buried electrical and telecommunications cables are present within the Project Area. A network of roads and utilities are present on the landscape. Land cover types (as depicted in **Figure 10**), including acreage within the Project Area and the participating landowner parcels, and anticipated temporary and permanent impacts that will result from the Project, are summarized in **Table 7-2**.

Table 7-2: Land Cover Types and Their Relative Abundance in the Project Area

Land Cover	Sum of Area (Acres)	Percent of Project Area	Sum of Participating Landowner Area	Percent of Participating Landowner Parcels	Temporary Impact Acres	Permanent Impact Acres
Herbaceous	10,955.8	47.80%	9,738.0	46.9%	516.4	21.5
Cultivated Crops	7,345.9	32.00%	6,819.2	32.9%	669.0	33.6
Open Water	1,067.0	4.70%	990.6	4.8%	4.5	0.1
Emergent Herbaceous Wetlands	944.4	4.10%	841.6	4.0%	5.8	0.1
Hay/Pasture	1,443.8	6.30%	1,328.9	6.4%	107.9	8.0
Developed, Open Space	700.5	3.10%	603.3	2.9%	42.9	2.3
Deciduous Forest	352.7	1.50%	332.2	1.6%	3.8	0.0
Woody Wetlands	46.7	0.20%	40.6	0.2%	1.2	0.1
Developed, Low Intensity	71.9	0.30%	45.6	0.2%	8.3	0.2
Shrub/Scrub	1.8	0.00%	1.8	0.0%	0.8	0.1
Barren Land	2.9	0.00%	2.9	0.0%	0.0	0.0
Developed, Medium Intensity	0.0	0.0%	0.0	0.0%	0.0	0.0
TOTAL	22,932.4	100	20,744.5	100.0	1,360.6	65.9

Source: National Land Cover Data 2011 (Homer et al. 2015)

In addition to the land cover types listed above, the U.S. Fish and Wildlife Service (USFWS) manages wetland and grassland easements within the Project Area aimed at protecting wetland and grassland habitats for waterfowl and other grassland birds within the Prairie Pothole Ecoregion (USFWS 2008). The USFWS manages 10,404 acres of wetland easements and 1,508 acres of wetland/grassland easements within the Project Area. These easements occur on private land and are not open to the public (**Figure 12**).

There are no North Dakota Wildlife Management Areas (WMAs), Waterfowl Production Areas (WPA), or National Wildlife Refuges (NWRs) within the Project Area. The North Dakota Game and Fish Department (NDGFD) holds PLOTS agreements with private landowners within the Project Area and allows walk-in public access to otherwise private land. Normal farming and

ranching activities are allowed in these PLOTS agreements. Ten (10) NDGFD PLOTS agreements occur within the Project Area totaling approximately 1,161.2 acres (**Figure 12**).

PLOTS agreements can occur in conjunction with Conservation Reserve Program (CRP) lands. CRP land is administered by the Farm Service Agency (FSA) through the U.S. Department of Agriculture (USDA). The program encourages landowners to voluntarily convert highly erodible cropland to vegetative cover that will improve the health and environmental quality of the land within the region in exchange for yearly compensation. Landowners are provided with technical and financial assistance for ten (10) to fifteen (15) years as an incentive for enrolling in the program (USDA-FSA 2017). Six (6) landowners within the Project Area have enrolled in the CRP, converting approximately 938.2 acres of previously broken land to perennial vegetative cover. CRP contracts are subject to federal privacy restrictions between participating landowners and FSA. Burke Wind will continue to work to obtain information on any additional CRP contracts on participating lands that may exist within the Project Area (**Figure 12**).

The North Dakota Department of Trust Lands (NDDTL) manages assets under the control of the Board of University and School Lands. The NDDTL, Surface Management Division leases and manages land held in trust for various schools and institutions and the primary use of these lands is grazing and agricultural leases (NDDTL 2018). Rights-of-way are allowed on state trust lands. Project facilities proposed on state trust lands will be limited to underground collection lines. Burke Wind will continue to work with the NDDTL to acquire state trust land rights-of-way once local and state approvals for the Project are secured.

7.3.2. Impacts

The development of the Project will not result in a significant change in land use. Vegetation will be removed during construction and installation of Project infrastructure to allow for construction of turbine pads, access roads, substation, and O&M facilities. Burke Wind has designed the Project to place the majority of Project infrastructure in agricultural fields (cropland and pastureland). Based on the current layout, up to 65.9 acres of land, or less than one (1) percent of the total Project Area, will be permanently removed from current existing land uses, while the areas surrounding each turbine will still allow farming or management as it was prior to the installation of the Project. No residents or residences will be displaced due to the Project.

No infrastructure will be sited within the Burke County WPA. PLOTS and state trust lands may temporarily be impacted by construction activities. The locations of USFWS grassland, wetland, and combination easements have been incorporated into project siting and Burke Wind is actively working with the USFWS to verify all easements have been avoided. Any land taken out of CRP would be negotiated between the individual landowner and the FSA.

7.3.3. Mitigative Measures

Burke Wind is working closely with landowners and seeking input from local, state, and federal agencies in refining the locations of the Project facilities to minimize impacts to environmentally sensitive areas to the greatest extent feasible. Burke Wind will avoid direct permanent and temporary impacts to natural areas to the extent feasible. A National Pollutant

Discharge Elimination System (NPDES) general construction stormwater permit, a SWPPP, and BMPs will be developed and implemented prior to the commencement of construction.

7.4. Public Services

7.4.1. Description of Resources

The Project is located in a sparsely populated, rural area in Burke County, in northwestern North Dakota. A network of roads and utilities provide access, electricity, water supply, and telephone service to rural residences, farmsteads, small industry, and unincorporated areas as depicted on **Figure 3**.

Local Government Services

There are no incorporated or unincorporated cities within the Project Area. Bowbells, the county seat of Burke County, is located approximately fifteen (15) miles northeast of the Project Area. Bowbells provides sanitary sewer, water, utility services, educational facilities, and recreational facilities and parks to its residents and visitors. Bowbells local services include emergency management, ambulance service, clinics, fire department, police department, and a landfill. The Project Area is located in the Bowbells 14 School District.

Electrical Service

Rural electric service in the Project Area is provided by Burke-Divide Electric Cooperative. Additional electrical transmission lines operated by Basin and MDU Resources Group, Inc. are present within the Project Area.

Roads

Roads located within and near the Project Area are U.S. Highway 52, State Highway 8, State Highway 50, State Highway 40, State Highway 5, county roads (gravel graded and drained roads), township roads, and section line roads. Roads within the Project Area fall under the North Dakota Department of Transportation (NDDOT) District Boundary of Williston.

Traffic

Average Annual Daily Traffic (AADT) activity is provided by the NDDOT for major roadways in North Dakota. This data is used for transportation engineering and planning. Existing traffic volumes on the major roadways in the Project Area are summarized in **Table 7-3** and **Figure 13**. Vehicle count data is not available for the additional county, township, and section line roads that run through the Project Area. Generally, NDDOT indicates that roads with vehicle counts under 100 AADT are rarely counted; although, some roads near the Project Area were counted. Roads with no count data are likely lower than 100 AADT.

Table 7-3: Existing Daily Traffic Levels

Roadway Segment	AADT
Highway 40 south of 93 Street Northwest	165
County Road 6 West of Highway 40	55

Source: (NDDOT 2018)

Water Supply

The Western Area Water Supply Authority supplies potable water to communities near the Project Area. Burke Wind would likely obtain water for construction from the cities of Bowbells, Powers Lake, and/or Columbus, and truck the water to the construction site. Burke Wind will coordinate with the cities to obtain the appropriate permits and/or approvals.

Communications

A response letter dated April 18, 2017, from the National Telecommunications and Information Administration (NTIA) stated that no agencies had issues with turbine placement in this area (**Appendix B**). Burke Wind conducted a preliminary telecommunications study to identify all non-federal microwave telecommunication systems within the Project Area. Two (2) Federal Communications Commission (FCC) licensed microwave beam paths are present in the Project Area. These beam paths have been avoided via Project design.

7.4.2. Impacts

The Project is anticipated to have a minimal effect on the existing services and infrastructure in the area. Below is a brief description of the impacts that may occur during construction and operation of the Project.

Local Government Services

No impact is expected to local services.

Electrical Service

The Project will require electrical service from Burke-Divide Electric Cooperative.

Roads

Temporary impacts are expected on public roads during the construction phase of the Project as materials, personnel, and equipment will be brought in via existing U.S. Highways and local roads. Road improvements and traffic delays associated with the Project may require coordination with appropriate agencies. Temporary and/or permanent culvert or low-water crossings within regulated features will be installed where necessary for permanent access roads, access road approaches, intersection improvements, and/or crane paths. Temporary culverts will be removed after construction and temporarily disturbed areas will be converted back to cropland or otherwise reseeded with locally sourced native seed mixes appropriate for the region. Burke Wind has begun to obtain road development agreements with applicable roadway authorities. Additional detail on these agreements is provided in **Section 7.4.3**.

Approximately 29.7 miles of new aggregate-surfaced Project access roads will be required in the construction of the Project. The access roads will be used by operation and maintenance personnel while inspecting and servicing wind turbines. Access roads will generally be placed between towers. Up to a 200-foot wide access road temporary disturbance area is expected during the construction process and temporary access roads are expected to be up to 50-feet

wide. Permanent access roads will primarily be sixteen (16) feet wide and low in profile to allow cross travel by landowners.

Traffic

Transport of Project materials, personnel, and equipment will result in an expected temporary impact on traffic during construction. The maximum amount of construction traffic is expected to result in up to 600 additional vehicle trips per day during peak construction. Local roads are expected to accommodate this traffic as the functional capacity of a two (2)-lane paved rural highway is in excess of 5,000 vehicles per day. However, some minor, short-term traffic delays within and near the Project site may occur during turbine and equipment delivery and construction activities.

Approximately 30 trips by concrete trucks will be required to pour the foundation for each turbine. Foundation pours can typically be completed within two (2) days per foundation. There may be some noticeable increase in heavy traffic in certain locations for limited durations, but the result to the travelling public will be short-term, and minor or insignificant as any network of federal, state, county highways, and other township roads would be utilized throughout the Project Area.

Truck access to the Project site is provided by Highway 40, which runs north and south through the middle of the Project Area. Specific truck routes will be dictated by delivery location. Additional operating permits will be issued by the State and County for over-sized truck transport.

During operations, only a small maintenance crew will utilize roads within the Project Area for regular inspections and maintenance and traffic is not expected to noticeably increase during the operations phase of the Project.

Water Supply

The local water supply will not be significantly impacted by the construction and operation of the Project. Project construction will require approximately ten (7) million gallons of water for dust control; five (4) million gallons of water for road construction and civil infrastructure; and three (2) million gallons of water for foundations, backfill, and compaction. Water usage estimates for construction are subject to change based on weather and site-specific attributes. Construction water will be brought to the Project Area by trucks, most likely from the Western Area Water Supply Authority, the City of Bowbells, the City of Powers Lake, and/or the City of Columbus. Water for the operation of the O&M facility may be obtained from the Western Area Water Supply Authority or via an on-site water well. Dewatering in the vicinity of excavations may be required during the construction of the P&H style turbine foundations. However, the Project will not require permanent dewatering. Additionally, the abandonment of existing wells is not required for the Project.

Communications

To ensure that impacts to fiber optic and telephone cables will be avoided, a utility locating service will locate the existing cables within the Project Area. Collection line siting and

installation will be coordinated with local telecommunication providers, as appropriate, to ensure there will be no impact to existing copper telephone lines. Minimal, if any, interference is expected in regard to cellular phones as mobile phone conversations are typically made up of packets and packet switching. When one (1) cellular link becomes interrupted, another cellular link is immediately provided. Impact to AM/FM systems from wind turbines is typically low and is correlated with wind turbine proximity to the station. Generally, turbine placement is sufficiently far away from AM/FM systems as most radio receptors will be near dwellings.

Impacts to FCC-licensed microwave beams are not anticipated from Project turbines, because a setback from microwave beam paths of blade length (190 feet) plus 33 feet (223 feet total) has been incorporated in the turbine layout.

7.4.3. Mitigative Measures

Construction, operation, and maintenance of the Project will follow all applicable federal, state, and local laws and permits in addition to industry construction and operation standards. Additional mitigation measures are not expected to be required due to the anticipated minimal impacts to existing communications infrastructure during construction and operation of the Project.

Local Government Services

No impact to local government services is anticipated, and no mitigation is proposed.

Electrical Service

Burke Wind will purchase electrical service from Burke-Divide Electric Cooperative. Burke Wind has established a turbine setback of 1.1 times turbine height distance from existing transmission lines that are 115 kV or greater (**Table 4-1**). No additional mitigation is proposed.

Roads

Prior to construction, Burke Wind will coordinate with applicable local and state road agencies to ensure all relevant permits are obtained, delivery plans are communicated, and weight limits are not exceeded. Burke Wind will formalize road development agreements with applicable roadway authorities to ensure that impacted or damaged roadways will be restored to their original pre-construction condition or better. Burke Wind will require, through its contract provisions, that the general contractor be in contact with the relevant road authorities during construction. Temporary vegetation impacts associated with temporary access road approaches, crane paths, and other temporary activities will be restored to previous conditions (i.e., converted back to cropland or otherwise reseeded with seed mixes appropriate for the region).

Burke Wind is working closely with local landowners to locate access roads to minimize land-use disruptions to the extent feasible. The layout of the turbines and access roads is shown in **Figure 4**.

Traffic

Burke Wind will coordinate with applicable local and state road agencies to ensure all relevant traffic management plans are implemented where necessary.

Water Supply

In the event that existing wells are abandoned, they will be sealed as required by North Dakota law. However, the abandonment of wells is not required for the Project.

Communications

An underground utilities location company will be contacted prior to construction to locate underground facilities for avoidance. Burke Wind will enter into agreements with service providers as necessary to avoid interference with their facilities where Project facilities may cross or affect existing communications systems.

7.5. Human Health and Safety

7.5.1. Description of Resources

There are no public or private airports or airstrips within the Project Area. The closest private airports to the Project Area are the Columbus Municipal Airport in Columbus, North Dakota, located approximately 4.8 nautical miles (5.5 miles) north of the Project Area and the Fagerland Private Airport, located approximately 5.2 nautical miles (6.1 miles) northwest of the Project Area. Nautical miles are the standard measure for aviation; one (1) nautical mile is equal to 1.15 statute miles. The nearest airport certified for commercial carrier operations is the Sloulin Field International Airport, located in Williston, North Dakota approximately 47 nautical miles (54 miles) southwest of the Project Area.

Federal Radar Interference

Radar systems and airspace navigation could receive interference from wind turbines. The online FAA-maintained Department of Defense (DoD) Preliminary Screening Tool provides a preliminary review of potential impacts to Long Range Radar, Weather Radar, Military Training Routes, and Special Airspaces (FAA 2018). The DoD Preliminary Screening Tool produces a map, as discussed in the following subsections and provided in **Appendix B**, depicting the location of the structure in relation to any DoD/U.S. Department of Homeland Security (DHS) and National Oceanic and Atmospheric Administration (NOAA) resources.

The FAA reviews potential impacts to DoD radar as part of its aviation study of structures when a Notice of Proposed Construction or Alteration (FAA Form 7460-1) is filed. The FAA will request that the DoD and DHS review the filing and may issue a Notice of Presumed Hazard if the DoD and DHS determine that impacts to radar are considered significant. The impact of a wind energy project on radar systems primarily depends on the distance of the wind energy project to the radar and the number and location of turbines.

Air Defense and Homeland Security Radars (Long Range Radar)

The DoD Preliminary Screening Tool map results (FAA 2018) indicated that impacts to Air Defense and Homeland Security radars are not anticipated within the Project Area. On July 26,

2018, the DoD issued a letter stating that the Project will have minimal impact on military operations.

Weather Surveillance Radar

Weather Surveillance Radar-1988 Doppler radars (also known as NEXRAD) can detect wind turbines occasionally at great distances. The DoD Preliminary Screening Tool map (FAA 2018) indicated that impacts to NEXRAD are not likely within the entire Project Area.

Military Training Routes and Special Use Airspace

The Preliminary Screening Tool map (FAA 2018) showed that impacts to military airspace are not likely within the entire Project Area. Coordination with the DoD on July 11, 2018 indicated that there may be impacts to military operations and low-level flight training. However, Burke Wind has continued to coordinate with the DoD, and on July 26, 2018, the DoD issued a letter stating that the Project will have minimal impact on military operations.

Electromagnetic Fields

Power frequency electric and magnetic fields (EMF) are created wherever electricity flows, which includes the wiring in homes and schools, power lines, and the electrical equipment and devices we use at work and home. Leading U.S. and international scientific organizations, such as the National Cancer Institute and the World Health Organization, have evaluated EMF research. These organizations generally conclude that overall the body of scientific research does not show that exposure to EMF causes or contributes to any type of cancer or any other disease or illness (NIEHS 1999).

Shadow Flicker

With respect to wind turbines, shadow flicker can be defined as an intermittent change in the intensity of light in a given area resulting from the operation of a wind turbine due to its interaction with the sun. An observer experiences repeated changes in brightness as shadows cast from the wind turbine blades briefly pass by as the blades rotate. In order for this to occur within a residence, the wind turbine must be operating, the sun must be shining, and the window must be within the shadow region of the wind turbine. A stationary wind turbine only generates a stationary shadow similar to any other structure.

Typically, shadow flicker is most prevalent during sunrise and sunset due to the low angle of sunlight conditions present at those times. The impact area of shadow flicker is also contingent on the physical and structural characteristics of the wind turbines.

Hazardous Materials/Hazardous Waste

Potentially hazardous materials within the Project Area may include pesticides and herbicides used in prior or ongoing agriculture related activities and petroleum products (diesel fuel, gasoline, propane, heating oil, lubricants, and maintenance chemicals). Contaminants associated with asbestos and/or lead polychlorinated biphenyls in transformers may be present due to the age of many of farmsteads within the Project Area. In addition, in rural areas trash or refuse piles are a common occurrence. A Phase I Environmental Site Assessment was

conducted for the Project Area and no Recognized Environmental Conditions (RECs) were identified (NextEra Energy Resources, LLC 2018). A REC is defined as, “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment” (ASTM 2013).

Hazardous materials used and stored within the Project Area during construction may consist of fuel, lubricating oil, hydraulic oil, propylene glycol, and other materials. Additionally, during operation of the wind farm, hazardous materials, such as hydraulic oil, lube oil, grease, and cleaning solvents will be used and stored on-site as they are necessary to maintain wind turbines and other equipment. Also, pad mounted transformers required for the operation of the Project contain large quantities of cooling fluids, typically consisting of mineral oil.

A Spill Prevention, Control, and Countermeasures (SPCC) Plan is required when more than 1,320 gallons of oil storage is located on-site to detail spill prevention procedures and to address any potential safety and containment issues. During construction, the EPC will provide an SPCC and prior to operations, Burke Wind will develop an SPCC Plan to be utilized during operations.

Security

Construction and operation of the Project will have minimal impact on the safety and security of the local communities primarily due to the low population density of Burke County, North Dakota.

7.5.2. Impacts

Air Traffic

The potential for air traffic collisions increases with the installation of wind turbines, the permanent MET tower, and the temporary PPT MET tower. The wind turbines and MET towers will house and display the proper lighting and markings in compliance with N.D. Admin. Code Ch. 69-06-11 and FAA requirements. Review from the FAA will evaluate and highlight any potential air traffic interference. Burke Wind will submit Notices of Proposed Construction or Alteration to the FAA for all Project turbines and will install an FAA-approved commercially viable lighting mitigation system, in compliance with Commission requirements in N.D. Admin. Code Ch. 69-06-11. Burke Wind anticipates utilizing ADLS or another comparable technology that receives FAA approval.

Air Defense and Homeland Security Radars (Long Range Radar)

The Project is not anticipated to impact Air Defense and Homeland Security radars based on the results of the Preliminary Screening Tool (**Appendix B**). On July 26, 2018, the DoD issued a letter stating that the Project and additional turbine locations considered at that time will have minimal impact on military operations.

Weather Surveillance Radar

No impacts to weather radar operations are anticipated (**Appendix B**). A response letter dated April 18, 2017, from the NTIA stated that no agencies had issues with turbine placement in this area.

Military Training Routes and Special Use Airspace

Coordination with the DoD resulted in a determination dated July 26, 2018 that the Project and additional turbine locations considered at that time will have minimal impacts to military operations (**Appendix B**).

Electromagnetic Fields

All Project-related facilities will be set back in compliance with county and state regulations. EMF levels would not be above background levels at these distances as low-level power frequency will occur in areas more concentrated around Project facilities. Based on the above, no significant adverse impacts are anticipated.

Shadow Flicker

An analysis of potential shadow flicker impacts of Project turbines was conducted in October 2018 by Epsilon Associates, Inc. utilizing windPRO software (Epsilon Associates, Inc. 2018a) and the proposed wind turbine array. The completed shadow flicker analysis report will be provided under separate cover to the Commission. The windPRO analysis took into account actual expected shadow flicker, historical sunshine probability, wind direction, and wind speed to determine impacts under realistic conditions. The analysis was conducted in a manner that assumes all receptors will have a potential direct line of sight of incoming shadow flicker. More realistically, the windows of many houses will not directly face the sun during higher probability shadow flicker impact periods. The analysis also conservatively did not take into account trees or other obstructions that commonly block sunlight, particularly when the sun is lower on the horizon. Shadow flicker impacts are not regulated by applicable federal, state, or county law.

Occupied structures and structures with unknown occupancy are considered to be potential receptors of shadow flicker for analytical purposes. Unoccupied structures were not considered potential receptors and were therefore not included in the shadow flicker analysis. Within the Project Area, 68 structures were determined to be potential receptors within the Project Area. The predicted shadow flicker impacts are fewer than 30 hours per year at all receptors and the highest expected shadow flicker duration per year at a participating receptor is 22 hours, 11 minutes. The highest expected shadow flicker duration per year at a non-participating receptor is 25 hours, 30 minutes.

Hazardous Materials/Hazardous Waste

Due to the presence of hazardous materials during Project construction and operations, there is the potential for Project spills and/or leaks to occur. The primary concerns associated with these potential spills and/or leaks are the potential impacts to surface and ground water resources and the potential for soil contamination within the Project Area. An SPCC plan will be created for both the construction and operational phases of the Project. The SPCC will detail

the appropriate storage and associated secondary containment (where applicable), cleanup, and disposal of hazardous wastes to ensure potential impacts are avoided.

Safety and Security

The construction and operation of the Project is anticipated to have minimal impacts to the safety and security of local communities in the vicinity.

7.5.3. Mitigative Measures

Air Traffic

An obstacle evaluation analysis was performed in June 2018 and Burke Wind will submit 7460-1 Forms for each wind turbine location to determine if the Project layout will impact communications technology used in aviation operations and/or navigable airspace. The permanent MET tower, temporary PPT MET tower, and wind turbines associated with the Project will be equipped with a lighting mitigation system in compliance with N.D. Admin. Code Ch. 69-06-11 and FAA requirements to minimize the potential for any air traffic impacts. Burke Wind anticipates utilizing ADLS or another comparable technology that receives FAA approval.

Air Defense and Homeland Security Radars (Long Range Radar)

No mitigation measures are proposed at this time since no significant adverse impacts are expected.

Weather Surveillance Radar

No mitigation measures are proposed at this time since no significant adverse impacts are expected.

Military Training Routes and Special Use Airspace

No mitigation measures are proposed at this time because coordination with the DoD resulted in a determination dated July 26, 2018 that the Project and additional turbine locations considered at that time will have minimal impacts to military operations.

Electromagnetic Fields

No mitigation measures are proposed at this time since no significant adverse impacts are expected.

Shadow Flicker

Burke Wind is dedicated to a turbine setback distance of at least one-half (0.5) mile from all existing occupied residential structures. Setback distance is the primary mitigation measure utilized to minimize shadow flicker from turbines. No additional mitigation measures are proposed at this time since no significant impacts are expected because the highest expected shadow flicker duration per year at any receptor is 25 hours, 30 minutes.

Hazardous Materials/Hazardous Waste

Any wastes generated during any phase of the Project will be handled, stored, and disposed of in compliance with all applicable local, state, and federal rules and regulations and the site-

specific SPCC for both construction and operation phases of the Project. Any monitoring, transportation, or handling of materials will be conducted by trained and qualified personnel utilizing established procedures and proper equipment.

Security

Listed below are security measures and protocol that will be followed to reduce the probability of injuries and damages to people and property at this site:

- Temporary and permanent safety fencing, warning signs, and locks on equipment will be employed as security measures during the construction and operation of the Project.
- Electrical equipment for turbines will be enclosed in steel turbine towers, apart from the pad-mounted transformers. Solid, steel doors that provide access to the tower will be locked when not in use.

7.6. Sound

7.6.1. Description of Resources

The majority of the Project Area is rural. Much of the land in the Project Area is used for cropland and pastureland. There are no incorporated cities or populated towns within the Project Area and the closest town, albeit unincorporated, is Larson, located 4.5 miles away. Rural residences, community buildings, farmsteads, and homesteads are scattered throughout the Project Area.

7.6.2. Impacts

Section 69-06-08-01(4) of the N.D. Admin. Code states that the operation of a wind energy conversion facility must not exceed sound levels of 50 dBA within 100 feet of any occupied residences or community buildings. These criteria can be waived by written documentation by the owner of the residence or building. Section 11, Article 11, Part J of the Burke County Zoning Regulations indicate that the County has adopted the USEPA noise level guidelines for a wind energy facility. The USEPA noise level guidelines equate to a Leq sound level limit of 49 dBA which the County applies to within 50 feet of an occupied structure. Design features and mechanisms are used in modern wind turbines that minimize mechanical sound sources.

A preliminary sound level modeling analysis for the Project was conducted by Epsilon Associates, Inc. in October 2018 and included analysis of the Project substation, 76 wind turbines, and five (5) alternate turbines (Epsilon Associates, Inc. 2018b). Of the 76 wind turbines modeled, 68 wind turbines were GE 2.72-116 units with 90 meter hub heights and eight (8) were GE 1.715-103 80 meter hub height units. The sound model results indicated that all receptor locations are in compliance with and below the North Dakota sound limit of 50 dBA and the Burke County Zoning Regulations limit of 49 dBA. The maximum modeled Leq sound level at 100 feet from a participating receptor was 47 dBA. The maximum modeled Leq sound level at 100 feet from a non-participating receptor was 46 dBA.

Project construction may cause short-term, unavoidable sound impacts. Large trucks will deliver supplies and heavy equipment will be used to construct the Project. Traffic generated from

construction activities will also create additional potential noise effects. Sound levels produced by construction activities are typically exempt from state and local noise regulation provided that activities occur within weekday, daytime hours. Reasonable efforts will be made to minimize impacts of noise resulting from construction activities.

7.6.3. Mitigative Measures

Burke Wind has designed the Project to meet the N.D. Admin. Code state noise standards to minimize the sound levels from wind turbines at all receptors within and near the Project Area, while also meeting the other constraints of Project design and regulatory specifications. Compliance with the N.D. Admin. Code noise standards will be accomplished, in part, by adhering to required wind turbine setbacks from residences (**Table 4-1**).

7.7. Cultural Resources

7.7.1. Description of Resources

Class I Literature Review

Atwell, LLC (Atwell) performed a Class I Cultural Resources Inventory (Class I) for a Review Area that was used to initially site the Project (Atwell 2017). The Class I included a file review completed at the State Historical Society of North Dakota (SHSND) in February, 2017. This file review was updated by AECOM in June 2018. The Class I review identified previously recorded archaeological, historical, and architectural sites and site leads identified within the Project Area and within a one (1) mile buffer surrounding the Project Area. Site leads refer to resources that have not been sufficiently investigated to fully record the resource on North Dakota Cultural Resources Survey (NDCRS) site forms.

The Class I identified a total of 176 previously recorded archaeological resources and two (2) architectural resources within the Project Area and a one (1) mile Study Area surrounding the Project Area. These previously recorded archaeological resources include 66 resources within the Project Area and 110 resources within the one (1) mile buffer area (including 43 resources that are located in both the Project Area and the one (1) mile buffer area). Within the Project Area, archaeological resources include three (3) previously recorded Euro-American archaeological sites and 63 Native American site leads. Examples of site leads include:

- locations recorded from various historic documents;
- locations reported by a landowner or other non-professional;
- isolates, locations with five (5) or fewer surface visible artifacts which, in the professional judgment of the archaeologist, are likely to be a limited surface expression of a former occupation area where most of the artifacts are still buried; and/or
- locations recorded by a cultural resource specialist outside of their Project Area(s), and thus not fully recorded.

Nearly all of the Native American site leads contain depressions or cultural material (CM) Many of the Native American site leads recorded in the Project Area were documented through notes and maps completed by Thad Hecker, an avocational archaeologist, who identified the site locations in the early- to mid-20th Century. The exact location of the features Hecker recorded

are not well known and the features are typically only mapped as accurately as the quarter section (160 acres) in which they might be located. The Euro-American sites include a collapsed storage building, foundations, CM scatters, or a combination of these feature types.

Outside of the Project Area, but within the one (1) mile Study Area surrounding the Project Area, there are twelve (12) archaeological sites, two (2) architectural sites, and 98 Native American archaeological site leads. The 12 archaeological sites include ten (10) Native American sites and three (3) Euro-American sites or leads. One (1) site (32BK00014) is both a Native American site and a Euro-American site and is included in both Native American and Euro-American sites and leads counts. The Native American sites or site leads are nearly all stone circles, cairns, depressions, CM scatters, or combinations of these feature types. The Euro-American sites or leads include a collapsed storage building, farmstead, foundation, depression, or combinations of these feature types. The architectural sites include a church and a storage tank.

Class III Cultural Resources Inventory for Archaeological Resources

Burke Wind and AECOM have coordinated with the SHSND on the appropriate scope and level of survey for the Project. A Class III Intensive Cultural Resources Inventory of the archaeological Survey Corridor is being completed to identify archaeological resources, and a Class III Cultural Resources Inventory Report is currently underway. The archaeological Survey Corridor includes all areas where ground disturbance is proposed, including all permanent and temporary impact areas. Once complete, the Class III Cultural Resources Inventory Report will be submitted to the SHSND for review and concurrence, and a management summary will be provided to the Commission.

Class III Cultural Resources Inventory for Architectural Resources

Based on the SHSND guidelines, Metcalf Archaeological Consultants, Inc. (Metcalf) conducted a Class III Architectural Inventory to identify architectural resources within an architectural Survey Area that includes the area within two (2) miles of all proposed turbines. An architectural historian completed a survey of architectural resources within the architectural Survey Area in spring of 2018. Additional architectural surveys will be completed to address changes in turbine locations, if necessary. A Class III Architectural Inventory Report will be submitted to the SHSND for review and concurrence, and a management summary will be submitted to the Commission.

Native American Coordination

On July 20, 2017, Burke Wind sent outreach letters to the following 24 Tribes:

- Cheyenne River Sioux Tribe;
- Chippewa Cree-Rocky Boy's;
- Crow Creek Sioux Tribe;
- Crow Nation;
- Flandreau Santee Sioux Tribe;
- Fort Peck Assiniboine and Sioux Tribe;
- Leech Lake Band of Ojibwe;

- Lower Brule Sioux Tribe;
- Lower Sioux Indian Community;
- Mandan, Hidatsa & Arikara Nation;
- Northern Arapaho;
- Northern Cheyenne Tribe;
- Oglala Lakota Nation;
- Prairie Island Indian Community;
- Red Lake Band of Chippewa Indians;
- Rosebud Sioux Tribe;
- Santee Sioux Nation;
- Sisseton Wahpeton Oyate;
- Spirit Lake Tribe;
- Standing Rock Sioux Tribe;
- Turtle Mountain Band of Chippewa Indians;
- Upper Sioux Community;
- White Earth Nation of Minnesota Chippewa; and
- Yankton Sioux Tribe.

Since that time, numerous discussions have taken place with the following eight (8) interested Tribes to discuss the Project, survey plans, and cultural resource report content and format:

- Cheyenne River Sioux Tribe;
- Northern Cheyenne Tribe;
- Rosebud Sioux Tribe;
- Sisseton Wahpeton Oyate;
- Spirit Lake Tribe;
- Standing Rock Sioux Tribe;
- Turtle Mountain Band of Chippewa Indians; and
- Yankton Sioux Tribe.

The first stage of tribal participation in the Project focused on assisting with the micro-siting of proposed turbine and service road locations in the Project Area in November and December 2017. During this stage, representatives from the Standing Rock Sioux Tribe and the Rosebud Sioux Tribe visited each turbine and service road location with representatives from Burke Wind and AECOM to assess the locations for potential cultural resources and sites of cultural and religious significance to the tribe (SCRSTT). After completion of this preliminary stage, AECOM provided all micro-siting results to Burke Wind along with avoidance recommendations. Based on this information, Burke Wind revised the Project infrastructure. A second round of micro-siting was conducted in May 2018. A tribal representative from the Rosebud Sioux Tribe participated in this effort.

In May through August 2018, stage two (2) of the tribal study, focusing on field survey of the Project, was completed. During stage two (2), Traditional Cultural Surveyors (TCS) from the Rosebud Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, and

the Spirit Lake Tribe completed a joint field survey together with cultural resources consultants for SCRSTT and cultural resources.

If future location changes in Project infrastructure occur, further fieldwork will be completed. TCS from the Rosebud Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, and the Spirit Lake Tribe will be invited to assist in joint tribal and cultural resource consultant field surveys.

Burke Wind, participating Tribal Historic Preservation Officers, cultural resource consultants, and the SHSND are coordinating preparation of a report that includes the results of the joint surveys into a Class III Cultural Resources Inventory Report.

7.7.2. Impacts

Archaeological Resources

Burke Wind utilizes an avoidance strategy and will avoid newly documented sites and previously documented archaeological sites within the Project Area that are recommended for avoidance by the SHSND and participating Tribal Historic Preservation Officers. Because numerous archaeological leads in the Project Area are mapped at the quarter section (160 acres) level, identification of lead locations based on available historic information was not possible. However, Class III cultural resources surveys are being conducted to identify any features within the archaeological Study Area that are associated with archaeological leads. These features will be recorded as new archaeological sites. Burke Wind will create avoidance buffers for previously recorded archaeological sites and newly recorded archaeological sites, including those associated with archaeological leads. The buffers will be delineated prior to construction to ensure avoidance of archaeological resources. The pedestrian survey and shovel testing associated with the Class III cultural resources survey were completed in May through October 2018. Once complete, the resulting cultural resources report will be submitted to the SHSND for review and concurrence and a management summary will be submitted to the Commission.

Architectural Resources

An architectural historian conducted a survey of architectural resources within the architectural Study Area in the spring of 2018. Significant architectural resources were not identified within the architectural Study Area and the Project is not anticipated to impact architectural resources. The Class III Architectural Inventory Report will be submitted to the SHSND for review and concurrence, and a management summary will be submitted to the Commission.

7.7.3. Mitigative Measures

Archaeological sites will be avoided during construction in accordance with input from the SHSND and participating Tribal Historic Preservation Officers. Archaeological sites that are recommended for avoidance by the SHSND and participating Tribal Historic Preservation Officers that are in close proximity to proposed construction easements will be fenced to reduce the potential for inadvertent disturbance. An Unanticipated Discoveries Plan will be prepared for the Project and will outline the procedure utilized to address any unanticipated

discoveries of cultural resources, including possible human remains. In the event that unanticipated discoveries are made during construction of the Project, the Unanticipated Discoveries Plan will provide direction to on-site personnel and their consultants regarding proper procedures for addressing the discoveries. Therefore, no significant impacts to archaeological sites are anticipated for the Project.

In the event that burials or cultural sites with Native American religious values are discovered during construction of the Project, construction would stop within 100 feet of the site and the site will be protected until the SHSND and the North Dakota Indian Affairs Commission are consulted. If confirmed or potential human skeletal remains are discovered, the Burke County Sheriff's office will be contacted. The Sheriff will contact the North Dakota State Forensic Examiner to determine if the remains are associated with a crime scene. If the remains are determined not to be part of an active crime scene or investigation, the North Dakota Chief Archaeologist will be contacted to coordinate how to proceed.

7.8. Recreational Resources

7.8.1. Description of Resources

Burke County provides a variety of recreational opportunities including hiking, fishing, hunting, camping and nature viewing. Information from the USFWS, NDGFD, and Burke County was reviewed to identify recreational resources in the Project Area and its vicinity. Ten (10) PLOTS parcels are located within the Project Area while seven (7) additional PLOTS parcels and five (5) WMAs are located within one (1) mile of the Project Area (**Figure 12**). The NDGFD PLOTS program provides landowner assistance to conserve habitat for fish and wildlife populations while also allowing public walk-in access for the purpose of hunting.

WMAs are owned by the State of North Dakota and were established to protect and manage lands and waters for wildlife production, public hunting, trapping, fishing or other recreational activities. North Dakota WMA 16 and WMA 37 are located within one (1) mile of the Project Area (**Figure 12**).

7.8.2. Impacts

Although several public lands are located within and adjacent to the Project Area, the Project has been designed to avoid direct impacts to recreational resources. Turbines will not be sited within public lands. Similar to other existing developments in and around the Project Area (e.g., existing residences, oil and gas activities, existing wind turbines, and transmission and distribution lines), proposed wind turbines will be visible from various vantage points within the public lands. The exact degree of impact to the viewshed will vary based on the presence of existing infrastructure visible, location of observer, and individual preference. Recreational users of private land and PLOTS lands may temporarily be impacted by construction activities. Recreational areas close to turbine locations could potentially be impacted by possible sound and sight of wind turbines.

7.8.3. Mitigative Measures

No direct impacts to public recreational resources are anticipated as a result of the Project. Turbines, access roads, and associated facilities will not be placed on public recreational lands and public recreational lands will not be used during construction activities. Potential visual impacts will be mitigated by utilizing lighting technology that reduces the impacts of flickering red lights on night sky viewing while complying with N.D. Admin. Code Ch. 69-06-11 and the FAA regulations to ensure navigational safety. Burke Wind anticipates utilizing the ADLS or another comparable technology that receives FAA approval.

7.9. Effects on Land-Based Economies

7.9.1. Description of Resources

Agriculture/Farming

According to the 2011 National Land Cover Database, land cover within the Project Area is primarily classified as herbaceous grassland (Homer et al. 2015). Herbaceous grasslands account for approximately 10,956 acres, or 47.8 percent of the Project Area; cultivated crops account for approximately 7,345.9 acres, or 32.0 percent of the Project Area; and hay/pasture comprises approximately 1,443.8 acres, or 6.3 percent of the Project Area, as shown on **Figure 10**.

According to the 2012 USDA Agricultural Census Report, over 84 percent of the land in Burke County (roughly 595,094 acres) was used for agriculture on approximately 488 farms. Wheat for grain, spring wheat for grain, and durum wheat for grain are the primary crops by acreage grown in Burke County. Cattle are the predominant livestock raised in the county. Market value of agricultural products sold in the County for 2012 was \$105.14 million, with crop markets totaling \$96.39 million and livestock markets totaling \$8.75 million (USDA 2014).

According to the USDA Natural Resources Conservation Service (NRCS), no prime farmland is present in the Project Area. Approximately 3,225.3 acres (14.1 percent) of the Project Area is classified as farmland of statewide importance, as described further in **Section 7.10** below. These areas have been identified by the NRCS as lands that may produce the highest crop yields. Approximately 85.9 percent of soils in the Project Area are classified as not prime farmland (See **Figure 5**).

Woodlands

There are no economically important forestry resources within the Project Area. According to the 2011 National Landcover Database (Homer et al. 2015), deciduous forest comprises approximately 1.5 percent of the Project Area and is limited to human-planted windbreaks surrounding farmsteads, small isolated woodlots, and wooded drainage corridors. No woodlands are present on PLOTS lands within the Project Area. These areas may be considered “enrolled woodlands” but will not be impacted by the Project.

7.9.2. Impacts

Agriculture/Farming

The Project is not expected to significantly impact agricultural land use or the general character of the area. No prime farmland is present in the Project Area. Approximately 12.5 acres (0.05 percent of the Project Area) of farmland of statewide importance would be permanently impacted by the Project and this amount of impact is negligible. While approximately 33.6 acres (less than one [1] percent of the total Project Area) of cropland will be removed from its current land use for the life of the Project to accommodate the turbine pad, access roads, and ancillary facilities, landowners may continue to plant crops and graze livestock adjacent to Project facilities. Approximately 8.0 acres of pastureland will be taken out of use for the life of the Project to accommodate the turbine pad, access roads, and ancillary facilities. Additionally, temporary impacts to pastureland will include access road approaches, crane paths, turning radii, equipment laydown areas, and/or intersection improvements.

The placement of turbines in agricultural fields is suggested in the 2012 USFWS Land-Based Wind Energy Guidelines (USFWS 2012). The primary impact to active agricultural land is the minimal reduction of crop production in the Project Area. This economic impact is offset by Burke Wind through lease payments agreed to by the landowner. During construction, agricultural practices may be interrupted in areas that are typically farmed and construction activities may result in temporary reduced access to some agricultural areas or damage to crops, fences, or drain tile. Temporary impacts to farmland will include access road approaches, crane paths, turning radii, equipment laydown areas, and/or intersection improvements. Large-scale environmental impacts to agriculture or agricultural lands are not anticipated with the placement of turbines, access roads, and ancillary facilities in agricultural fields.

Woodlands

No impacts to economically important forestry resources are expected, as none are located within the Project Area. The Project has been designed to largely avoid wooded areas; tree removal from Project construction will be minimal. Impacts to any naturally occurring woodlands will be mitigated by replacement following the Commission requirements.

7.9.3. Mitigative Measures

Agriculture/Farming

Approximately 33.6 acres of cropland will be permanently taken out of crop production for the turbines, certain electrical equipment, and access roads. After construction of the Project is completed, all remaining land surrounding the turbines and access roads may still be planted with crops or used for grazing. Permanent loss of agricultural land will not result in the loss of agricultural-related jobs or net loss of income. Additionally, revenues lost from the removal of land from agricultural production will be offset by lease payments to landowners according to their respective contracts with Burke Wind. Total lease payments to landowners over the life of the Project and Transmission Line are estimated at \$40 million.

To the extent possible, staging areas and laydown areas will be placed in areas where previous soil impacts have occurred to avoid impacting undisturbed farmland. Should soil compaction or

drain tile damage occur as a result of temporary construction activities, including staging and laydown areas or crane paths, appropriate measures (e.g., soil decompaction, tile repair) will be taken so farmland is restored in accordance with the lease agreement between the landowner and Burke Wind, Commission regulations, and stormwater construction permits.

Approximately 8.0 acres of land for the turbines, certain electrical equipment, and access roads will permanently impact pastureland. Permanent impacts to livestock are not expected. Livestock in pastureland may be temporarily disrupted during construction due to temporary activity and sound, but appropriate measures will be made to ensure fenced pastureland is secure. Temporary fencing may be put in place if fencing is impacted and will be repaired or replaced after construction. Temporarily impacted areas of pastureland will be restored in accordance with the lease agreement between the landowner and Burke Wind. Restoration of pastureland areas will occur in accordance with the Commission's regulations and stormwater construction permit conditions.

Woodlands

There are no economically important forestry resources within the Project Area. The Project has been designed to largely avoid wooded areas. If trees and shrubs need to be removed during construction, Burke Wind will coordinate removal with the landowner and a tree and shrub mitigation plan will be created for the Commission.

7.10. Soils

7.10.1. Description of Resources

The USDA Soil Survey Geographic Database has mapped 45 soil map units (NRCS 2017) within the Project Area. Soils in the Project Area are primarily loams, clay loams, and silty clay loams. Six (6) of the 45 mapped soil units account for almost 85 percent of the Project Area. These soils are the Zahl-Williams-Zahill complex (23.8 percent of the Project Area), Zahl-Williams loams (20.17 percent of the Project Area), Zahl-Max-Parnell complex (20.16 percent of the Project Area), Williams-Zahl loams (11.10 percent of the Project Area), Williams-Zahl-Parnell complex (4.91 percent of the Project Area), and Southam silty clay loam (4.29 percent of the Project Area).

None of the soil units mapped within the Project Area are classified as prime farmland. Fifteen (15) soil map units, accounting for approximately 3,225.3 acres (14.1 percent) of the Project Area, are classified as farmland of statewide importance. Prime farmland is defined as land that has the best combination of characteristics for producing food, feed, and forage, whereas farmland of statewide importance does not meet the criteria for prime farmland but can still produce high crop yields if managed according to acceptable farming methods (NRCS 2017). Thirty-seven (37) soil map units, accounting for greater than 97 percent of the Project Area, have hydric soil components. A list of the soil map units within the Project Area, including acreage, percentage of the Project Area, farmland rating, and hydric soil rating, are provided in **Table 7-4**.

Table 7-4: Soil Map Units within the Project Area

Map Unit Name	Area (Acres)	Percent of Project Area	Farmland Rating	Hydric Rating
Zahl-Williams-Zahill complex, 6 to 9 percent slopes	5,462.22	23.82%	Not prime farmland	Hydric
Zahl-Williams loams, 9 to 15 percent slopes	4,626.35	20.17%	Not prime farmland	Hydric
Zahl-Max-Parnell complex, 0 to 35 percent slopes	4,622.40	20.16%	Not prime farmland	Hydric
Williams-Zahl loams, 3 to 6 percent slopes	2,546.51	11.10%	Farmland of statewide importance	Hydric
Williams-Zahl-Parnell complex, 0 to 9 percent slopes	1,125.16	4.91%	Not prime farmland	Hydric
Southam silty clay loam, 0 to 1 percent slopes	984.51	4.29%	Not prime farmland	Hydric
Parnell silty clay loam, 0 to 1 percent slopes	534.12	2.33%	Not prime farmland	Hydric
Vallers, moderately saline-Parnell complex, 0 to 1 percent slopes	382.71	1.67%	Not prime farmland	Hydric
Zahl-Williams loams, 6 to 9 percent slopes	359.34	1.57%	Not prime farmland	Hydric
Wabek-Lehr-Appam complex, 9 to 25 percent slopes	329.75	1.44%	Not prime farmland	Hydric
Williams-Zahl loams, 3 to 6 percent slopes	224.68	0.98%	Farmland of statewide importance	Hydric
Water	223.52	0.97%	Not prime farmland	
Zahl-Williams loams, 15 to 60 percent slopes	185.17	0.81%	Not prime farmland	
Zahl-Max-Arnegard loams, 15 to 60 percent slopes	171.73	0.75%	Not prime farmland	Hydric

Map Unit Name	Area (Acres)	Percent of Project Area	Farmland Rating	Hydric Rating
Zahl-Max-Bowbells loams, 6 to 35 percent slopes	123.48	0.54%	Not prime farmland	Hydric
Zahl-Williams loams, 9 to 15 percent slopes	115.70	0.50%	Not prime farmland	Hydric
Williams-Niobell loams, 0 to 3 percent slopes	99.59	0.43%	Farmland of statewide importance	Hydric
Vallers loam, moderately saline, 0 to 1 percent slopes	96.18	0.42%	Not prime farmland	Hydric
Williams-Bowbells loams, 0 to 3 percent slopes	93.92	0.41%	Farmland of statewide importance	Hydric
Zahl-Williams-Vallers loams, 0 to 60 percent slopes	87.98	0.38%	Not prime farmland	Hydric
Hamerly-Tonka complex, 0 to 3 percent slopes	86.24	0.38%	Not prime farmland	Hydric
Wabek-Lehr complex, 2 to 6 percent slopes	49.61	0.22%	Not prime farmland	Hydric
Williams-Bowbells loams, 3 to 6 percent slopes	48.90	0.21%	Farmland of statewide importance	Hydric
Williams-Bowbells loams, 0 to 3 percent slopes	48.74	0.21%	Farmland of statewide importance	Hydric
Williams-Niobell loams, 0 to 3 percent slopes	36.96	0.16%	Farmland of statewide importance	Hydric
Pits, gravel and sand, 0 to 60 percent slopes	27.24	0.12%	Not prime farmland	
Nutley silty clay, low precipitation, 0 to 2 percent slopes	26.84	0.12%	Farmland of statewide importance	Hydric
Nutley silty clay, low precipitation, 2 to 6 percent slopes	23.22	0.10%	Farmland of statewide importance	

Map Unit Name	Area (Acres)	Percent of Project Area	Farmland Rating	Hydric Rating
Wabek-Appam complex, 6 to 9 percent slopes	21.70	0.09%	Not prime farmland	Hydric
Appam-Wabek complex, 2 to 6 percent slopes	16.47	0.07%	Not prime farmland	
Tansem loam, 0 to 2 percent slopes	16.42	0.07%	Farmland of statewide importance	Hydric
Noonan-Niobell loams, 0 to 6 percent slopes	15.77	0.07%	Not prime farmland	Hydric
Sakakawea-Tansem loams, 6 to 9 percent slopes	15.51	0.07%	Farmland of statewide importance	
Vallers loam, saline, 0 to 1 percent slopes	14.57	0.06%	Not prime farmland	Hydric
Williams-Bowbells loams, 3 to 6 percent slopes	13.25	0.06%	Farmland of statewide importance	Hydric
Tansem-Sakakawea loams, 2 to 6 percent slopes	12.04	0.05%	Farmland of statewide importance	
Lehr-Wabek loams, 0 to 2 percent slopes	11.86	0.05%	Not prime farmland	Hydric
Williams-Niobell loams, 3 to 6 percent slopes	11.24	0.05%	Farmland of statewide importance	Hydric
Miranda-Noonan loams, 0 to 3 percent slopes	11.06	0.05%	Not prime farmland	Hydric
Williams-Niobell loams, 3 to 6 percent slopes	7.48	0.03%	Farmland of statewide importance	Hydric
Noonan-Niobell-Williams loams, 0 to 6 percent slopes	6.36	0.03%	Not prime farmland	Hydric
Sakakawea-Tansem loams, 9 to 25 percent slopes	5.95	0.03%	Not prime farmland	

Map Unit Name	Area (Acres)	Percent of Project Area	Farmland Rating	Hydric Rating
Zahl-Max loams, 15 to 25 percent slopes	5.04	0.02%	Not prime farmland	Hydric
Harriet-Regan-Stirum complex, 0 to 2 percent slopes, occasionally flooded	4.74	0.02%	Not prime farmland	Hydric
Miranda-Noonan loams, 0 to 3 percent slopes	0.45	0.00%	Not prime farmland	Hydric

7.10.2. Impacts

Construction and operation of the Project will result in short and long-term impacts to soils within the Project Area. As there is no prime farmland in the Project Area, no impacts to prime farmland will occur. Approximately 3,145.1 acres of participating landowner acreage (13.8 percent) is farmland of statewide importance. Approximately 12.4 acres (0.05 percent of the Project Area) of farmland of statewide importance will be permanently impacted which represents a negligible impact to farmland of statewide importance. There will be a potential for localized soil erosion and compaction during construction. Short-term and minor impacts will result from clearing of vegetation; generation of dust; and the excavation, stockpiling, and redistribution of soils. Most impacts will be short term and are expected to be minor. Long-term impacts will include soil compaction. However, following Project completion, Project facilities will be decommissioned and soils will be returned back to their original use and condition. Estimated soil impacts include approximately 65.9 acres of permanent disturbance and 1,360.6 acres of temporary disturbance.

7.10.3. Mitigative Measures

A NPDES general construction stormwater permit, a SWPPP, and BMPs will be developed and implemented prior to construction. Sedimentation and erosion will be reduced through the use of BMPs and may include mulching, hydroseeding, erosion control blankets, silt fence installation, jute matting, interim reclamation, and revegetation. Water and chemical application will be used to suppress dust. Following the completion of construction, all temporarily impacted areas that will not be used for the operation of Project facilities will be restored to pre-construction condition in accordance with landowner lease agreements. As part of the restoration efforts, action will be taken to eliminate areas of soil compaction and to return removed topsoil to its original location. By implementing these systems, plans, and practices, measures will be taken to protect surface waters from direct and indirect impacts of sedimentation and erosion, while simultaneously preventing any adverse impacts to soil resources.

7.11. Geologic and Groundwater Resources

7.11.1. Description of Resources

The Project Area is situated near the center of the Williston Basin and underlain by sedimentary rocks ranging in thickness from 9,400 feet to 11,700 feet (Freers 1973). Above these sedimentary rocks is the Coleharbor Formation. The Coleharbor Formation covers 98 percent of Burke County and ranges in thickness from zero (0) feet to 483 feet. Boulder-clay, gravel, sand, clay, and silt are found within this formation. Boulder-clay is most common, covering approximately 85 to 90 percent of the County.

The Project Area is divided into two (2) topographical areas (Freers 1973). These two (2) areas are the Missouri Coteau Escarpment and the Missouri Coteau. The Missouri Coteau Escarpment is an area within Burke County where elevations rise from 2,000 feet to 2,350 feet amsl over an area of 3.5 miles. The majority of the Project Area is located within the Missouri Coteau. The Missouri Coteau lies directly south of the Missouri Coteau Escarpment and is characterized as a hilly area with moderate to high relief and steep slopes. Hundreds of wetlands and undrained depressions are found within this area and little to no drainage occurs except along occasional stream features. The water in these wetlands eventually seeps into the ground and is one of the main components of recharging the groundwater supply in Burke County.

Currently, there are no aquifers within the Project Area (SHSND 2018). There are 234 documented wells within Burke County ranging in depths from zero (0) to 1,185 feet (ND State Water Commission 2018). There is one (1) abandoned mine and two (2) mine shafts within the one (1) mile Project Area buffer. Additionally, four (4) gravel pits are within the one (1) mile buffer and three (3) gravel pits are within the Project Area boundary. There are 29 oil and gas wells within the Project Area and 68 within the one (1) mile Project Area buffer.

7.11.2. Impacts

Impacts to geologic resources from the Project are anticipated to be minimal. Footings designed to support turbines will in some cases require minor impacts to glacial drift. Geotechnical testing will occur at wind turbine locations prior to construction to determine soil stability and depth to bedrock.

Significant impacts to groundwater resources and wells are not expected from Project related activities due to abundance of setbacks and the minimal water-related needs of the Project. One (1) temporary batch plant may be needed on-site to supply concrete for the construction of the Project, which will require water to produce concrete for turbine pads and other associated infrastructure. Appropriate permitting for the batch plant will be obtained, as applicable, prior to construction. The water used for concrete production, dust abatement, and construction activities will either come from a local well or may be trucked in from a suitable local resource and stored at the concrete batch plant site. The source of water will be determined closer to construction and will be coordinated with appropriate authorities.

Construction dewatering may occur depending on the depth of the turbine foundations, weather, soil conditions, and specific locations. Dewatering activities will be completed as outlined in the SWPPP that will be developed for the Project and in accordance with NPDES

permit requirements, as applicable. Discharged water will be allowed to infiltrate naturally back into the ground if construction dewatering occurs and in accordance with temporary discharge permit requirements, as applicable.

A small amount of increased impervious surface will result from the installation of the turbines and associated facilities. However, the Project would not contribute to significant impacts on groundwater flow or recharge given the small increase in impervious surface and the large, undeveloped areas between Project facilities.

7.11.3. Mitigative Measures

Existing well locations will be taken into account and turbines will be set back from wells in accordance with state and county standards. Mitigation for impacts to existing wells is not proposed as construction and operation of the Project is not expected to impact groundwater resources.

7.12. Surface Water and Floodplain Resources

7.12.1. Description of Resources

The Project Area lies entirely within the prairie pothole region of North Dakota. This region was formed by retreating glaciers of the last ice age that left behind innumerable shallow depressions, which are now lakes and wetlands known as prairie potholes. Various datasets were utilized to identify potential surface waters within the Project Area including the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD), USFWS National Wetlands Inventory (NWI), and the National Land Cover Database (NLCD). Results from this desktop database research were used to inform field delineations of wetlands and other surface waters.

The Project Area is located within the Headwater Souris River Watershed (Hydrologic Unit Code [HUC] 09010007), the Lake Sakakawea Watershed (HUC 10110101), and the Long Creek (HUC 09010006) (USEPA 2017, 2018). The USGS NHD dataset indicates the presence of a number of streams within the Project Area (USGS 2018) including multiple unnamed watercourses (**Figure 14**). These streams primarily line the northern edge of the Project Area and flow in a northerly direction out of the Project Area. Additionally, the NHD dataset identified numerous open water features scattered through the Project Area. According to the USGS NHD dataset, the Project Area contains a total of approximately 1,223 acres (approximately five [5] percent of the Project Area) of NHD waterbodies and approximately 6.8 miles of NHD watercourses (USGS 2018; refer to **Figure 14**). Many of the NHD mapped features have NWI-mapped emergent, shrub/scrub, and forested wetland buffers (USFWS 2018a) (see **Section 7.13** for additional discussion about wetlands).

Due to the Project Area's rural location, Federal Emergency Management Agency (FEMA) flood ratings have not been developed for the area (FEMA 2017). Burke County does not have mapped floodplains and does not require floodplain permits.

7.12.2. Impacts

Overall, surface waters will remain largely un-impacted because the Project has been designed to avoid or minimize adverse impacts to surface waters. Permanent dewatering will not occur, though the possibility exists that temporary dewatering of turbine foundations and collection

lines will occur as needed during construction. Temporary or permanent impacts to surface water runoff may be associated with crane paths, access roads, turbine pads, subsurface electrical collector lines, the substation and the O&M facility.

There is a potential for sedimentation and erosion to occur associated with ground-disturbing activities. Moderately to highly sloped ground can also be subject to sheet and rill erosion or slumping. No turbines, access roads, or other Project infrastructure will impact FEMA mapped floodplains as no flood rating map has been developed for the Project Area.

7.12.3. Mitigative Measures

Temporary impacts to surface waters will be avoided due to the careful design and planning of the construction easement, which has been designed to avoid surface waters to the extent feasible. Permanent impacts to surface waters from turbines, access roads, and Project infrastructure have been avoided during the design phase of the Project. Specifically, measures were taken to avoid permanent surface water impacts where possible, and to minimize surface water impacts in cases where impacts could not be avoided.

Coverage under the North Dakota Department of Health's (NDDOH) NPDES general construction stormwater permit will be obtained prior to the start of construction. A SWPPP will also be developed prior to construction. BMPs will be employed to ensure that excavated material is contained, exposed soil is protected, restored material is stabilized, and disturbed areas are re-vegetated with locally sourced native seed mixes. Use of BMPs will also ensure that access roads and drainage ways will be designed in a manner that allows water to flow unrestricted from upper portions of the watershed to lower portions of the watershed. Typical BMPs may include surface roughening, erosion control blankets, straw wattles/bales, rolls, mulch, vegetative buffers, hydromulch, sediment fencing, and waterbars. In some cases, temporary (annual) seed may be used to help prevent erosion. Reclaimed topographic conditions will be similar to pre-disturbance conditions.

Burke Wind has committed to avoiding impacts to jurisdictional wetlands and other Waters of the U.S. (WOUS) as discussed further in **Section 7.13**. The Project will therefore not require a Section 404 permit.

7.13. Wetlands

7.13.1. Description of Resources

Wetlands are vital natural resources that provide a number of ecosystem functions. These functions include water storage, water filtration, streambank stabilization, flood flow attenuation, and the discharge and recharge of ground water. Wetlands also provide valuable habitat for fish and wildlife, as well as human recreational opportunities.

The U.S. Army Corps of Engineers (USACE) technical guidelines for defining wetlands are contained in the USACE 1987 Wetland Delineation Manual and regional manuals. The USACE's technical guidelines outlined in the manuals consist of three (3) criteria for delineating a feature as a wetland: a source of hydrology, hydric soils, and hydrophytic vegetation (Environmental Laboratory 1987). Under the procedures and criteria in the manuals, a feature must normally

satisfy all three (3) criteria to be classified as a wetland. There are many different types of wetlands including marshes, swamps, bogs, fens, wet meadows, and prairie potholes.

An aerial desktop review was conducted for the Project Area, and consisted of reviewing Geographic Information Systems (GIS)-identified wetland features and interpreting topography and associated drainage patterns, position in the landscape, vegetative cover, and soils, to estimate jurisdictional status. Current and historic aerial photographs, USGS Topographic maps, NWI maps, NHD maps, USDA – National Cooperative Soil Survey (NCSS) maps, Light Imaging Detection and Ranging (LiDAR)-derived five (5)-Foot Contours maps, HUC 12 Sub Watershed Boundary Dataset maps, and National Agriculture Imagery Program (NAIP) 1-Meter 4-Band Multispectral Aerial Imagery (Red, Green, Blue, and Infrared) imagery for the Project Area were reviewed to evaluate the overall site characteristics of the Project Area. FEMA Flood Insurance Rate Maps (FIRM) floodplain maps and county floodplain map data were confirmed to not be available for the Project Area. Based on the aerial desktop review findings, greater than 90 percent of the wetlands within the Project Area were determined to be likely isolated. Potentially jurisdictional wetlands were also identified (**Figure 14**).

The USACE has jurisdiction of WOUS under Section 404 of the Clean Water Act (CWA) and navigable waters under Sections 9 and 10 of the Rivers and Harbors Act of 1899 (RHA). As such, a meeting was conducted with the USACE Regulatory Office in Bismarck on December 13, 2016 to discuss the results and findings of the aerial desktop review. It was determined at the 2016 USACE meeting that the majority of wetlands in the Project Area are isolated. Based on Burke Wind's standard approach of avoidance, all wetland and non-wetland WOUS have been avoided by Project design and thus the Project does not require a Section 404 permit.

The USACE requested that Burke Wind conduct an in-field assessment of a representative sample of wetlands to determine WOUS jurisdictional status and verify aerial desktop review methods. Burke Wind conducted an in-field wetland boundary and watercourse determination and delineation of the Project Area in June 2017, September 2017 (Burke Wind met with USACE and conducted Project Area site visit), and November 2017. Based on the area evaluated in 2017, of the over 6,000 wetland features that were examined within the Project Area and its vicinity, approximately four (4) percent of these wetland features were determined to likely be jurisdictional WOUS. The current 200-MW Project Area contains over 2,470 wetland features, approximately six (6) percent of which are wetland features that were determined to likely be jurisdictional WOUS.

Additional wetland fieldwork was conducted between May and October 2018 to delineate wetland boundaries within all additional areas where temporary and permanent impacts could occur. Wetlands are depicted on **Figure 14**. A wetland delineation report amendment is currently being prepared and will be provided to the Commission pre-hearing. Wetlands delineated in 2018 are assumed to be jurisdictional and will be avoided as part of Project design.

7.13.2. Impacts

Burke Wind is committed to avoiding impacts to jurisdictional wetlands and WOUS. Thus, a Section 404 permit will not be required. In addition, Burke Wind avoided all wetlands and waters during Project design, regardless of potential jurisdictional status, to the degree feasible. Access roads and Project infrastructure have been designed and sited to avoid or minimize impacts to isolated wetlands to the greatest extent possible. Temporary impacts to isolated wetlands associated with crane paths or temporary work space may occur.

7.13.3. Mitigative Measures

Burke Wind is committed to avoiding and minimizing impacts to all wetlands to the extent feasible. Burke Wind will avoid impacts to jurisdictional wetlands and WOUS, thus avoiding the need for a Section 404 permit.

Burke Wind has conducted detailed wetland determination and delineation surveys within parcels that are proposed to contain Project infrastructure. During the design phase of the Project, measures were taken to avoid impacts to all wetland areas both those that fall under USACE jurisdiction and those that are isolated, where possible, and to minimize isolated wetland impacts in cases where the impacts could not be avoided. Directional drilling of collector and communication lines is planned to avoid all impacts to jurisdictional wetlands and WOUS and avoid and minimize impacts to isolated wetlands wherever possible. If adverse impacts to isolated wetlands are unavoidable, the impacts will be minimized to the maximum extent practicable.

BMPs will be employed to protect topsoil, minimize soil erosion, and protect wetland resources from direct and indirect impacts. Wetland soils and moderately to highly sloped ground can also be subject to sheet and rill erosion or slumping. Sediment runoff into wetlands will be minimized and/or avoided through the use of BMPs outlined in the SWPPP. To minimize disturbance, timber matting will be used for crane path travel lanes as appropriate.

7.14. Vegetation

7.14.1. Description of Resources

The Project Area and surrounding vicinity is sparsely populated and supports a mix of grasslands, hayfields, pasturelands and cultivated cropland within an extensive prairie pothole wetland system (**Figure 10**). The primary land use within the region of the Project Area is agricultural (cultivated crops and hay/pasture). According to the 2011 National Landcover Database, approximately 47.8 percent of the Project Area consists of grasslands and other herbaceous vegetation and approximately 32.0 percent of the Project Area is cultivated cropland. Grasslands within the Project Area consist of remnant areas of native prairie and tame (planted) pastureland. For the purpose of this Application, native prairie is defined as prairie grassland found on unbroken soils that has never been cultivated for agricultural row crop production. Tame grasslands occur on tilled soil that has been replanted into grassland.

Native prairie consisting of specific plant species has the potential to harbor the Dakota skipper (*Hesperia dacotae*), a federally threatened butterfly. The prairie habitat type is characterized by moist soils dominated by bluestem grass species (*Schizachyrium* and *Andropogon* spp.) with three (3) wildflower species: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*) and smooth camas (*Zygadenus elegans*) (Dyke et al. 2015). The second prairie habitat type is mesic upland prairie that is typically found on ridges and hillsides dominated by bluestem, needle grasses (*Nassella* sp.), and purple coneflower (*Echinacea angustifolia*). Comprehensive analysis of GIS data, aerial imagery, and field investigation was conducted to determine the extent of native prairie within the Project Area.

Burke Wind assessed native prairie within the Project Area by conducting a desktop review that utilized numerous GIS databases and aerial imagery analysis to initially identify potential areas of native prairie (**Figure 15**). Desktop review was further supplemented by in-field assessment to ground truth the data layers. Micrositing surveys in May and June 2018 included native prairie evaluations for each proposed turbine location. All areas mapped or aerially interpreted as cultivated, hayed, forest, wetland, open water, or otherwise disturbed were removed from consideration as potential native prairie. The comprehensive analysis was an iterative process that eliminated definitively non-native prairie through the process. The remaining parcels of land identified as potential areas of native prairie, and that were not otherwise eliminated through the analysis described above, were considered “native prairie.” Approximately 2,674.4 acres (12.9 percent) of the 20,744.5-acre participating landowner parcel portion of the Project Area were identified as “native prairie” during this process.

Additional tame grasslands are also present within the Project Area that provide habitat for a variety of avian species, including resident and migratory raptor species, upland birds, and other grassland nesting songbirds. These tame grasslands include pastures, fallow agricultural fields, or filter strips within agricultural areas. There are ten (10) PLOTS land parcels covering approximately 1,161 acres located within the Project Area. These are private lands open to sportsmen that consist of lands that were typically used privately as cultivated agricultural land and/or grazing land. Some of these areas, notably previously cultivated lands, have been replanted to native grasses. In some cases, these parcels are also enrolled in the CRP program. While there are approximately 938 acres of CRP land within the Project Area, any land enrolled in CRP has been cultivated for agricultural purposes, by definition, in the past. Most of these areas have been replanted with a standard native grass mix.

7.14.2. Impacts

Vegetation will be removed during construction and installation of Project infrastructure to allow for construction of turbine pads, access roads, substation, and O&M facilities. Burke Wind has designed the Project in coordination with participating landowners to place the majority of Project infrastructure in agricultural fields where amenable to the participating landowner. Depending on the final layout, up to 65.9 acres of land will be permanently removed from current land uses, while the areas surrounding each turbine will still allow farming or continuation of the same land uses that occurred prior to the installation of the Project. Less than one (1) percent of the total Project Area will be permanently converted to sites for wind turbines or other Project infrastructure.

Public lands managed by USFWS are meant to preserve habitat for waterfowl and other wildlife. These areas are typically wetlands or grasslands that provide roosting and nesting habitat for waterfowl. As discussed further in **Section 8.0**, Burke Wind met with the USFWS multiple times and continues to coordinate to discuss USFWS grassland and wetland easements in the Project Area. The USFWS indicated no surface disturbance should occur within grasslands, wetland/grassland easements, and within protected wetland basins and, as such, no surface disturbance of these areas is planned. The locations of USFWS grassland, wetland, and wetland/grassland easements have been incorporated into Project siting and Burke Wind is actively working with the USFWS to verify all easements have been avoided.

Access road construction or collection line installation may result in some temporary impacts to agricultural drainages, grasslands, shrublands, and wetlands from temporary grading and other construction activities (e.g., topsoil stripping, trenching, temporary turning radius, etc.). As ground will be disturbed by equipment deliveries from different geographic areas, introduction of noxious weeds may occur, though Burke Wind will work collaboratively with all Project construction parties to minimize and prevent the introduction of invasive species. Four (4) state listed noxious weed species were documented during field surveys and are outlined in the mitigative measures below. Direct permanent and temporary impacts to natural areas and sensitive vegetation will be avoided and minimized. Native prairie areas will be avoided where possible. Based on the current design, approximately 3.0 acres of native prairie (0.01 percent of participating parcel lands) will be permanently impacted by the Project. Revisions of a past array from November 2017 removed 55 turbines from native prairie. Additionally, four (4) separate micrositing surveys were conducted to help identify and avoid native prairie. Also, since the filing of the original Application on September 14, 2018, the number of turbines originally applied for with the Commission was reduced by 38 turbines, which further reduced the permanent native prairie impacts by 57 percent (from 7.0 acres to 3.0 acres). Any restoration activities required will follow the SWPPP.

7.14.3. Mitigative Measures

Burke Wind has planned the Project and will continue to plan the Project to avoid, to the extent feasible, direct, permanent, and temporary impacts to natural areas. Impacts to native prairie will be avoided as much as feasible.

The locations of existing CRP and PLOTS easements will be identified in coordination with participating landowners. If CRP and/or easements are determined to be present, the locations will be incorporated into Project planning as it relates to turbine and road layout, and any other associated construction activities and these lands will be avoided to the maximum extent practicable, consistent with landowner preferences. If the Project requires the placement of permanent infrastructure within CRP or PLOTS land, the landowner will remove the land from the CRP and/or PLOTS program.

Burke Wind is committed to avoiding impacts to existing trees and shrubs. If trees and shrubs need to be removed for construction purposes, coordination with the landowner will be conducted along with preparation of a tree and shrub mitigation plan for submittal to the

Commission. In the event that trees and shrubs would be removed, an inventory will be taken for replacement purposes and trees and shrubs will be replaced according to the Commission's Tree and Shrub Mitigation Specifications. Trees and shrubs would be replaced with the same species or similar species, except in the case of invasive or noxious species. These species would be replaced using similar, suitable non-invasive or non-noxious species.

Burke Wind will coordinate with the local NRCS office to ensure the reseeding of temporarily disturbed areas with locally sourced native seed mixes should temporary impacts occur during construction activities. Burke Wind will implement BMPs for all Project construction entities entering the Project Area to control and prevent the introduction of invasive species, including noxious weeds. There are eleven (11) state noxious weeds and one (1) additional noxious weed listed for Burke County (North Dakota Department of Agriculture 2015): absinth wormwood (*Artemisia absinthium*), Canada thistle (*Cirsium arvense*), dalmatian toadflax (*Linaria genistifolia*), diffuse knapweed (*Centaurea diffusa*), leafy spurge (*Euphorbia esula*), musk thistle (*Carduus nutans*), purple loosestrife (*Lythrum salicaria*), Russian knapweed (*Acroptilon repens*), Saltcedar (*Tamarix chinensis*, *T. parviflora*, and *T. ramosissima*), spotted knapweed (*Centaurea maculosa*), yellow toadflax (*Linaria vulgaris*), and common tansy (*Tanacetum vulgare*). Four (4) state listed noxious weeds (absinthe wormwood, Canada thistle, leafy spurge, and musk thistle) were documented during field surveys.

7.15. Wildlife

7.15.1. Description of Resources

The following desktop assessments and field studies were conducted to document wildlife habitat and use within the Project Area and Avian Use Study Area. The Avian Use Study Area consists of an area that is larger than, but that encompasses the current Project Area. Field studies were conducted in accordance with the voluntary 2012 USFWS Land-Based Wind Energy Guidelines (USFWS 2012):

- Bi-weekly eagle use surveys were conducted from April 2017 through March 2018;
- General avian use surveys were conducted from April 2017 through March 2018;
- Eagle and raptor nest aerial surveys were conducted in April 2017 (Atwell 2018a);
- Sharp-tailed grouse (*Tympanuchus phasianellus*) lek surveys were conducted in April 2017 (Atwell 2018a);
- Breeding waterfowl use surveys were conducted from May 2017 through July 2017;
- Sensitive breeding grassland bird surveys were conducted from June 2017 through July 2017;
- Dakota Skipper surveys were completed in summer 2017 and June 2018 and are ongoing. An Assessment Report is expected following completion of the surveys. Native prairie mapping was completed between December 2017 and June 2018. (See **Section 7.16** for discussion);
- Desktop whooping crane (*Grus americana*) habitat assessment was conducted in June 2018 (Watershed Institute, Inc. 2018) (See **Section 7.16** for discussion); and
- Bat habitat and risk assessment was conducted in June 2018 (Atwell 2018b).

Avian Species

Based on the field observations of the habitat present within the Project Area, most avian species that are likely to occur within the Project Area are those which are found in grassland, wetland, and agricultural habitats. Atwell conducted avian use point count surveys from April 2017 through March 2018 to document species presence and overall avian use of the Avian Use Study Area. These surveys totaled 840 hours of standardized effort in keeping with the 2012 USFWS Land-based Wind Energy Guidelines and Eagle Conservation Plan Guidance-Module One (1) recommendations (USFWS 2012, 2013). In addition, over 400 cumulative hours were invested in documenting incidental (i.e., non-standardized) eagle and species of concern observations recorded while *en route* to surveys, during bald eagle (*Haliaeetus leucocephalus*) nest surveys, and during targeted breeding season surveys throughout the Project. Atwell recorded 142 bird species during standardized migration use surveys during the spring and fall, with 7,798 individual bird observations within 2,593 separate groups recorded. Cumulatively, five (5) species accounted for 45.6 percent of all individual observations; lesser scaup (*Aythya affinis*), mallard (*Anas platyrhynchos*), Franklin's gull (*Leucophaeus pipixcan*), Lapland longspur (*Calcarius lapponicus*), and red-winged blackbird (*Agelaius phoeniceus*). Over the course of the avian field surveys, one (1) federally listed species (three [3] whooping cranes) was recorded migrating through the Project Area at least 150 meters overhead (above the rotor-swept zone). A Year 1 Pre-Construction Avian Migration and Eagle Use Observational Study is in preparation and will be submitted to the Commission.

During the course of the full year study, Atwell observed 20 species of raptors within the Avian Use Study Area, but documented a low overall raptor use within the Avian Use Study Area of approximately 0.76 and 0.79 birds per 20 minute survey during spring and fall respectively, 0.45 birds per 20 minute survey during the summer, and 0.04 birds per 20-minute survey during the winter. Red-tailed hawks (*Buteo jamaicensis*), northern harriers (*Circus cyaneus*), Swainson's hawks (*Buteo swainsoni*), and rough-legged hawks (*Buteo lagopus*) were the most frequently observed raptors across all seasons.

Sensitive breeding grassland bird surveys were conducted during June and July 2017 within the Avian Use Study Area. No federally endangered or federally threatened bird species were detected during June and July surveys in 2017. The USFWS maintains a list of Birds of Conservation Concern (BCC; USFWS 2008) and five (5) grassland associated Birds of Conservation Concern including Sprague's pipit (*Anthus spragueii*), grasshopper sparrow (*Ammodramus savannarum*), Nelson's sparrow (*Ammodramus nelsoni*), marbled godwit (*Limosa fedoa*), and upland sandpiper (*Bartramia longicauda*) were observed during 2017 summer breeding season surveys within the Project Area. Of these five (5) species, all but Sprague's pipit were detected within the 200-MW Project Area. While a total of six (6) Sprague's pipits were detected within the Avian Use Study Area, zero (0) were detected within the current 200-MW Project Area.

A breeding waterfowl study was conducted for the Project Area. A primary objective of this study was to provide more refined spatial data regarding waterfowl use within the Avian Use Study Area in response to USFWS recommendations at the March 8, 2017 and April 25, 2017 agency meetings. Four (4) wetland associated Birds of Conservation Concern (USFWS 2008)

(marbled godwit, black tern [*Chlidonias niger*], horned grebe [*Podiceps auritus*], and American bittern [*Botaurus lentiginosus*]) were observed over the course of this study period. No federally endangered or federally threatened bird species were detected as part of the 2017 study. A report summarizing the results of this study is in preparation and will be submitted to the Commission.

Sharp-tailed grouse combined ground and aerial based surveys were conducted out to a 0.5 mile buffer surrounding the Project Area in April 2017. Sharp-tailed grouse preferred habitat is characterized as consisting of relatively dense herbaceous cover found in mixed-grass prairie with scattered shrubs (Connelly et al. 1998). Six (6) confirmed leks were located within the Project Area (**Figure 15**) during the course of the April 2017 surveys (Atwell 2018a). Additional grouse leks were located within a 0.5 mile lek assessment buffer from the Project Area. Further information is detailed in the Grouse Lek and Raptor Nest Survey Results Memorandum (Atwell 2018a) that has been provided under separate cover to the Commission.

During the course of the aerial eagle nest surveys, six (6) active red-tailed hawk nests and five (5) active great horned owl (*Bubo virginianus*) nests were observed within the Project Area (**Figure 16**). Each of these active nests was observed with either: an incubating adult, an adult defending the nest, or a nest containing eggs or nestlings. In addition to red-tailed hawks and great horned owls, northern harriers, ferruginous hawks (*Buteo regalis*), Swainson's hawks, and short-eared owls (*Asio flammeus*) are all potential breeders within the Project Area.

Bat Species

North Dakota is home to eleven (11) species of bats, of which the northern long-eared bat (NLEB [*Myotis septentrionalis*]) is the only federally listed species (threatened). Based on a review of publically available publications, datasets, agency occurrence maps, and field observations, a bat habitat assessment was conducted by Atwell to determine the amount of suitable habitat for bats within the Project Area (Atwell 2018b). The Bat Habitat Assessment indicated that the bat community within the Project Area is likely to include the big brown bat, little brown bat, eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and silver-haired bat (*Lasionycteris noctivagans*). The Bat Habitat Assessment (Atwell 2018b) concluded that the NLEB is unlikely to occur within the Project Area based on the habitat characteristics within the Project Area, and state-wide and regional mist-netting survey results. The full Bat Habitat Assessment has previously been provided under separate cover to the Commission..

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.

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 NLCD, deciduous forest (approximately 332 acres [1.6 percent of the participating parcels within the Project Area]) and wooded wetlands (40.6

acres [0.2 percent of the participating parcels within the Project Area]) encompass roughly 1.8 percent of the total land use/land cover mapped within the participating parcels of the Project Area (Homer et al. 2015).

7.15.2. Impacts

Avian Species

There are few recent studies in similar landscapes that provide pre-construction and post-construction data from which to draw comparisons to the Project. Existing post-construction mortality data was collated into regional estimates of mortality rates for the Great Plains region (1.81 birds/MW/year; Loss et al. 2013) and for the prairie biome (2.29 small birds/MW/Year; Erickson et al. 2014). Differences in study design, statistical modeling, and site-specific characteristics can make direct comparisons between wind projects difficult; however, it is likely that bird mortalities at Burke Wind will be comparable to the mortality rates observed at other wind facilities within the region due to similar avian species composition, land cover, land use, and location within the region. Furthermore, existing research indicates that mortality recorded at wind facilities impacted less than one-tenth of one percent (less than 0.1 percent) of continent-wide bird populations per year (Erickson et al. 2014). Additional research conducted by Beston et al. (2016) determined that modeled risk of potential population level impact is species-specific and that small birds are at relatively low risk of population impacts.

Sharp-tailed Grouse

Sharp-tailed grouse congregate at lek locations every spring to display and breed. To date, no peer-reviewed research has been conducted to determine how sharp-tailed grouse respond to wind turbines. There is some research that evaluates the potential impacts of various kinds of anthropogenic disturbance on prairie grouse, including oil and gas, highways, and tall structures (transmission lines, wind turbines, communication towers) (Messmer et al. 2010, Bartuszevige and Daniels 2016, Elmore and Dahlgren 2016). However, scientific evidence related to the effects of wind turbines on prairie grouse is characterized by high uncertainty (Hagen et al. 2004, McNew et al. 2014, Walters et al. 2014). Further research would be needed to determine the long-term implications of wind turbine technology within this prairie grouse's mixed grassland haunts.

No wind turbines will be placed within 0.5 miles of the six (6) confirmed active sharp-tailed grouse lek locations within the Project Area (**Figure 15**). In addition, surface disturbance between April and July will be restricted to the extent practicable within 0.5 miles of the six (6) confirmed active lek locations within the Project Area.

Other Raptor Species

Eleven active raptor nest locations were documented over the course of the aerial transect surveys (**Figure 16**). Six (6) active red-tailed hawk nests and five (5) active great horned owl nests were located within the Project Area. No wind turbines will be placed within 0.25 miles of the 11 active nest locations within the Project Area. In addition, surface disturbance between March and July will be restricted to the extent practicable within 0.25 miles of the 11 active nest locations within the Project Area.

Bat Species

Based on the results of the Bat Habitat Assessment, only 1.8 percent of the participating parcels within the Project Area contain forested or woody wetland land cover types that are suitable habitat for bats (Atwell 2018b). The predominant landcover types within the Project Area are grasslands, cultivated crops, and hay/pasture which together total approximately 86.2 percent of the participating parcels within the Project Area. These three (3) main cover types are of lower quality habitat for bat species, and as such, bat use is expected to be low within the Project Area.

Bat mortality at any given wind energy project can be highly variable (Kunz et al. 2007). Mortality estimates for wind energy projects across the U.S. and Canada from 2000-2011 indicate that three (3) migratory tree bats: hoary bat, eastern red bat, and silver-haired bat, account for 78 percent of cumulative mortality (Arnett and Baerwald 2013). According to these studies, mortality of bats is likely to be higher for migratory tree bats (e.g., hoary bat and silver-haired bat). The Project Area lacks large, forested riparian corridors and roosting habitat for bats. Thus, use by bats is expected to be low within the Project Area. Collision risk for bats is also expected to be low given the lack of preferred foraging and roosting habitat within the Project Area.

7.15.3. Mitigative Measures

Burke Wind will implement the following measures to avoid potential impacts to wildlife in the Project Area during selection of the turbine locations and Project development and operation:

- Avoid and minimize siting turbines and access roads in wetlands and waterbodies to the greatest extent feasible;
- Avoid and minimize siting turbines in mapped native prairie and native plant communities to the greatest extent feasible. The original Project turbine array was modified to remove 55 turbine locations out of native prairie areas. Then, after the filing of the original Application on September 14, 2018, 38 turbines and associated infrastructure were removed from the current Project, further reducing permanent impacts to native prairie;
- Avoid or minimize placement of turbines in high quality grassland or pasture areas that may act as native grasslands for breeding grassland bird species;
- Avoid or minimize placement of turbines in previously undisturbed shrub/scrub vegetation types that may provide additional habitat for breeding birds;
- Bury collection lines from the turbines to the collection substation to avoid collision risk in accordance with the Avian Power Line Interaction Committee (APLIC) suggested practices;
- Design utility lines according to APLIC 2012 guidelines to prevent bird collision, as practicable (APLIC 2012);
- Implement pad-mounted transformers to reduce risk of bird electrocution;
- Site turbines at least 0.25 miles from active raptor nests and 0.5 miles from leks;
- Avoid impacts to the extent practicable within 0.5 miles of known sharp-tailed grouse lek locations during the lekking and breeding season (April through July);

- Avoid impacts to the extent practicable within 0.25 miles of active raptor nest locations during the nesting season (March through July);
- Protect existing trees and shrubs by avoiding tree removal for turbines, access roads and underground collector lines or if removal is necessary, replace following the Commission Tree and Shrub policy;
- Avoid impacts to all jurisdictional wetlands and WOUS and avoid or minimize disturbance to isolated wetlands or drainage systems to the extent feasible during Project construction
- Maintain appropriate water and soil conservation practices during construction through the implementation of construction BMPs. These practices include silt fencing, temporary reseeding, permanent seeding, mulching, filter strips, erosion blankets, grassed waterways and sod stabilization;
- Construct wind turbines using tubular, monopole towers as opposed to a lattice structure, to minimize perching opportunities for raptors and other birds;
- Light turbines in accordance with FAA requirements;
- Provide contractors with static constraint maps;
- Coordinate with local NRCS staff to revegetate non-cropland and pasture areas temporarily disturbed during construction or operation of the wind facility with locally sourced native seed mixes appropriate to the region;
- Conduct one (1) year of Tier 4 post-construction monitoring to better understand bird and bat impacts that are attributable to the Burke Wind operation;
- Once turbine construction is completed, implement a Wildlife Response and Reporting System (WRRS). The WRRS will include reporting protocols to report and document bird and bat mortality during routine maintenance activities. If any dead or injured birds or bats are found, its location will be marked and reported to the Plant Lead/Site Supervisor. The dead or injured bird or bat will not be removed from the location it was found;
- Prepare a voluntary Wildlife Conservation Strategy (WCS), which includes an adaptive management approach, so that information gathered during post-construction monitoring can be used to inform future management decisions at the Project;
- Implement a 25 mph speed limit within the Project Area to minimize wildlife collisions; and
- Burke Wind is committed to the avoidance and minimization of impact practices for vegetation, wildlife, and federally-listed species as outlined in **Sections 7.14, 7.15, and 7.17** respectively.

Burke Wind is committed to minimizing avian and wildlife impacts within the Project Area and will implement measures to avoid and minimize impacts to sensitive wildlife species and habitat. Burke Wind continues to maintain communication with USFWS and NDGFD regarding appropriate mitigation measures for wildlife impacts.

7.16. Federally-protected Species

7.16.1. Description of Resources

The USFWS provides distribution lists of federally-listed threatened and endangered species (TES) on a county-by-county basis and as part of the USFWS IPaC tool. The IPaC tool (USFWS 2018b) indicated that the Project Area is within the range of six (6) TES (i.e., the species is known or has the potential to occur within the Project Area). These species include two (2) mammals, three (3) birds, and one (1) insect: gray wolf (*Canis lupus*), NLEB, piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), whooping crane, and Dakota skipper, respectively.

One (1) federally listed species was observed within the Project Area during the course of the pre-construction surveys. This observation consisted of three (3) whooping cranes migrating north over the Project Area at a height above 492 feet (150 meters) above ground (above the rotor swept zone). This species was not recorded on the ground or utilizing any stopover habitat within the Project Area. There is no federally designated Critical Habitat within the Project Area. As such, no impacts to areas critical for the life stages of threatened or endangered species are expected. North Dakota does not have a state TES species list; however, it does recognize all federally listed species under the ESA.

Bald and golden eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos*, respectively) are protected under the Bald and Golden Eagle Protection Act (BGEPA). Limited numbers of both eagle species were detected within the Project Area, and no nests were found for either species (Atwell 2018a).

Gray Wolf (Federally Endangered)

The gray wolf is federally listed as an endangered species in North Dakota. It occupies a wide range of habitats, though they are more expected in forested areas in north-central and northeastern regions of the state, particularly in areas with reasonable habitat connectivity. However, wolves are generally rare in North Dakota (NDGFD 2016a).

The *Upper Great Plains Wind Energy Programmatic Environmental Impact Statement* (PEIS) lists Burke County among counties from which gray wolves have been reported; however, the date(s) and whether these records are from within the Project Area are unknown (WAPA and USFWS 2015). Currently, there is no known breeding wolf population in North Dakota (NDGFD 2016a). Though there are previous records of gray wolves from Burke County and perhaps within the Project Area, it appears unlikely that Project construction and operation will have negative impacts on this species due to the species' rarity, the lack of a known breeding population within the state, and because wind turbines are sited in locations not considered to be high-quality gray wolf habitat. Therefore, it is a low likelihood that the species will be within the Project Area.

Northern Long-eared Bat (Federally Threatened)

The NLEB is federally threatened species and is considered rare in North Dakota (NDGFD 2016b). Northern long-eared bats may be encountered roosting and foraging in forested habitats in North Dakota during the late spring and summer (Owen et al. 2003). Roost locations

include under loose or peeling bark or in cavities and crevices of dead and living trees (USFWS 2015a). Preferred roosts in North Dakota are silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and eastern cottonwood (*Populus deltoides*) (Gillam and Barnhart 2012). To date, no hibernacula or maternity trees have been identified in North Dakota (USFWS pers. comm. 2016).

The USFWS recognizes the NLEB as potentially occurring in every county of North Dakota (USFWS 2017). The Project Area is located within the range of this species, although the lack of suitable wooded habitat within the Project Area reduces the species' occurrence probability down to unlikely. The NLEB has been documented in forested habitat in the Turtle Mountains (approximately 110 miles east-northeast of the Project Area) and within riparian corridors of the Little Missouri and Missouri Rivers (approximately 41 miles southwest of Project Area) (Dyke et al. 2015).

Additional acoustic monitoring studies were conducted in 2010 at Des Lacs NWR (approximately 20 miles east-northeast of the Project Area), J Clark Slayer NWR (approximately 70 miles east-southeast of the Project Area), and Upper Souris NWR (approximately 34 miles southeast of the Project Area) (Coberly et al. 2011). The acoustic studies indicated that concentrations of NLEB were highest in riparian corridors with moderate to low use of agricultural lands.

Overall use of the Project Area by the NLEB is predicted to be low because of the fragmented and relatively limited extent of forested habitat and riparian corridors present within the Project Area boundary.

The NLEB was listed as federally threatened by the USFWS primarily due to the threat posed by white-nose syndrome (WNS), a fungal disease that has affected several bat populations (USFWS 2015b, c). The Project Area is approximately 128.5 miles west of the edge of the WNS zone, per the USFWS WNS Zone Final 4(d) Rule (USFWS 2018d). The final 4(d) rule prohibits incidental take that occurs in hibernacula or that results from tree removal activities near maternity roost trees or hibernacula within the WNS zone (USFWS 2016c). Although habitat may exist within the Project Area, the Project Area is outside of areas affected by WNS; therefore, it is not anticipated that the Project would be subject to prohibitions on incidental take for the NLEB under the final 4(d) rule. The Project will not likely impact the NLEB or the species' breeding habitat.

Piping Plover (Federally Threatened)

In the Northern Great Plains, piping plovers inhabit barren sand and gravel shores of rivers and alkaline lakes. Nearly all natural lakes used by plovers in North Dakota are alkaline in nature and have salt-encrusted, white beaches that are typically up to 35 meters wide. These lakes in particular provide sparsely-vegetated beaches that are well suited to nesting habitat requirements for this shorebird (Elliott-Smith and Haig 2004).

Migrating piping plovers may use pothole wetlands found within the Project Area as stopover habitat. Pothole wetlands may have suitably wide beaches that have the potential to also serve as piping plover nesting habitat, and piping plovers nest regularly within alkaline flats at

Lostwood NWR, approximately 6.5 miles southeast of the Project Area. No suitable nesting habitat within the Project Area was recorded during the course of the Tier III field studies for the Project.

Red Knot, *Rufa* Subspecies (Federally Threatened)

The '*rufa*' subspecies of red knot is federally-listed as threatened and migrates through the northern Great Plains region during spring and fall (Baker et al. 2013, USFWS 2014a). This shorebird is, in general, a scarce migrant and does not breed within North Dakota (USFWS 2014b). Geolocator data indicate that birds have utilized stopover habitat within saline/alkaline lake environments in northern North Dakota (USFWS 2014a), and it is reasonable to assume that red knots may use similar features found within Lostwood NWR. Despite this, the USFWS currently has not published critical habitat designations for '*rufa*' red knot anywhere within its occurrence corridor in the continental United States, and it is unclear whether red knots use the Project Area for migratory stopover habitat.

Whooping Crane (Federally Endangered)

USFWS has listed whooping cranes as endangered. Critical habitat has not been designated for whooping cranes within Burke County, North Dakota, and the Aransas-Wood Buffalo Whooping Crane Population does not breed in the state. Concentrated stopover use within North Dakota appears to be located within the northwestern part of the state and along the North and South Dakota state border. Cranes are known to use a variety of wetland habitats within an agricultural landscape during migration stopover (USFWS 2009). Suitable stopover habitat was modeled using The Watershed Institute habitat suitability model and is scattered throughout the Project Area (Watershed Institute, Inc. 2018).

The Project Area lies within the central 75 percent observation migration corridor, as defined by USFWS (USFWS 2009) (**Figure 17**). Stopover data from the USFWS indicates that four (4) observations of whooping cranes have occurred within four (4) miles of the Project Area, some dating back to the 1997. One (1) of the four (4) observations were recorded within the Project Area in 2009 (**Figure 18**). Additional contemporary records include observations from 2015 (Thorson Township, five [5] miles southwest of SH 40s intersection with the southern boundary of the Project Area), and from 2006, approximately 3.1 miles south of the Project Area).

In addition, during the course of the avian use surveys conducted at the site, a single flock of three (3) whooping cranes were observed flying over the Project Area above the rotor-swept zone during northbound migration (early April 2017).

Dakota Skipper (Federally Threatened)

On October 23, 2014, the USFWS listed the Dakota skipper as federally threatened and finalized designation of its critical habitat on October 1, 2015 (USFWS 2016a). Dakota skippers have been previously documented in Burke County (Lotts and Naberhaus 2017); one (1) observation from 2004 occurred approximately 5.7 miles northeast of the Project Area boundary (Lotts and Naberhaus 2017).

The Dakota skipper is a small orange butterfly that prefers undisturbed alkaline tallgrass prairie (Brock and Kaufman 2003). It is typically found in two (2) types of prairie habitats within North

Dakota (Dyke et al. 2015): the first habitat type is characterized by moist soils dominated by bluestem grass species with three (3) wildflower species: wood lily, harebell and smooth camas (Dyke et al. 2015). The second habitat type is mesic upland prairie that is typically found on ridges and hillsides dominated by bluestem, needle grasses, and purple coneflower. Each of these two (2) prairie habitats are considered highly fragmented within North Dakota (Dyke et al. 2015).

The Dakota skipper is usually absent from areas that are intensively grazed or frequently burned. Encroachment of invasive species also contributes to degradation of Dakota skipper habitat (USFWS 2016d).

A desktop analysis utilizing SWCA Environmental Consultants habitat modeled data was combined with review of numerous GIS databases and aerial interpretation to determine the potential native prairie habitat within the Project Area. An in-field assessment was then conducted to confirm the findings from the desktop review. Based on the findings from the assessments, the GIS dataset for native prairie was modified to remove non-native prairie areas and all previously impacted areas. The aforementioned methodology resulted in the identification of approximately 2,674.4 acres (12.9 percent) of native prairie within the participating landowner parcels that could be potentially suitable Dakota skipper habitat. After coordination with the USFWS, Dakota skipper surveys were recommended only in Township 160N, Range 91W due to past occurrence records of the Dakota skipper from that particular township (USFWS 2018c). However, additional habitat suitability in-field assessments were conducted by SWCA Environmental Consultants from May through October 2018 and confirmed that suitable habitat was present in limited portions of the Project Area (**Figure 19**).

Based on feedback received from wildlife agencies, the approximately 2,674.4 acres of native prairie that were identified using desktop GIS resources and in-field habitat suitability assessments were cross-referenced with appropriately-sized contiguous native grasslands. These areas were then rated as good/possible or excellent/likely habitat for the Dakota skipper and siting of Project infrastructure in this area was avoided to the maximum extent practicable. Where siting in this area was not feasible, Dakota skipper habitat was entirely avoided by utilizing construction boring to place collection line underneath the habitat, thus avoiding surficial disturbance. Additional measures to avoid habitat alteration and a variety of other Dakota skipper mitigative measures that will be implemented for the Project are described in **Section 7.16.3**.

Bald Eagle (Federally protected under BGEPA)

The bald eagle was removed from the federal list of TES species in 2007 but is still protected under the BGEPA. The bald eagle breeds throughout nearly all of the United States. A 2009 statewide census documented one (1) bald eagle nest in southern Burke County (Johnson 2009).

Bald eagle nesting populations are expanding in North Dakota and this species has the potential to establish nesting territories in Burke County. Bald eagles typically require mature trees in which to build their nests, and nests are usually placed near open water (Johnson 2009). They

have strong nest site fidelity and will often build more than one (1) nest within their territory. No bald eagle nests were observed during an April 2017 aerial nest survey of the Avian Use Study Area and a ten (10)-mile surrounding buffer (Atwell 2018a). Eagle use surveys revealed moderately low totals of bald eagles during spring and fall migratory periods (eighteen [18] individuals were detected at survey points during each respective season). Bald eagle standardized mean use was slightly higher in the fall than in the spring but were comparatively low in both seasons compared to more common raptor species such as the red-tailed hawk (*Buteo jamaicensis*) and northern harrier (*Circus cyaneus*). Bald eagles were not detected during the summer and only two (2) bald eagle individuals were detected during the winter.

Golden Eagle (Federally protected under BGEPA)

The golden eagle is protected under the BGEPA. Golden eagles do not nest within Burke County (Dyke et al. 2015), but they breed in the Lake Sakakawea breaks, over 35 miles south of the Project Area. No golden eagle nests were located during the course of aerial survey efforts within ten (10) miles of the Project Area during April 2017 (Atwell 2018a). Golden eagle detections during standardized eagle use surveys were rare events, only occurring twice over 840 hours of standardized use surveys. Migration and wintering density of golden eagles is expected to be low within the Project Area.

7.16.2. Impacts

Impacts to listed species described in **Section 7.16** are expected to be minimal. If a dead or injured federally protected species is found within the Project Area, it must be left alone and must be reported to the USWFS per the Wildlife Response and Reporting System (WRRS) protocol.

The gray wolf, piping plover, and '*rufa*' red knot are not expected to have impacts associated with the Project based on a lack of suitable foraging, stopover (for birds), or breeding habitat within the Project Area.

Northern Long-eared Bat

Northern long-eared bats appear to represent small numbers of cumulative mortalities at wind farms across the U.S. and Canada (Arnett and Baerwald 2013) and mortality for this species across the United States at wind farms appears to be low during migration (Erickson et al. 2002). The species typically avoids wide open habitat (at least during the summer), tends to be found outside of forested habitat only when moving to or from a favored roost location, and generally shows strong preferences for moving long distances in close proximity to forest cover (Henderson and Broders 2008).

There is potential that the NLEB may occur in the vicinity of or within the Project Area during summer or migration. Overall use of the Project Area by the NLEB is predicted to be low because of the fragmented and relatively limited amounts of forested habitat and riparian corridors, which are primarily restricted along the northern boundary of the Project Area. The NLEB was listed as a federally threatened species by the USFWS with a final 4(d) rule (USFWS 2016c). Although habitat may exist within the Project Area, the Project Area is outside of areas affected by WNS; therefore, it is not anticipated that the Project would be subject to

prohibitions on incidental take for the NLEB under the final 4(d) rule. Therefore, the Project is unlikely to impact the NLEB or the species' breeding habitat.

The Bat Habitat Assessment (Atwell 2018b) also concluded that the NLEB is unlikely to occur within the Project Area based on the habitat characteristics within the Project Area, and state-wide and regional mist-netting survey results. The full Bat Habitat Assessment has previously been provided under separate cover to the Commission

Whooping Crane

Project development is not anticipated to have any negative impacts on whooping cranes. To date, there have been no whooping crane mortality events associated with wind turbines in North America. In addition, cranes appear to have a low risk of collision with wind turbines based on field work conducted in South Dakota (Nagy et al. 2012).

Dakota Skipper

The Dakota skipper requires plant communities with a species richness and diversity that are most commonly found in relic native prairie scenarios. Native forbs and grasses are a vital component for water, nutrients, and protection of the eggs during the Dakota skipper's short two (2) to four (4) week active flight period (USFWS 2016b).

Up to 0.05 acres of field-verified suitable Dakota skipper habitat areas have been identified within the Project design and occur only where an underground collection line will be installed (**Figure 19**). At this location, the collection line will be bored under a field-verified suitable Dakota skipper habitat area to avoid habitat impacts. Project operations have a low potential to hinder the breeding potential for the Dakota skipper. Mitigation measures are described in **Section 7.16.3** below.

There have been multiple iterations of the Project layout to avoid native prairie and suitable Dakota skipper habitat. Extensive micro-siting and survey work has been completed to understand and address suitable Dakota skipper habitat in the Project vicinity. Initially, 55 turbine locations were moved to avoid native prairie impacts and twelve (12) turbines were moved to avoid suitable Dakota skipper habitat. In addition, after the filing of the original Application on September 14, 2018, 38 proposed turbines and associated infrastructure were removed from Project design. Potential surface impacts to field-verified suitable Dakota skipper habitat areas have been avoided by boring under habitat areas. As of October 2018, evaluations of all current turbine locations indicated a low risk potential for impacting Dakota skipper habitat.

Bald and Golden Eagles

No bald or golden eagle nests are located within the Avian Use Study Area or within ten (10) miles of the Project (Atwell 2018a). Eagle use survey effort detected low use of the Avian Use Study Area. Bald eagle use was detected primarily during spring and fall migratory periods. Golden eagles were detected within the Project, but in very low numbers during spring, fall, and winter. As such, impacts to eagles are expected to be low, and the WCS and WRRS will help document any issues related to eagles that arise later in the Project's lifespan.

7.16.3. Mitigative Measures

In addition to the avoidance and minimization measures described for vegetation and wildlife in Sections 7.14 and 7.15 respectively, Burke Wind is committed to the following additional measures for TES species.

- Burke Wind will provide all construction and maintenance staff with training in the identification of all federally listed species in addition to the training provided through the WRRS;
- Given the Project's location within the USFWS North American whooping crane corridor, Burke Wind will implement NextEra's internal guidance document determining whooping crane curtailment triggers during migratory periods as part of the WCS. These curtailment steps include shutting down all operational turbines when a whooping crane is identified within one (1) mile of the Project Area, with the turbines remaining shut down for 15 minutes following the departure of the whooping crane or until the whooping crane is observed moving away;
- Burke Wind will provide the appropriate whooping crane identification guide materials to be in all Project maintenance and operations vehicles for reference;
- Field-verified suitable Dakota skipper habitat has been and will continue to be avoided to the greatest extent feasible during Project design. High visibility fencing (e.g., snow fence) will be placed around field-verified suitable Dakota skipper habitat areas in close proximity to construction that are to be avoided to restrict construction equipment from disturbing these areas;
- Burke Wind will reduce the width of the construction easement in portions of the Project Area which intersect with field-verified suitable Dakota skipper habitat;
- Burke Wind will bore under field-verified suitable Dakota skipper habitat to avoid all surface impacts to Dakota skipper habitat;
- In all areas where field-verified Dakota skipper habitat has been identified, no construction will occur between June 15 and July 18, i.e., during the Dakota skipper adult flight period;
- Burke Wind will provide contractor(s) with training, spatial data and static constraints maps that identify where field-verified suitable Dakota skipper habitat is located and where construction equipment is restricted;
- Burke Wind will educate construction contractor(s) about TES and the associated mitigative measures being implemented for each respective species;
- Burke wind will coordinate with the North Dakota Department of Trust Lands on a locally sourced native seed mix for any Project impacts on their lands;
- Burke Wind is committed to the avoidance and minimization of impact practices for vegetation, wildlife, and federally-listed species as outlined in **Sections 7.14, 7.15, and 7.17** respectively; and
- Burke Wind employees will notify the USFWS after completing the WRRS documentation process if a live, injured, or dead threatened or endangered animal is observed within the Project Area.

7.17. Summary of Impacts

Table 7-5 presents a summary of potential Project-related impacts and associated measures to mitigate these impacts, as appropriate.

Table 7-5: Summary of Impacts and Mitigation

Resource	Impact	Mitigation
Socioeconomics	An increased tax base due to property taxes, expenditures during construction, and long-term benefits of lease payments, will result in primarily positive impacts.	None proposed.
Land Use	1,360.6 acres will be temporarily disturbed for road construction, laydown and contractor staging, turbine storage, cable trenching, and turbine installation. Of this acreage, up to 65.9 acres of land will be permanently impacted by turbines, the MET tower, and access roads.	Burke Wind will work with regulatory agencies and landowners to minimize impacts of the Project to existing land use. A NPDES general construction permit, a SWPPP, and BMPs will be developed and implemented prior to the commencement of construction.
Public Services	No impacts to public services are anticipated.	The Project will utilize station service from the local electrical utility and will adhere to their recommendations to prevent adverse impacts to the transmission system.
Human Health and Safety	The predicted shadow flicker impacts are fewer than 30 hours per year at all receptors and the highest expected shadow flicker duration per year at a participating receptor is 22 hours, 11 minutes. The highest expected shadow flicker duration per year at a non-participating receptor is 25 hours, 30 minutes. No impacts to human health and safety are anticipated.	Turbines will be lighted to comply with Commission and FAA requirements. A number of security measures will be employed to minimize the probability of site access.

Resource	Impact	Mitigation
Sound	Sound modeling results indicated that all receptors are expected to experience less than 50 dBA 100 feet from their residence. The maximum modeled Leq sound level at 100 feet from a participating receptor was 47 dBA. The maximum modeled Leq sound level at 100 feet from a non-participating receptor was 46 dBA.	None proposed.
Cultural Resources	No direct or indirect impacts to cultural resources are anticipated as the Project layout avoids all unevaluated or significant sites.	An Unanticipated Discoveries Plan will be prepared prior to construction. Unevaluated or significant sites in close proximity to construction will be buffered and fenced to avoid potential impacts.
Recreational Resources	Impacts to recreational resources will primarily be visual in nature and will contribute to the existing utility infrastructure and other existing development-related impacts (e.g., residences, oil and gas activities, and transmission and distribution lines) that are currently present in and around the Project Area.	Commercially viable lighting mitigation technology will be incorporated into the design to reduce impacts from wind turbine lighting on night sky viewing while meeting required for navigational safety expectations.
Land Based Economies	1,360.6 acres will be temporarily disturbed for road construction, laydown and contractor staging, turbine storage, cable trenching, and turbine installation. Of this acreage, up to 65.9 acres of land will be permanently impacted by turbines, the MET tower, and access roads.	Only land needed for the Project facilities will be permanently affected as temporarily disturbed areas will be restored to pre-construction conditions. Burke Wind has worked with landowners to minimize impacts on their land.
Soils	1,360.6 acres will be temporarily disturbed for road construction, laydown and contractor staging, turbine storage, cable trenching, and turbine installation. Up to 65.9 acres of land will be permanently impacted by turbines, the MET tower, and access roads.	Only land needed for the Project facilities will be permanently affected as temporarily disturbed areas will be restored to pre-construction conditions. BMPs for erosion and sediment control will be utilized to minimize wind and water erosion at the site with the Project SWPPP.

Resource	Impact	Mitigation
Geologic and Groundwater Resources	No impacts to groundwater are anticipated.	None proposed.
Surface Water and Floodplain Resources	Overall, surface waters will remain largely un-impacted because the Project has been designed to avoid or minimize adverse impacts to surface waters.	Burke Wind will employ BMPs to minimize erosion at the site in association with the Project SWPPP.
Wetlands	Impacts to all jurisdictional wetlands and WOUS will be avoided.	All wetlands, both jurisdictional and isolated, potentially affected by the Project will be delineated and demarcated prior to construction. Horizontal, directional drilling will be used where necessary to avoid impacts to jurisdictional wetlands and WOUS from trenching collection lines during construction. To minimize disturbance, timber matting will be used at isolated wetlands for crane path travel lanes as appropriate.
Vegetation	1,360.6 acres will be temporarily disturbed during construction activities. Up to 65.9 acres of land will be permanently impacted.	Burke Wind will avoid existing trees and shrubs as practicable and will use BMPs during construction and operation to minimize impacts. If impacts to trees or shrubs cannot be avoided; the individual trees or shrubs will be replaced. Temporarily disturbed areas will be reseeded or restored to crop, depending on original conditions and landowner preference. Native prairie will be avoided to the extent practicable and will be reseeded using a native mix in accordance with landowner preferences.

Resource	Impact	Mitigation
Wildlife	<p>Potential bat and avian collisions may occur but are anticipated to be limited based on avian and bat studies conducted within the Project Area and previously conducted post-construction monitoring studies within the region (Erickson et al. 2014). Furthermore, existing research seems to indicate that population level impacts are relatively low based on turbine collision risk (Beston et al. 2016). Sharp-tailed grouse may be exposed to seasonal disturbance during construction activities.</p>	<p>Numerous mitigative measures, as discussed in Section 7.15.3, will be implemented. A WCS will be developed and employed for the Project. The Project's WRRS will be implemented after construction of the Project, and the Project will complete one year of post-construction mortality monitoring.</p>
Rare and Unique Natural Resources	<p>Federal TES are not expected to be impacted by the Project. Bald and golden eagles may be exposed to collision risk when they occur seasonally within the Project Area; however, the potential for eagles to occur in the Project Area is low and therefore the associated risk is low, with population impacts not expected.</p>	<p>Numerous mitigative measures, as discussed in Section 7.16.3, will be implemented. In the event a whooping crane is observed within one (1) mile of the site array, all turbines will be powered down until the crane has moved out of the immediate vicinity of the Project. A WCS and WRRS will be developed and employed for the Project.</p>

8.0 PUBLIC AND AGENCY COORDINATION

Per N.D. Admin. Code § 69-06-01-05, Burke Wind and its representatives have contacted local, state, and federal agencies. Beginning in December 2016, Project representatives informed agencies of the Project and requested their input and their assistance in identifying concerns or issues within the Project Area. Agency correspondence and responses received as of September 6, 2018 are included in **Appendix C; Table 8-1** summarizes the responses received from agencies to date.

Open house events for the Project were held on March 9, 2017 and June 15, 2017 in Bowbells, North Dakota for area residents. In addition, Burke Wind has notified 24 Native American Tribes of the Project. Eight (8) Tribes (Cheyenne River, Northern Cheyenne, Rosebud, Sisseton, Spirit Lake, Standing Rock, Turtle Mountain, and Yankton Sioux) responded to the initial notification and expressed interest in the Project. Of these aforementioned eight (8) Tribes, representatives from the Standing Rock and Rosebud Sioux Tribes visited the Project with Burke Wind and AECOM during the Project infrastructure siting process and provided feedback on any potential cultural or religious sites of significance. For further details on avoidance of tribal resources, please see **Section 7.7** for more details.

Landowner dinners were held in March 2017, June 2017, and June 2018. Local County meetings with Planning and Zoning and the County Commission have been held on a bi-monthly basis. Public open houses were held on March 9, 2017 and June 15, 2017 in Bowbells, North Dakota.

Burke Wind is committed to being involved in the local community over the project duration and to date has actively contributed to the local community, including providing donations to the following local community organizations:

- 2017 Bowbells Ambulance Service;
- 2017 Bowbells Volunteer Fire Department;
- 2017 Burke County Fair Sponsorship;
- 2017 City of Bowbells -Public pool contribution;
- 2017 & 2018 CHS: Harvest for Hunger;
- 2018 Burke County Boy & Girls Club basketball teams;
- 2018 Burke County Extension Office Weather Station sponsorship;
- 2018 Burke Central School Post Prom Committee - Keeping kids safe after prom program; and
- 2018 Kenmare Public School District #28 Book Fair.

Table 8-1 Summary of Agency Responses

Agency	Response Date	Response Summary
Department of Defense (DoD)	05/01/2018	The Military Aviation and Installation Siting Clearinghouse requests that all future correspondence be routed to them.
	05/31/2018	The DoD received the informal review request and will have an assessment completed within a few weeks.
	07/11/2018	The DoD informally reviewed the Project. The Project, as proposed, may have an impact on military operations and low-level flight training. The DoD requests communication with Jamie Flanders to discuss the Project. Burke Wind will continue to coordinate with the DoD.
	07/26/2018	DoD issued a letter indicating that DoD conducted further analysis and determined that the Project will have minimal impact on military operations.
North Dakota Department of Health	05/07/2018	North Dakota Department of Health recommends minimizing impacts to water bodies during construction. Projects disturbing one (1) or more acres must have a permit to discharge stormwater. North Dakota Department of Health recommends avoiding impacts to groundwater quality and to report all spills immediately.
North Dakota Department of Transportation	05/14/2018	If any work is proposed within the highway ROW, then appropriate permits and risk management documents will need to be obtained.
North Dakota Department of Trust Lands (NDDTL)	05/04/2018	An application for a Wind Farm Easement Agreement was sent to NDDTL in March of 2017 and is pending. Prior to the easement agreement, the Board will provide an onsite inspection of the trust property. The Board of University and School Lands will not approve the Wind Energy Easement Agreements until site inspection review has been completed and all local and state approvals have been obtained. Separate applications will need to be submitted for buried collection lines within common school trust fund surfaces. The surface tracts within the Project Area will need to be evaluated for inclusion.

Agency	Response Date	Response Summary
(NDDTL)	06/14/2018	NDDTL reviewed Project information and determined that on-site review would be necessary. A separate application will need to be filed for the construction route which will need its own agreement. NDDTL also asked a series of questions related to siting Project infrastructure on state trust lands. NDDTL also provided a reminder that acquisition of state trust land ROW cannot occur until after local and state approvals are secured for the Project. Project easement drawing exhibits were provided.
	07/13/2018	Correspondence between Burke Wind and NDDTL regarding removal of turbines from state trust lands. Request for ROW is now just for collection line. Revised project easement drawing exhibits were provided. Discussion between Burke Wind and NDDTL regarding scheduling on-site review.
North Dakota Game and Fish Department (NDGFD)	09/27/2016	Meeting with NDGFD to introduce the Project and discuss resources and approaches to documenting existing conditions.
	01/11/2017	NDGFD confirmed that there are no known bald/golden eagle nests sites in Burke County or the NDGFD database. There are ferruginous hawk nest observations. NDGFD suggests downloading the whooping crane intensity use layer and ND State Wildlife Action Plan (SWAP) Focus Areas (used in conjunction with native prairie & woodland layers).
	02/24/2017	NDGFD provided a data sharing agreement and additional details on wetland resources. NDGFD recommended review of the “waterfowl thunderstorm map” and the Missouri Coteau Breaks focus area from the ND SWAP.
	02/28/2017	NDGFD provided shapefiles of point locations for hawk nest and waterbird sites.
	11/16/2017	NDGFD response to avian study plan.

Agency	Response Date	Response Summary
(NDGFD)	01/29/2018	Burke Wind met with NDGFD and USFWS to provide an update on Project details. Discussed powerline marking, infrastructure placement in grassland easements, upcoming field study result deliverables, and anticipated summer Commission application submittal.
	05/22/2018	NDGFD letter expressing concern about Burke Wind and the Transmission Line related to: project location; the amount of native prairie present and the Transmission Line construction impacts to native prairie; Project location within the whooping crane corridor; the existing breeding waterfowl density in the area; bald and golden eagle use within the area; sharp-tailed grouse lek density; and SWAP species of concern that were detected in the area during pre-construction surveys. Suggested voluntary offset packages be developed based upon Draft North Dakota Native Wildlife Resources: Guidelines for Reducing Impacts from Wind Energy Development.
	09/27/2018	Burke Wind, Atwell and WEST meeting to discuss Project development, potential impacts on native prairie, and grassland resource issues.
	10/10/2018	Burke Wind, Atwell and WEST meeting to discuss native prairie and grassland resource issues.
North Dakota Geological Survey (NDGS)	04/30/2018	The NDGS reviewed the Project Area and compared it to their landslide database and found no landslide areas within the Project Area.
North Dakota Industrial Commission (NDIC)	05/03/2018	NDIC requested mapping shapefile data for the Project. Atwell supplied shapefiles on June 29, 2018.
North Dakota State Water Commission	05/09/2018	If surface or groundwater is diverted, then a water permit will be required per N.D.C.C. § 61-04-02. If an observation well is encountered and must be removed, contact the Water Appropriation Division. A floodplain permit is required for all development that takes place within a Special Flood Hazard Area, as defined by the FEMA.

Agency	Response Date	Response Summary
Standing Rock Sioux Tribe, Sisseton-Wahpeton Oyate, and Rosebud Sioux Tribe Tribal Historic Preservation Officers (THPO)	01/29/2018	Burke Wind, AECOM, Standing Rock Sioux Tribe, Sisseton-Wahpeton Oyate, and Rosebud Sioux Tribe had a conference call to discuss the reporting methods for the combined Tribal and AECOM surveys. A methodology for a joint Archaeology-Tribal report was agreed upon to discuss with SHPO on January 30, 2018.
State Historic Preservation Offices (SHPO)	01/30/2018	Burke Wind and AECOM met with SHPO to discuss the reporting methods discussed with the Tribes for the combined tribal and AECOM surveys. A methodology for a joint Archaeology-Tribal report was agreed upon.
	02/09/2018	Burke Wind and AECOM had a conference call with SHPO concerning the handling of sites which were micro-sited, but not further documented during field survey. It was agreed that micro-sited sites will be included in the report as Areas of Concern.
State Historical Society of North Dakota	04/23/2018	The SHSND recommended a current Class I file search for the Study Area, a Class III archeological survey of all areas of direct impact, and a Class III architectural survey of all areas within two (2) miles of turbine locations.
U.S Army Corps of Engineers (USACE)	12/13/2016	Burke Wind met with USACE in Bismarck to introduce the Project and determine the recommended next steps and the USACE review process for a Jurisdictional Determination.
	12/16/2016	Follow-up on 401 Water Quality Certification and delivery of USACE minimum standards special public notice. The 401 Water Quality Certification will be included as part of the Nationwide 12 or 14 permit.
	02/27/2018	Final Jurisdictional Determination confirmed.
	05/21/2018	A description of Section 404 of the Clean Water Act as well as a fact sheet for Nationwide Permit 12 and ENG Form 4345 was provided.
U.S. Fish and Wildlife Service	09/26/2016	USFWS grassland easement spatial data sent to Burke Wind.

Agency	Response Date	Response Summary
(USFWS)	03/08/2017	Burke Wind met with USFWS in Bismarck to discuss grassland easements, PEIS, and next steps of the Project review and timelines for the Project. USFWS indicated that it may be beneficial to gather targeted sensitive grassland breeding bird and summer waterfowl use data.
	04/25/2017	Burke Wind met with USFWS in Bismarck and discussed the following: Project Discussion, Easement Discussion, Proposal and Review Process Discussion. Next step is to submit proposed infrastructure for easement review by USFWS. USFWS indicated that it may be beneficial to gather targeted sensitive grassland breeding bird and summer waterfowl use data.
	05/22/2017	USFWS provided threatened and endangered species regional occurrence maps for whooping crane, Dakota skipper, and piping plover.
	01/29/2018	Burke Wind met with USFWS and NDGFD to provide an update on Project details. Discussed powerline marking, infrastructure placement in grassland easements, upcoming field study result deliverables, and anticipated summer Commission submittal.
	03/21/2018	USFWS provided map of Dakota skipper occurrence records in the vicinity of the Project Area.
	04/23/2018	Burke Wind met with USFWS in Bismarck and discussed the Loesch and Niemuth wetland/waterfowl/crane/ grassland modeling publications. Presented USFWS with grassland, waterfowl, and whooping crane report results.
	04/27/2018	The USFWS provided Burke Wind with a geodatabase that contained two (2) layers of waterfowl related information and a research article on developing spatial models to guide conservation of grassland birds.
	05/09/2018	The USFWS is looking into wetland definitions and calculation methodologies before they embark on an impact assessment.
	05/17/2018	The USFWS provided Burke Wind with an image file of the whooping crane relative probability of occurrence for Burke County.

Agency	Response Date	Response Summary
(USFWS)	07/27/2018	Burke Wind and Atwell provided mapping including: Project construction corridors, approximate underground electric collection line bore locations, USACE jurisdictional wetlands, and USFWS easement boundaries for review by the USFWS.
	08/22/2018	The USFWS reviewed Project construction corridors, approximate underground electric collection line bore locations, and USFWS easement boundaries and provided protected wetland basin locations.
	09/19/2018	Burke Wind, Atwell, and WEST met to discuss the Project with the USFWS staff in Pierre, South Dakota.

While the following agencies have been contacted and informed about the Project, no responses from these agencies have been received to date:

- North Dakota Department of Agriculture;
- North Dakota Aeronautics Commission;
- North Dakota Parks and Recreational Department;
- North Dakota Township Officers Association;
- Department of Human Services;
- North Dakota Department of Labor and Human Rights;
- North Dakota Department of Career and Technical Education;
- Department of Commerce;
- Office of Governor, State of North Dakota;
- Job Service of North Dakota;
- Soil Conservation Committee;
- Federal Aviation Administration;
- North Dakota Transmission Authority;
- North Dakota Pipeline Authority;
- Burke County Commission; and
- North Dakota Bureau of Indian Affairs.

9.0 POTENTIAL PERMITS/APPROVALS

Table 9-1 provides a list of potential federal and state permits or approvals that may be required for the construction and operation of the Project. Permits dependent on the final Project design will be applied for prior to construction and in some cases once Commission approval has been received.

Table 9-1 Potential Permits and Approvals Required for Construction and Operation of the Facility

Agency	Type of Approval	Status	Need
Federal Approvals			
USACE	NWP 12 and/or 14	3	Wetland delineations were completed October 2018. The Project will avoid impacts to jurisdictional wetlands and WOUS.
FAA	Form 7460-1, Notice of Proposed Construction	1	Notice and approval are required for structures over 200 feet in height. FAA approval of lighting and marking of turbines is required.
	Form 7460-2, Supplemental Notice		Notice is required when structures over 200 feet are erected at time of construction.
USEPA	SPCC Plan	2	An SPCC plan will be completed if more than 1,320 gallons of oil is stored on site.
State of North Dakota			
Public Service Commission	Certificate of Site Compatibility	1	Required for construction of generation facility over 0.5 MW in size.
SHSND	Concurrence with effect determinations.	2	Reports for the Class III cultural resources inventories will be submitted to SHSND for review when complete.
North Dakota Department of Health	NPDES Permit: General Construction Stormwater	2	Required for disturbance of over one (1) acre of land. Must also prepare a SWPPP.
North Dakota Highway Patrol	Overheight/Overweight Permit	2	Permit required for hauling construction materials and equipment on State Highways.
NDDOT	Road Approach/Access Permit	2	Permit required for construction of access roads from State Highways.
	Utility Permit/Risk Management Documents	2	Permit required for utility crossings on State Highway ROW.

Agency	Type of Approval	Status	Need
ND State Water Commission	Drainage Permit	3	Required to install a structure, fill, or modify a drain with a drainage area of 80 acres or more.
	Water Permit	3	Required if drilling a well for the O&M building.
North Dakota One Call	Utility Line Marking	2	Required before any excavation activity.
Burke County	Conditional Use Permit (CUP)	1	Required for Conditional Uses of zoned land in the County. A CUP application was submitted in June 2018 and approved in September 2018.
	Building Permit	2	Required to erect, move, or alter a building or structure within the County.
	County Road Crossing Permit	2	Permit required to install conduit across a county Road.
	Utility Occupancy Permit	3	Required to install a utility within a county road ROW.
	Re-Zoning of Batch Plant from Agricultural to Industrial (Batch Plant)	1	Submitted in October 2018 and approval expected November 2018.
	Re-Zoning of Batch Plant from Agricultural to Industrial (Laydown)	1	Submitted in October 2018 and approval expected November 2018.

*Status Explanation:

- 1 Applied and/or Decision Pending
- 2 Will Apply for Prior to Construction
- 3 Final Layout will Determine whether Permit/Approval is Needed

10.0 FACTORS CONSIDERED

There are eleven (11) factors listed in the North Dakota Energy Conversion and Transmission Facility Siting Act that serve to guide the Commission in evaluating and designating the site of the facility. This section discusses each factor.

10.1. Public Health and Welfare, Natural Resources, and the Environment

The studies and research conducted to evaluate the potential impacts of the Project on public health and welfare, natural resources, and the environment are discussed in the previous sections. Anticipated Project impacts and the proposed mitigation to minimize Project impacts are summarized in **Section 7.17**.

10.2. Technologies to Minimize Adverse Environmental Effects

Burke Wind will employ BMPs and mitigation measures that minimize impacts to the environment. Many current technologies are being utilized to support the siting of the facility, to optimize wind and land resources, and to inform Project operations. The Project will be built using current wind turbine technologies and equipment, including light-mitigating technology as required by N.D. Admin. Code Ch. 69-06-11 and the FAA. Burke Wind anticipates utilizing ADLS or another comparable technology that receives FAA approval.

10.3. Potential for Beneficial Uses of Waste Energy

Wind energy does not produce any waste energy. Therefore, this factor is not applicable to the Project.

10.4. Unavoidable Adverse Environmental Effects

Section 7.0 includes a discussion of unavoidable adverse environmental effects for each resource type and **Section 7.17** includes a detailed summary of impacts and proposed mitigation. Once built, the Project will occupy approximately 65.9 acres of land that will not be available for other uses during the life of the Project. During construction, an additional approximately 1,294.8 acres of land will be temporarily disturbed to facilitate construction activities. The Project will impact the visual resources of the existing landscape; however, existing electrical transmission and distribution lines as well as oil and gas development are found within the visual vicinity of the Project Area. Although minimal, unavoidable habitat fragmentation will likely result from the Project.

10.5. Alternative to Proposed Site

Burke Wind selected the Project Area as it represents the most viable alternative for the siting of the Project. Burke Wind is committed to coordinating with landowners regarding reasonable alternatives to the preliminary site layout. A number of site layout alternatives have been considered for the Project. To avoid and minimize potential impacts to sensitive species, some alternatives such as previously proposed wind turbine locations, have been dropped from further consideration to avoid and minimize potential impacts. For example, 55 turbines were moved from original locations so as to avoid native prairie and potential Dakota skipper habitat.

In addition, the Project size was reduced from 300 MW to 200 MW since the original Application filing on September 14, 2018, resulting in a reduction of 38 turbines and a smaller Project Area. This reduction was made in an effort to address concerns related to the Project's initial proximity to Lostwood NWR and feedback from local political subdivisions. Burke Wind will strive to balance landowner preferences, environmentally sensitive areas, and wind resource.

10.6. Irreversible and Irretrievable Commitment of Natural Resources

In order for the Project to be built, some irreversible and irretrievable natural resource commitments will be made, primarily related to the use of physical, nonrenewable resources used for fabricating the equipment and facilities that will be installed and those used to construct the Project. However, these commitments will be outweighed by the anticipated long-term environmental and economic benefits associated with the operation of the Project.

The physical materials used to comprise and construct the Project are used irreversibly (i.e., they cannot be replaced or regenerated) and irretrievably (i.e., they cannot be restored). Many materials used during the construction phase of the Project are irreversible and irretrievable resources and include, but are not limited to, items such as the concrete used for each turbine pad, the aggregate used for access road construction, the steel used to fabricate each turbine, the wiring used for the collector cables, and the materials used to build the Project substation and ancillary facilities. Also, the petroleum fuel products used to extract the resources, fabricate the materials, and construct the Project are also irreversible and irretrievable resources. While irreversible and irretrievable, these resources generally are not in short supply and their use for the Project will incrementally affect the availability of these resources. As the Project will provide a renewable source of energy and an economic benefit to the local and regional economy, the irreversible and irretrievable resources that will be used for the Project are balanced by this outcome.

10.7. Direct and Indirect Economic Impacts

Construction and operation of the Project will positively affect the economic conditions within Burke County by generating increased property tax revenues over the expected life of the Project. The Project will also positively affect the county by generating sales, use, and income tax revenue. The Project improves the local economy in this area of North Dakota by providing economic diversification.

Beneficial effects to the local and regional economies include potential creation of temporary and permanent employment as well as creation of increased property tax revenue. Residents in the county and the state will add to the additional personal income for the state through the circulation and recirculation of taxes estimated at \$30 million dollars for the Project and the Transmission Line combined for both Burke and Mountrail Counties. Equipment, energy, fuel, operating supplies, and other products and services are expenditures that benefit businesses throughout North Dakota. Overall, the combined Project and associated transmission line represent a \$300 million dollar capital investment. The Project will use both local and non-local personnel for design and construction. Depending on the experience and qualifications of the

available local workers, it is expected that some portion of the work will be performed by local personnel; however, some skilled tradespeople will be required from outside the local area. Purchase of goods and services such as, housing accommodations, food and supplies, and construction materials also serve to stimulate the local economy. Personal income generated through wages paid and the purchase of goods and services will result in the circulation and recirculation of dollars paid out by Burke Wind.

The Project will require up to 65.9 acres of permanent disturbance for the life of the Project and an additional 1,294.8 acres of temporary disturbance during construction activities. Landowners will be compensated for the temporary and permanent land disturbances on their property. In general, cropland areas surrounding each turbine can still be farmed. In addition, landowners will be compensated for any permanent loss of agricultural land during operations by land easement payments that are estimated at \$40 million over the life of the Project and Transmission Line.

Overall, the Project will positively impact the region by adding infrastructure, temporary and permanent jobs, increasing the county's tax base, and providing lease payments to Project participants. The communities near the Project are also expected to receive positive economic benefits as construction will necessitate the need for temporary and full time positions.

10.8. Existing Development Plans of the State, Local, Government and Private Entities at or in the Vicinity of the Site

No conflicts are known or are anticipated with existing state and local government or private development plans. Burke Wind has coordinated with Burke County throughout the development process. Burke Wind submitted a Conditional Use Permit application to Burke County in June 2018.

10.9. Effect of Site on Cultural Resources

As detailed in **Section 7.7**, a Class I Literature Review has been completed for the Project. The Class I Literature Review identified three (3) previously recorded archaeological sites and 63 site leads within the Project Area. Based on Tribal coordination, a joint Class III Cultural Resources Inventory for Archaeological Resources and field surveys with TCS to identify SCRSTT has been completed. The results of the joint surveys will be incorporated into a Class III Cultural Resources Inventory Report, which is underway. A Class III Cultural Resources Inventory for Architectural Resources has also been completed. Management summaries of both the joint survey and the architectural survey results will be provided to the Commission and full reports, which are underway, will be submitted to the SHSND for review and concurrence upon completion. Known unevaluated or significant archaeological resources will be avoided during construction and no direct or indirect impacts to architectural resources are anticipated. SCRSTT identified by the TCS will be avoided during construction and no direct impacts to SCRSTT are anticipated. An Unanticipated Discovery Plan will be prepared for the Project to address procedures should any unknown cultural resources or SCRSTT be identified during construction.

10.10. Effect of Site on Biological Resources

While few studies have considered population-level consequences of wind energy development, the following two (2) studies have addressed this question as it pertains to birds. Erickson et al. (2014) completed a review of small bird mortality in the U.S. that adjusted for avifaunal biome estimates and concluded that fatalities were much less than one (1) percent per year or that less than one tenth of one (0.1) percent of continent-wide populations were affected per year. Beston et al. (2016) calculated measures of turbine risk for 428 bird species and determined that modeled risk of potential population level impact is species-specific and that small birds are at relatively low risk of population impact.

Burke Wind has followed the voluntary 2012 USFWS Land-Based Wind Energy Guidelines (USFWS 2012), designed the Project following suggested APLIC practices (APLIC 2012), and conducted a wide range of pre-construction desktop assessments and field studies that were used to inform the siting of turbines and associated infrastructure. To reduce potential for habitat loss, fragmentation, and disturbance to sensitive species such as sharp-tailed grouse and raptors, no turbines are sited within 0.5 miles of sharp-tailed grouse leks or within 0.25 miles of raptor nests to avoid and minimize potential impacts to biological resources from the Project. Collision risk has been minimized by siting turbines away from wetlands and by planning to bury collection lines.

The Project has been designed such that it is unlikely to affect the gray wolf, NLEB, piping plover, red knot, whooping crane, Dakota skipper, bald eagle, or golden eagle. Raptor nest surveys and eagle use surveys were conducted in 2017-2018 and no bald or golden eagle nests were located within ten (10) miles of the Project Area. In addition, Dakota skipper surveys and native prairie mapping have resulted in 55 turbines being moved out of native prairie areas, reducing the potential for impacts to both the Dakota skipper but also sensitive grassland breeding species. Also, the Project size was reduced from 300 MW to 200 MW since the original Application filing on September 14, 2018, resulting in a reduction of 38 turbines and a smaller Project Area. This reduction was made in an effort to address concerns related to the Project's initial proximity to Lostwood NWR and feedback from local political subdivisions, but also resulted in a reduction of potential impacts to Dakota skipper habitat and sensitive grassland breeding species. In addition, breeding waterfowl use surveys were conducted in the summer of 2017 and effects to waterfowl and wetland associated species were minimized to the extent practicable by moving infrastructure away from wetland margins as much as possible. Burke Wind developed a voluntary WCS which includes an adaptive management component so that additional future post-construction monitoring data can be used to inform future management decisions for the Project.

Additionally, the Project has been designed to avoid impacts to USFWS protected wetland basins and wetland/grassland easements to avoid impacting native plant communities and wildlife habitat. Burke Wind is engaged in ongoing coordination with the USFWS to verify all USFWS easements have been avoided by proposed infrastructure.

Additional discussion of potential impacts and proposed mitigative measures on biological resources can be found in **Section 7.14** (Vegetation), **Section 7.15** (Wildlife), and **Section 7.16** (Federally-protected Species).

10.11. Cumulative Effects

The Project Area is comprised primarily of grassland and cropland. An extensive prairie pothole wetland system is present. The Project is not expected to significantly impact agricultural land use or the general character of the Project Area. While an estimated 40.0 acres of cropland (33.6 acres) and pastureland (8.0 acres) will be taken out of agricultural production for the life of the Project to accommodate the turbine pad, access roads, and ancillary facilities, landowners may continue to plant crops near, and graze livestock up to the gravel roadway around each turbine pad. The placement of turbines in agricultural fields is suggested in the USFWS Land Based Wind Energy Guidelines (USFWS 2012). The primary impact to active agricultural land will be the reduction of crop production in areas where the Project facilities are located. During construction, agricultural practices may be interrupted in areas that are typically farmed. Livestock in pastureland may be temporarily disrupted during construction and some pasturelands may be taken out of production to accommodate Project facilities. These economic impacts are offset through lease payments from Burke Wind agreed to by the landowner that are estimated at \$40 million over the life of the Project and Transmission from easement payments. In addition, contributions to the local tax base for Burke and Mountrail Counties are estimated at \$30 million over the life of the Project and Transmission Line, which will also help strengthen the local economy. Large scale cumulative impacts to agriculture or agricultural lands are not anticipated.

In addition to the primarily agriculture-driven activities located within the Project Area and vicinity, existing wind energy development consists of the Lindahl Wind Project in Williams County, North Dakota, comprising 75 turbines with a capacity of 150 MW. The Lindahl Wind Project is approximately seventeen (17) miles southwest of the Project Area. The Project Area is located within the Bakken Formation which is characterized by a high concentration of oil and gas extraction wells and other associated infrastructure. It is likely that energy development will continue in northwestern North Dakota.

The Project is not anticipated to impact the demographics of the local community. The Project will be visible to permanent observers (residents) and temporary observers (motorists or individuals passing through or using the area intermittently). The Project is anticipated to have minimal impact to public services, human health and safety, sound, recreational resources, soils, geology, and water resources.

The Project could potentially affect wildlife both directly (mortality) and indirectly (via habitat fragmentation and loss). Burke Wind will avoid and minimize direct and indirect potential impacts to the extent feasible, and as such, minimal or no cumulative impacts are anticipated. The Project has avoided siting infrastructure in areas of native vegetation that provide higher quality habitat to wildlife and facilities are sited in agricultural lands that are of minimal value to wildlife to the extent feasible. For example, 55 turbines were moved from original locations so as to avoid native prairie. Also, the Project size was reduced from 300 MW to 200 MW since

the original Application filing on September 14, 2018, resulting in a reduction of 38 turbines and a smaller Project Area. This reduction was made to in an effort address concerns related to the Project's initial proximity to Lostwood NWR and feedback from local political subdivisions, but also resulted in a reduction of potential impacts to Dakota skipper habitat and sensitive grassland breeding species.

Both direct and indirect potential impacts to wildlife will be avoided and minimized to the extent practicable. The regional landscape the Project Area is within has existing oil and gas development and wind energy development. As a result, the Project is not expected to significantly contribute to cumulative impacts. Post-construction monitoring will be conducted as a part of the WCS for the Project and will provide real-time mortality data that will be used as part of the adaptive management program for the Project in order to minimize additional future impacts as much as possible.

10.12. Agency Comments

Burke Wind has coordinated with various agencies and entities and has identified the permits and approvals potentially required for the Project. **Section 8** summarizes agency coordination completed to date and a copy of agency correspondence is included in **Appendix C. Section 9** summarizes potential permits and/or approvals necessary for the Project.

11.0 QUALIFICATIONS OF CONTRIBUTORS

Name Project Role	Education and Professional Experience
<p>Kimberly Wells, PhD Environmental Services Project Manager NEER</p>	<p>Dr. Wells has sixteen (16) years of environmental permitting experience including experience as both a consultant and environmental manager in the renewable industry. Her primary expertise is technically challenging and interdisciplinary projects on private and public land, with a focus on large environmental impact assessment and permitting projects with the National Environmental Policy Act (NEPA) and state equivalents; the Endangered Species Act, the Clean Water Act, and associated natural resource laws. She is a certified wildlife biologist and wetland delineator, and obtained her BS in Natural Resource Management from the University of Arizona, her MS in Fisheries and Wildlife Ecology from Oklahoma State, and her PhD in Fisheries and Wildlife Sciences from the University of Missouri–Columbia. Dr. Wells and her team are responsible for all environmental permitting in the Mid-Continent Region that includes North Dakota.</p>
<p>Carolyn Stewart Director Tribal Relations NEER</p>	<p>Carolyn Stewart is Director Tribal Relations for NextEra Energy and is responsible for all indigenous and tribal relations efforts in the U.S. and Canada. She has forty years of energy industry experience in conventional and renewable energy development, energy planning, and gas distribution and electric distribution operations, including nearly 20 years of tribal renewable energy project development and tribal relations experience. She earned a B.S. in Finance from the University of Illinois, and an M.B.A. from University of Chicago Graduate School of Business.</p>
<p>Richard Estabrook, Ph.D. RPA Environmental Services Project Manager – Archaeologist NEER</p>	<p>Dr. Estabrook has over 25 years of cultural resources management, including experience as both a consultant and environmental manager in the renewable industry. He obtained his BA in Anthropology from Stony Brook University, his MA in Public Archaeology from University of South Florida, his GIS Certificate from University of South Florida, and his PhD in Applied Anthropology/Archaeology from University of South Florida.</p>

Name Project Role	Education and Professional Experience
<p>Clay Cameron Project Manager NEER</p>	<p>Mr. Cameron has over 20 years of experience in development project management including construction, federal, state and local permitting and compliance. His responsibilities include financial feasibility analysis, cost and schedule management, and coordination of functional project team and customer relationship. Clay has ten (10) years' experience in the utility industry including roles of increasing responsibility in community development, engineering & construction, and project development. Clay studied business management at Louisiana State University, and holds a State of Florida General Contractor license, and a State of California General Engineering license.</p>
<p>Barry Lane Manager NEER</p>	<p>Mr. Lane is responsible for the management and oversight of early stage phases of project planning, engineering, and construction of wind projects. Duties also include budget development, contract execution, procurement, logistical planning, and ultimately transition to the construction execution team. Barry has more than four (4) years of experience in the development of wind energy projects, including 300 MW of wind projects that were constructed in North Dakota in 2016. Barry also has over 20 years of experience in construction management and holds a Bachelor of Arts in Environmental Geography from the Rutgers University.</p>
<p>Jeromy Miceli Engineering Manager NEER</p>	<p>Mr. Miceli has over ten (10) years of experience in wind farm engineering and construction, and direct involvement in projects totaling over 2000 MW. His responsibilities include the management of substation, transmission, and collector system engineering consultants, control of project engineering schedules and budgets, and engineering support during early stage and execution. Jeromy has a Bachelor of Science degree in Chemical Engineering from the University of Illinois, as well as Master's degrees in Environmental Engineering and in Project Management, both from Northwestern University.</p>

Name Project Role	Education and Professional Experience
<p>Bourke Thomas Project Manager Atwell, LLC</p>	<p>Mr. Thomas has fourteen (14) years of experience in natural resources consulting and environmental construction management, specializing in field studies and permitting involving wetlands, wildlife, forestry and stream ecology. He has been working as a natural resources consultant in renewable energy for the last ten (10) years including permitting, environmental compliance, species at risk review, wetlands and watercourses studies, soil erosion and sedimentation control compliance, and agency coordination. He earned his BS in Environmental Studies from Michigan State University and his MBA from DeVos Graduate School of Business at Northwood University</p>
<p>Ethan Jahnke Deputy Project Manager Atwell, LLC</p>	<p>Mr. Jahnke has over 22 years of experience in energy project management, federal, state and local regulatory permitting and compliance, NEPA, evaluation and permitting of energy projects, water management and hydrologic modeling. Mr. Jahnke holds a BS in Natural Resources Management from Colorado State University and an MS in Water Resources Science from the University of Minnesota.</p>
<p>Tara Corbett Certificate of Site Compatibility Task Lead Atwell, LLC</p>	<p>Mrs. Corbett has over seventeen (17) years of experience in environmental planning and project management, federal, state and local regulatory permitting and compliance, and evaluation and permitting of energy projects. She obtained her BA from Hanover College and her MS in Geography from the University of Oregon.</p>
<p>Benjamin Banks Environmental Consultant/Cultural Resources Specialist Atwell, LLC</p>	<p>Mr. Banks has over ten (10) years of experience in cultural resources and environmental compliance projects. He has prepared numerous cultural resources reports and environmental assessments for wind energy and development projects across the contiguous United States. Mr. Banks has experience conducting cultural resources fieldwork and analysis, Phase I environmental site assessments, and cultural resources construction monitoring. Mr. Banks is a Registered Professional Archaeologist and earned his BS in Sociology from Oklahoma State University and his MA in Anthropology from the University of Arkansas–Fayetteville.</p>

Name Project Role	Education and Professional Experience
<p>Andy Cain GIS Manager Atwell, LLC</p>	<p>Mr. Cain has over thirteen (13) years of professional experience in geospatial analysis and cartography across numerous fields of business, including regional development, location analytics, natural resource management, and environmental consulting. Mr. Cain earned his MS in Geographic Information Sciences from Michigan State University.</p>
<p>Christopher McCreedy Environmental Consultant Atwell, LLC</p>	<p>Mr. McCreedy has twenty (20) years of experience in avian-focused ecological research, conservation planning, and environmental compliance assessment/demographic monitoring. He has worked on wind energy and solar energy developments across the United States, focused on the Great Plains, Midwest, Desert Southwest, and Sierra Nevada. He earned his BS in Natural Resources Management at the University of Michigan and his MS in Wildlife Management at the University of Arizona.</p>
<p>Aaron Boone Senior Ecologist Atwell, LLC</p>	<p>Mr. Boone has twenty (20) years of experience conducting avian ecological research, citizen science project coordination, wildlife compliance assessment, and conservation strategy development. He has worked on wind and solar energy, electric transmission, pipeline, and residential developments across the United States, particularly focused on the Great Plains, Midwest, and Southeast. He earned his BS in Biology at Bob Jones University and his MS in Natural Resource Management at The Ohio State University.</p>
<p>Melinda McCarthy, MA, RPA Archaeologist/GIS Analyst AECOM</p>	<p>Ms. McCarthy has eleven (11) years of cultural resources and historic preservation experience. Her responsibilities included leading the cultural resources archaeology and architecture surveys, GIS, and tribal outreach. She has a Bachelor of Arts in Anthropology with an emphasis in Archeology and a Master of Arts in History with a specialization in Historic Preservation, both from Southeast Missouri State University. She is permitted as a Principle Investigator through North Dakota State Historical Preservation Office.</p>

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13.0 ACRONYMS AND ABBREVIATIONS

ACRONYM/TERM	DEFINITION
AADT	Average Annual Daily Traffic
ADLS	Aircraft Detection Lighting System
AMSL	Above Mean Sea Level
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
Atwell	Atwell, LLC
Basin	Basin Electric Power Cooperative
BGEPA	Bald and Golden Eagle Protection Act
Burke Wind or Applicant	Burke Wind, LLC
BMPs	Best Management Practices; prevents soil erosion and sedimentation
Capacity	The capability of a system, circuit, or device for storing electronic charge
Certificate	Certificate of Site Compatibility
Class I Cultural Resources Inventory	Class I; Existing data inventory – a large-scale review and compilation of recorded cultural resource data.
Class III Cultural Resources Inventory	Intensive field inventory to identify cultural resources that could be affected by Project facilities – physical inspection and identification of cultural resources within a specific area.
CM	Cultural Material
Commission	North Dakota Public Service Commission
CRP	Conservation Reserve Program
CWA	Clean Water Act
dBA	A-weighted decibels
DHS	U.S. Department of Homeland Security

ACRONYM/TERM	DEFINITION
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business
DoD	Department of Defense
EMF	Electromagnetic Fields
EPC	Engineering, Procurement, and Construction
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FSA	Farm Service Agency
GE	General Electric
Generator	A machine by which mechanical energy is changed into electrical energy
Geotechnical	A science that deals with the application of geology to engineering
GIS	Geographic Information Systems
HUC	Hydrologic Unit Code
Hub	The central component of the wind turbine which connects the rotors to the generator.
Interconnection	Location of project connection to the power grid.
IPaC	Information for Planning and Consultation
kV	kilovolt
Leq	Equivalent continuous sound level
LiDAR	Light Imaging Detection and Ranging
M/S	Meters per Second

ACRONYM/TERM	DEFINITION
MET	Meteorological Evaluation Towers
Metcalf	Metcalf Archaeological Consultants, Inc.
Micrositing	The process in which the wind resources, potential environmentally sensitive areas, soil conditions, and other site factors, as identified by local, state and federal agencies, are evaluated to locate wind turbines and associated facilities.
MISO	Midcontinent Independent System Operator
MPH	Miles per Hour
MW	megawatts
Nacelle	A streamlined enclosure (as for an engine), which houses the gearbox, generator, brake, cooling system and other electrical and mechanical systems
NAIP	National Agriculture Imagery Program
NASA	National Aeronautics and Space Administration
NCED	National Conservation Easement Database
NCSS	National Cooperative Soil Survey
N.D. Admin. Code	North Dakota Administrative Code
N.D.C.C.	North Dakota Century Code
NDDOH	North Dakota Department of Health
NDDOT	North Dakota Department of Transportation
NDGFD	North Dakota Game and Fish Department
NEER	NextEra Energy Resources, LLC
NERC	North American Reliability Council
NEXRAD	Weather Surveillance Radar-1988 Doppler radars
NHD	National Hydrography Dataset

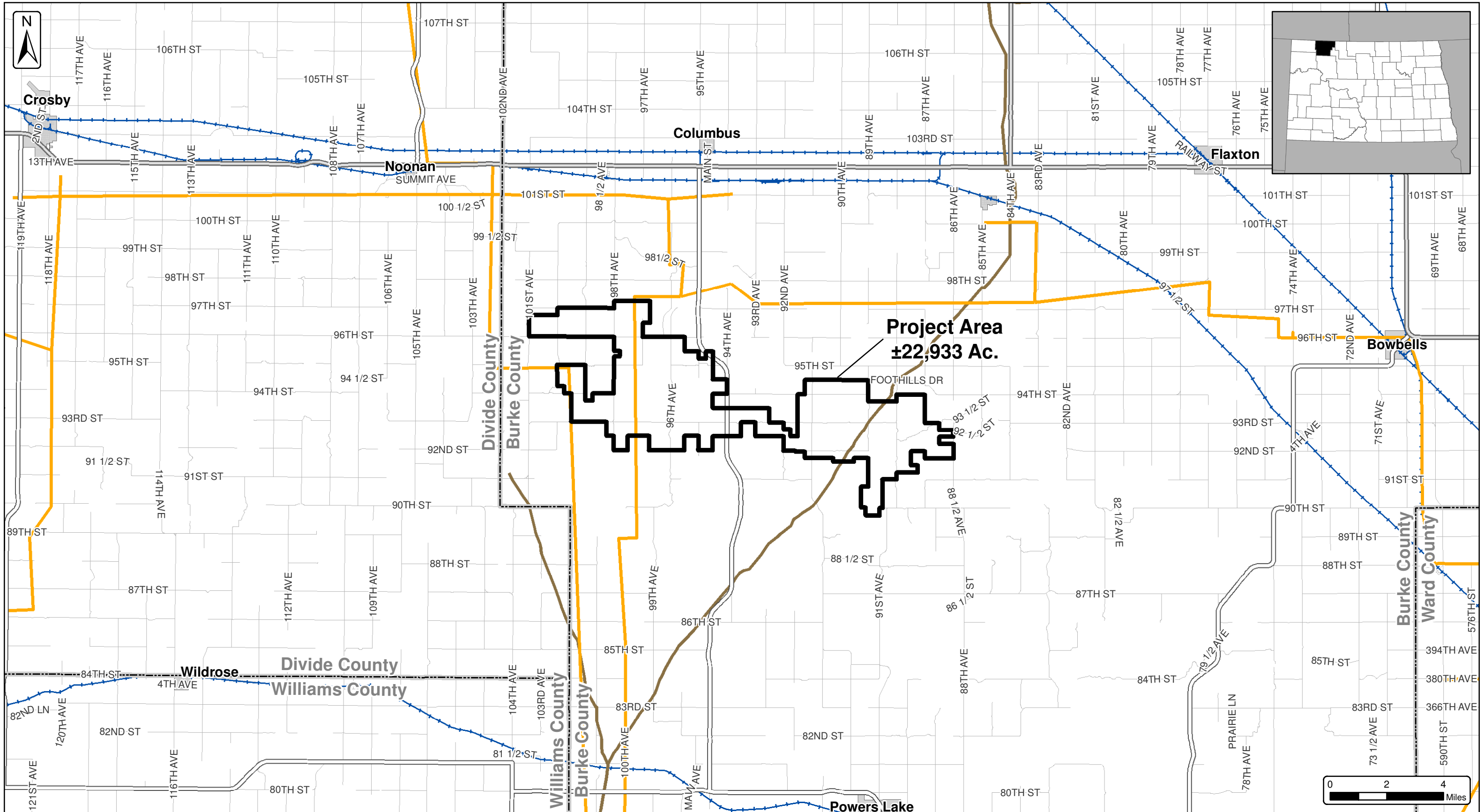
ACRONYM/TERM	DEFINITION
NLCD	National Land Cover Database
NLEB	Northern long-eared bat
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NREL	National Renewable Energy Laboratory
NTIA	National Telecommunications and Information Administration
NWI	National Wetlands Inventory
NWP	Nationwide Permit
NWR	National Wildlife Refuge
O&M	Operations and maintenance facility
PCN	Pre-Construction Notification
PEIS	Programmatic Environmental Impact Statement
PLOTS	Private Land Open to Sportsmen
PPA	Power Purchase Agreement
PPT	Power Performance Testing
Project	Burke County Wind Energy Center
PTC	Production Tax Credit
RECs	Recognized Environmental Conditions
RHA	Rivers and Harbors Act of 1899
Rotor	The rotor consists of three (3) blades mounted to a rotor hub
Rotor Diameter	Diameter of the rotor from the tip of a single blade to the tip of the opposite blade

ACRONYM/TERM	DEFINITION
ROW	Right-of-Way
RPM	Revolutions per Minute
SCADA	Supervisory Control and Data Acquisitions (communications technology)
SCRSTT	Sites of Cultural and Religious Significance to the Tribe
SHSND	State Historical Society of North Dakota
SODAR	Sonic Detection and Ranging
SPCC	Spill Prevention, Control, and Countermeasures
Step-up Transformer	A transformer that increases voltage
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TCS	Traditional Cultural Surveyors
TES	Threatened and Endangered Species
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCS	Wildlife Conservation Strategy
WindLogics	WindLogics, Inc.
WMA	Wildlife Management Area
WNS	White-Nose Syndrome
WOUS	Waters of the U.S.
WPA	Waterfowl Protection Area

ACRONYM/TERM	DEFINITION
WRRS	Wildlife Response and Reporting System
Yaw	To deviate erratically from a course (as when struck by a heavy sea); especially to move from side to side: to turn by angular motion about the vertical axis


FIGURES:

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- Figure 3 - Project Area (Topo)
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- Figure 7 - Path of Energy Diagram
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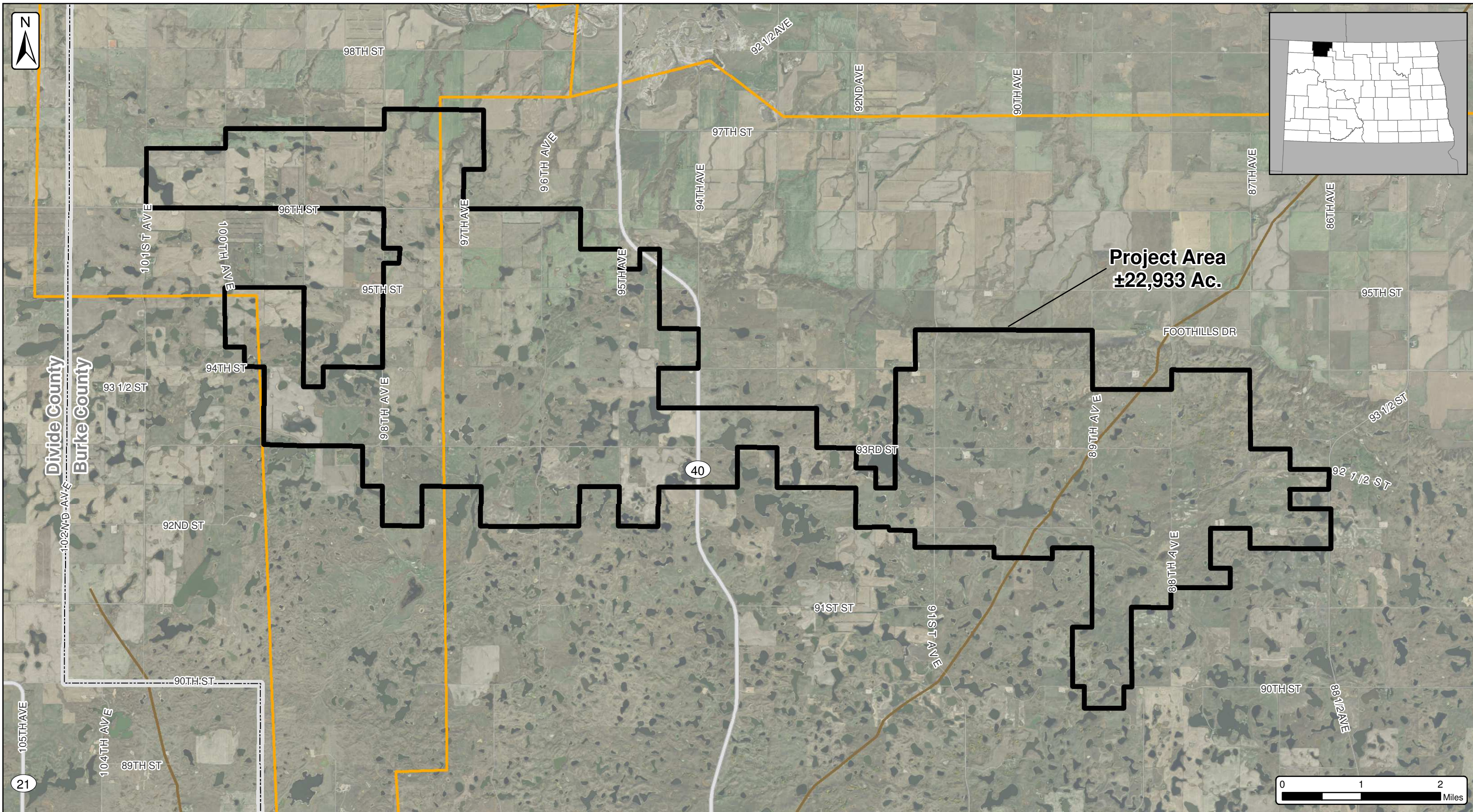


Burke County Wind Energy Center
Figure 1: Project Location
 Burke County, North Dakota
 Date: 10/30/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947











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Burke County Wind Energy Center
Figure 2: Project Area (Aerial)
 Burke County, North Dakota
 Date: 10/30/2018

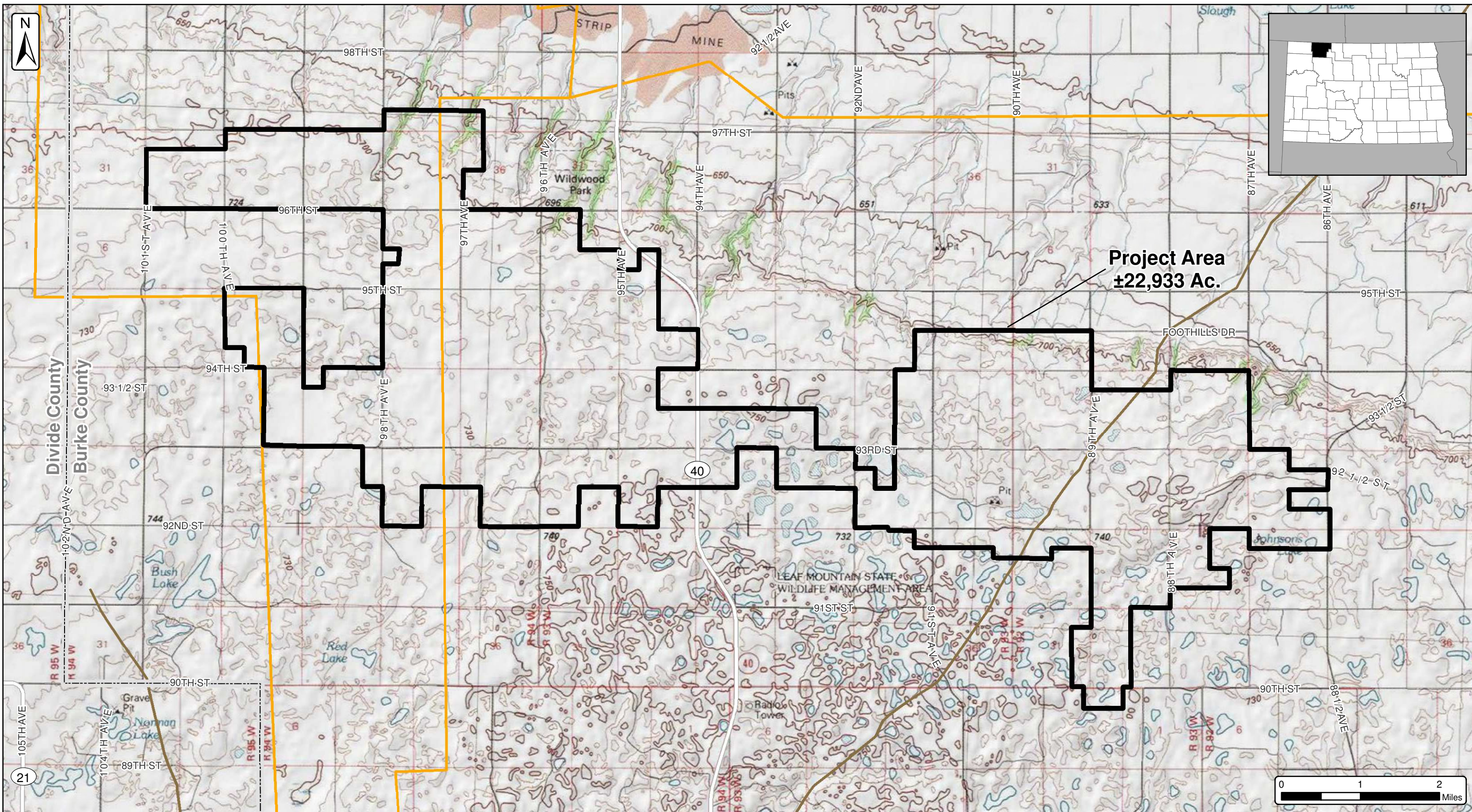
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

 Existing Transmission (Velocity Suite)	 Railroad	 Project Area 10/23/2018 (±22,933 Ac.)
 Natural Gas Pipeline (Velocity Suite)	 Major Roads	 Counties
	 Minor Roads	



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SOURCE: USDA NAIP 2017



Burke County Wind Energy Center
Figure 3: Project Area (Topo)
 Burke County, North Dakota
 Date: 10/30/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

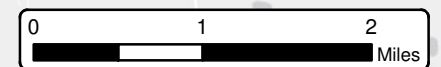
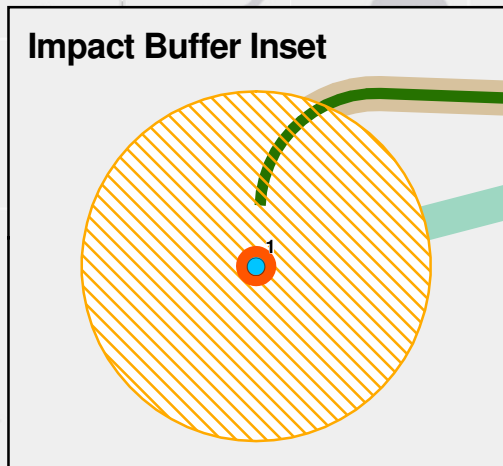
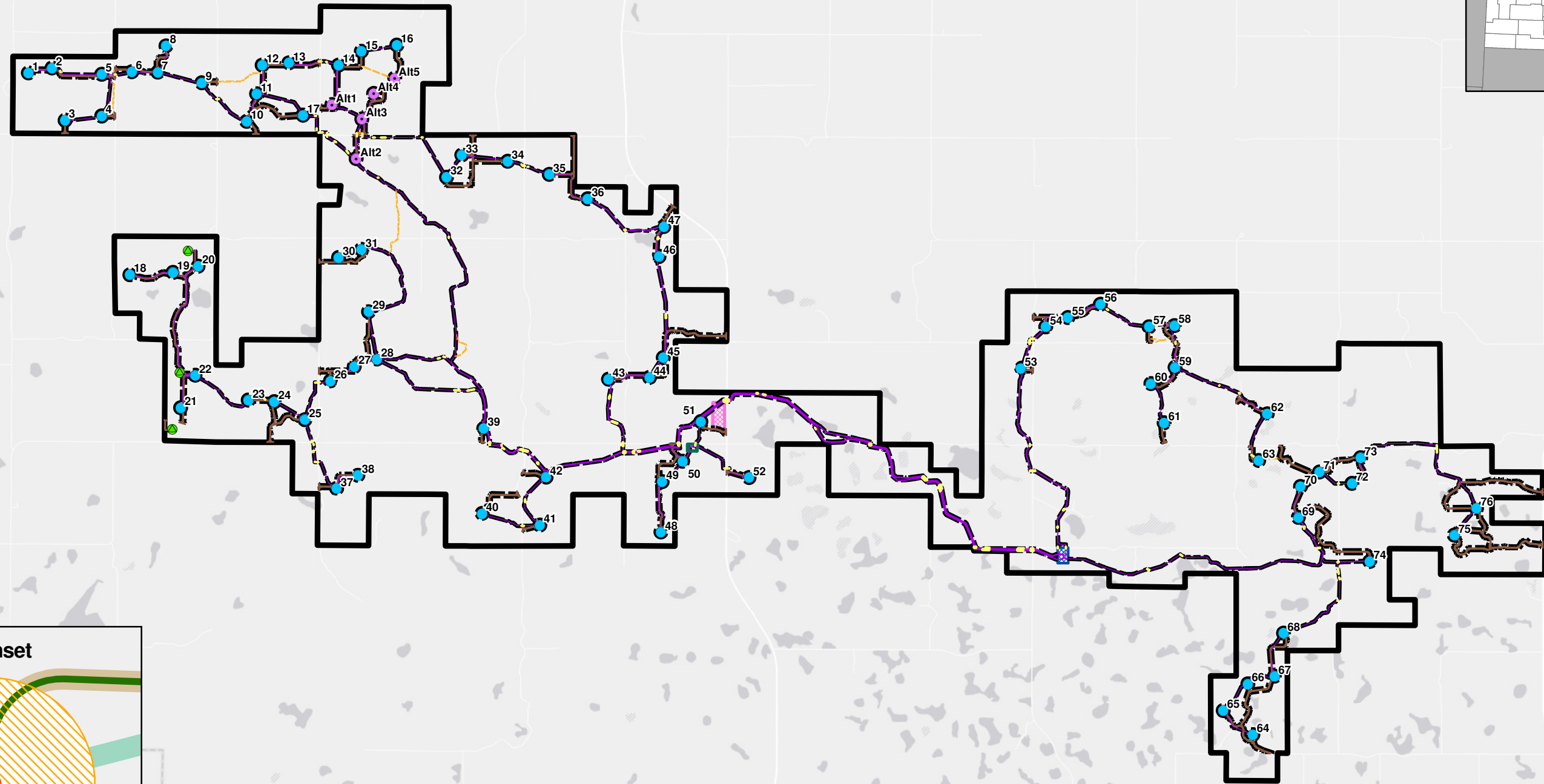
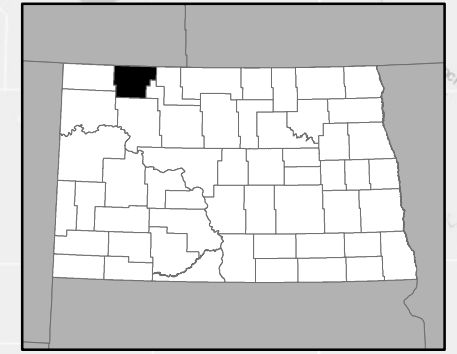
- Existing Transmission (Velocity Suite)
- Natural Gas Pipeline (Velocity Suite)
- Railroad
- Major Roads
- Minor Roads

- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

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

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Burke County Wind Energy Center

Figure 4: Project Impact Assumptions
 Burke County, North Dakota
 Date: 11/6/2018

Client:

Burke Wind, LLC

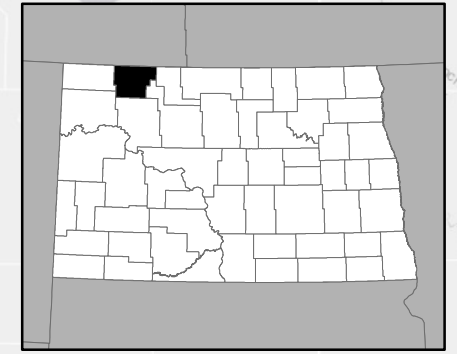
Atwell, LLC Project:16000947

- | | | |
|-----------------------------------|---------------------------------------|---|
| Turbine (10/08/2018) | Crane Path (11/03/2018) | Permanent Turbine Impact Buffer |
| Alt Turbine (10/08/2018) | Construction Easement (11/03/2018) | Permanent Service Road Impact Buffer |
| MET Tower (10/26/2018) | Laydown Yard (05/30/2018) | Temporary Turbine Impact Buffer |
| Collection Line Bore (11/03/2018) | O&M & Substation (06/06/2018) | Temporary Collection Line Impact Buffer |
| Collection Line (11/03/2018) | Batch Plant Area (11/01/2018) | Temporary Service Road Impact Buffer |
| Access Road (11/03/2018) | Project Area 10/23/2018 (±22,933 Ac.) | |

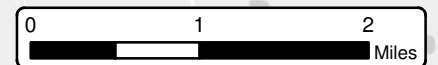
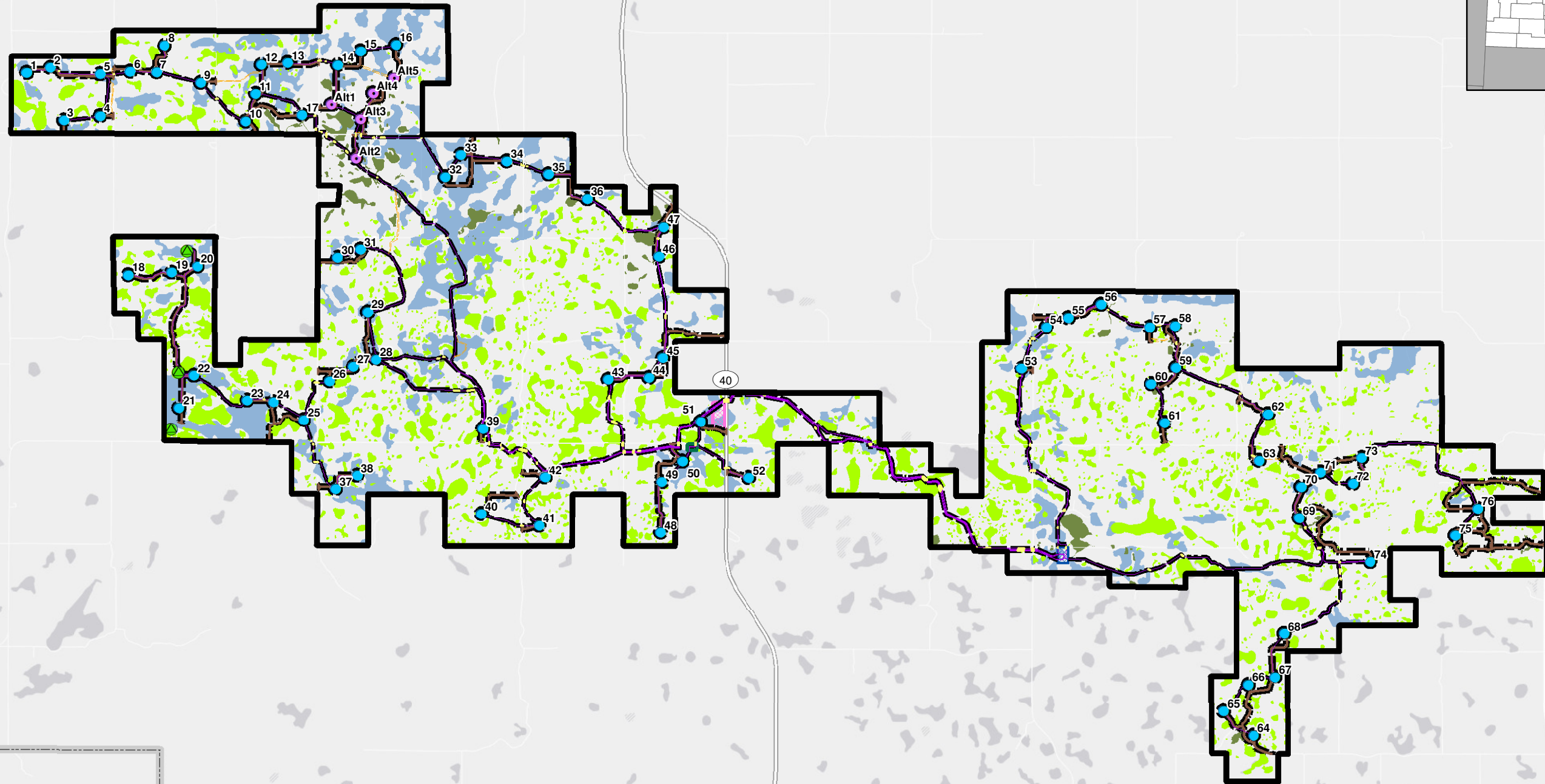
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Divide County
Burke County



Burke County Wind Energy Center

Figure 5: Exclusion & Avoidance Areas
Burke County, North Dakota
Date: 11/6/2018

Client:

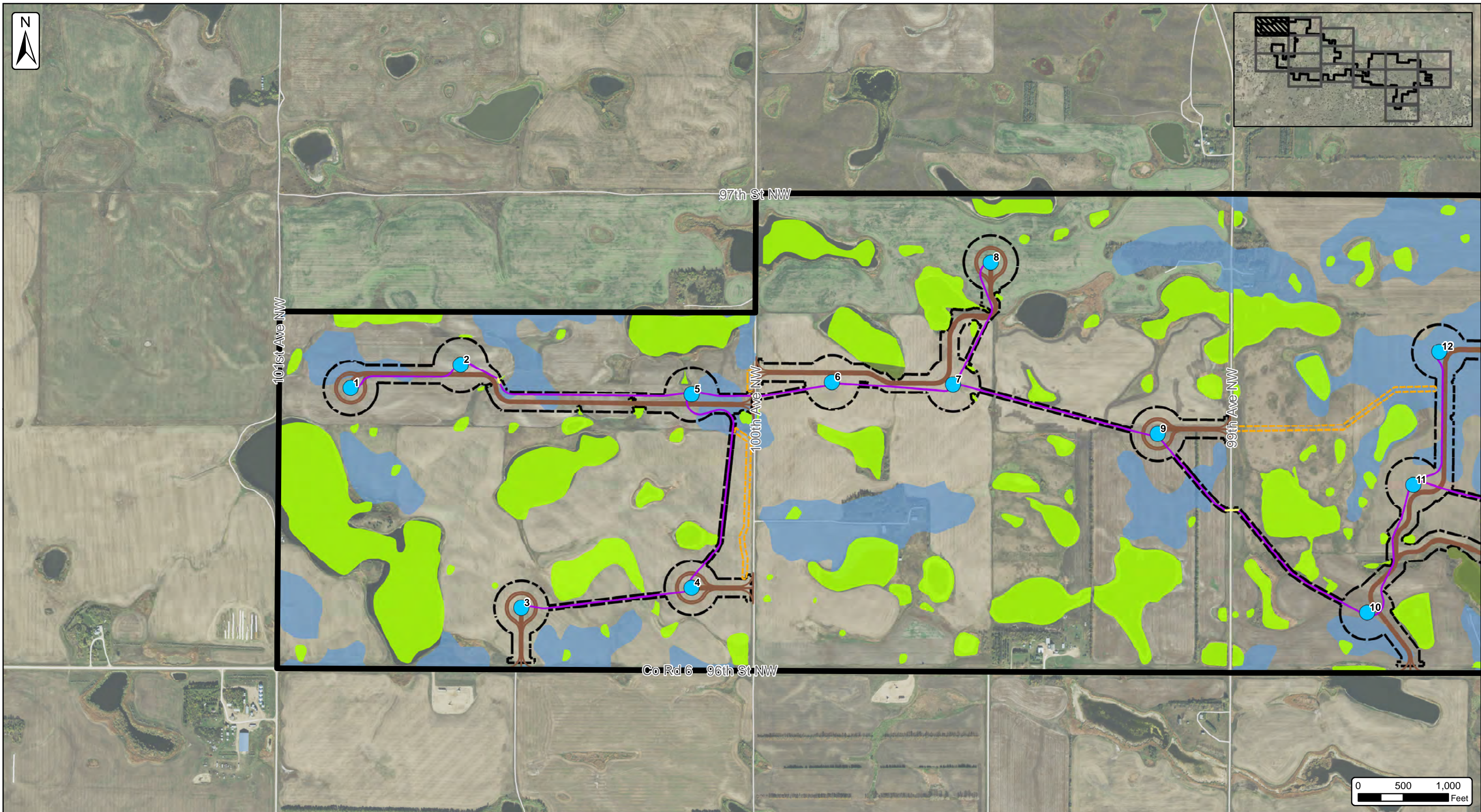
Burke Wind, LLC

Atwell, LLC Project:16000947

- Turbine (10/08/2018)
 - Alt Turbine (10/08/2018)
 - MET Tower (10/26/2018)
 - Collection Line Bore (11/03/2018)
 - Collection Line (11/03/2018)
 - Access Road (11/03/2018)
 - Crane Path (11/03/2018)
 - Construction Easement (11/03/2018)
 - Laydown Yard (05/30/2018)
 - O&M & Substation (06/06/2018)
 - Batch Plant Area (11/01/2018)
 - Project Area 10/23/2018 (±22,933 Ac.)
 - Counties
 - Avoidance Areas
 - Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Exclusion Areas: Archaeological sites not shown due to confidentiality



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Burke County Wind Energy Center
 Figure 5a: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

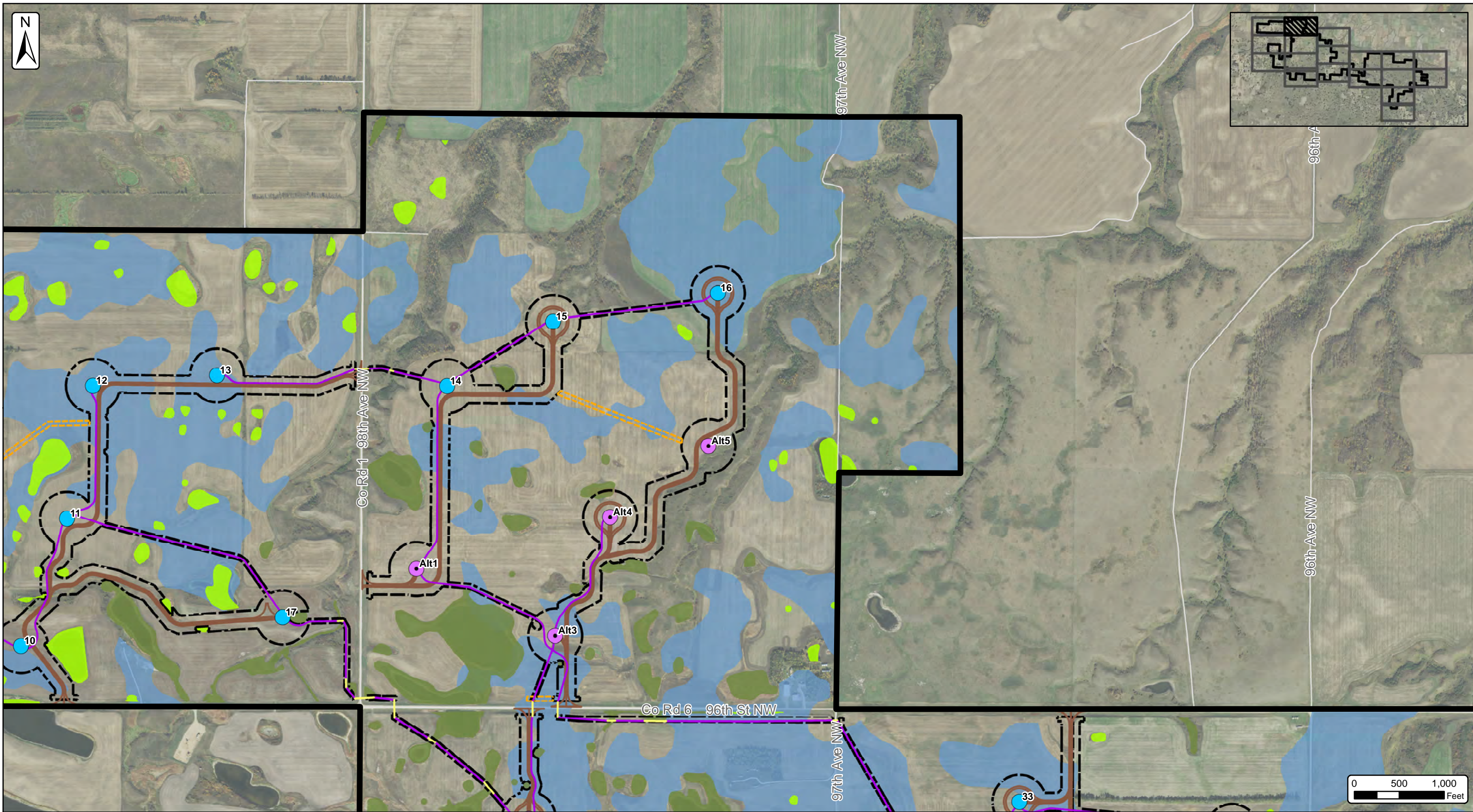
- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- Exclusion Areas: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
Figure 5b: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

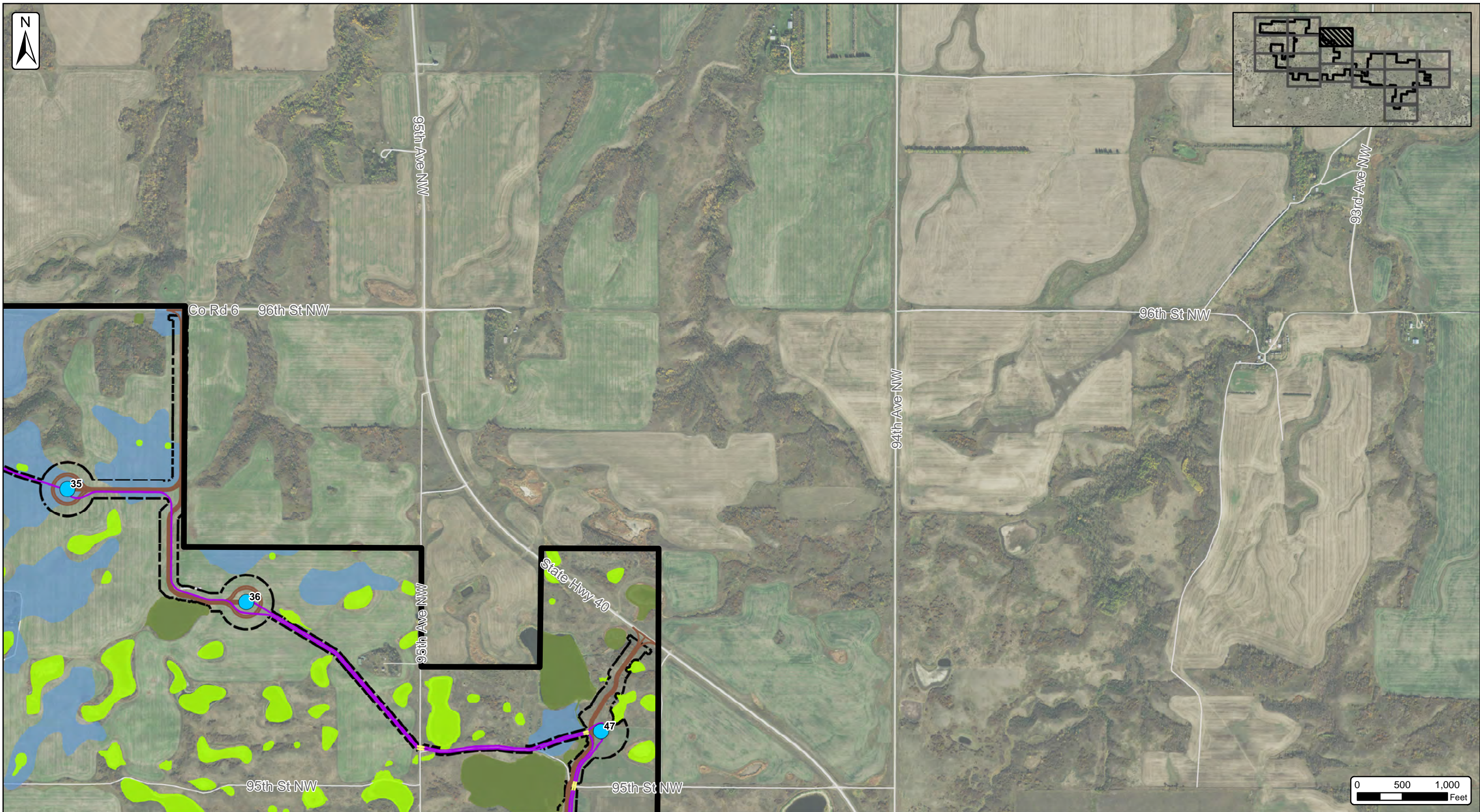
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- SOURCE: USDA NAIP 2017

ATWELL

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Burke County Wind Energy Center
Figure 5c: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

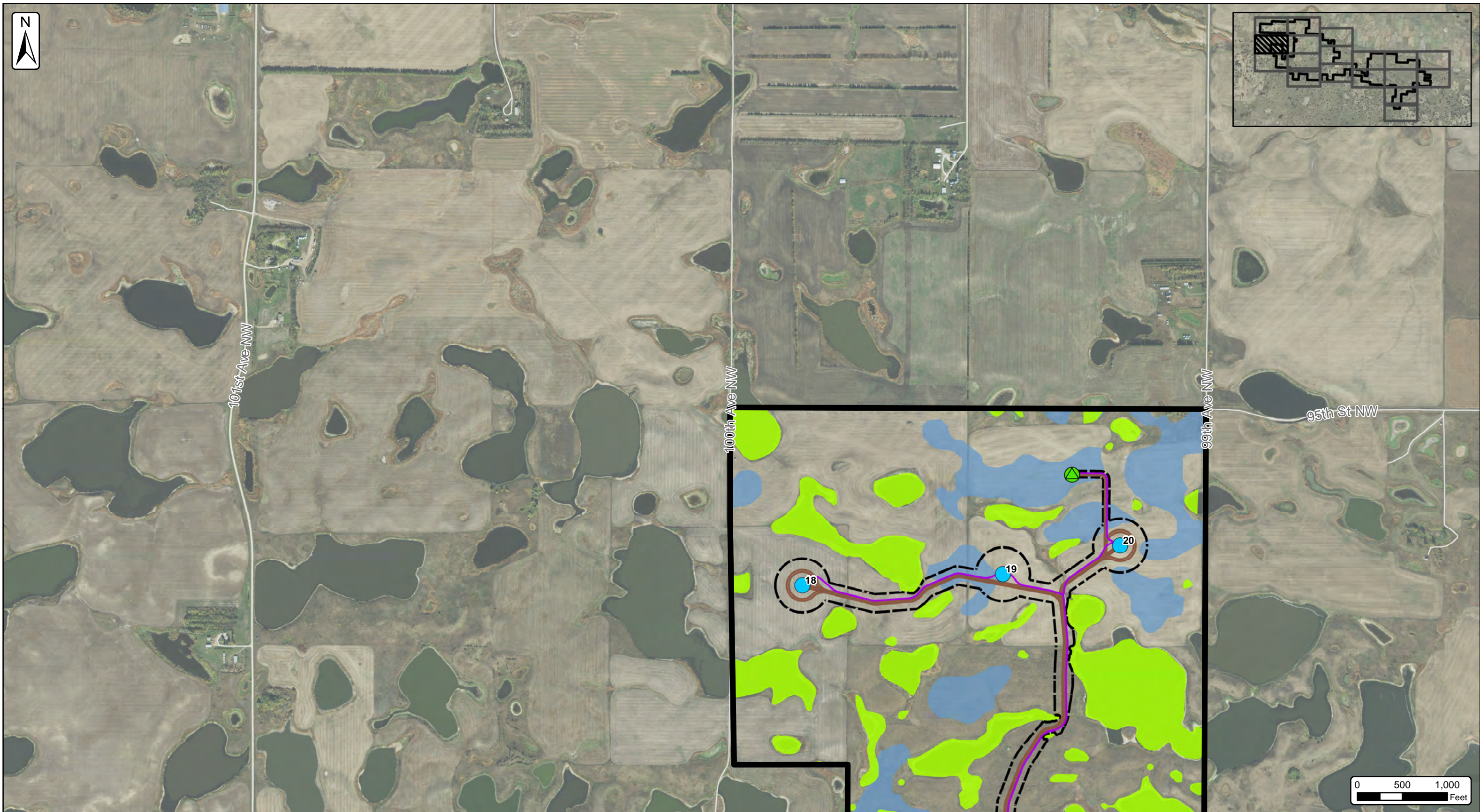
- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)

Exclusion Areas: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
Figure 5d: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

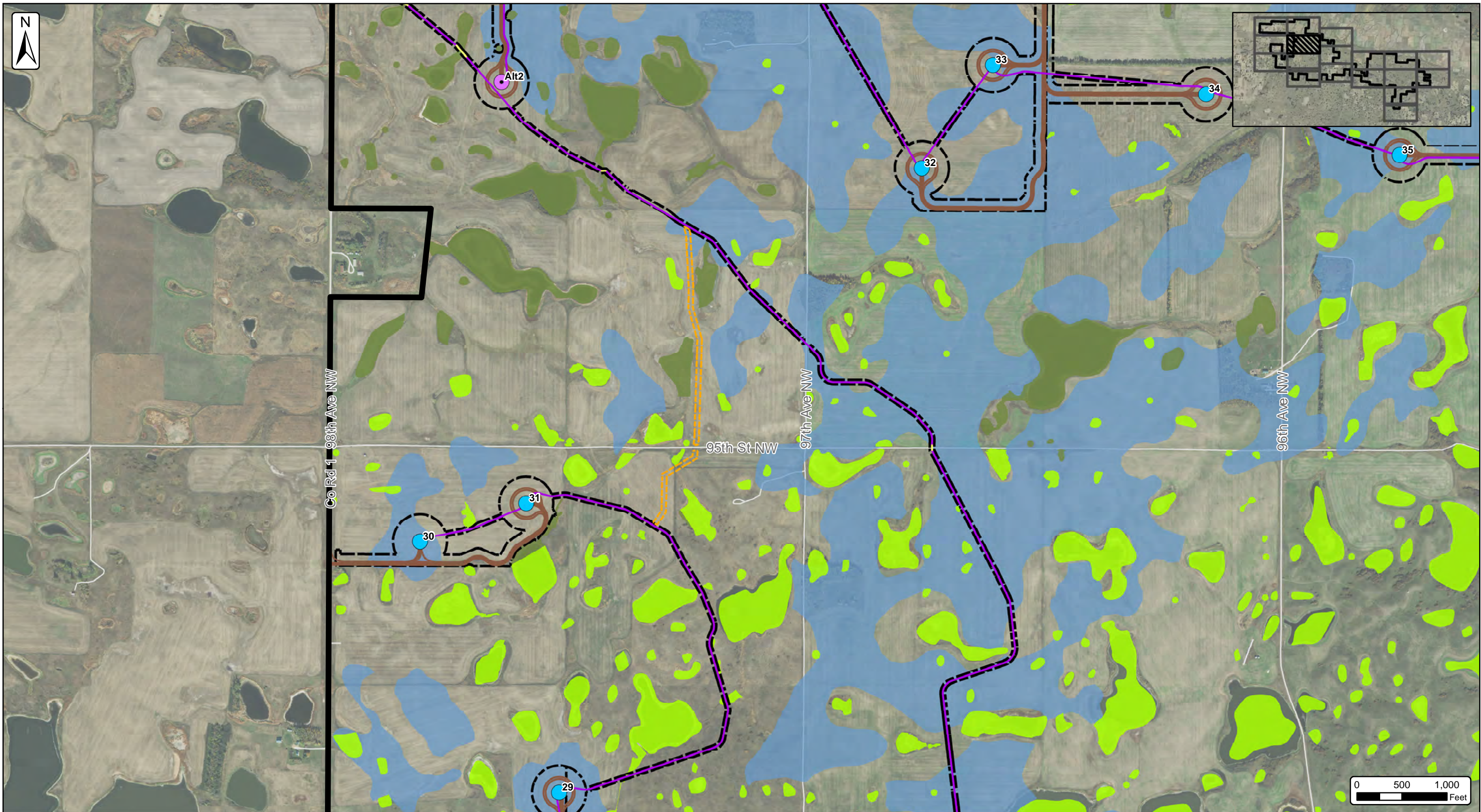
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- Exclusion Areas: Archaeological sites not shown due to confidentiality
- SOURCE: USDA NAIP 2017

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Burke County Wind Energy Center
 Figure 5e: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

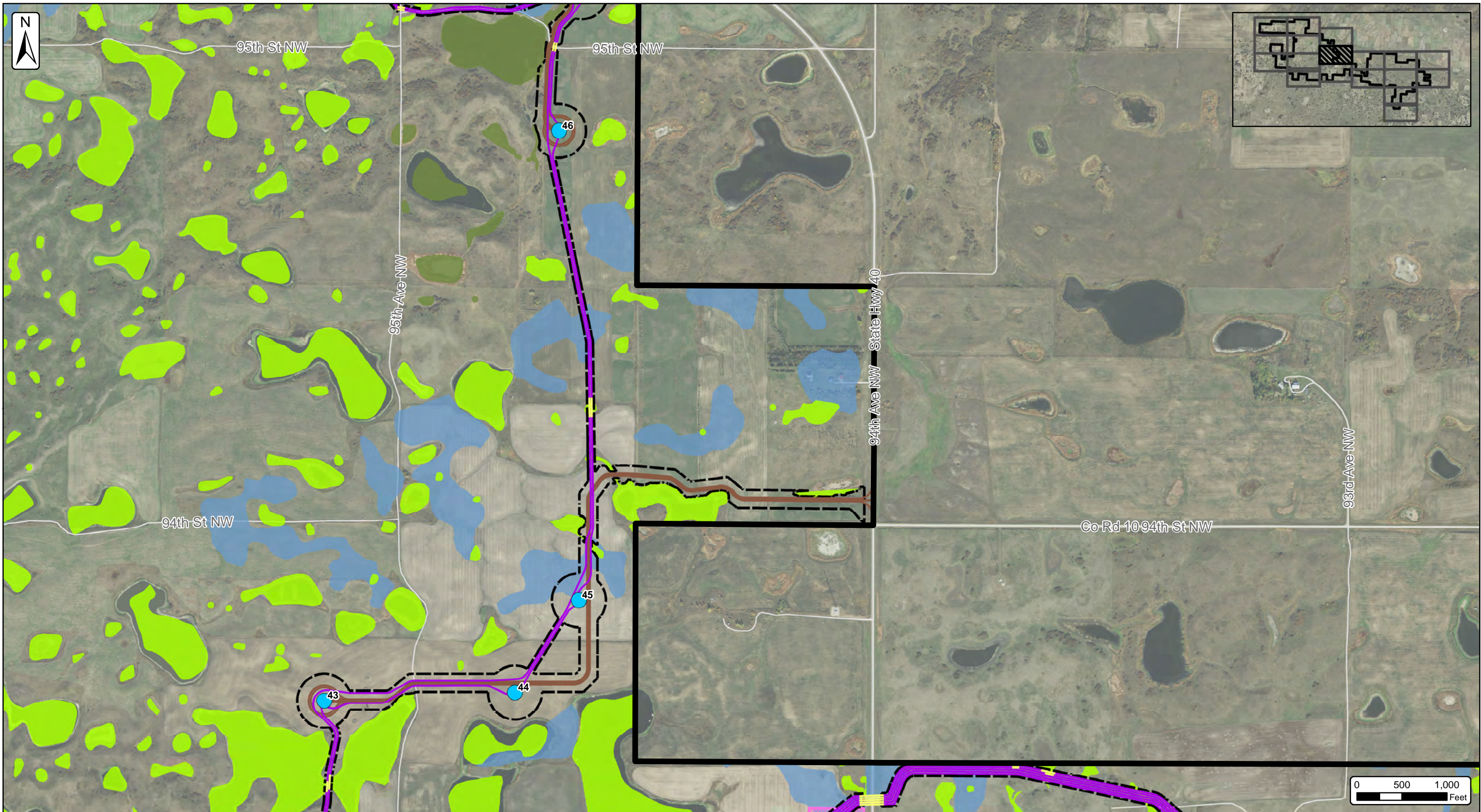
Client:
 Burke Wind, LLC
 Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- PERCENT OF PROJECT AREA
- SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center

Figure 5f: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:

Burke Wind, LLC

Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

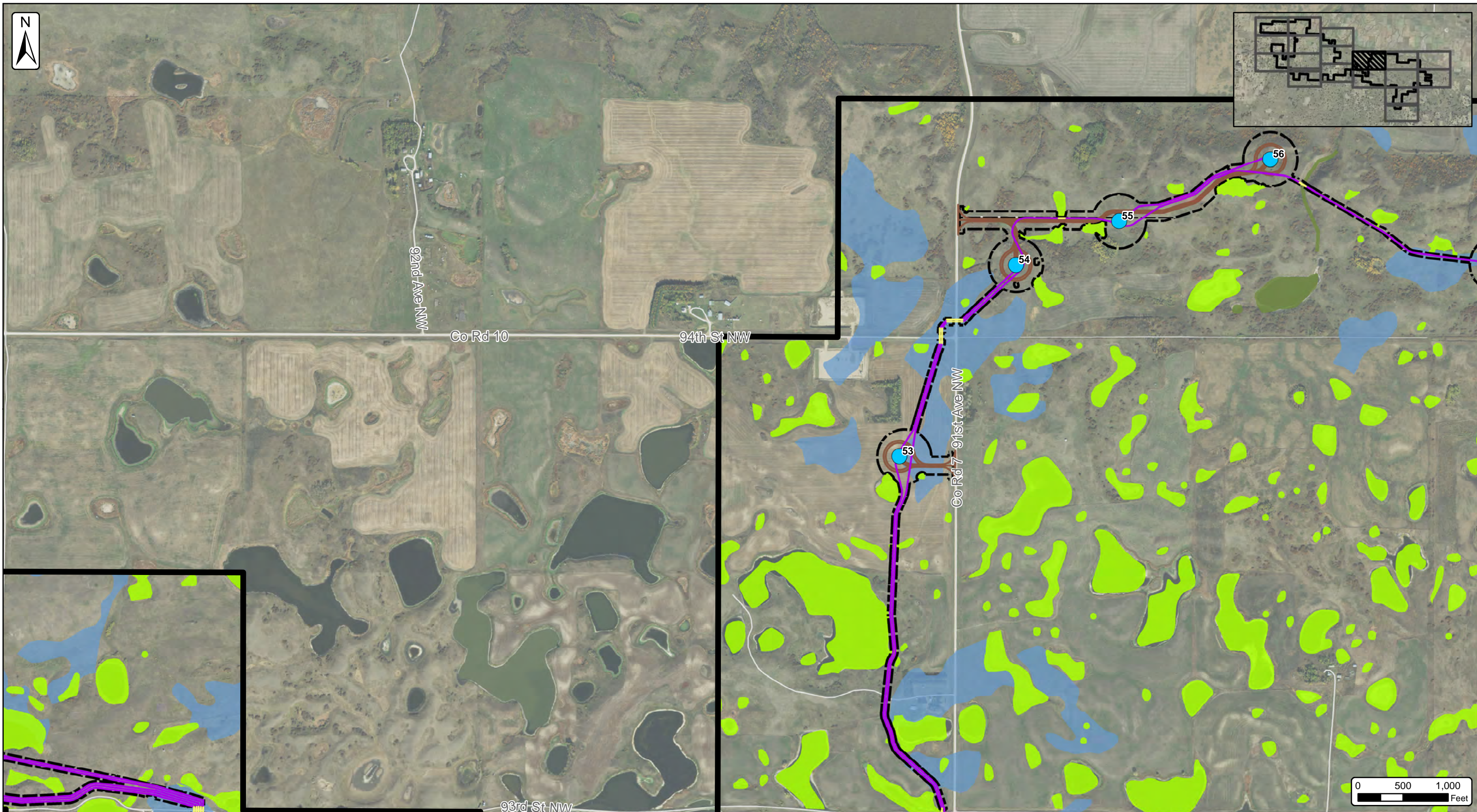
- Avoidance Areas
- Isolated Wetlands
- Jurisdictional Wetlands
- Farmland Soils (SSURGO)
- Farmland of Statewide Importance (14.06%)

Exclusion Areas: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
 Figure 5g: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

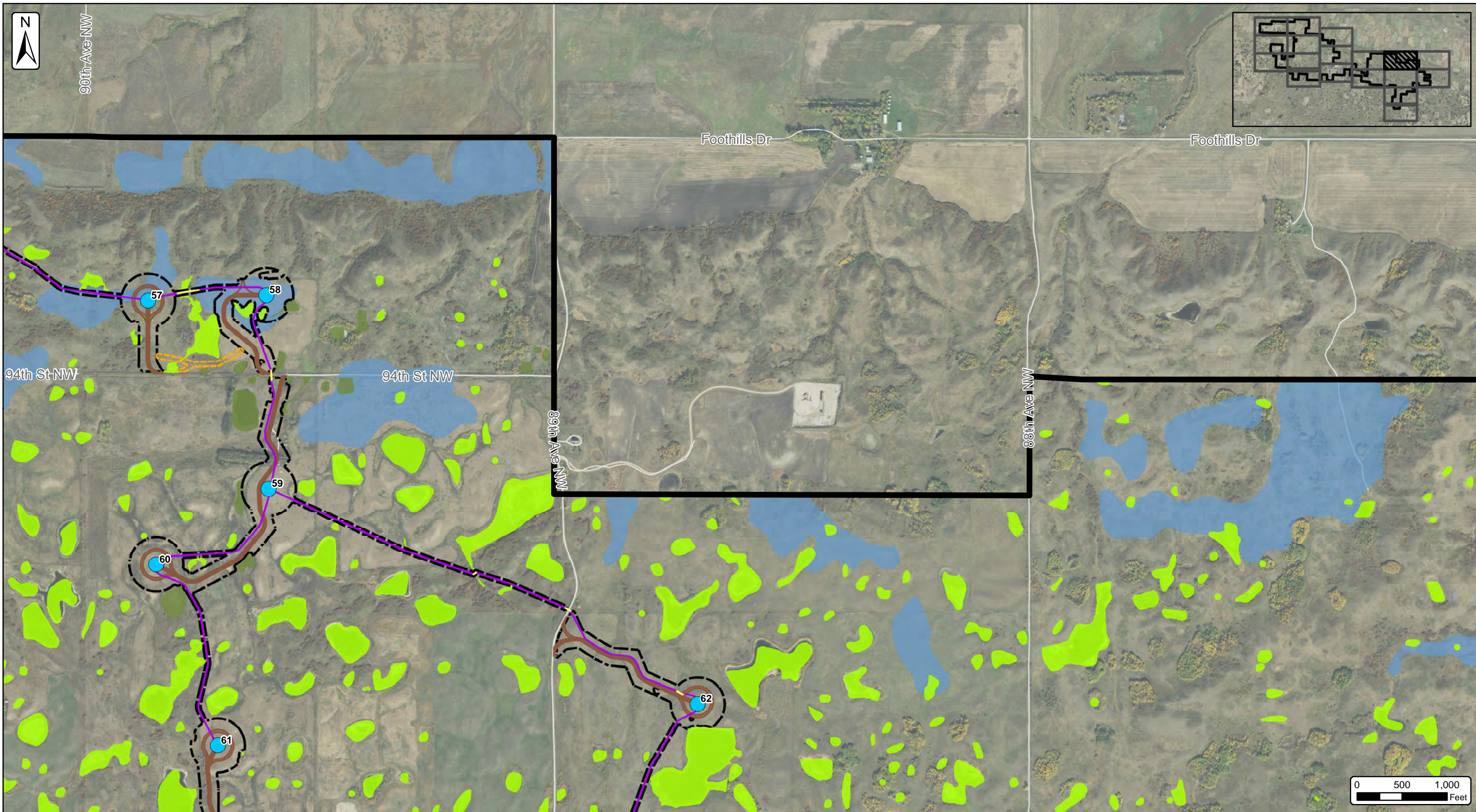
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- SOURCE: USDA NAIP 2017

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Burke County Wind Energy Center
 Figure 5h: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- - - Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- Exclusion Areas: Archaeological sites not shown due to confidentiality
- SOURCE: USDA NAIP 2017

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Burke County Wind Energy Center
Figure 5i: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

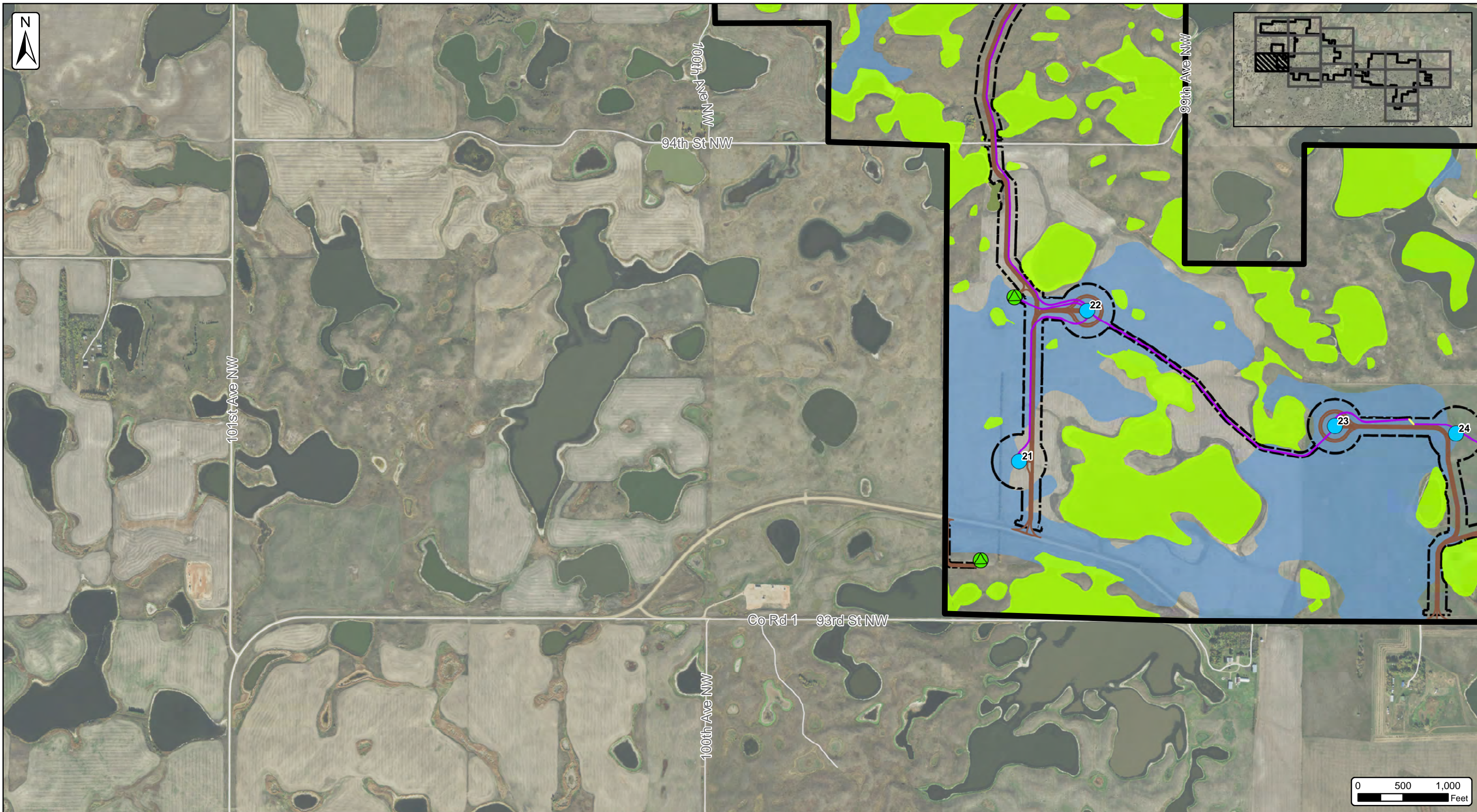
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- Exclusion Areas: Archaeological sites not shown due to confidentiality
- SOURCE: USDA NAIP 2017

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Burke County Wind Energy Center

Figure 5j: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:

Burke Wind, LLC

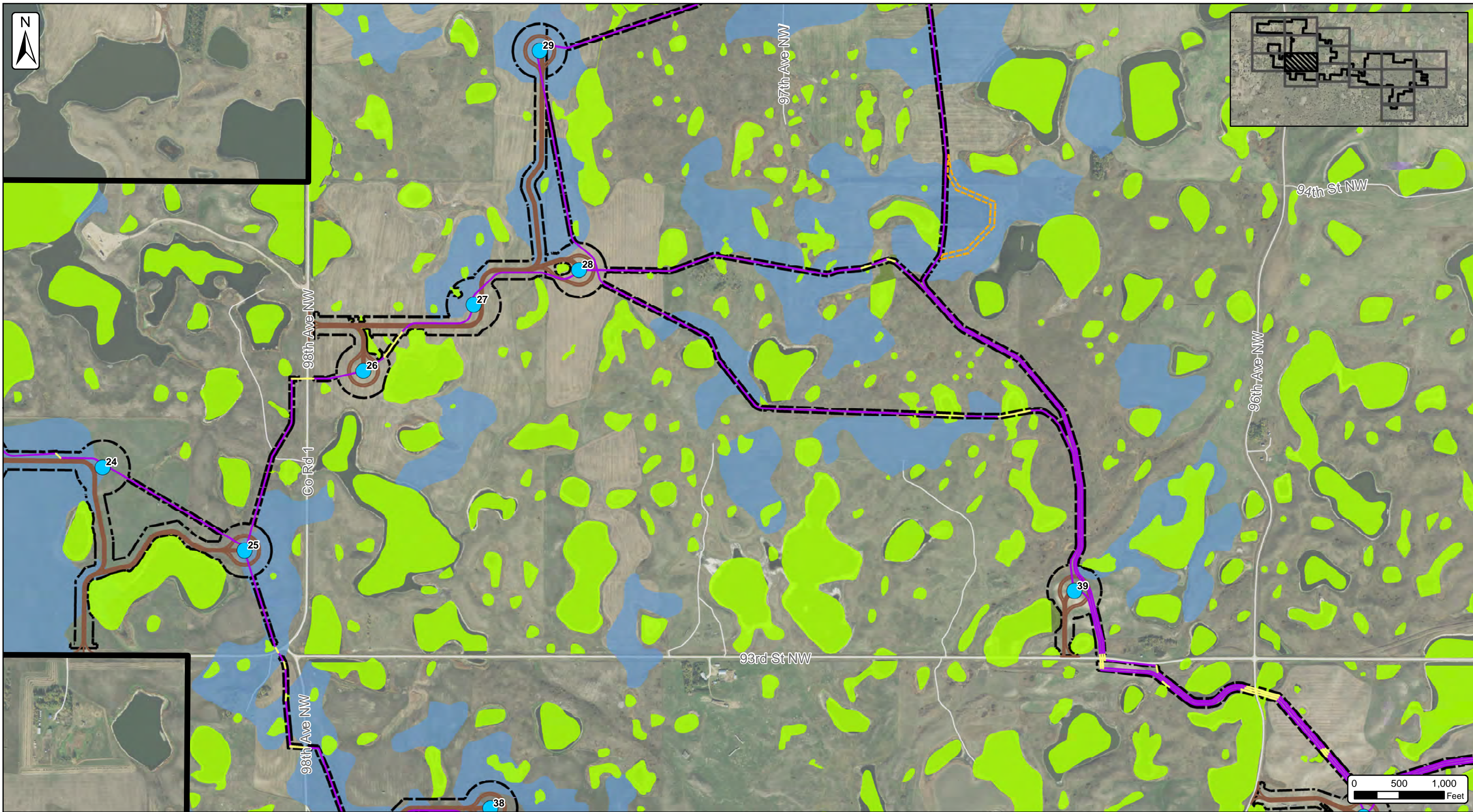
Atwell, LLC Project:16000947

- | | | |
|---------------------------------------|---|---|
| ● Turbine (10/08/2018) | --- Construction Easement (11/03/2018) | ■ Avoidance Areas |
| ● Alt Turbine (10/08/2018) | ■ Laydown Yard (05/30/2018) | ■ Isolated Wetlands |
| ● MET Tower (10/26/2018) | ■ O&M & Substation (06/06/2018) | ■ Jurisdictional Wetlands |
| --- Collection Line Bore (11/03/2018) | ■ Batch Plant Area (11/01/2018) | ■ Farmland Soils (SSURGO) |
| --- Collection Line (11/03/2018) | ■ Project Area 10/23/2018 (±22,933 Ac.) | ■ Farmland of Statewide Importance (14.06%) |
| --- Access Road (11/03/2018) | --- Counties | |
| --- Crane Path (11/03/2018) | | |
- Exclusion Areas: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
 Figure 5k: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

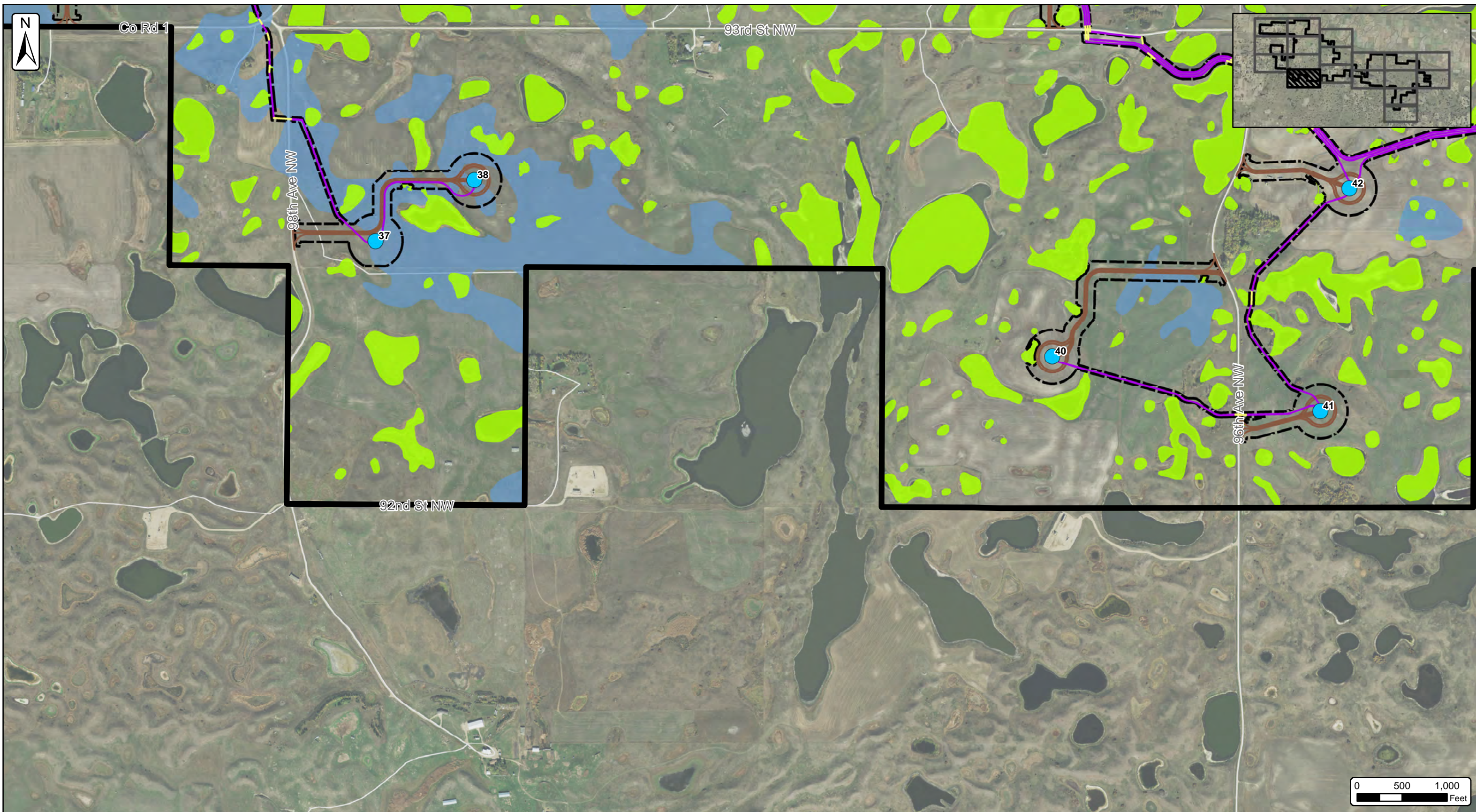
Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- SOURCE: USDA NAIP 2017

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Burke County Wind Energy Center

Figure 5I: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:

Burke Wind, LLC

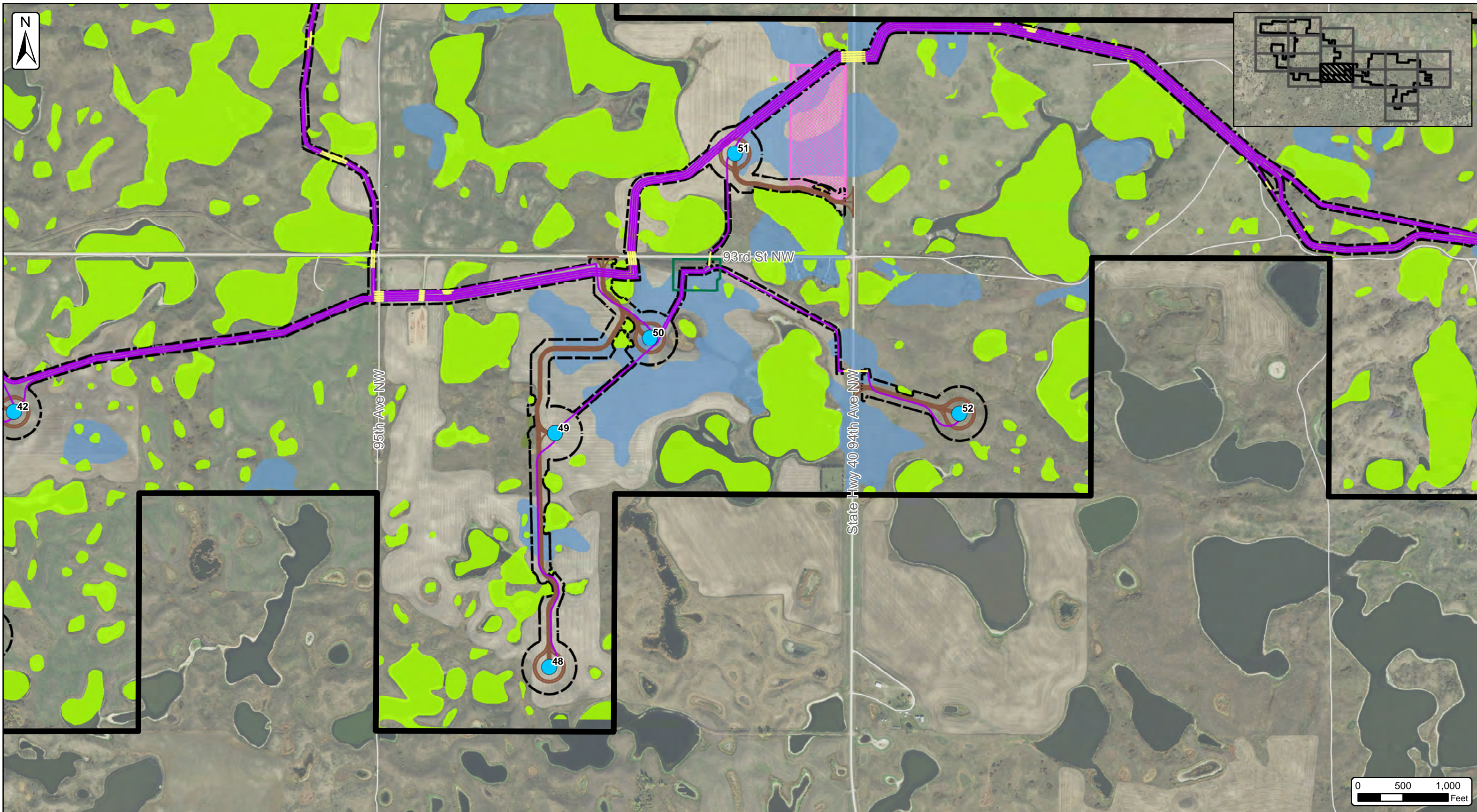
Atwell, LLC Project:16000947

- | | | |
|-------------------------------------|---|---|
| ● Turbine (10/08/2018) | --- Construction Easement (11/03/2018) | Avoidance Areas |
| ● Alt Turbine (10/08/2018) | ▨ Laydown Yard (05/30/2018) | ● Isolated Wetlands |
| ● MET Tower (10/26/2018) | ▨ O&M & Substation (06/06/2018) | ● Jurisdictional Wetlands |
| — Collection Line Bore (11/03/2018) | ▨ Batch Plant Area (11/01/2018) | ■ Farmland Soils (SSURGO) |
| — Collection Line (11/03/2018) | ▨ Project Area 10/23/2018 (±22,933 Ac.) | ■ Farmland of Statewide Importance (14.06%) |
| — Access Road (11/03/2018) | ▨ Counties | |
| — Crane Path (11/03/2018) | | |
- Exclusion Areas: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
 Figure 5m: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

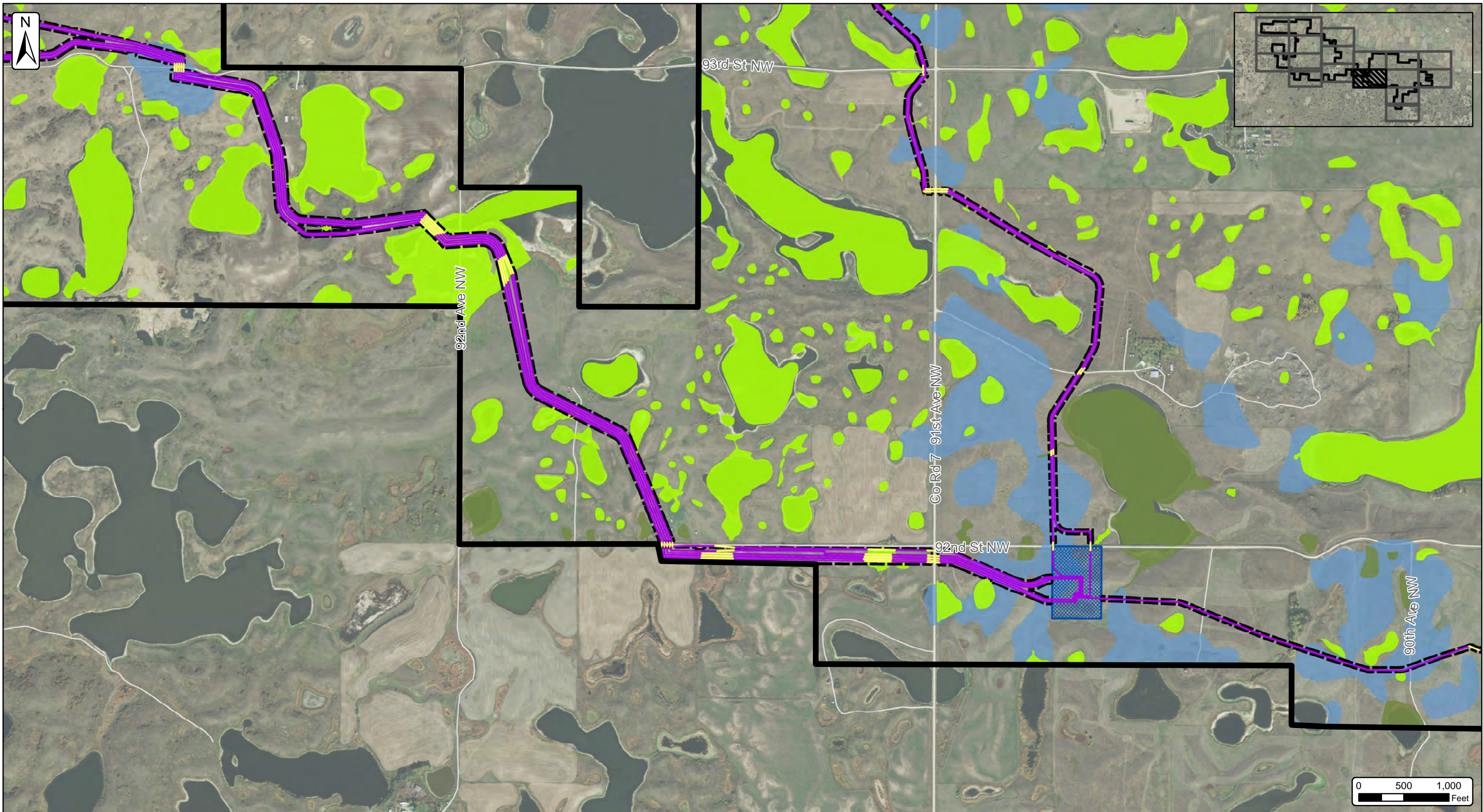
- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)

Exclusion Areas: Archaeological sites not shown due to confidentiality

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
Figure 5n: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

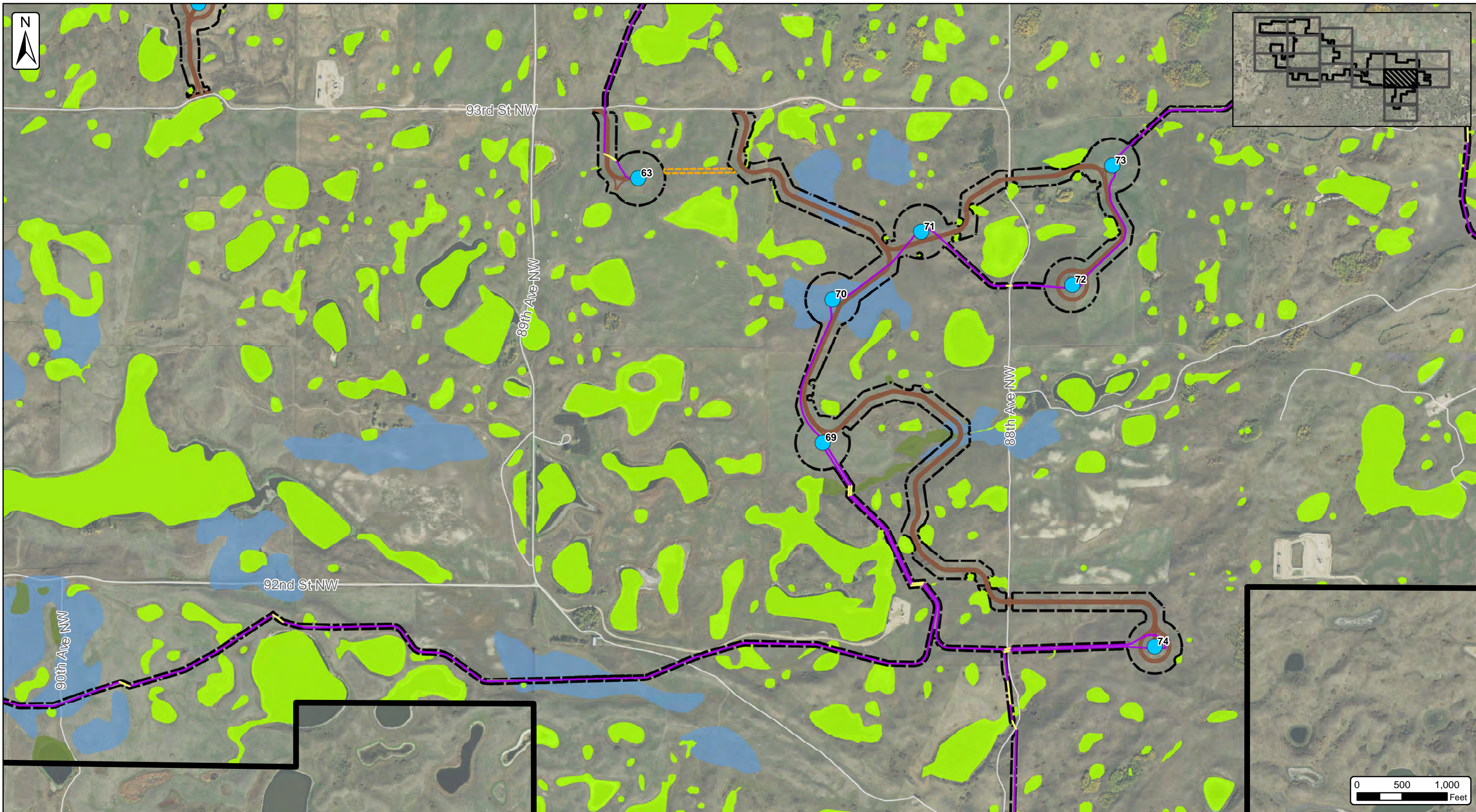
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- Exclusion Areas: Archaeological sites not shown due to confidentiality
- SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
 Figure 5o: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

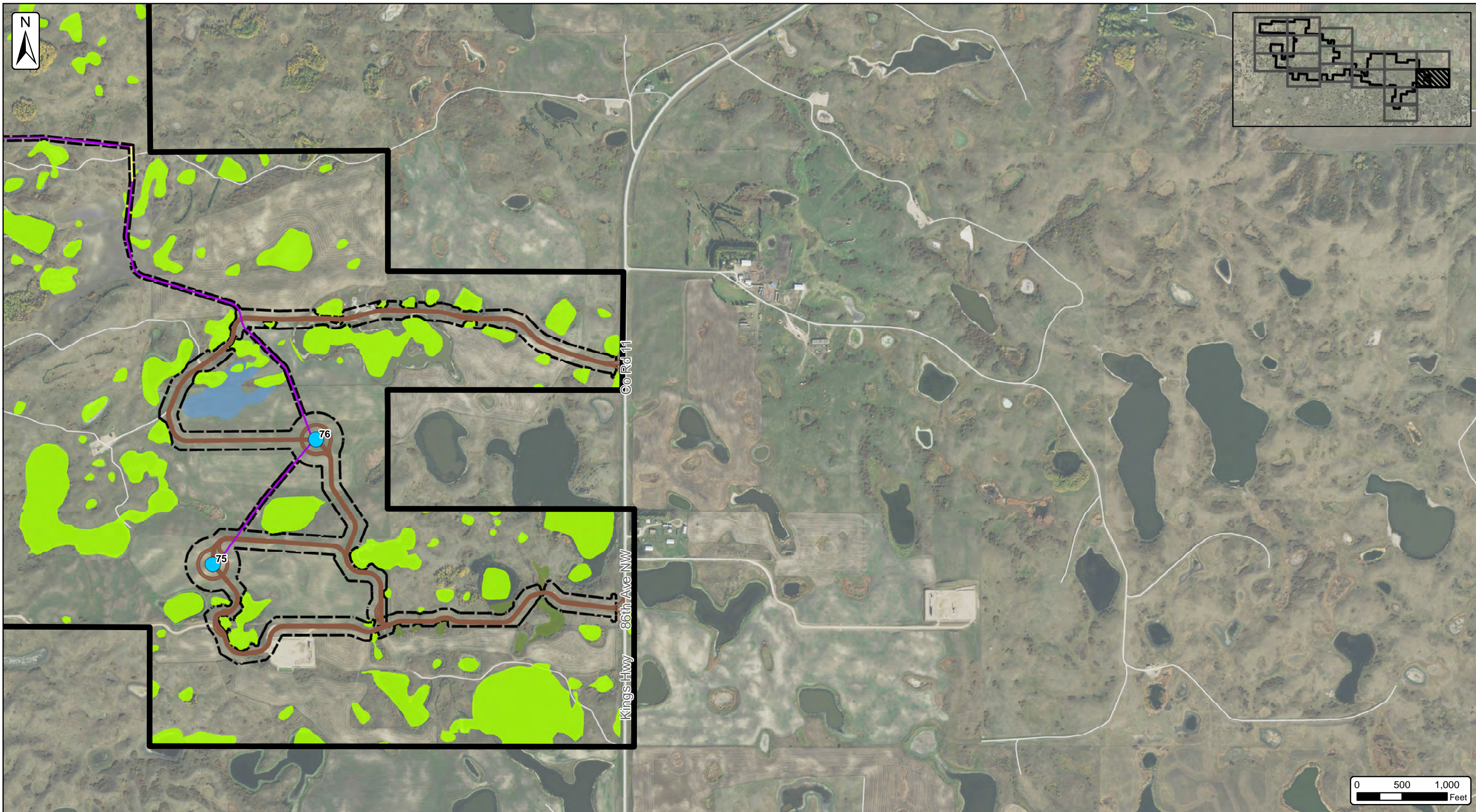
Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- SOURCE: USDA NAIP 2017

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Burke County Wind Energy Center

Figure 5p: Exclusion & Avoidance Areas
Burke County, North Dakota
Date: 11/6/2018

Client:

Burke Wind, LLC

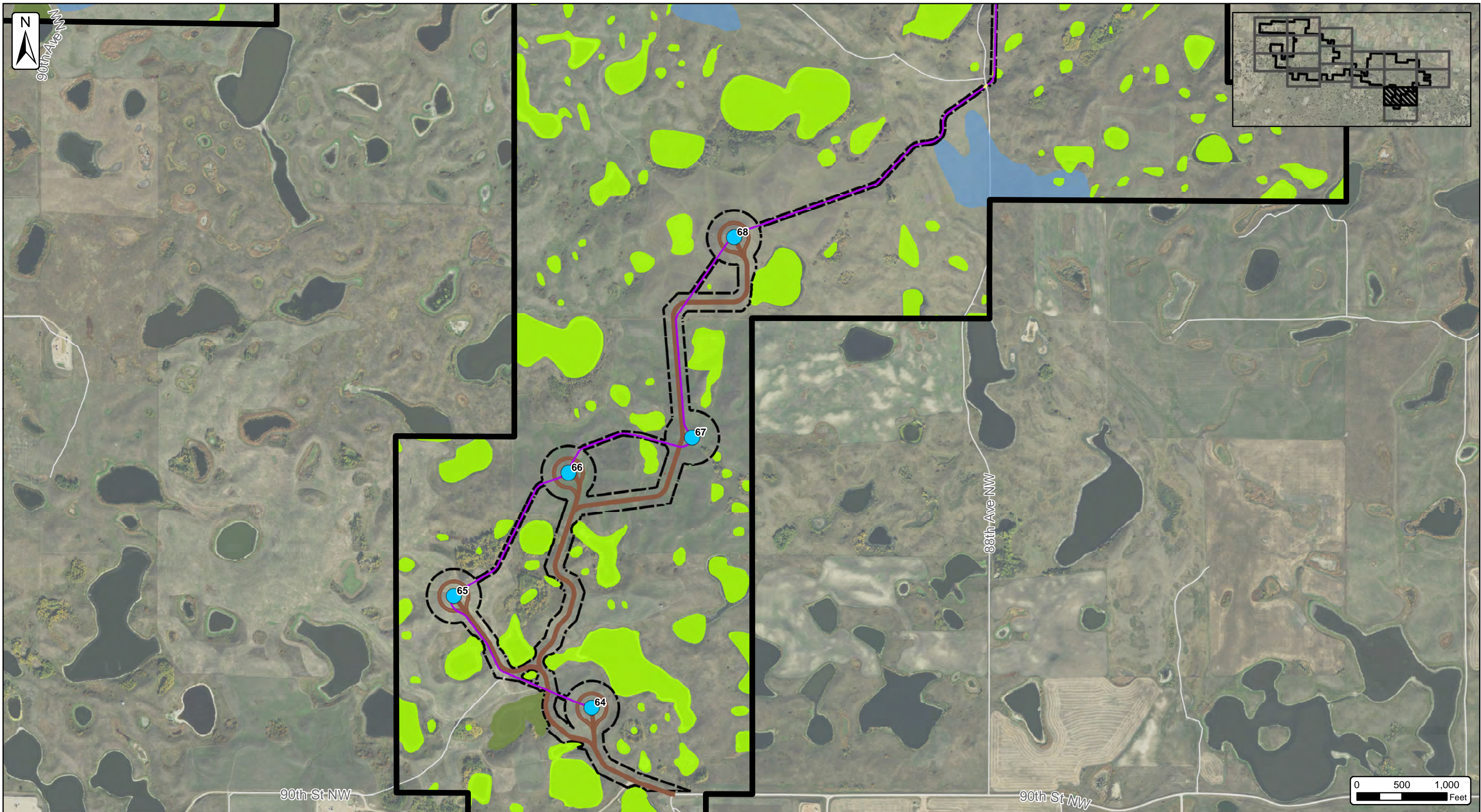
Atwell, LLC Project:16000947

- | | | |
|-----------------------------------|--|---|
| Turbine (10/08/2018) | Construction Easement (11/03/2018) | Avoidance Areas |
| Alt Turbine (10/08/2018) | Laydown Yard (05/30/2018) | Isolated Wetlands |
| MET Tower (10/26/2018) | O&M & Substation (06/06/2018) | Jurisdictional Wetlands |
| Collection Line Bore (11/03/2018) | Batch Plant Area (11/01/2018) | Farmland Soils (SSURGO) |
| Collection Line (11/03/2018) | Project Area 10/23/2018 (±22,933 Ac.) | Percent of Project Area |
| Access Road (11/03/2018) | Counties | Farmland of Statewide Importance (14.06%) |
| Crane Path (11/03/2018) | Exclusion Areas: Archaeological sites not shown due to confidentiality | |

SOURCE: USDA NAIP 2017



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Burke County Wind Energy Center
 Figure 5q: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

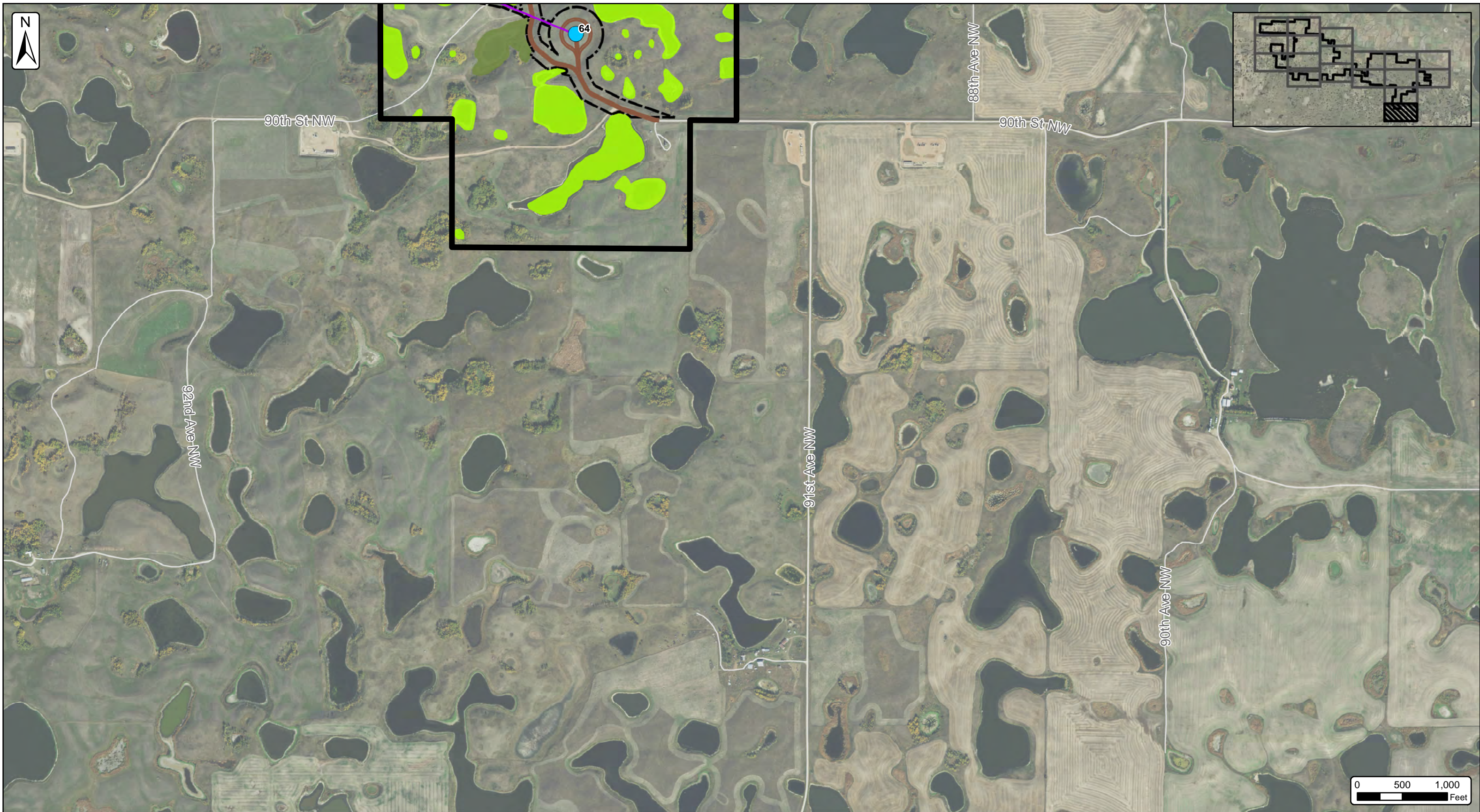
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- PERCENT OF PROJECT AREA
- SOURCE: USDA NAIP 2017

ATWELL

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Burke County Wind Energy Center
 Figure 5r: Exclusion & Avoidance Areas
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Avoidance Areas**
- Isolated Wetlands
 - Jurisdictional Wetlands
 - Farmland Soils (SSURGO)
 - Farmland of Statewide Importance (14.06%)
- Percent of Project Area
- Exclusion Areas: Archaeological sites not shown due to confidentiality
- SOURCE: USDA NAIP 2017

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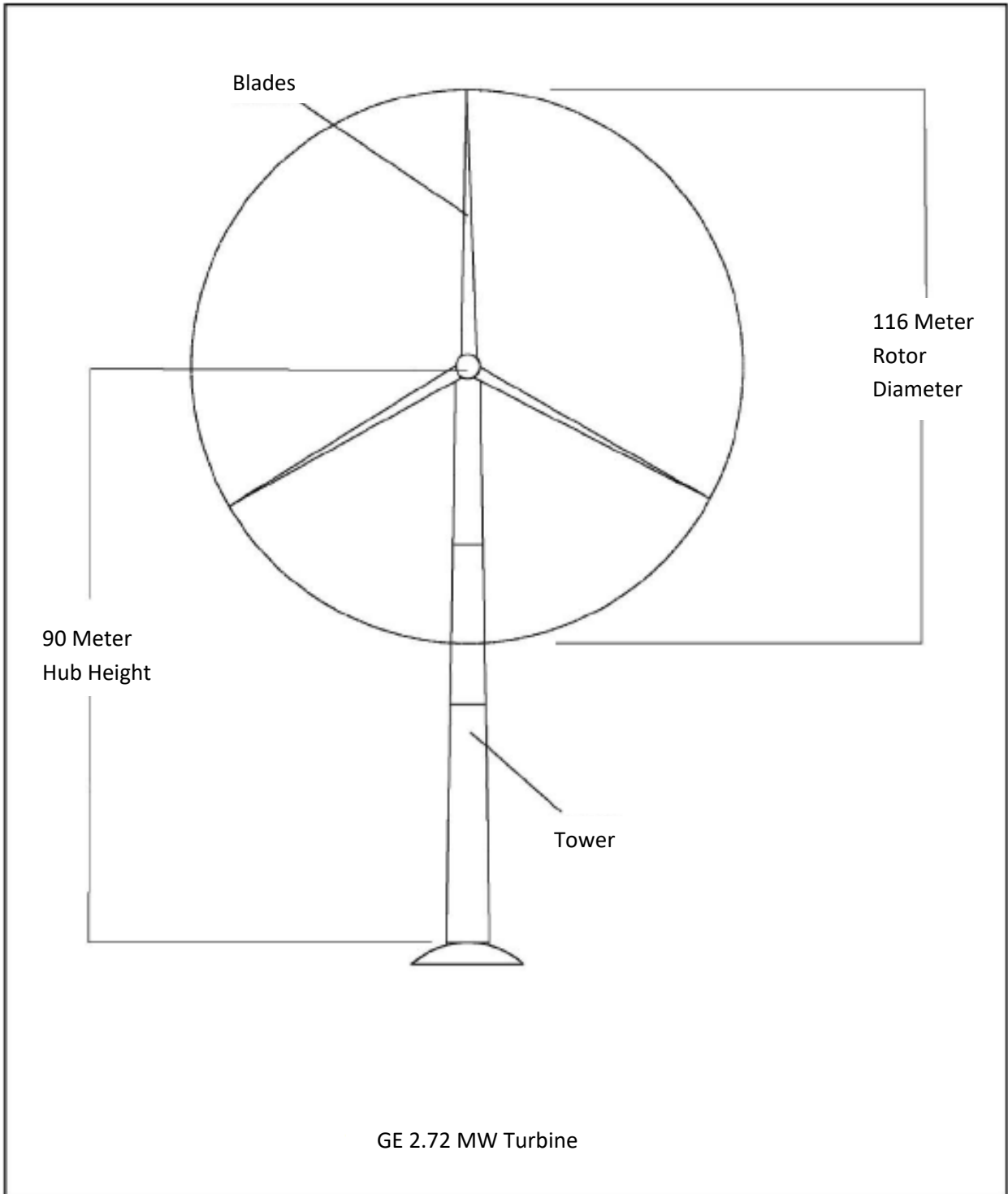


Figure 6(a)

Wind Turbine Design Features

Burke Wind Energy Center

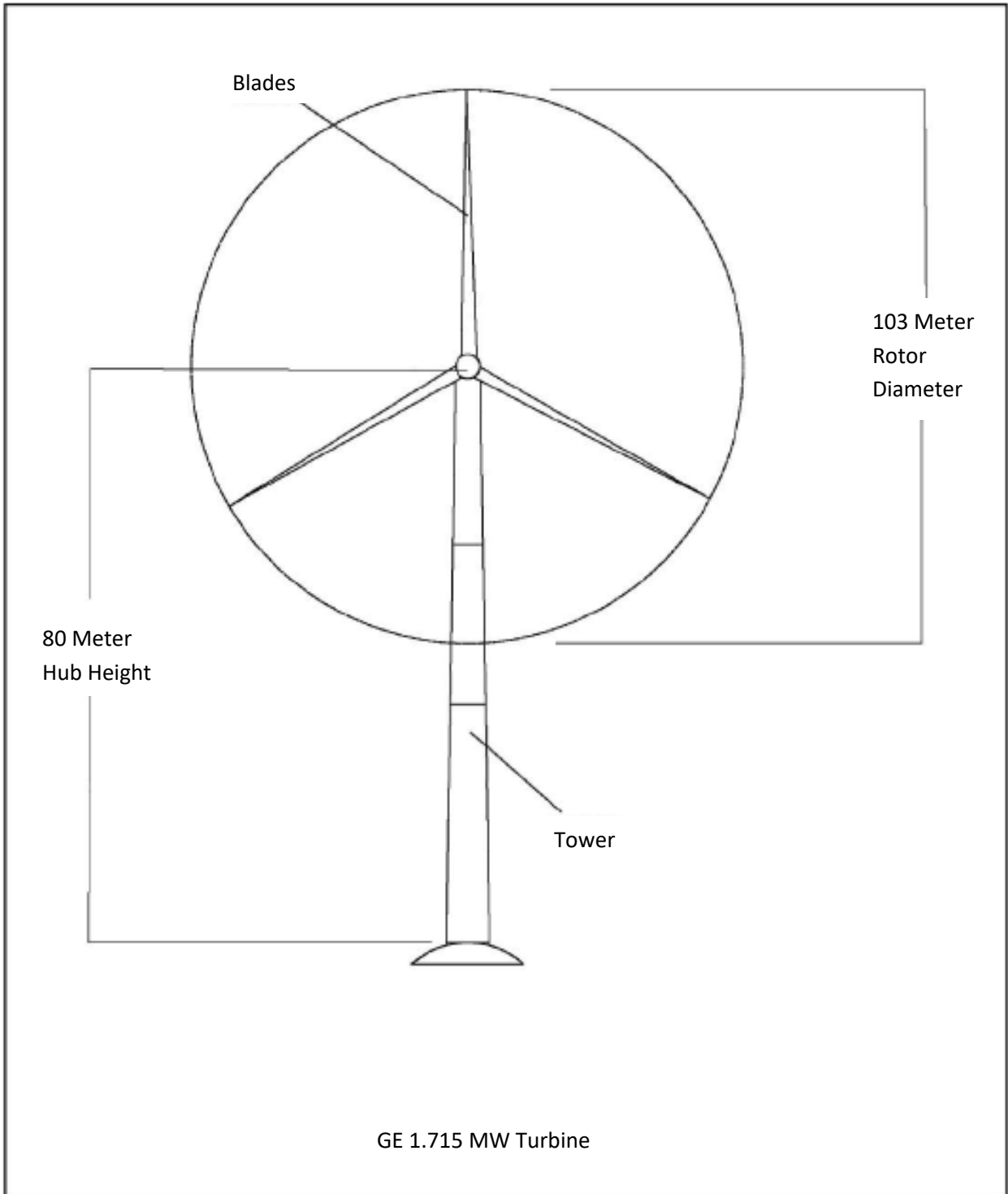


Figure 6(b)

Wind Turbine Design Features

Burke Wind Energy Center

WINDPLANT SYSTEM

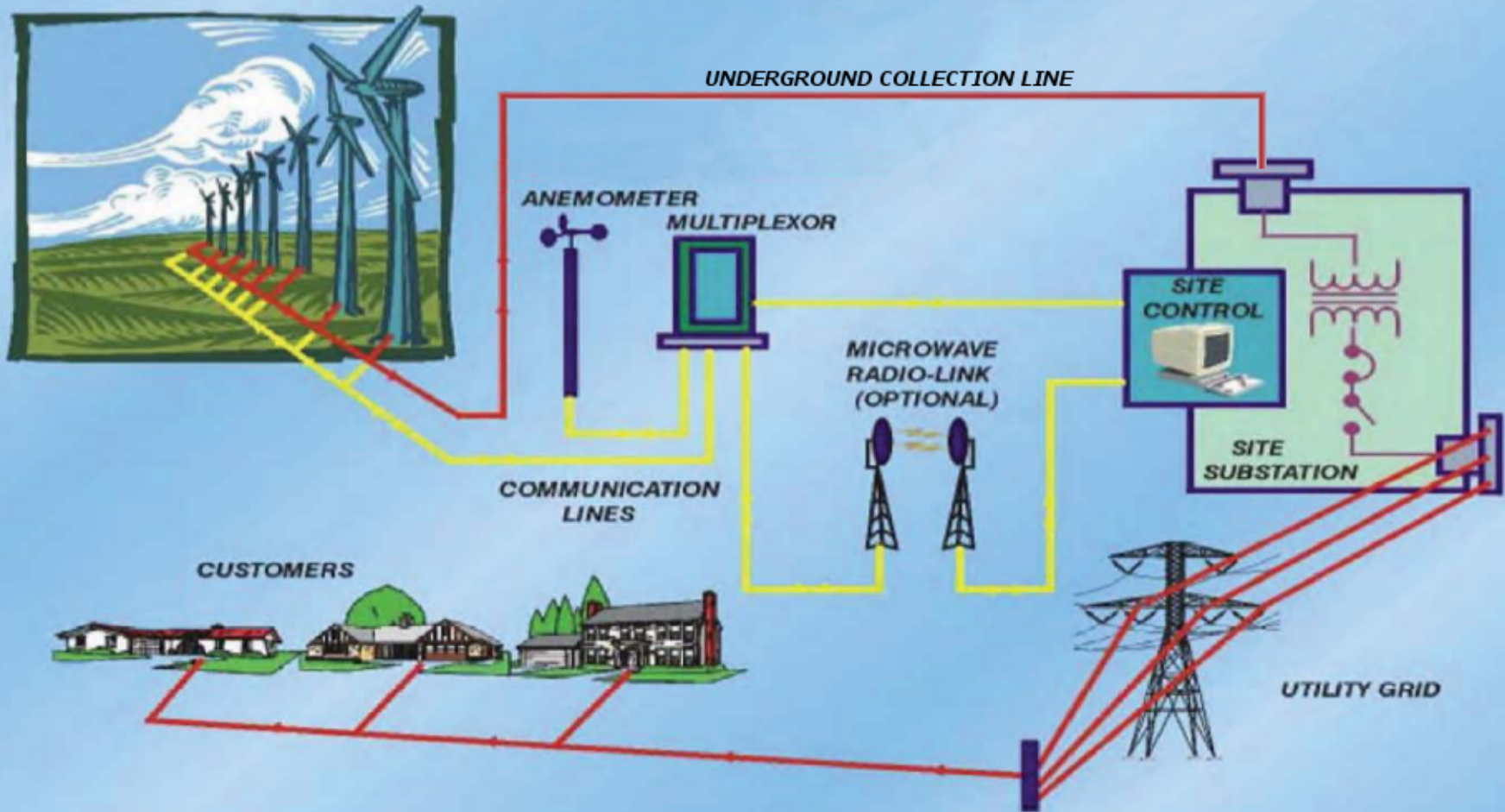


Figure 7 - Path of Energy Diagram

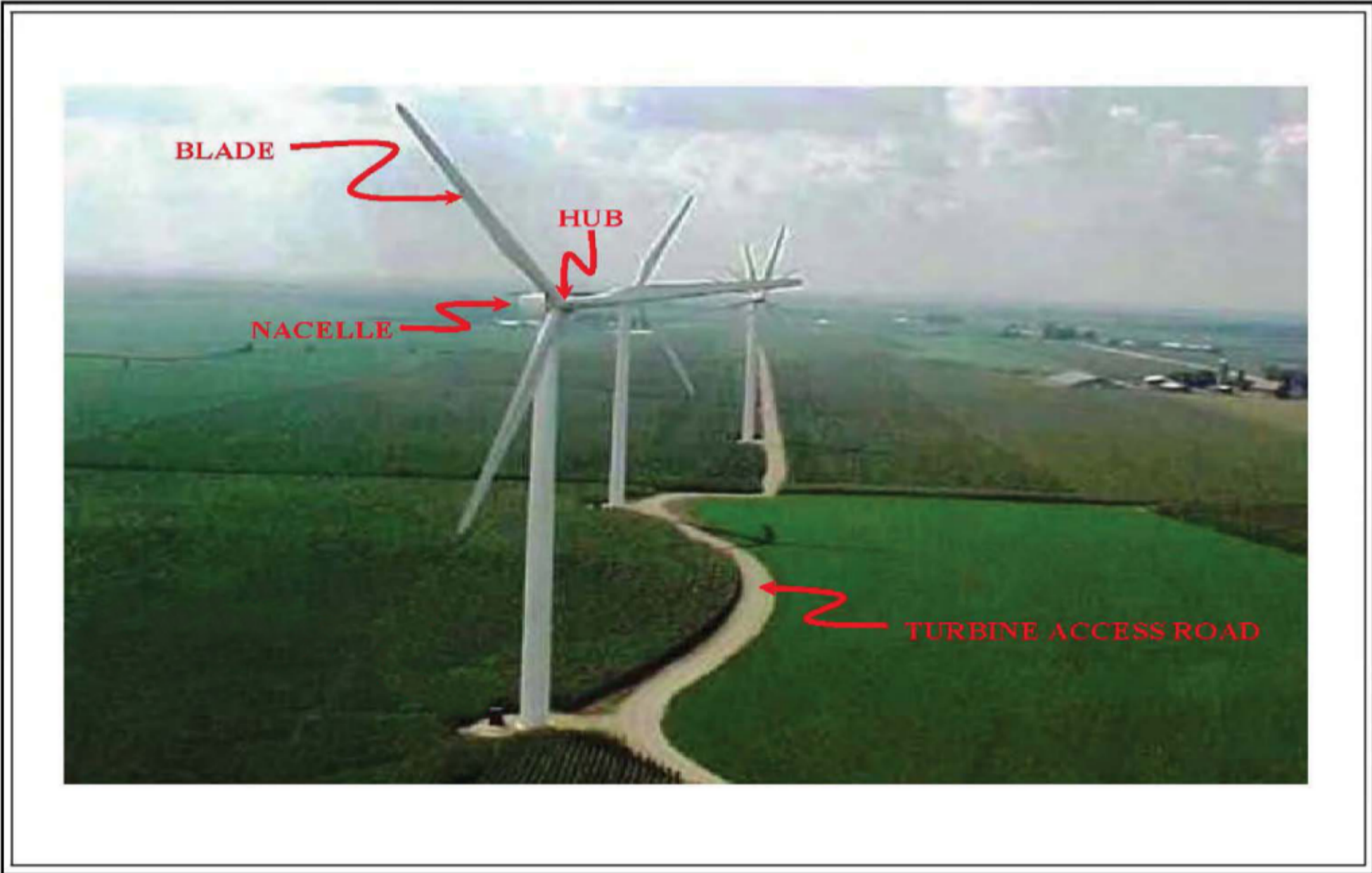


Figure 8 - Typical Wind Energy Center Layout

PRELIMINARY
NOT FOR CONSTRUCTION

rev	date	by	ckd	description
A	05/18/18	TMC	MKR	30% DESIGN

Figure 9 - O&M Building and Collector Substation Site Plan



Scale For Microfilming
Millimeters
38
Inches

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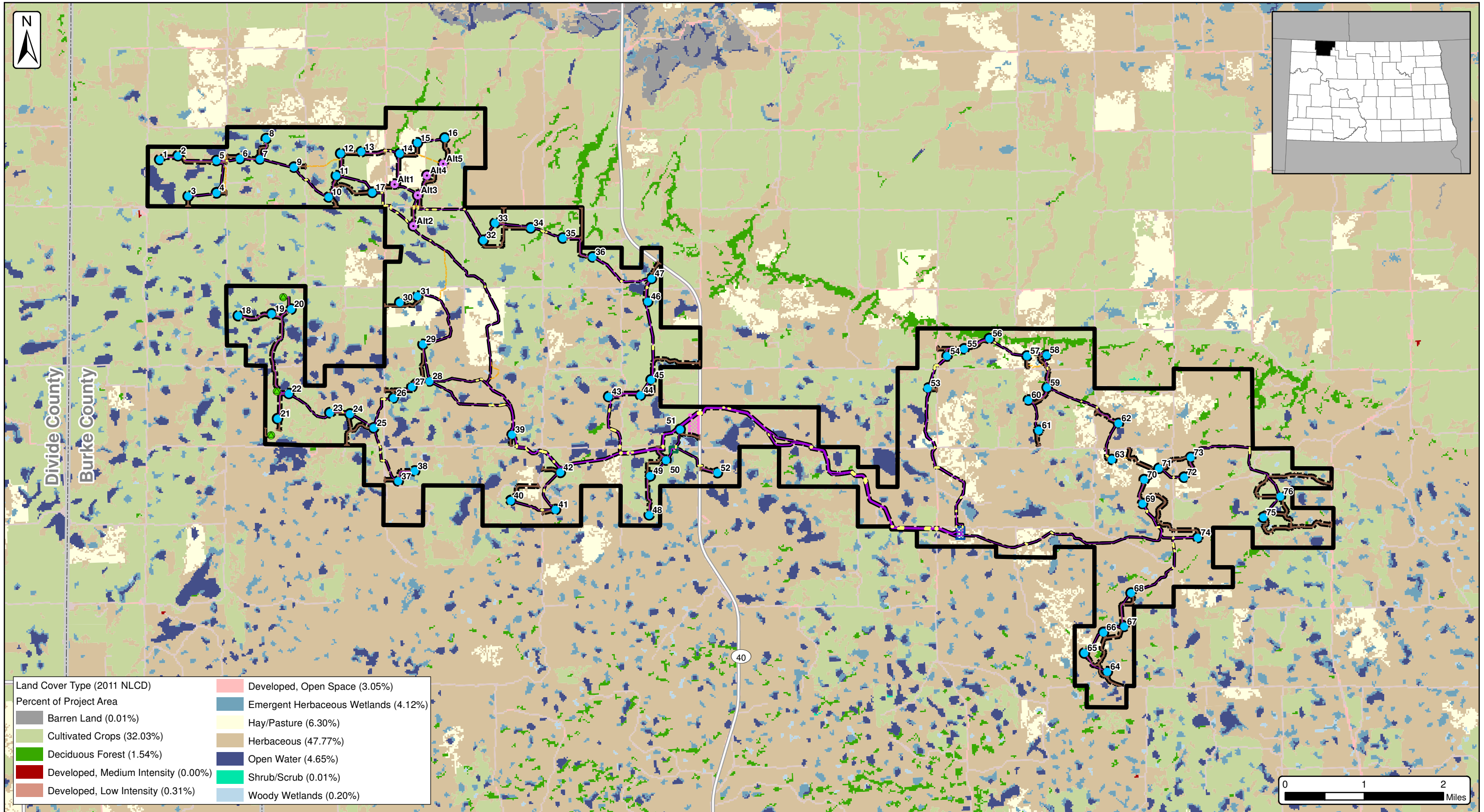
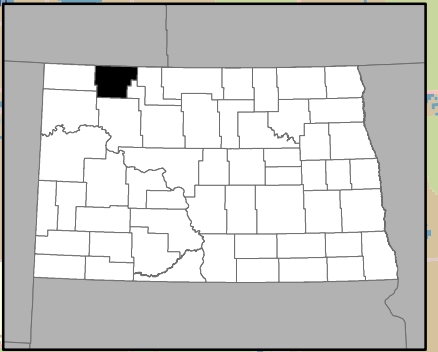
BURNS & MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

date 05/18/18	detailed T. CRAFTON
designed T. CRAFTON	checked M. ROWLAND

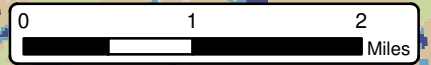


BURKE COUNTY
SITE PLAN

project 99476	contract
drawing BC-D-P002-1	rev. A
file BC-D-P002-1.DWG	



Land Cover Type (2011 NLCD)	
Percent of Project Area	
Barren Land (0.01%)	Developed, Open Space (3.05%)
Cultivated Crops (32.03%)	Emergent Herbaceous Wetlands (4.12%)
Deciduous Forest (1.54%)	Hay/Pasture (6.30%)
Developed, Medium Intensity (0.00%)	Herbaceous (47.77%)
Developed, Low Intensity (0.31%)	Open Water (4.65%)
	Shrub/Scrub (0.01%)
	Woody Wetlands (0.20%)



Burke County Wind Energy Center
Figure 10: Land Cover Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

SOURCE: 2011 NATIONAL LAND COVER DATABASE (USGS)



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Figure 11. Photo of Typical Landscape



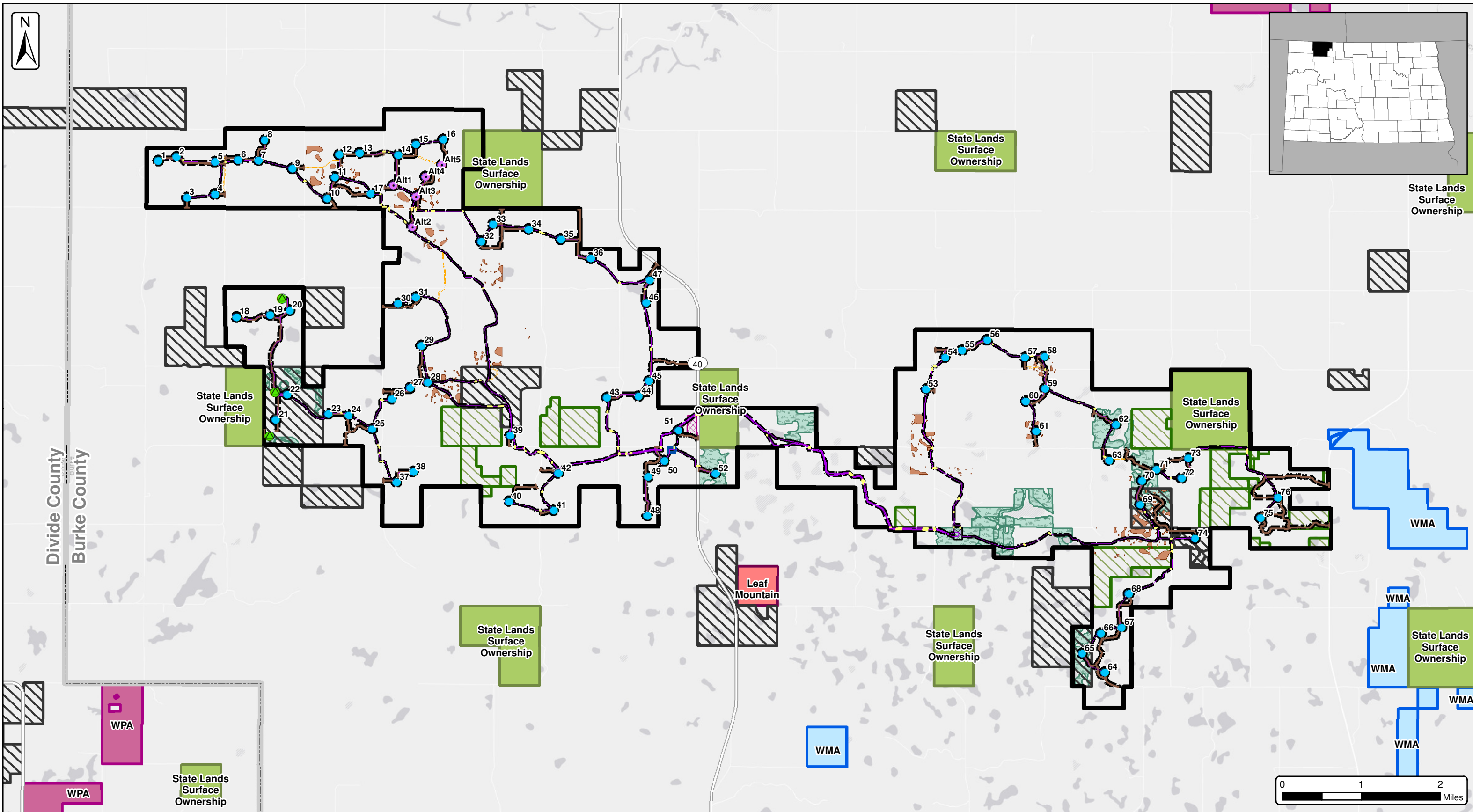
Figure 11a. Photo of Typical Landscape



Figure 11b. Photo of Typical Landscape



Figure 11c. Photo of Typical Landscape




Burke County Wind Energy Center
 Figure 12: Public Lands & Easements
 Burke County, North Dakota
 Date: 11/6/2018

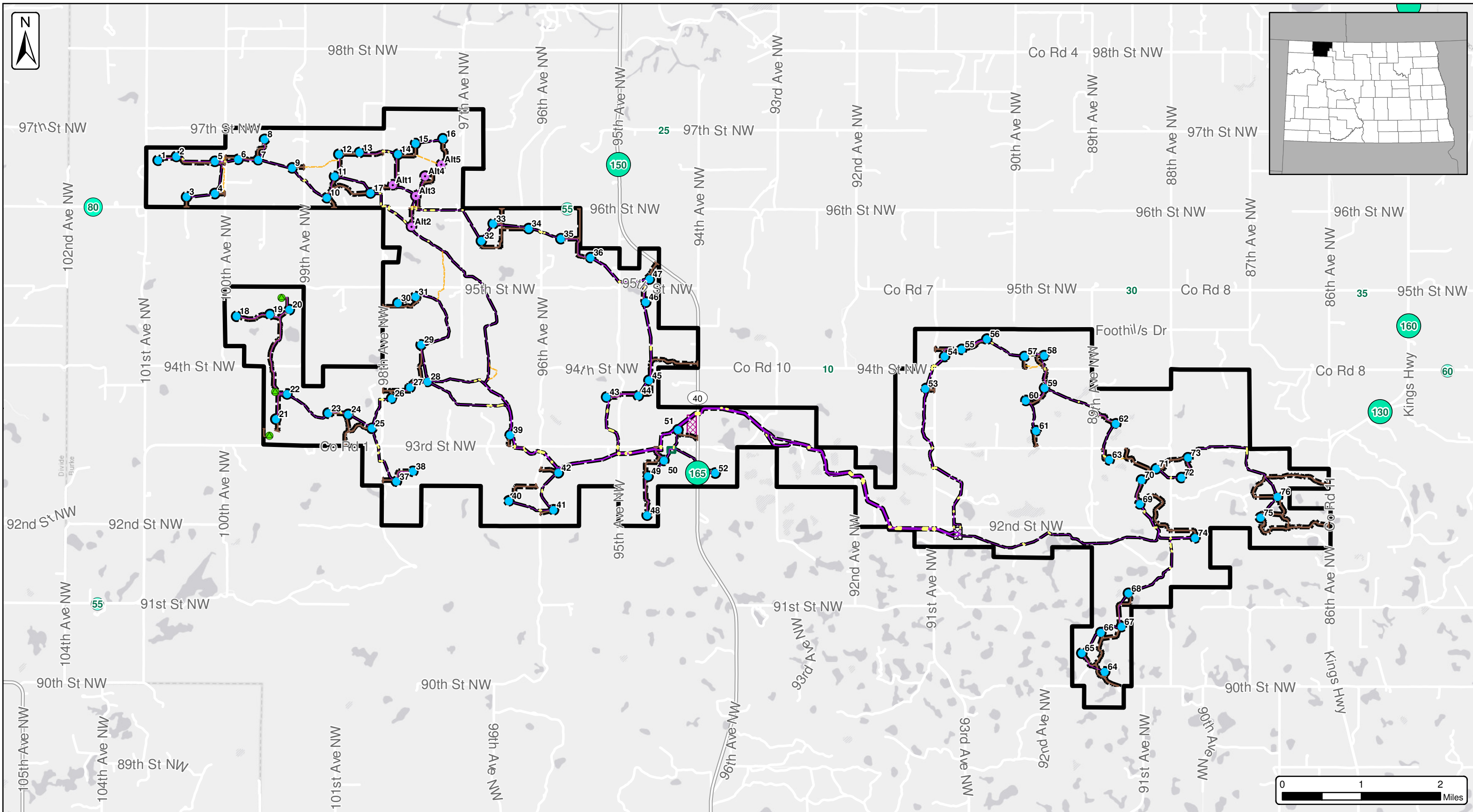
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

- Protected Areas (USGS)**
- State Wildlife Management Area
 - Waterfowl Production Area
 - Wildlife Management Area
 - State Lands Surface Ownership
- Other Features:**
- PLOTS (NDGFD)
 - CRP Easements
 - Protected Wetland Basins within Wetland Easements (USFWS)
 - Wetland/Grassland Easement (USFWS)
- Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community



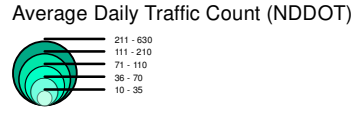
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Burke County Wind Energy Center
Figure 13: Average Daily Traffic
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project: 16000947

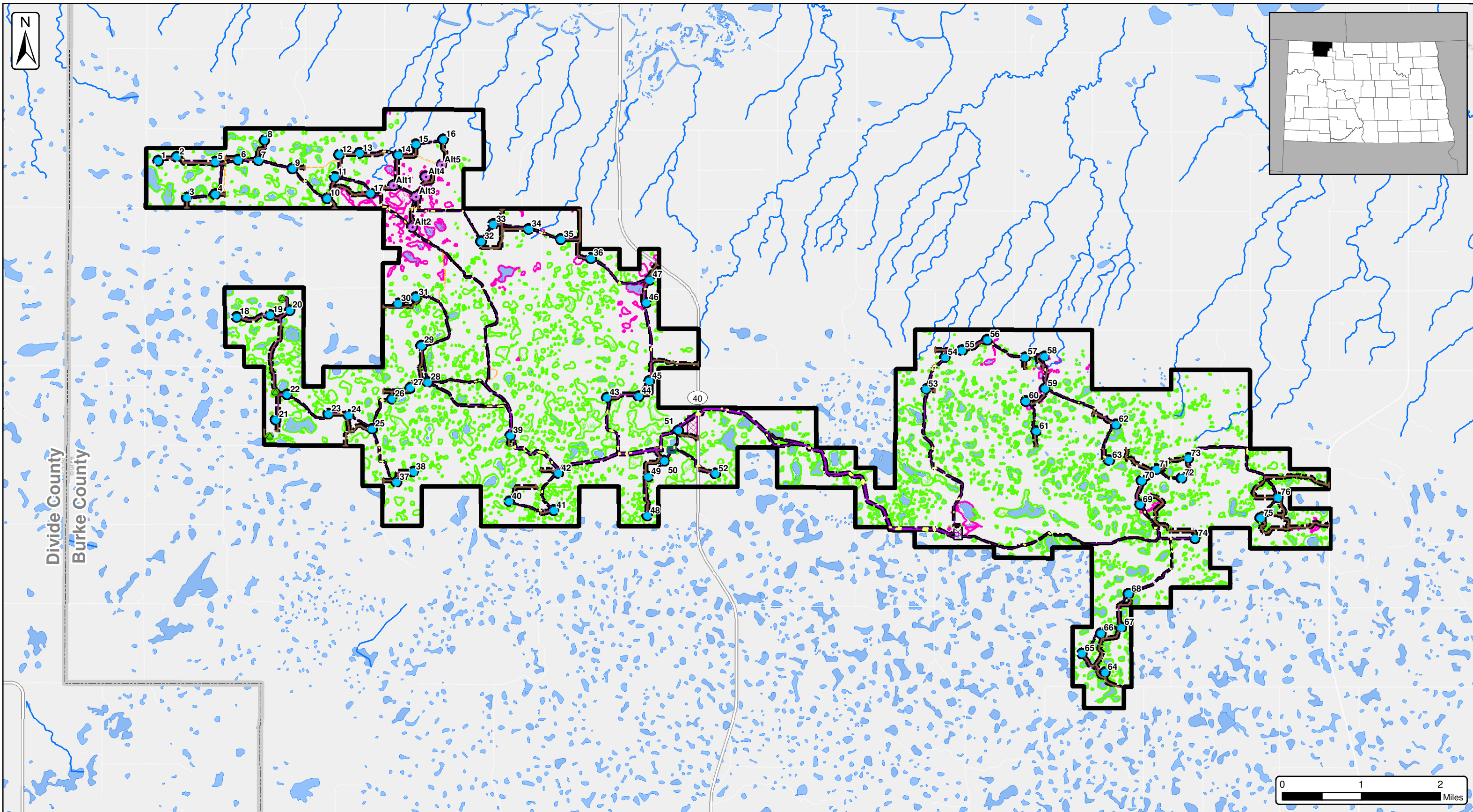
- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- - - Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)



Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community



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Burke County Wind Energy Center
Figure 14: Wetlands & Surface Water
 Burke County, North Dakota
 Date: 11/6/2018

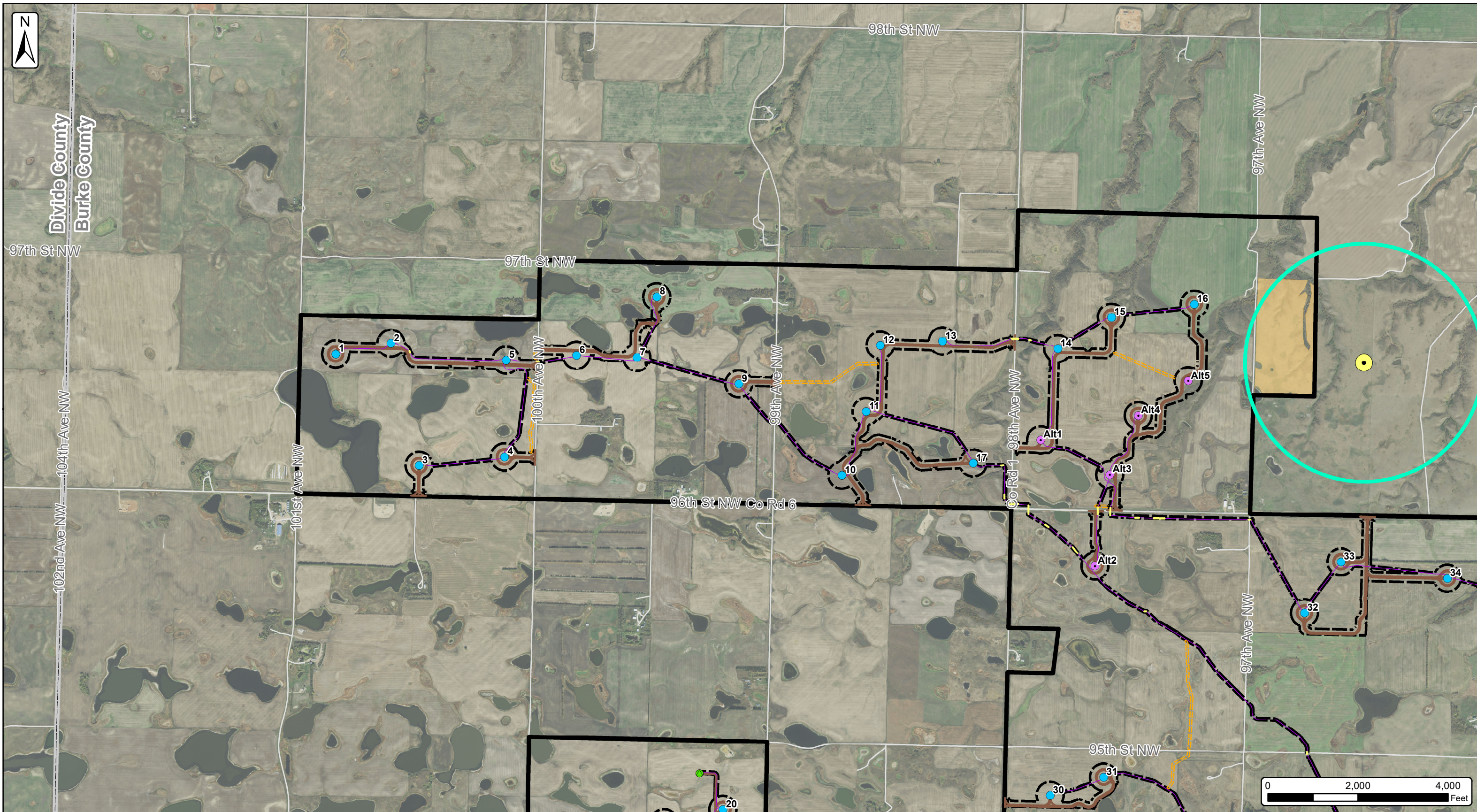
Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Watercourses (NHD)
- Waterbodies (NHD)
- Wetlands**
- Isolated Wetlands
- Jurisdictional Wetlands
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community



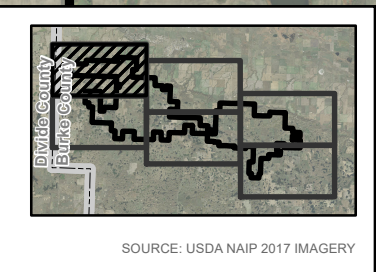
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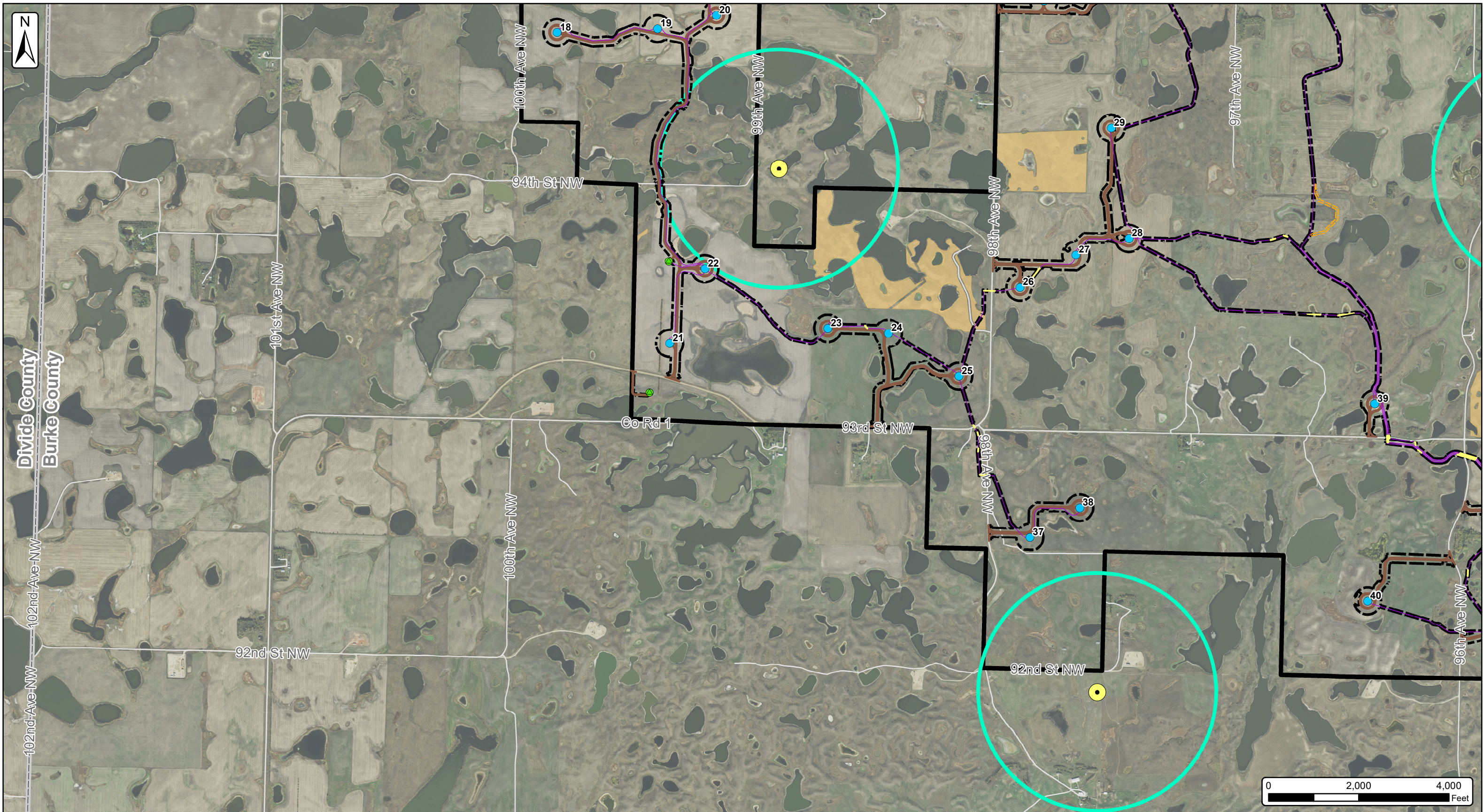
Burke County Wind Energy Center
Figure 15a: Sharp-tailed Grouse Lek Habitat & Native Prairie Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- | | | |
|---|---------------------------------------|---|
| Sharp-tailed Grouse (Atwell Identified 2017/2018) | ● Turbine (10/08/2018) | --- Construction Easement (11/03/2018) |
| ● Confirmed Lek | ● Alt Turbine (10/08/2018) | ■ Laydown Yard (05/30/2018) |
| □ Grouse Lek 0.5 Mile Buffer | ● MET Tower (10/26/2018) | ■ O&M & Substation (06/06/2018) |
| ■ Native Prairie Habitat | --- Collection Line Bore (11/03/2018) | ■ Batch Plant Area (11/01/2018) |
| | --- Collection Line (11/03/2018) | ■ Project Area 10/23/2018 (±22,933 Ac.) |
| | --- Access Road (11/03/2018) | --- Counties |
| | --- Crane Path (11/03/2018) | |



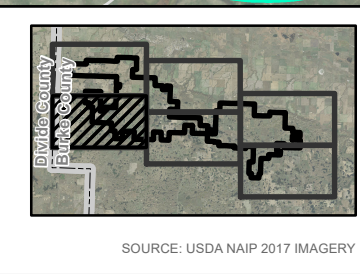
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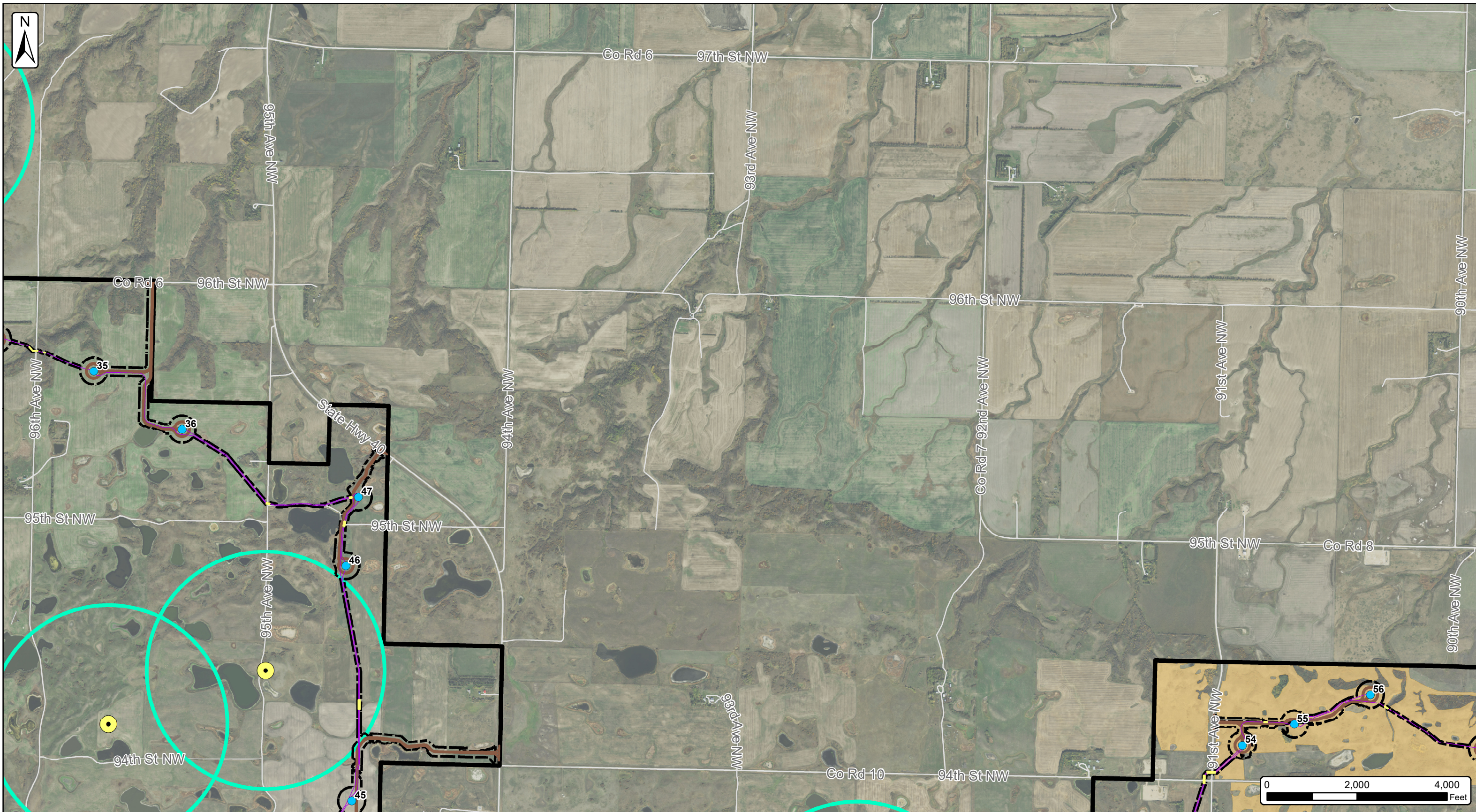
Burke County Wind Energy Center
Figure 15b: Sharp-tailed Grouse Lek Habitat & Native Prairie Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- | | | |
|---|-------------------------------------|---|
| Sharp-tailed Grouse (Atwell Identified 2017/2018) | ● Turbine (10/08/2018) | --- Construction Easement (11/03/2018) |
| ● Confirmed Lek | ● Alt Turbine (10/08/2018) | ■ Laydown Yard (05/30/2018) |
| ○ Grouse Lek 0.5 Mile Buffer | ● MET Tower (10/26/2018) | ■ O&M & Substation (06/06/2018) |
| ■ Native Prairie Habitat | — Collection Line Bore (11/03/2018) | ■ Batch Plant Area (11/01/2018) |
| | — Collection Line (11/03/2018) | ■ Project Area 10/23/2018 (±22,933 Ac.) |
| | — Access Road (11/03/2018) | --- Counties |
| | — Crane Path (11/03/2018) | |



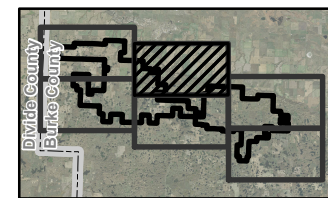
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Burke County Wind Energy Center
Figure 15c: Sharp-tailed Grouse Lek Habitat & Native Prairie Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

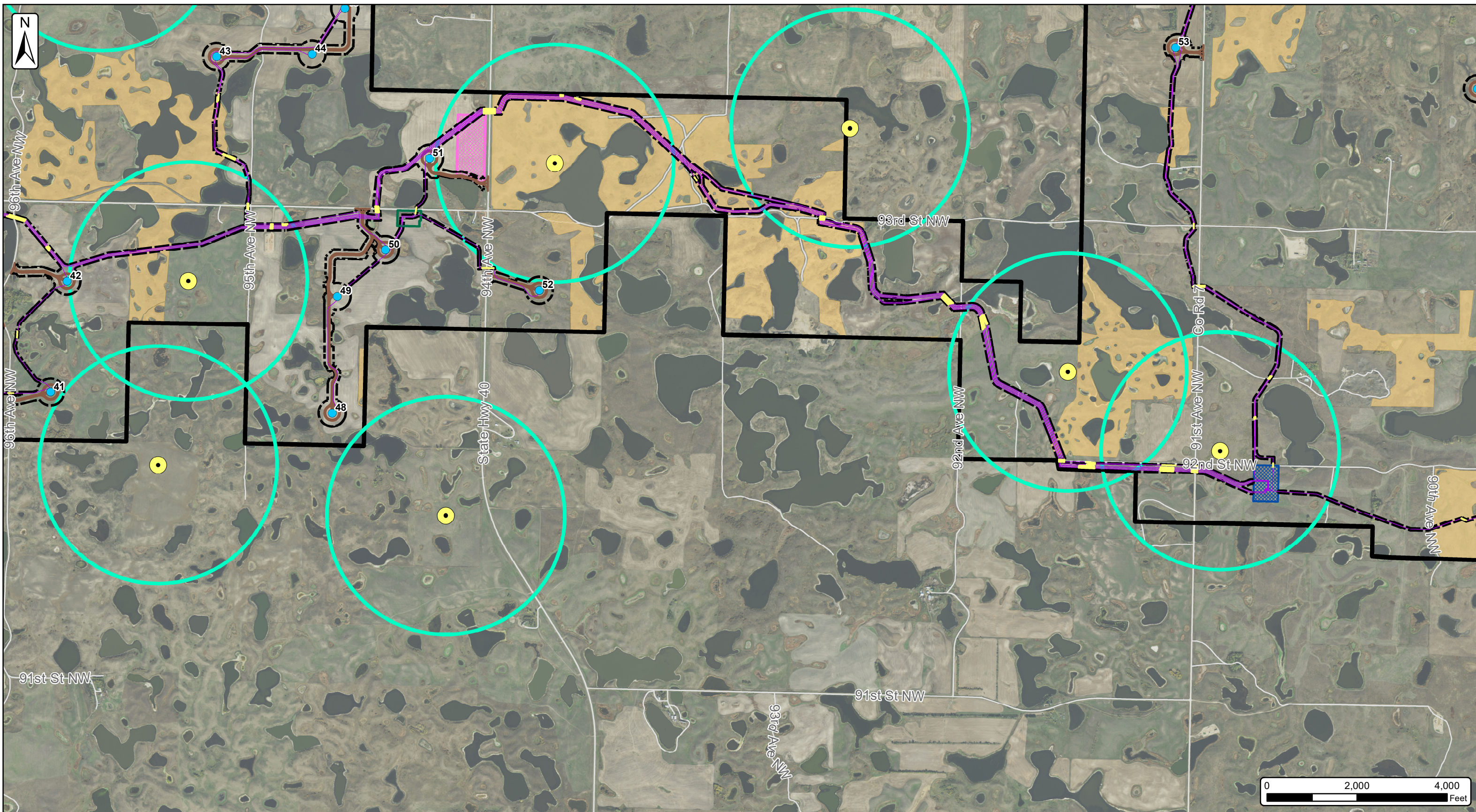
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|---|---------------------------------------|---|
| Sharp-tailed Grouse (Atwell Identified 2017/2018) | ● Turbine (10/08/2018) | --- Construction Easement (11/03/2018) |
| ● Confirmed Lek | ● Alt Turbine (10/08/2018) | ■ Laydown Yard (05/30/2018) |
| ○ Grouse Lek 0.5 Mile Buffer | ● MET Tower (10/26/2018) | ■ O&M & Substation (06/06/2018) |
| ■ Native Prairie Habitat | --- Collection Line Bore (11/03/2018) | ■ Batch Plant Area (11/01/2018) |
| | --- Collection Line (11/03/2018) | ■ Project Area 10/23/2018 (±22,933 Ac.) |
| | --- Access Road (11/03/2018) | --- Counties |
| | --- Crane Path (11/03/2018) | |



SOURCE: USDA NAIP 2017 IMAGERY



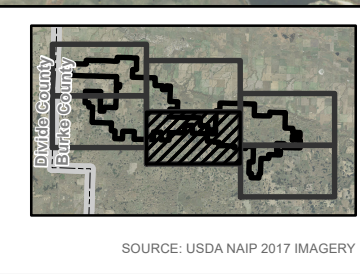
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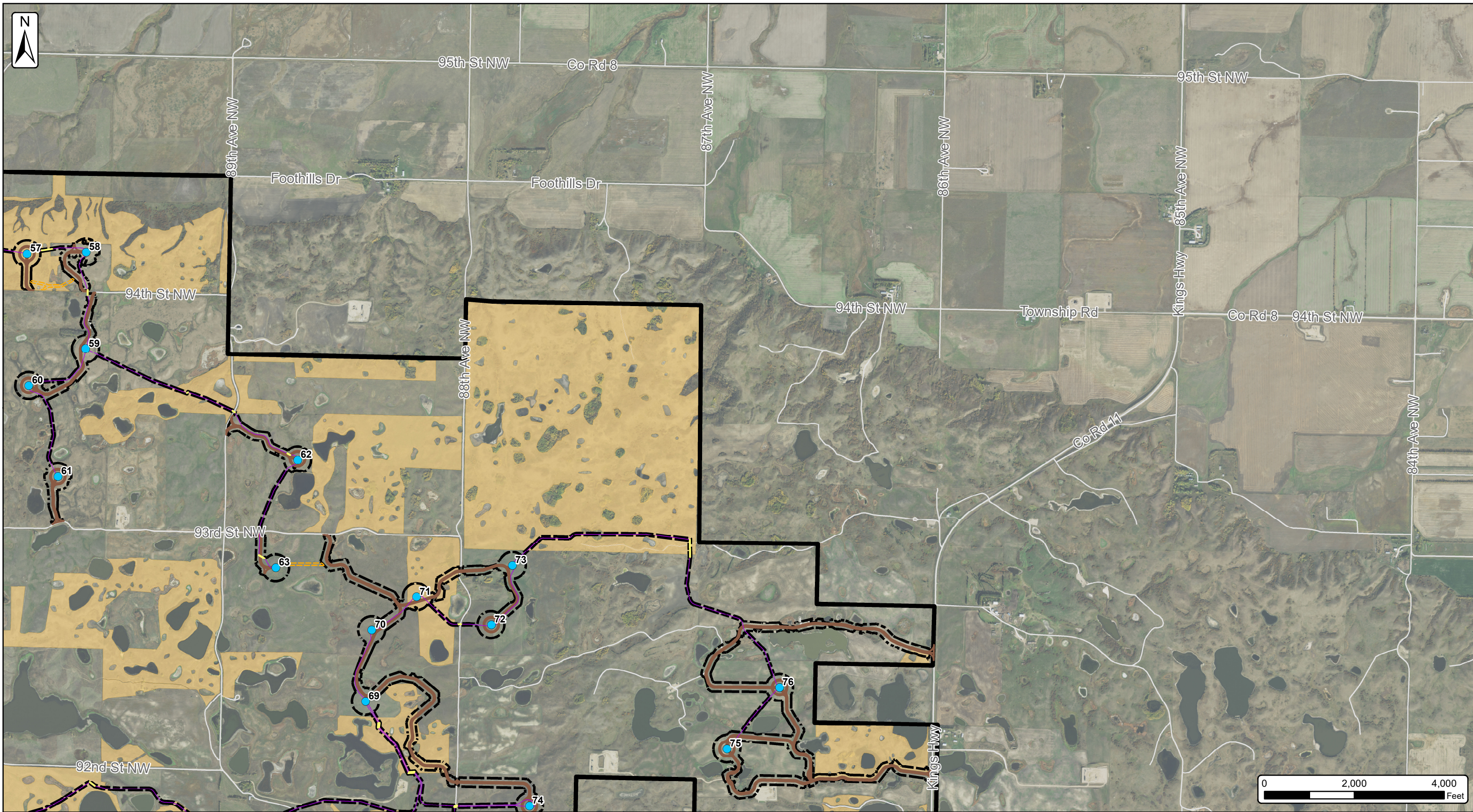
Burke County Wind Energy Center
Figure 15d: Sharp-tailed Grouse Lek Habitat & Native Prairie Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

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| <ul style="list-style-type: none"> Sharp-tailed Grouse (Atwell Identified 2017/2018) Confirmed Lek Grouse Lek 0.5 Mile Buffer Native Prairie Habitat | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
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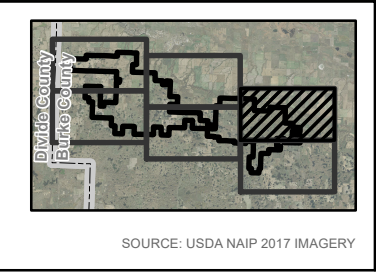
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Burke County Wind Energy Center
 Figure 15e: Sharp-tailed Grouse Lek Habitat & Native Prairie Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

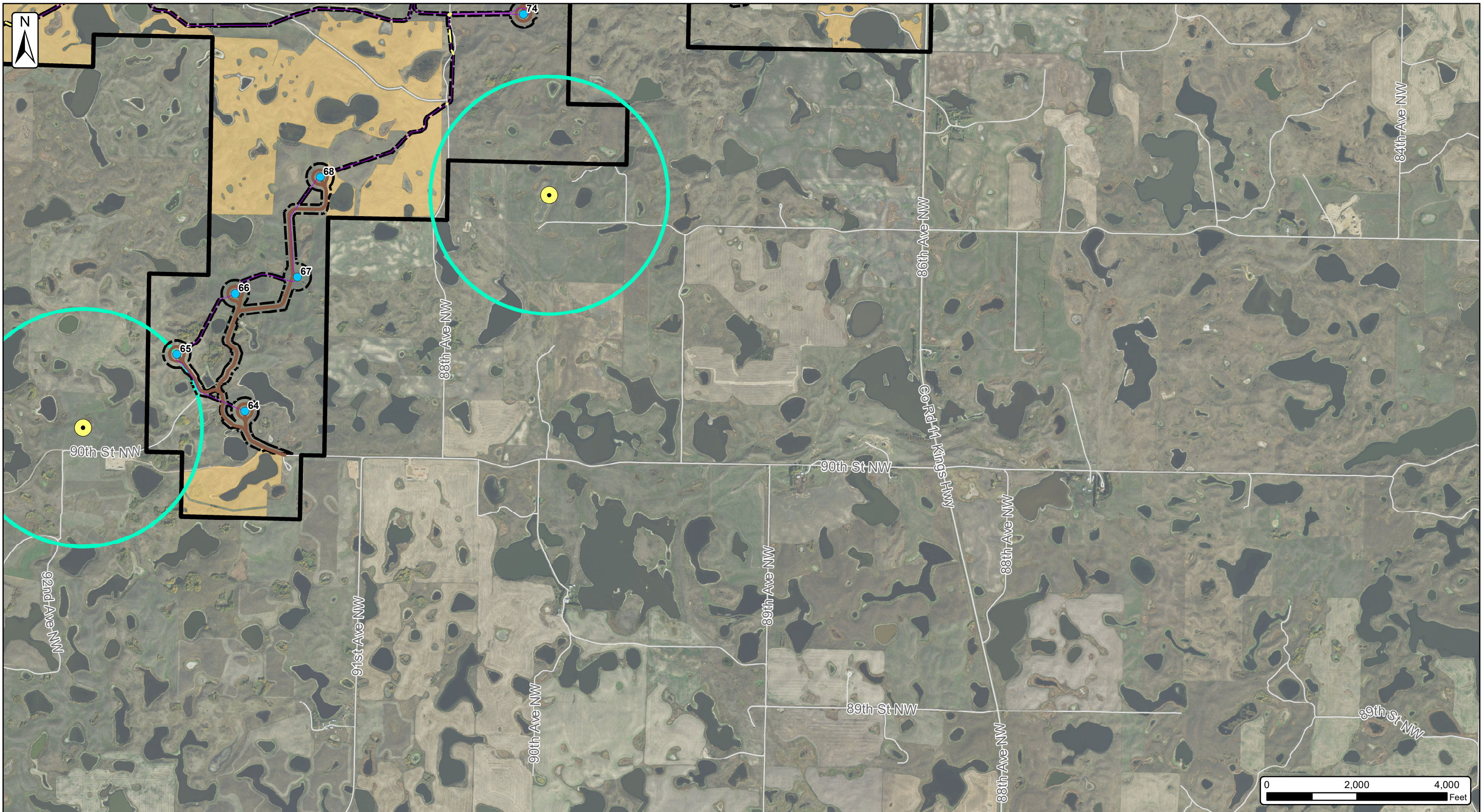
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| <ul style="list-style-type: none"> Sharp-tailed Grouse (Atwell Identified 2017/2018) Confirmed Lek Grouse Lek 0.5 Mile Buffer Native Prairie Habitat | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
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SOURCE: USDA NAIP 2017 IMAGERY



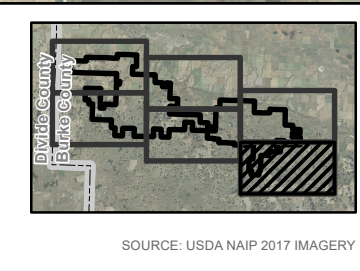
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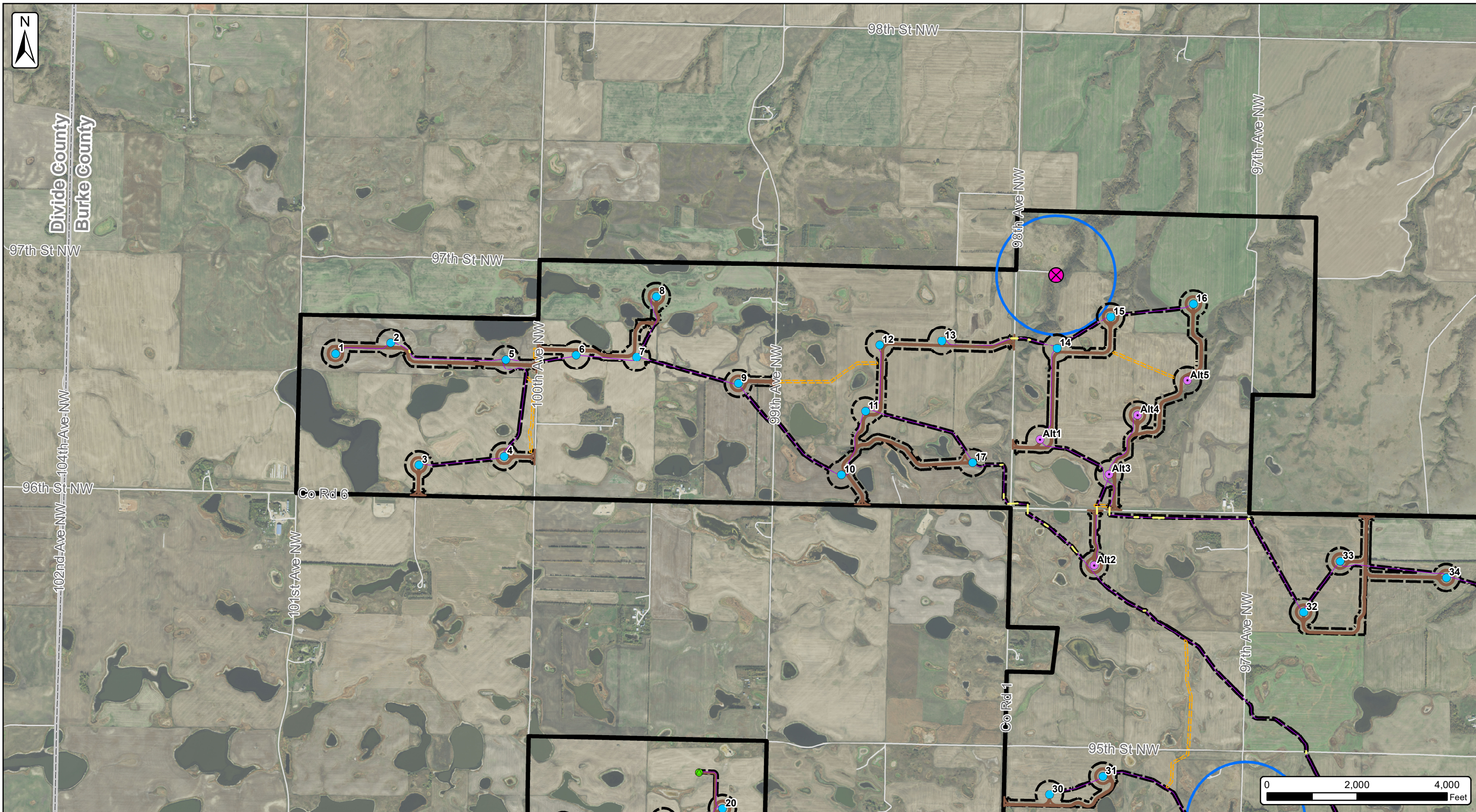
Burke County Wind Energy Center
 Figure 15f: Sharp-tailed Grouse Lek Habitat & Native Prairie Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

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| <ul style="list-style-type: none"> Sharp-tailed Grouse (Atwell Identified 2017/2018) Confirmed Lek Grouse Lek 0.5 Mile Buffer Native Prairie Habitat | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
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Burke County Wind Energy Center

Figure 16a: Raptor Nest Map

Burke County, North Dakota

Date: 11/6/2018

Client:

Burke Wind, LLC

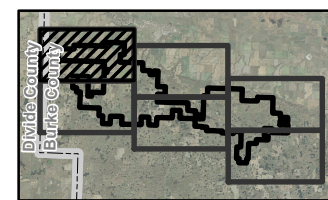
Atwell, LLC Project:16000947

Raptor Nest Constraints
(Atwell Identified April & May 2017)

- Great Horned Owl
- Red-tailed Hawk
- Raptor Nest 0.25 Mile Buffer

- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)

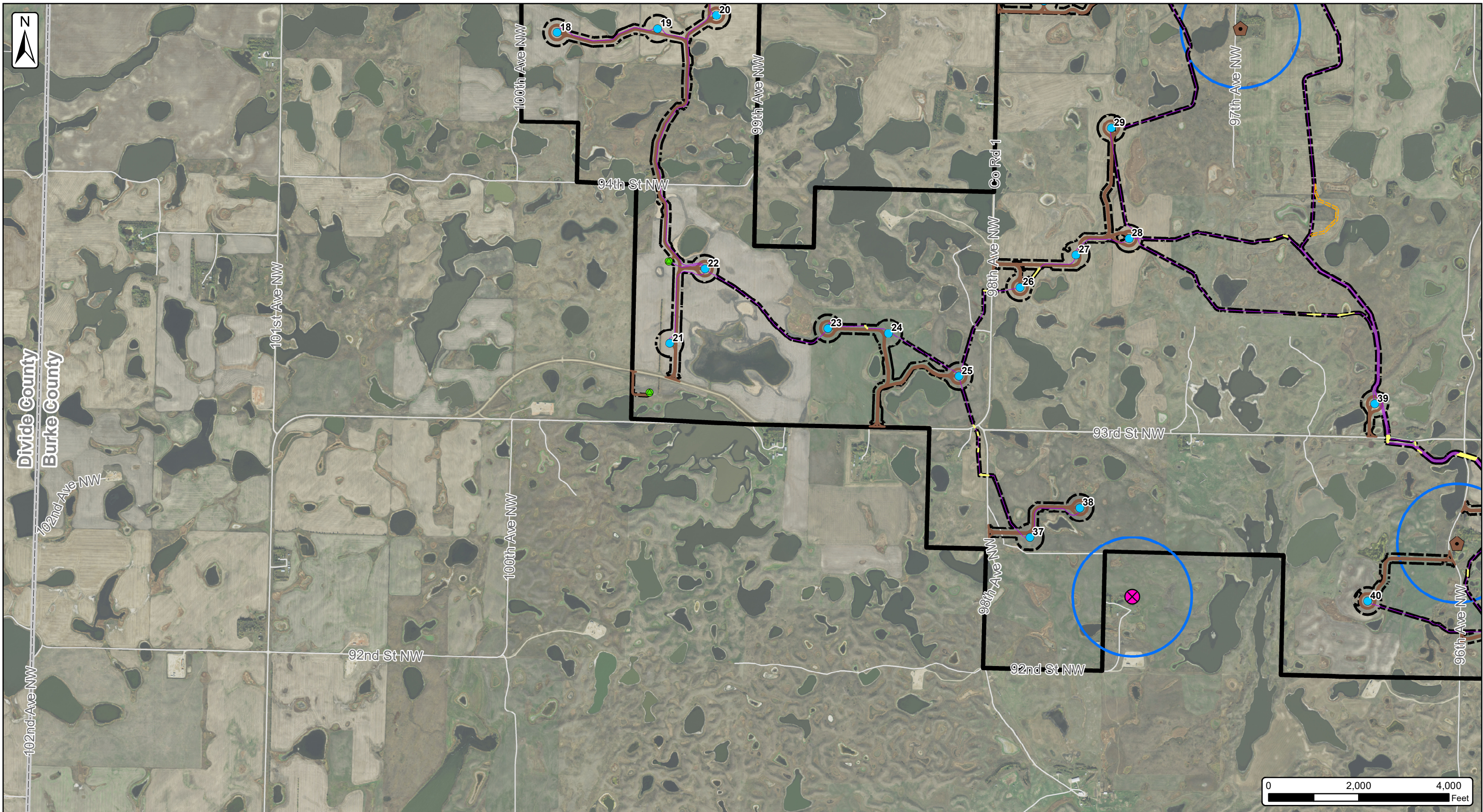
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties



SOURCE: USDA NAIP 2017 IMAGERY



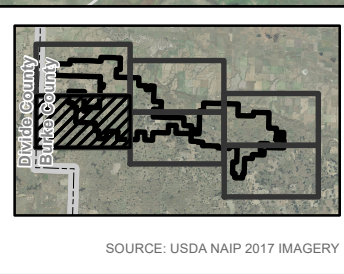

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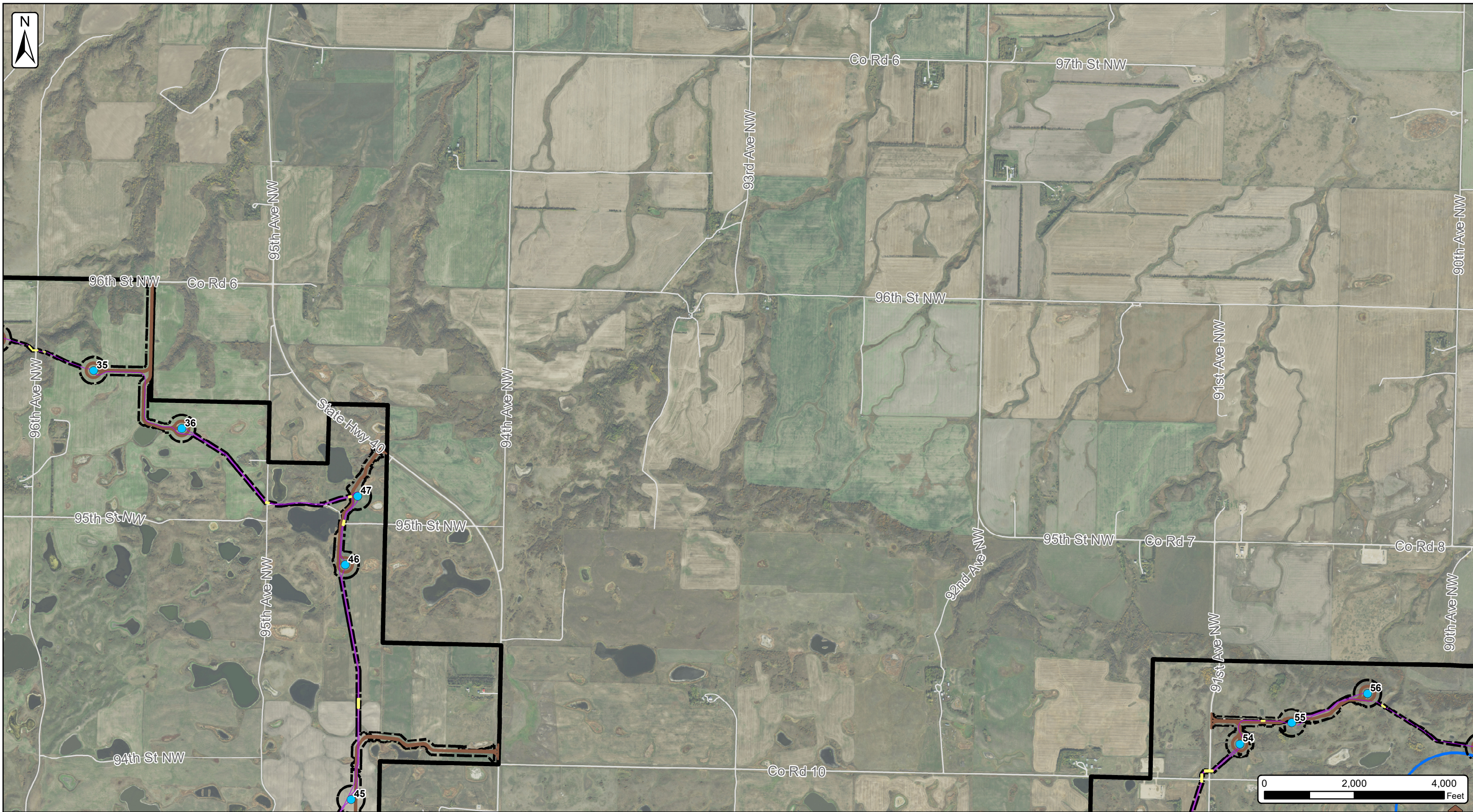
Burke County Wind Energy Center
Figure 16b: Raptor Nest Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> Raptor Nest Constraints (Atwell Identified April & May 2017) Great Horned Owl Red-tailed Hawk Raptor Nest 0.25 Mile Buffer | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
|---|---|--|

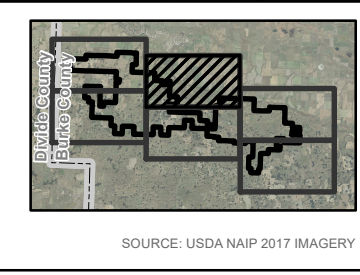
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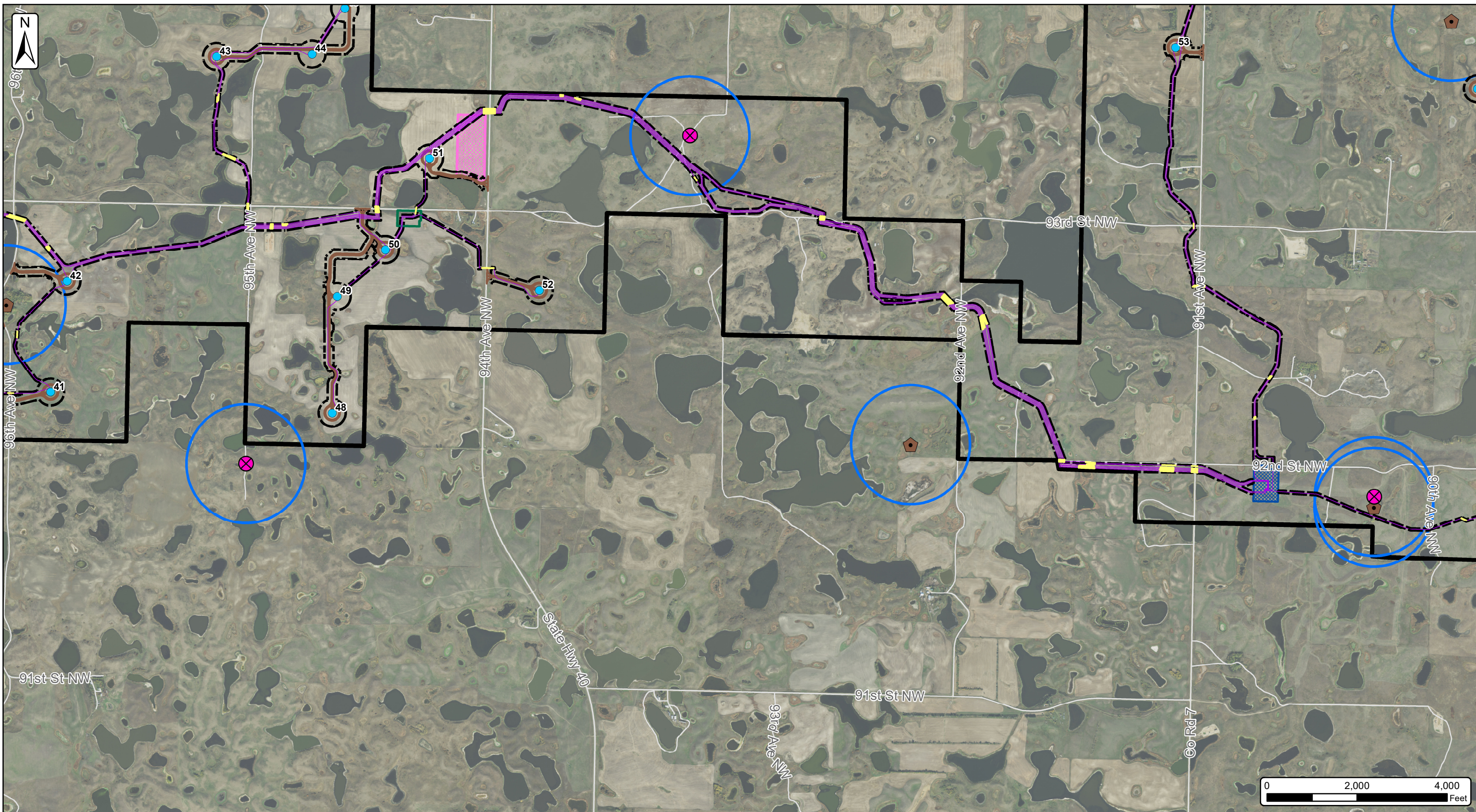
Burke County Wind Energy Center
Figure 16c: Raptor Nest Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> Raptor Nest Constraints (Atwell Identified April & May 2017) Great Horned Owl Red-tailed Hawk Raptor Nest 0.25 Mile Buffer | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
|---|---|--|



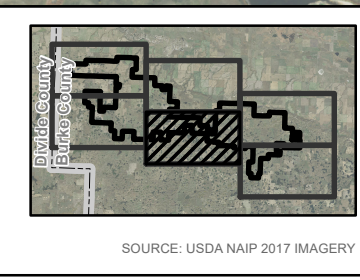
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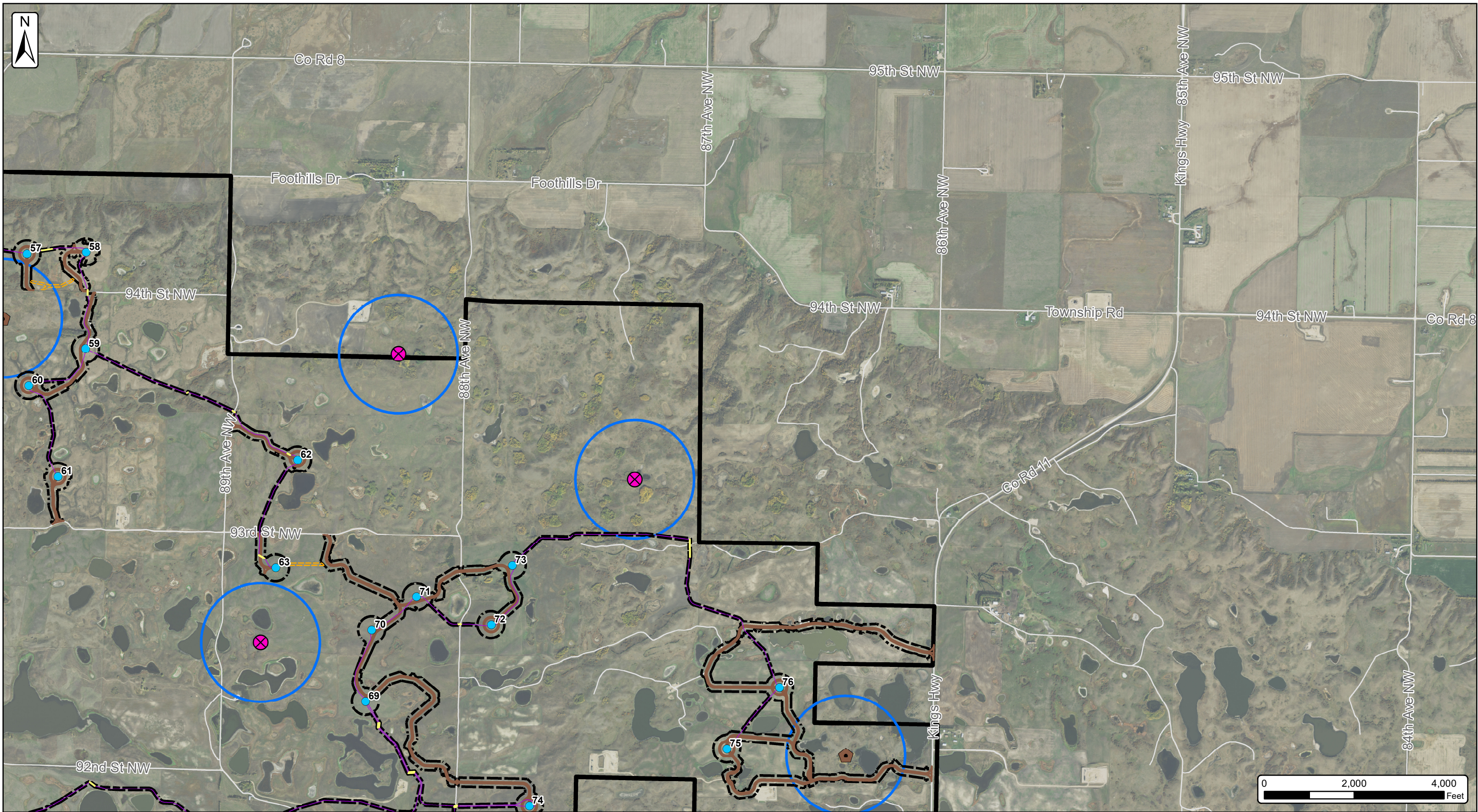
Burke County Wind Energy Center
Figure 16d: Raptor Nest Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> Raptor Nest Constraints (Atwell Identified April & May 2017) Great Horned Owl Red-tailed Hawk Raptor Nest 0.25 Mile Buffer | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
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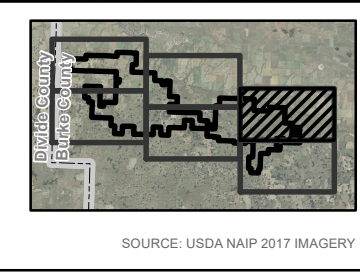
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Burke County Wind Energy Center
Figure 16e: Raptor Nest Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

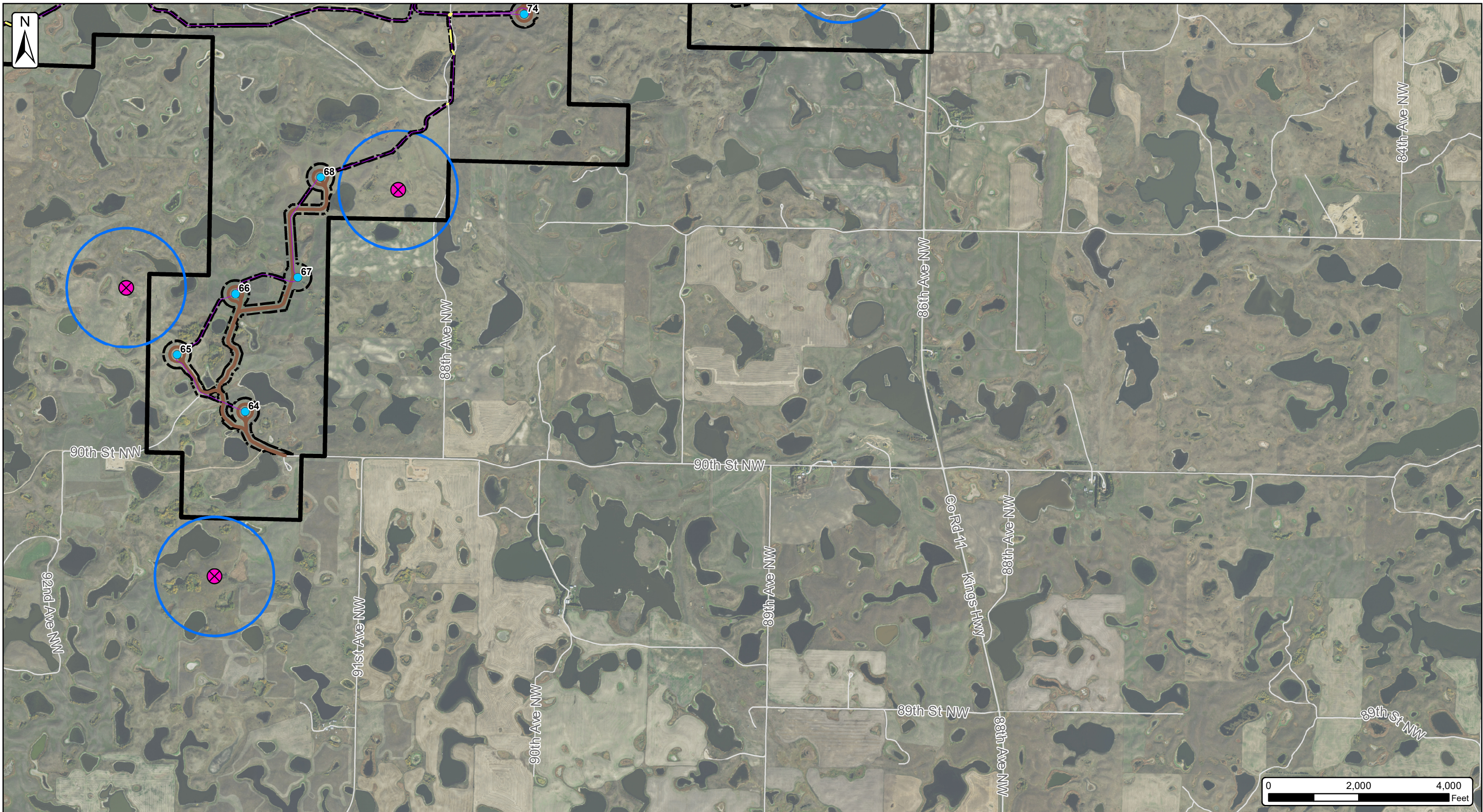
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| <ul style="list-style-type: none"> Raptor Nest Constraints (Atwell Identified April & May 2017) Great Horned Owl Red-tailed Hawk Raptor Nest 0.25 Mile Buffer | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
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SOURCE: USDA NAIP 2017 IMAGERY



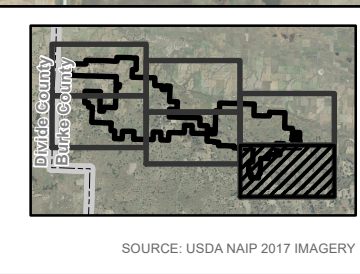
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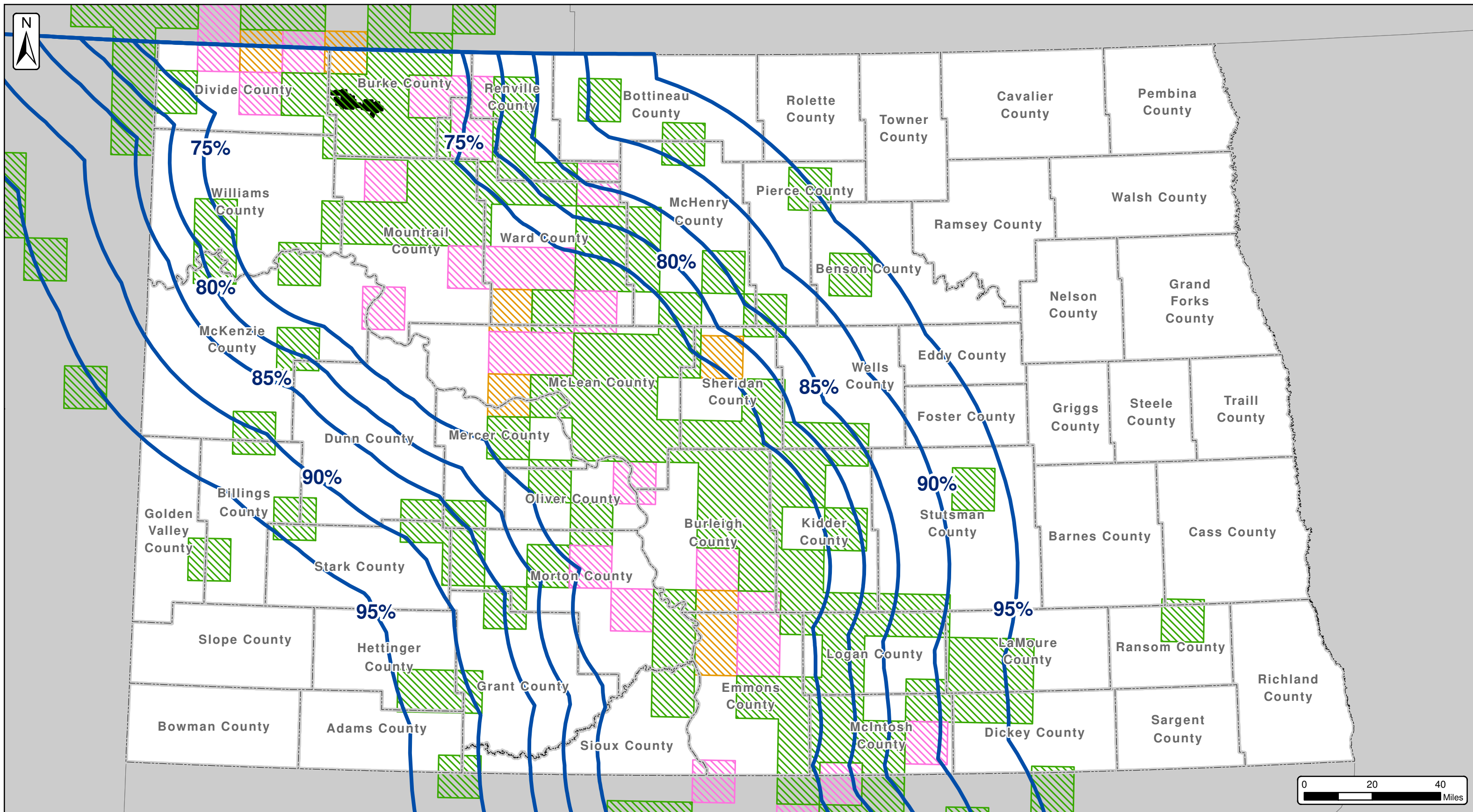
Burke County Wind Energy Center
Figure 16f: Raptor Nest Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> Raptor Nest Constraints (Atwell Identified April & May 2017) Great Horned Owl Red-tailed Hawk Raptor Nest 0.25 Mile Buffer | <ul style="list-style-type: none"> Turbine (10/08/2018) Alt Turbine (10/08/2018) MET Tower (10/26/2018) Collection Line Bore (11/03/2018) Collection Line (11/03/2018) Access Road (11/03/2018) Crane Path (11/03/2018) | <ul style="list-style-type: none"> Construction Easement (11/03/2018) Laydown Yard (05/30/2018) O&M & Substation (06/06/2018) Batch Plant Area (11/01/2018) Project Area 10/23/2018 (±22,933 Ac.) Counties |
|---|---|--|



The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.



Burke Wind Transmission Line
 Figure 17: Whooping Crane Migration Corridor Map
 North Dakota
 Date: 10/30/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

Whooping Crane Stop Over Site Use Intensity (USGS)

- Extended Use Core Intensity
- Core Intensity
- Low Intensity

Whooping Crane Migration Corridor - Percent of Sightings (USFWS)

- Whooping Crane Migration Corridor - Percent of Sightings (USFWS)
- Project Area
- County Boundaries

SOURCE: USFWS & USGS

ATWELL

The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.



Divide County
Burke County

102nd Ave NW
104th Ave NW

107th Ave NW

101st Ave NW

97th St NW

100th Ave NW

96th St NW
Co Rd 6

98th St NW

99th Ave NW

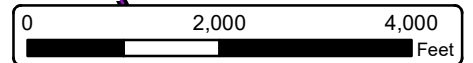
Co Rd 1

98th Ave NW

97th Ave NW

95th St NW

97th Ave NW



















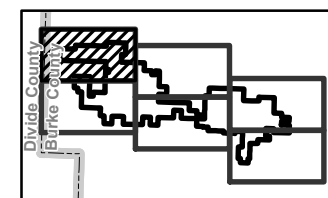
Burke County Wind Energy Center
Figure 18a: Potential Whooping Crane Habitat Map
Burke County, North Dakota
Date: 11/6/2018

Client:

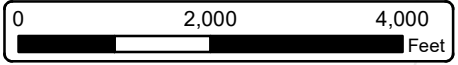
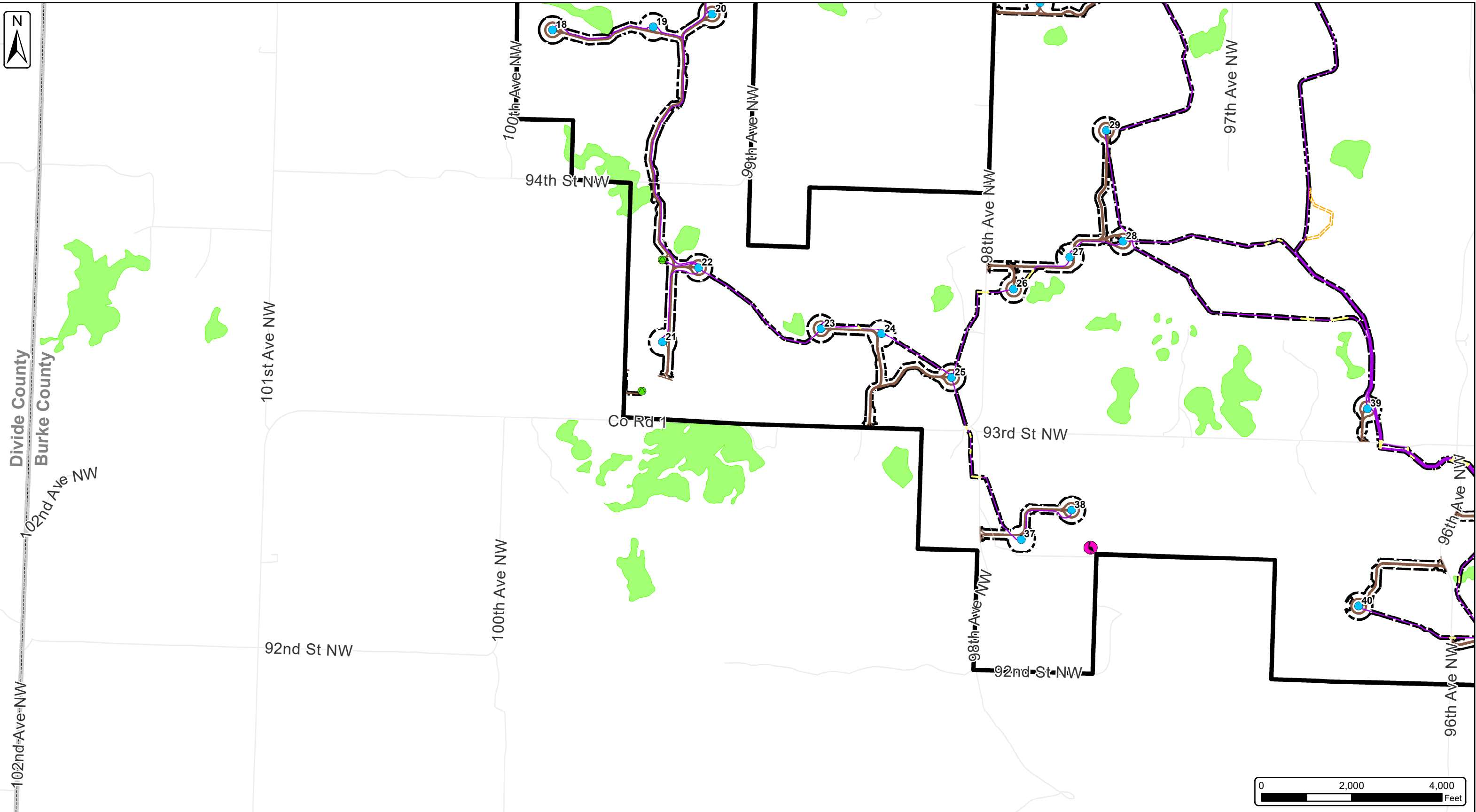
Burke Wind, LLC

Atwell, LLC Project:16000947

-  Atwell Whooping Crane Observation Point (04/10/2017)
-  Whooping Crane Sightings Through Fall 2015 (USFWS)
-  Whooping Crane Potential Suitable Habitat (TWI)
-  Turbine (10/08/2018)
-  Alt Turbine (10/08/2018)
-  MET Tower (10/26/2018)
-  Collection Line Bore (11/03/2018)
-  Collection Line (11/03/2018)
-  Access Road (11/03/2018)
-  Crane Path (11/03/2018)
-  Construction Easement (11/03/2018)
-  Laydown Yard (05/30/2018)
-  O&M & Substation (06/06/2018)
-  Batch Plant Area (11/01/2018)
-  Project Area 10/23/2018 (±22,933 Ac.)
-  Counties



















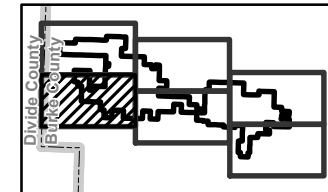
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Burke County Wind Energy Center
Figure 18b: Potential Whooping Crane Habitat Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

-  Atwell Whooping Crane Observation Point (04/10/2017)
-  Whooping Crane Sightings Through Fall 2015 (USFWS)
-  Whooping Crane Potential Suitable Habitat (TWI)
-  Turbine (10/08/2018)
-  Alt Turbine (10/08/2018)
-  MET Tower (10/26/2018)
-  Collection Line Bore (11/03/2018)
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-  Access Road (11/03/2018)
-  Crane Path (11/03/2018)
-  Construction Easement (11/03/2018)
-  Laydown Yard (05/30/2018)
-  O&M & Substation (06/06/2018)
-  Batch Plant Area (11/01/2018)
-  Project Area 10/23/2018 (±22,933 Ac.)
-  Counties



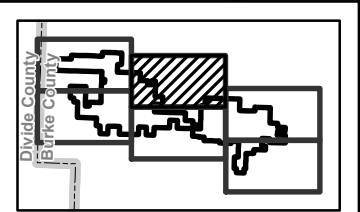

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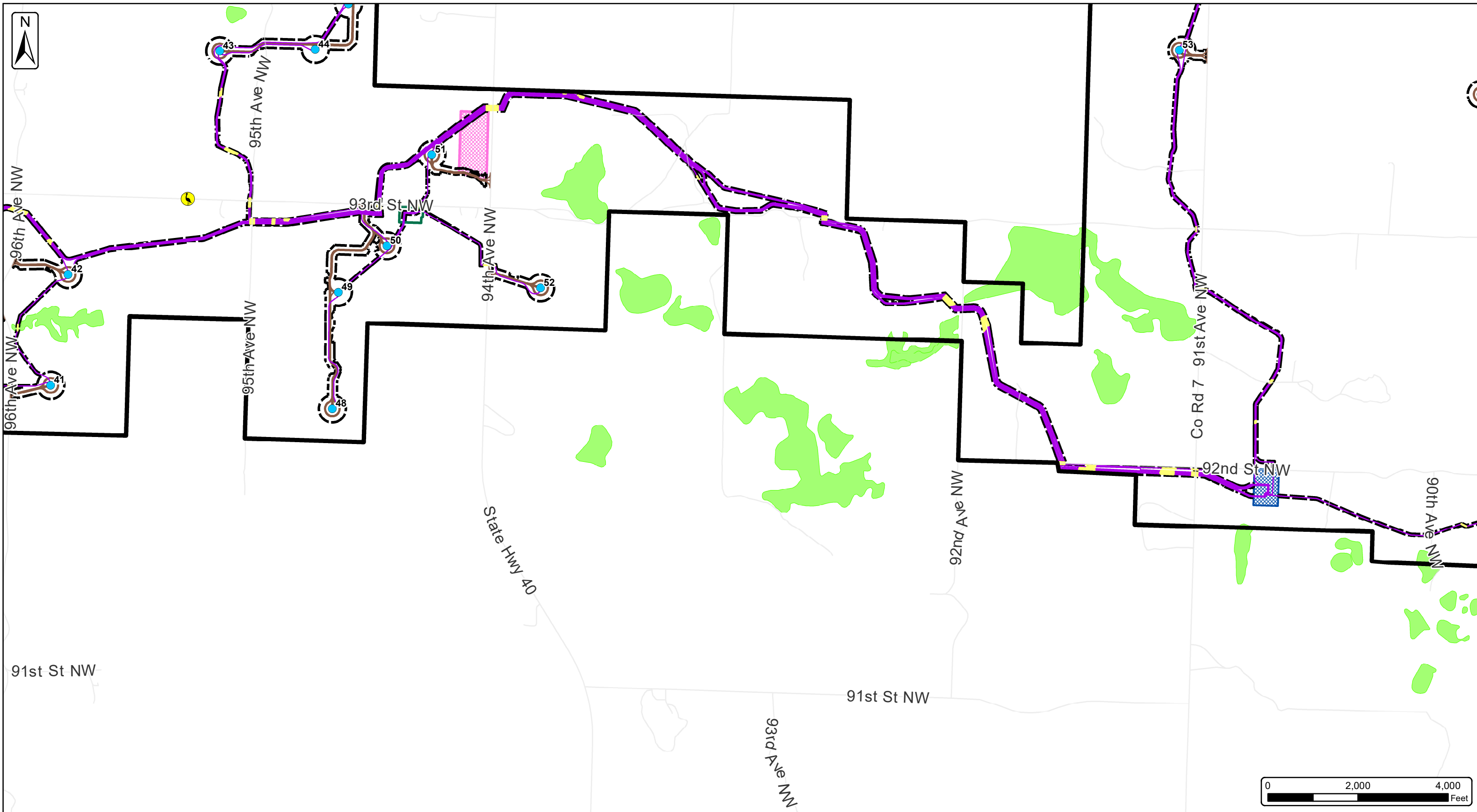
Burke County Wind Energy Center
Figure 18c: Potential Whooping Crane Habitat Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- Atwell Whooping Crane Observation Point (04/10/2017)
- Whooping Crane Sightings Through Fall 2015 (USFWS)
- Whooping Crane Potential Suitable Habitat (TWI)
- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
- Access Road (11/03/2018)
- Crane Path (11/03/2018)
- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties




















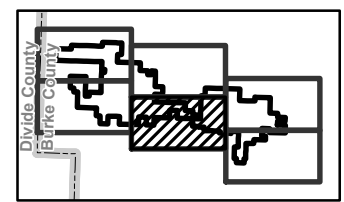

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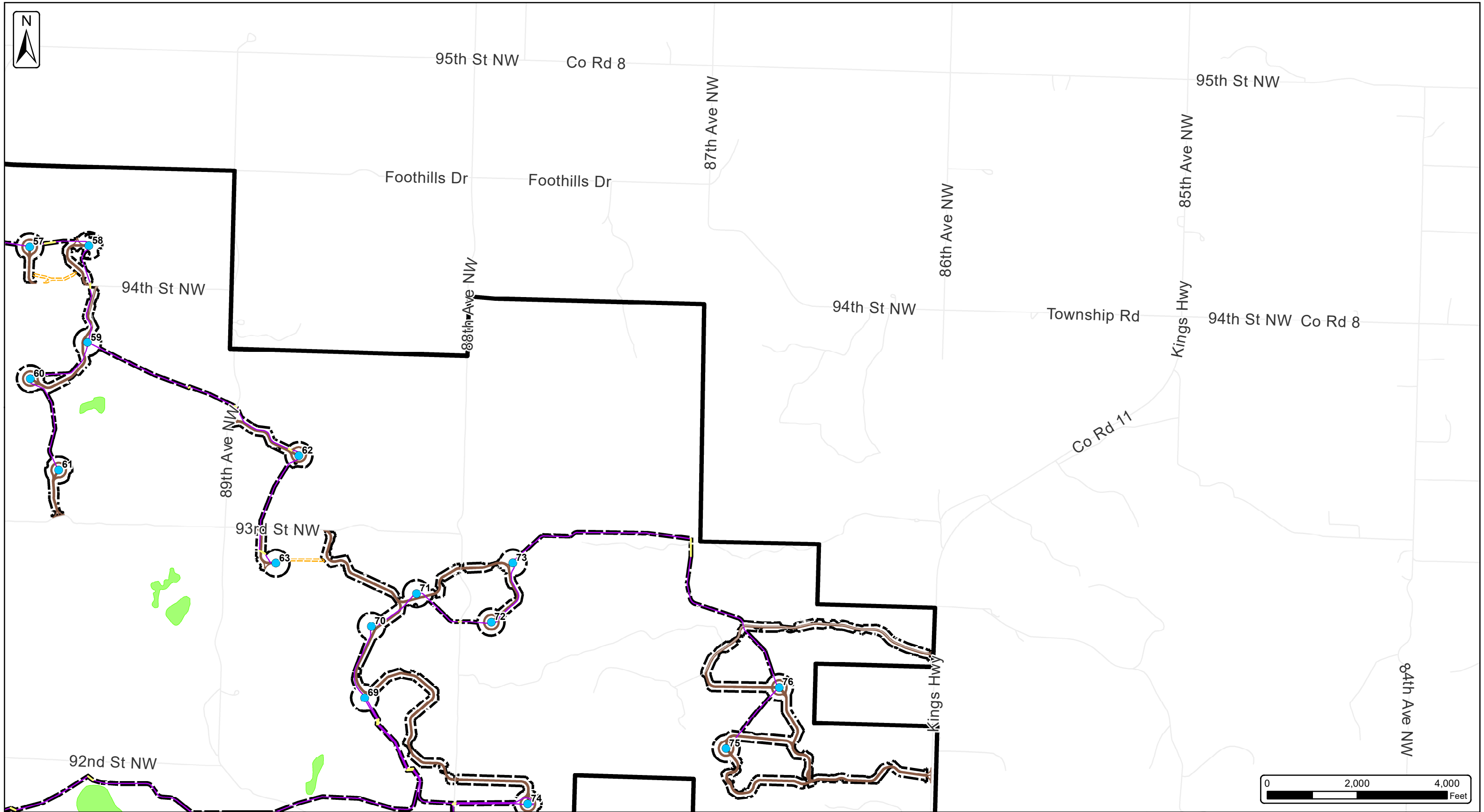
Burke County Wind Energy Center
Figure 18d: Potential Whooping Crane Habitat Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

-  Atwell Whooping Crane Observation Point (04/10/2017)
-  Whooping Crane Sightings Through Fall 2015 (USFWS)
-  Whooping Crane Potential Suitable Habitat (TWI)
-  Turbine (10/08/2018)
-  Alt Turbine (10/08/2018)
-  MET Tower (10/26/2018)
-  Collection Line Bore (11/03/2018)
-  Collection Line (11/03/2018)
-  Access Road (11/03/2018)
-  Crane Path (11/03/2018)
-  Construction Easement (11/03/2018)
-  Laydown Yard (05/30/2018)
-  O&M & Substation (06/06/2018)
-  Batch Plant Area (11/01/2018)
-  Project Area 10/23/2018 (±22,933 Ac.)
-  Counties




















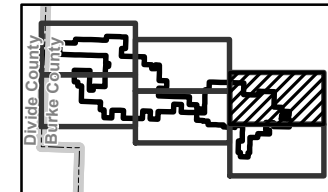
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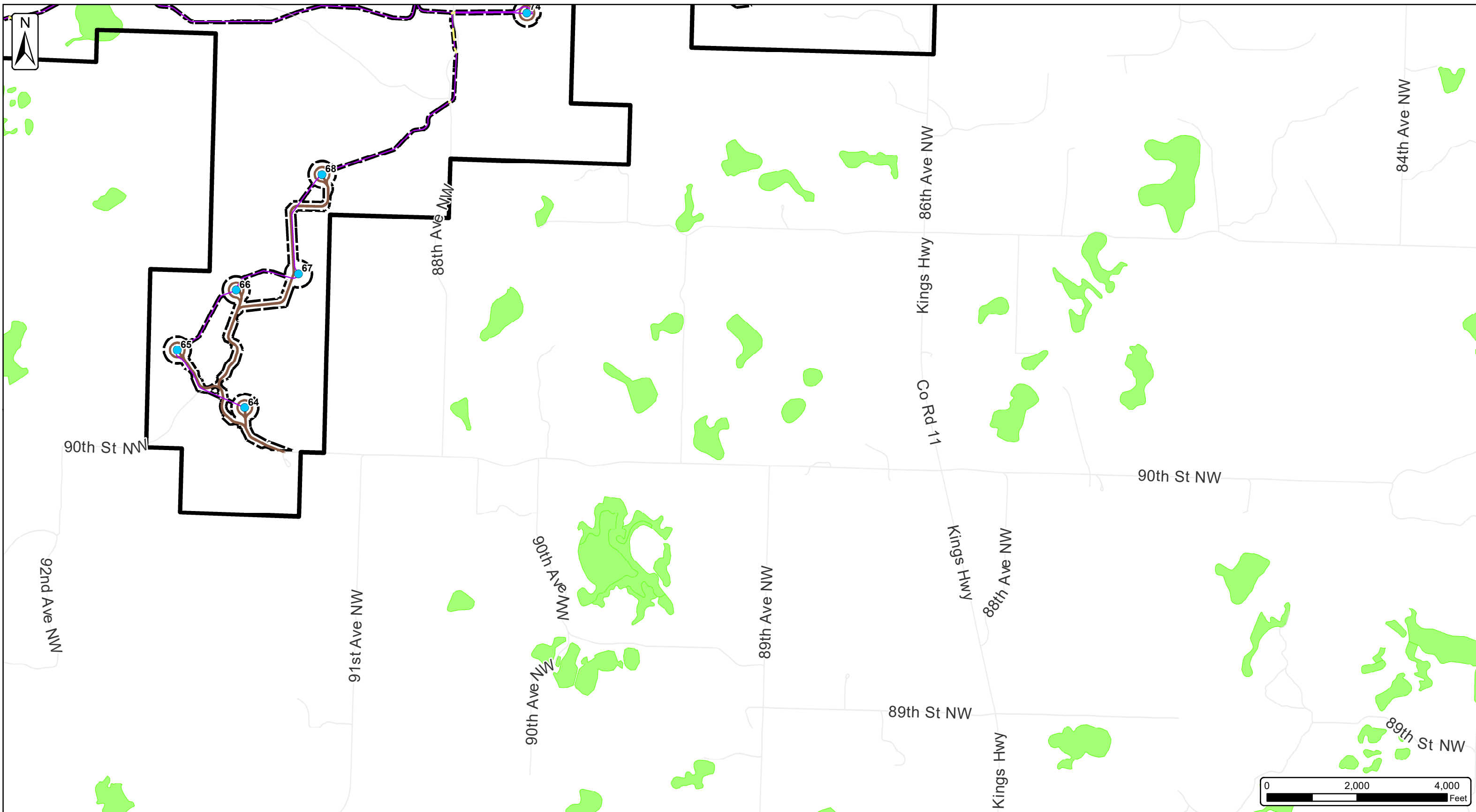
Burke County Wind Energy Center
Figure 18e: Potential Whooping Crane Habitat Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

-  Atwell Whooping Crane Observation Point (04/10/2017)
-  Whooping Crane Sightings Through Fall 2015 (USFWS)
-  Whooping Crane Potential Suitable Habitat (TWI)
-  Turbine (10/08/2018)
-  Alt Turbine (10/08/2018)
-  MET Tower (10/26/2018)
-  Collection Line Bore (11/03/2018)
-  Collection Line (11/03/2018)
-  Access Road (11/03/2018)
-  Crane Path (11/03/2018)
-  Construction Easement (11/03/2018)
-  Laydown Yard (05/30/2018)
-  O&M & Substation (06/06/2018)
-  Batch Plant Area (11/01/2018)
-  Project Area 10/23/2018 (±22,933 Ac.)
-  Counties



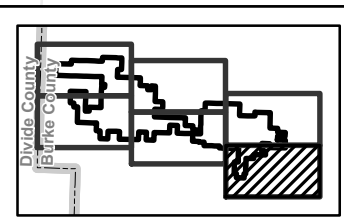

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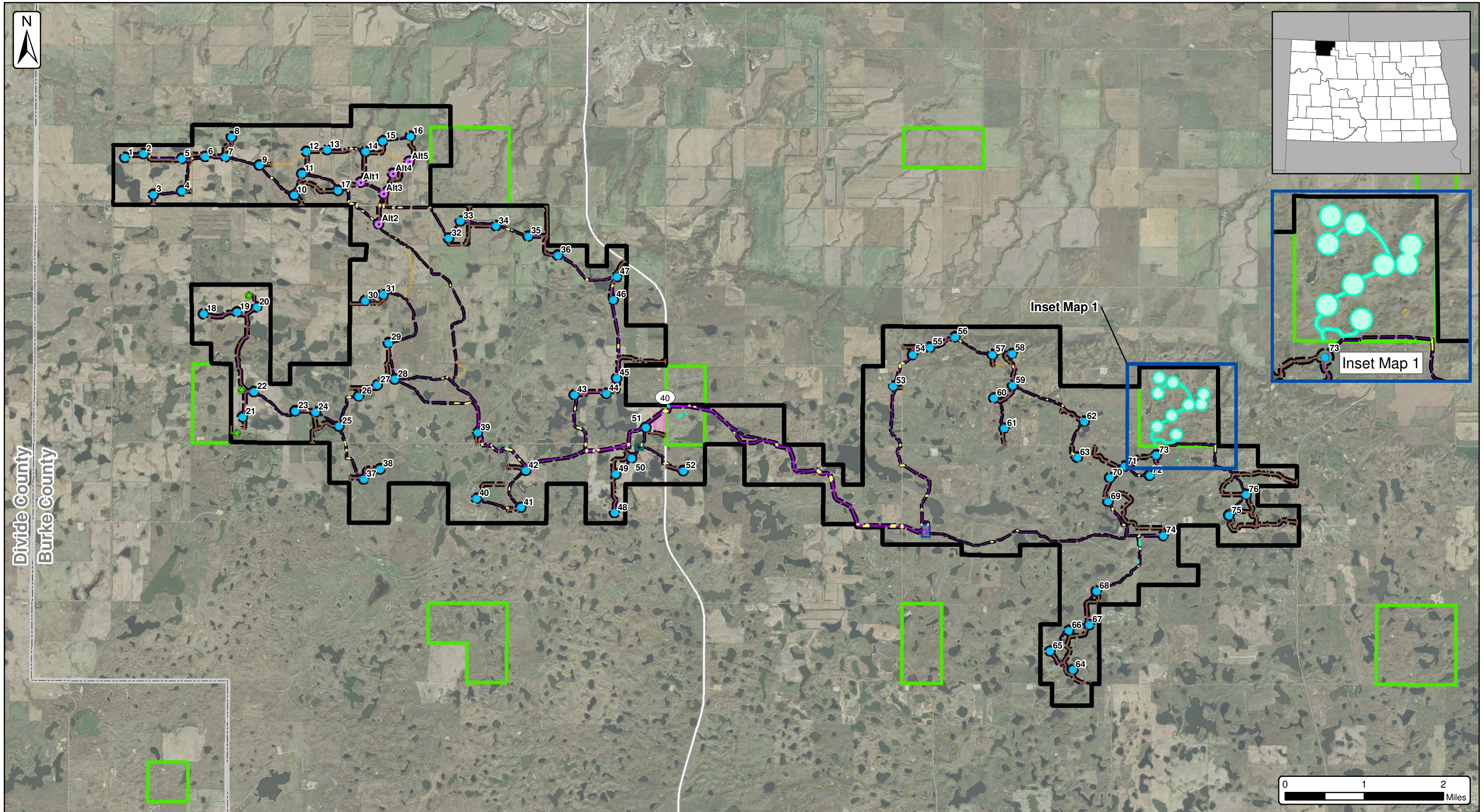
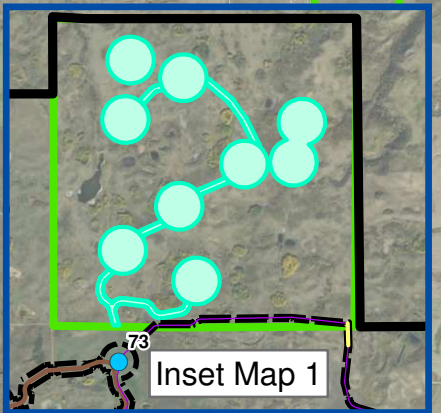
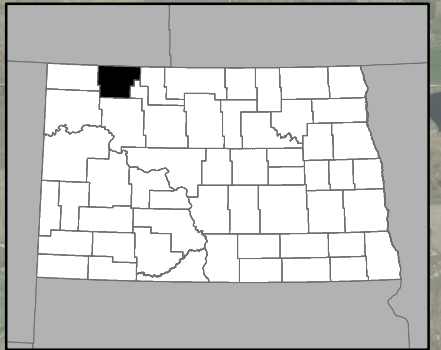
Burke County Wind Energy Center
Figure 18f: Potential Whooping Crane Habitat Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
 Atwell, LLC Project:16000947

- Atwell Whooping Crane Observation Point (04/10/2017)
- Whooping Crane Sightings Through Fall 2015 (USFWS)
- Whooping Crane Potential Suitable Habitat (TWI)
- Turbine (10/08/2018)
- Alt Turbine (10/08/2018)
- MET Tower (10/26/2018)
- Collection Line Bore (11/03/2018)
- Collection Line (11/03/2018)
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- Construction Easement (11/03/2018)
- Laydown Yard (05/30/2018)
- O&M & Substation (06/06/2018)
- Batch Plant Area (11/01/2018)
- Project Area 10/23/2018 (±22,933 Ac.)
- Counties

The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.



Burke County Wind Energy Center
Figure 19: Dakota Skipper Habitat Map
 Burke County, North Dakota
 Date: 11/6/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

- Field Confirmed Dakota Skipper Habitat (SWCA)
 - State Lands Surface Ownership (USGS)
 - Turbine (10/08/2018)
 - Alt Turbine (10/08/2018)
 - MET Tower (10/26/2018)
 - Collection Line Bore (11/03/2018)
 - Collection Line (11/03/2018)
 - Access Road (11/03/2018)
 - Crane Path (11/03/2018)
 - Construction Easement (11/03/2018)
 - Laydown Yard (05/30/2018)
 - O&M & Substation (06/06/2018)
 - Batch Plant Area (11/01/2018)
 - Project Area 10/23/2018 (±22,933 Ac.)
 - Counties
- SOURCE: USDA NAIP 2017 IMAGERY

ATWELL

The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.

Appendix A:

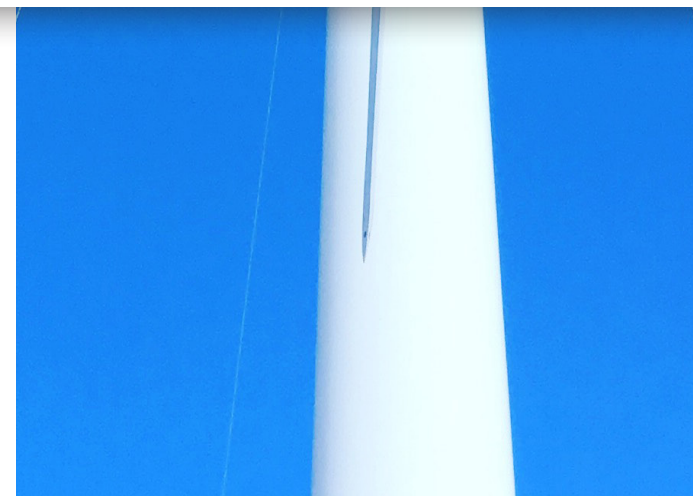
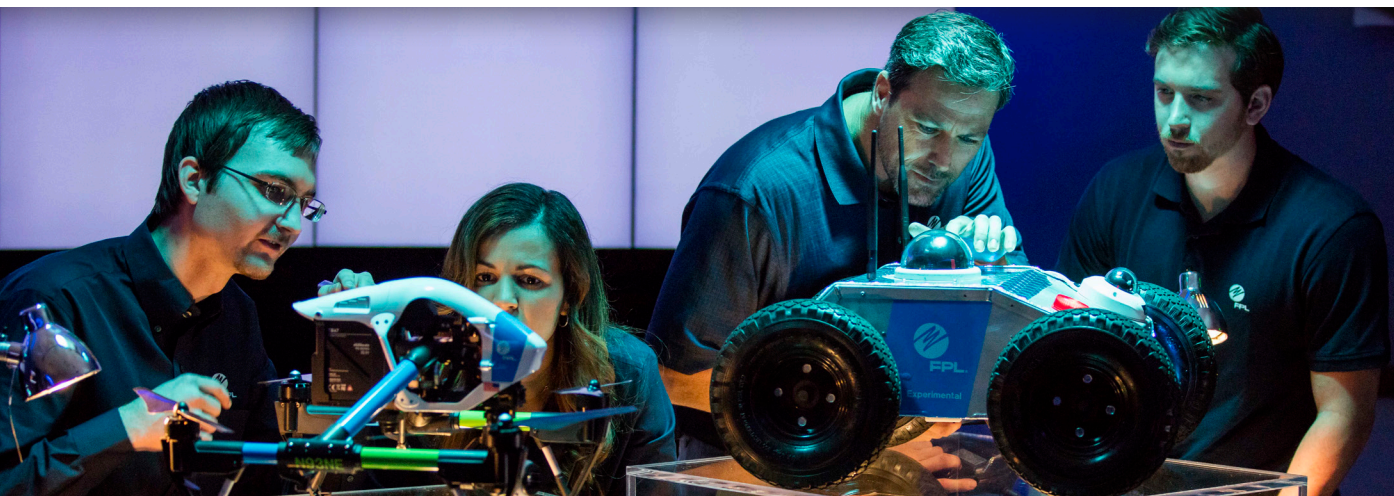
Excerpt from NextEra Energy, Inc. 2017 Corporate Responsibility Report

2017

CORPORATE RESPONSIBILITY
EXECUTIVE DIGEST
CORPORATE PROFILE



**INVESTING IN AMERICA'S ENERGY INFRASTRUCTURE
SUSTAINABLY AND RESPONSIBLY**





Jim Robo

Our Vision

**Be North America's Leader
in the Generation and Delivery
of Clean Energy**

Our Values

**We Are Committed to Excellence
We Do the Right Thing
We Treat People with Respect**

NYSE Ticker Symbol: NEE

Recognitions

Most Admired Companies (Fortune magazine) –
No. 1 in electric & gas utilities industry – 10 times, incl. 2017

A World's Most Ethical Company® (Ethisphere Institute) – 10 times, incl. 2017

No. 1 Green Utility in U.S. and No. 4 in the world (EI Energy Intelligence)

Florida Employer Support of the Guard and Reserves "Above and Beyond Award" –
three times, incl. 2016

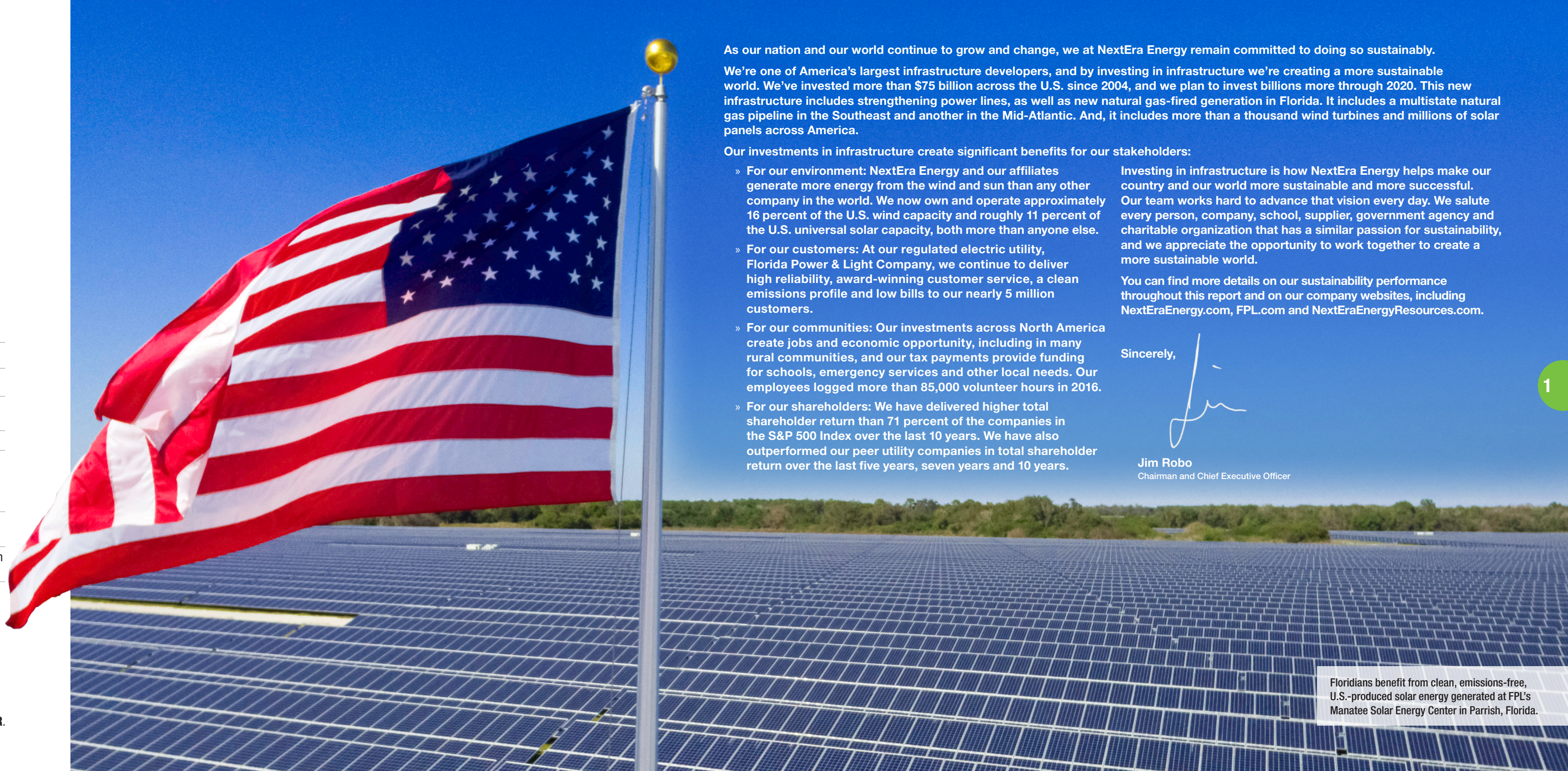
A Fortune 200 company; included in S&P 100 Index

At a Glance (2016)

~14,700 employees	~\$2.9 billion in net income
Operations in 30 U.S. states, four Canadian provinces	~\$90 billion in total assets
~\$16.2 billion in operating revenue	~45,900 megawatts (MW) in total generation capacity

Data in At A Glance is as of Dec. 31, 2016.
Cautionary statements and risk factors that may affect future results can be found on the inside back cover of this report.

To view our complete Corporate Responsibility Report, visit NextEraEnergy.com/CRR.



As our nation and our world continue to grow and change, we at NextEra Energy remain committed to doing so sustainably.

We're one of America's largest infrastructure developers, and by investing in infrastructure we're creating a more sustainable world. We've invested more than \$75 billion across the U.S. since 2004, and we plan to invest billions more through 2020. This new infrastructure includes strengthening power lines, as well as new natural gas-fired generation in Florida. It includes a multistate natural gas pipeline in the Southeast and another in the Mid-Atlantic. And, it includes more than a thousand wind turbines and millions of solar panels across America.

Our investments in infrastructure create significant benefits for our stakeholders:

- » For our environment: NextEra Energy and our affiliates generate more energy from the wind and sun than any other company in the world. We now own and operate approximately 16 percent of the U.S. wind capacity and roughly 11 percent of the U.S. universal solar capacity, both more than anyone else.
- » For our customers: At our regulated electric utility, Florida Power & Light Company, we continue to deliver high reliability, award-winning customer service, a clean emissions profile and low bills to our nearly 5 million customers.
- » For our communities: Our investments across North America create jobs and economic opportunity, including in many rural communities, and our tax payments provide funding for schools, emergency services and other local needs. Our employees logged more than 85,000 volunteer hours in 2016.
- » For our shareholders: We have delivered higher total shareholder return than 71 percent of the companies in the S&P 500 Index over the last 10 years. We have also outperformed our peer utility companies in total shareholder return over the last five years, seven years and 10 years.

Investing in infrastructure is how NextEra Energy helps make our country and our world more sustainable and more successful. Our team works hard to advance that vision every day. We salute every person, company, school, supplier, government agency and charitable organization that has a similar passion for sustainability, and we appreciate the opportunity to work together to create a more sustainable world.

You can find more details on our sustainability performance throughout this report and on our company websites, including NextEraEnergy.com, FPL.com and NextEraEnergyResources.com.

Sincerely,

Jim Robo
Chairman and Chief Executive Officer

Floridians benefit from clean, emissions-free, U.S.-produced solar energy generated at FPL's Manatee Solar Energy Center in Parrish, Florida.

Respecting Our Environment

- » NextEra Energy's emissions rates of carbon dioxide (CO₂), sulfur dioxide (SO₂) and nitrogen oxide (NOx) are substantially better than the U.S. electric sector averages.
- » We continue to be the world's largest generator of renewable energy from the wind and the sun.
- » Nearly 99 percent of the water we use is returned to its original source.
- » We are committed to interacting with nature in a positive manner and have developed wildlife programs to protect a number of species and their habitats.

IN 2016 ALONE, NEARLY 64 MILLION TONS OF CO₂ WERE AVOIDED THANKS TO NEXTERA ENERGY'S EMISSIONS-FREE WIND, SOLAR AND NUCLEAR POWER GENERATION.

THAT'S THE
EQUIVALENT OF TAKING
12 million cars
OFF THE ROAD

The environmental attributes of NextEra Energy's electric generation facilities, such as renewable energy credits, emissions reductions, offsets, allowances, and the avoided emission of greenhouse gas pollutants, have been or likely will be sold or transferred to third parties, who are solely entitled to the reporting rights to any federal, state, foreign or voluntary emissions trading program and to ownership of such environmental attributes.

To view our complete Corporate Responsibility Report, visit NextEraEnergy.com/CRR.



OUR EMISSIONS RATES ARE SUBSTANTIALLY BETTER THAN THE U.S. ELECTRIC SECTOR AVERAGES

53%
LOWER
CO₂

94%
LOWER
SO₂

74%
LOWER
NOx

Kurtis Hill, a member of the National Guard and a wind technician with NextEra Energy Resources, uses an iPad® to plan and execute work at the Peetz Table Wind Energy Center in Logan County, Colorado.

Outstanding Customer Value

- » Our customers range from homes and businesses to utilities, retail electricity providers, power cooperatives, municipalities and, increasingly, individual companies committed to renewable and sustainable energy.
- » In 2017, FPL was recognized as one of the most trusted U.S. electric utilities by Market Strategies International. We're committed to doing the right thing for our customers, and we challenge ourselves each and every day to enhance the service we provide our customers.
- » The investments we make in our nation's electric infrastructure provide these customers with affordable, reliable and clean energy.
- » At FPL, our typical residential customer bill is lower than it was 10 years ago.



Since 1994, the Care To Share® program raised more than

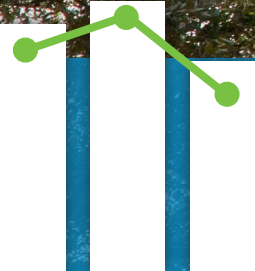
\$22.5 million
helping 89,000 families

To view our complete Corporate Responsibility Report, visit NextEraEnergy.com/CRR.



These FPL employees and thousands of their colleagues are working daily to provide affordable, reliable and clean energy to Floridians.

FPL customers can discover ways to save money by visiting FPL.COM/ENERGYDASHBOARD



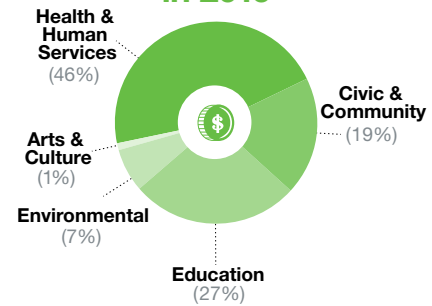
4

5

Sustaining Our Communities

- » As part of our signature Power to Care volunteer program, our employee volunteers contributed more than 85,000 hours in 2016 to our communities through company-sponsored projects and personal volunteer time.
- » To spark student interest in science, technology, engineering and math (STEM), we sponsor more than 70 robotics teams or clubs at all grade levels, as well as science shows, solar education stations and other programs that use real-life applications to motivate our future workforce.
- » Our employees and company contributed \$15 million in 2016 to support initiatives that contribute to the well-being of our communities.

Charitable Giving in 2016



NextEra Energy employee volunteers working with Whole Foods® Market packed hurricane kits to benefit patrons of Meals on Wheels.

In 2016, our employees

<p>Raised more than \$3.7 million for the community</p>	<p>Donated \$143,000 worth of Dollars for Doers grants</p>	<p>Volunteered 85,000 hours of service</p>	<p>Logged 22% more service hours than in 2015</p>	<p>Expanded CEO Volunteer Circle membership to 270 employees</p>
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Investing in Our Team

- » Our 2016 safety performance was 63 percent better than 10 years ago.
- » Through our NextEra University and other venues, our employees spent approximately 1 million hours in 2016 growing their skills, completing 850,000 individual training sessions.
- » The NextEra Health & Well-Being program provides information, motivation and on-site facilities to help employees take care of themselves and their families.
- » We encourage and value a diverse and inclusive work environment, stressing these values in our recruiting, development, internal knowledge sharing and community involvement.

STRIVING TO BE WELL IN 2016

58 On-site fitness centers

17,000 On-site health center visits

4,000 On-site wellness screenings

5,000 Employees attended nearly 200 health and wellness presentations

Training in this control room simulator underscores NextEra Energy's commitment to the safe and efficient operation of our nuclear power plant fleet.

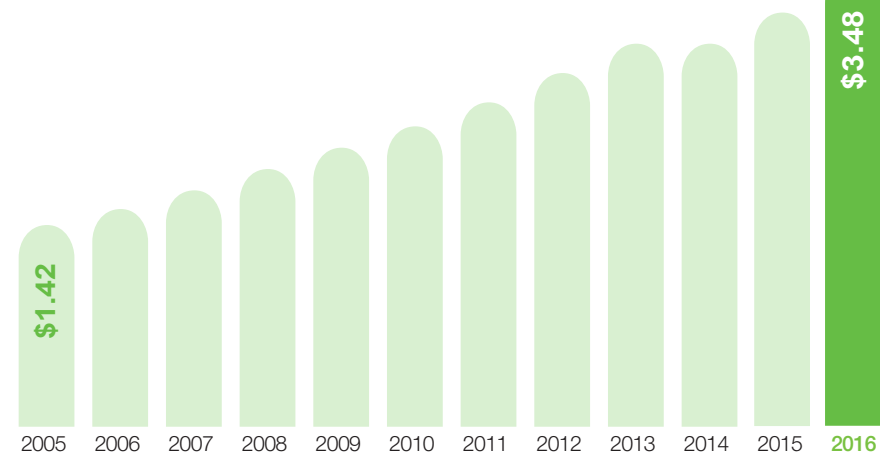
850,000
TRAINING SESSIONS COMPLETED

Growing Shareholder Value

- » NextEra Energy delivered a 10-year total shareholder return through Dec. 31, 2016, of approximately 206 percent, compared with 96 percent for the S&P 500 Utilities Index and 96 percent for the S&P 500 Index.
- » We achieved a compound annual growth rate in dividends per share of approximately 8.5 percent since 2005 through Dec. 31, 2016.
- » We continue to maintain strong credit ratings.

10

DIVIDENDS PER SHARE



To view our complete Corporate Responsibility Report, visit NextEraEnergy.com/CRR.



Value creation at NextEra Energy is everyone's business. Here, employees use leading-edge technology to help FPL produce its best-ever service reliability in 2016, ranking among the best in the nation among all investor-owned energy companies.

11

No. 170
FORTUNE 500, 2017

TOTAL SHAREHOLDER RETURN
206%
 over the last decade, outperforming our peers and the S&P 500
10 years ending 12/31/16

NextEra Energy

Building America's Energy Infrastructure

At NextEra Energy, we're investing in infrastructure for this and future generations.

NextEra Energy is an industry leader

- » We are among the top 10 companies in the world, across all industries, in: 1) innovation, 2) social responsibility and 3) use of corporate assets (Fortune magazine).
- » We generate more electricity than any other electric utility in the U.S.
- » We generate more wind and solar energy than any other company in the world.

NextEra Energy is one of America's largest investors in infrastructure

- » We made U.S. capital investments of more than \$75 billion from 2004 through 2016.
- » We are among the largest capital investors in any industry.
- » From 2017 through 2020, we plan new infrastructure investment of tens of billions more.

NextEra Energy's infrastructure delivers economic benefits across America

- » We employ approximately 14,700 workers in the U.S.
- » We paid \$580 million in property taxes in 2016, providing communities with much-needed funding for schools, emergency services and other local needs.



Production Technician Troy Munroe is pictured at the Port Everglades Next Generation Clean Energy Center in Florida. This fuel-efficient facility generates clean, affordable and reliable electricity for thousands of residential and business customers.

WE INVESTED MORE THAN \$75 BILLION IN U.S. ENERGY INFRASTRUCTURE FROM 2004 THROUGH 2016

NextEra Energy at a Glance (2016)

Operating Revenue	~\$16.2 billion
Operations in	30 U.S. states, 4 Canadian provinces
Total Generating Capacity	~45,900 MW
Number of Employees	~14,700



Florida Power & Light Company

Smart, Affordable, Reliable, Clean

With residential bills significantly lower than the national and Florida averages, FPL's focus continues to be on finding smart investments to lower costs, improve reliability and provide clean energy solutions for the benefit of our customers.

Sheep are used at the DeSoto Solar Energy Center as an environmentally responsible method to prevent weeds and slow the growth of grass.

BY EARLY 2018,
**WE'RE BUILDING
8 NEW
SOLAR ENERGY
CENTERS**
COMPRISED OF
**2.5 MILLION
SOLAR PANELS**
THAT'S ENOUGH TO
**WRAP AROUND
FLORIDA'S
COASTLINE
2X**

14

Most Reliable U.S. Electric Utility

As a result of its ongoing investments to enhance service reliability, FPL delivered its best-ever service reliability in 2016, ranking highest among all investor-owned energy companies in Florida and among the best in the nation for the second consecutive year.

Since 2006, FPL has invested nearly \$3 billion to strengthen its electric system, resulting in fewer and shorter customer interruptions of service.

Over the next four years, the company plans to make further investments to improve reliability by continuing to strengthen and automate its transmission and distribution system.

Continuing to Modernize Our Fleet

At FPL, we continue to advance our strategy of making smart, long-term investments in clean energy infrastructure, while keeping electric bills low, reliability high, and delivering superior customer value.

Clean Natural Gas

Progress continues on the approximately 1,750-MW Okeechobee Clean Energy Center that is scheduled to begin operation in mid-2019.

We also plan to modernize one of FPL's oldest power plants in Dania Beach, Florida, with a new approximately 1,200-MW high efficiency natural gas plant that is expected to begin serving FPL customers by mid-2022.

Phasing Out Coal Plants

Over the last two years, FPL has bought out existing contracts with two independent coal-fired power plants with the goal of shutting down both plants, saving hundreds of millions of dollars for customers and significantly reducing emissions.

- » The first of these, the Cedar Bay plant in Jacksonville, ceased operations in 2016.
- » FPL also has significantly reduced operations at the Indiantown plant in Martin County and it is on track to be retired by 2019.

Also, in 2017, FPL reached a preliminary agreement with JEA to close the St. Johns River Power Park, an approximately 1,300-MW coal-fired power plant jointly owned by the two utilities. If finalized, retirement of St. Johns in 2018 is expected to produce \$183 million in savings for FPL customers and eliminate 5.6 million tons of carbon dioxide emissions annually.

Advancing Universal Solar Cost-Effectively For All Customers

Our universal solar energy centers generate clean, zero-emissions power for all FPL customers by using the sun for fuel. Universal solar is the fastest and most cost-effective way to bring more solar to more Floridians.

In 2016, we built three, 74.5-MW universal solar energy centers, each capable of generating enough solar to power about 15,000 homes.

We're leading one of the largest solar expansions ever in the eastern United States. Construction is underway at eight 74.5-MW solar energy centers across FPL's service area. Once complete, the eight solar energy centers will produce 600 MW of combined solar capacity – enough to power approximately 120,000 homes. Those eight facilities alone will feature 2.5 million solar panels that could wrap around Florida's coastline more than two times.



15

One of the Largest U.S. Electric Utilities

Customer Accounts	~5 million
People Served	~10 million
Employees	~8,900
Generating Capacity	~26,000 MW
Substations	~600
Power Lines	~74,800 miles

NextEra Energy Resources, LLC

We're Delivering Clean Energy Across Much of North America

The World Leader in Wind Energy

We produced more wind energy in 2016 than any other company in the world.

Over the last decade, our wind energy capacity has nearly tripled, and today we own and operate nearly 14,000 MW of wind energy.

In 2016 alone, our wind energy portfolio grew by approximately 1,465 MW, adding eight wind energy centers in six states.

For 2017-2018, we expect to bring online an additional 2,400 to 4,100 MW of clean, emissions-free wind energy.

The World Leader in Solar Energy

- » NextEra Energy Resources produced more solar energy in 2016 than any other company in the world.
- » We produce universal solar energy in Alabama, Arizona, Arkansas, California, Georgia, Minnesota, Nevada, New Jersey, New Mexico and Canada.
- » In 2017-2018, we expect to bring online an additional 400 to 1,300 MW of clean, emissions-free solar energy.
- » We also continue to tailor solutions for commercial, utility and public power customers to produce clean solar energy from rooftops, parking structures and vacant land. We develop, build, finance and operate these systems to help these customers control costs and meet their renewable energy goals. We have these kind of solar facilities in operation in 9 states across the U.S. and in 2017 have 18 of these solar facilities in development or construction in eight states.

Emissions-Free Nuclear Energy

NextEra Energy Resources operates emissions-free nuclear power plants in Iowa, New Hampshire and Wisconsin. This nuclear fleet as a whole produces enough electricity to power 3 million homes. Each nuclear power plant employs hundreds of highly trained workers. These plants pay millions of dollars in local and state taxes each year, and create billions of dollars in economic activity.

Investing in Natural Gas Infrastructure

We began investing in shale gas production in 2008, and today we have more than \$2.7 billion deployed around the country.

We are also executing on our plans for significant investments in natural gas pipelines:

- » In Texas, the more than 500 miles of NET Midstream pipelines (seven pipelines);
- » In Alabama, Georgia and Florida, the approximately 515-mile Sabal Trail Transmission Pipeline;
- » In West Virginia and Virginia, the 303-mile Mountain Valley Pipeline;
- » In Florida, the 126-mile Florida Southeast Connection pipeline; and
- » In North Dakota, the Flickertail and Wheatland pipelines.

Meeting the Need for Energy Storage

Today's power infrastructure must balance electricity supply and demand instantaneously, while accounting for the intermittency of renewable energy. Customers are looking for energy services and products that provide flexibility and value in areas like grid reliability and peaking power. Our battery energy storage technologies help customers meet these challenges.

- » At the end of 2016, we had in operation approximately 90 MW of battery energy storage systems in Arizona, California, Florida, Illinois, Maine, New Jersey and Pennsylvania; and
- » Other projects are in development in Arizona, California, New York, Texas, and Ontario, Canada.

Providing Affordable Retail Products and Services

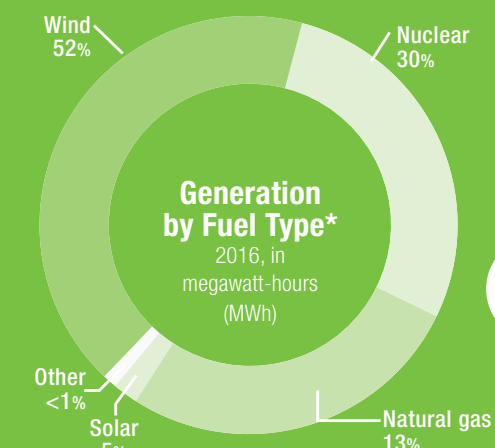
Gexa Energy, our wholly owned subsidiary, is a leading provider of affordable retail energy products and services for residential and commercial customers and is one of the fastest growing retail energy providers in North America.

Today, Gexa serves more than 125,000 residential customers and 5,500 commercial customers in Texas. Outside of Texas, Gexa provides retail energy services under the brand NextEra Energy Services and currently serves more than 500,000 residential customers and 6,000 commercial customers in 14 states in the Midwest and Northeast U.S.

GEXA ENERGY

NextEra Energy Resources at a Glance (2016)

Operating Revenues	~\$4.9 billion
Total Assets	~\$41.7 billion
Employees	~5,300



WORLD'S NO. 1 GENERATOR OF WIND AND SOLAR ENERGY

* Includes megawatts associated with noncontrolling interests related to NextEra Energy Partners, LP.

NextEra Energy produced more solar energy in 2016 than any other company in the world. The Roswell-Chaves Solar Energy Center is one of several solar facilities that went into operation in 2016.

Electricity's Superhighways

NextEra Energy Transmission

It's one thing to generate affordable, reliable and clean energy, but getting it safely and quickly to where it's needed most is equally important. That role falls to large poles and high voltage electric transmission lines that cross urban and rural areas alike. At NextEra Energy, these businesses are making it happen across much of North America.

Business	Location	Scope
FPL	35 counties across Florida	6,926 circuit miles (69kV - 500kV)
NextEra Energy Resources	Alabama, Alberta (Can.), Arizona, California, Colorado, Illinois, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Dakota, Nova Scotia (Can.), Oklahoma, Ontario (Can.), Pennsylvania, Quebec (Can.), South Dakota, Texas, Washington, West Virginia, Wisconsin	1,244 circuit miles (69kV - 345kV)
NextEra Energy Transmission	California, New Hampshire, Ontario (Can.), Texas	624 circuit miles (345kV)



Owner and operator of approximately 330 miles of high-voltage transmission lines and associated equipment in Texas, bringing wind power to Central Texas, strengthening the electric grid and enhancing electric reliability from all sources.



The majority owner of the Seabrook Substation, a 345-kV facility in New Hampshire connecting the Seabrook Nuclear Generating Station and three critical 345-kV transmission lines in New England to the power grid.



The designated developer of the Ontario East-West Tie line, which will be an approximately 250-mile, 230-kV transmission line between Thunder Bay and Wawa and will connect to the bulk transmission system in Northern Ontario to improve reliability.



The designated developer for two projects in California, the Suncrest Dynamic Reactive Power Support Project located in San Diego and the Estrella Substation Project located in Paso Robles.

Delivering Unique Solutions

FPL Energy Services, FPL Services, NextEra Energy Solutions, GEXA Energy Solutions

With a strong commitment to excellence and customer satisfaction, FPL Energy Services (FPLES) offers convenient, affordable energy products and services that add value and comfort to our customers' homes and businesses. Our residential portfolio of innovative products and services includes: SurgeShield®, Electronics Surge Protection, Home Electrical Solutions, ElectricShield®, A/C Filter Smart®, installation and service of backup generators, water heater and plumbing protection plans and more.

» **Natural gas supply services:** FPLES has been providing a reliable supply of natural gas at competitive rates, coupled with sophisticated industry analysis and custom consulting services in Florida for more than 15 years.

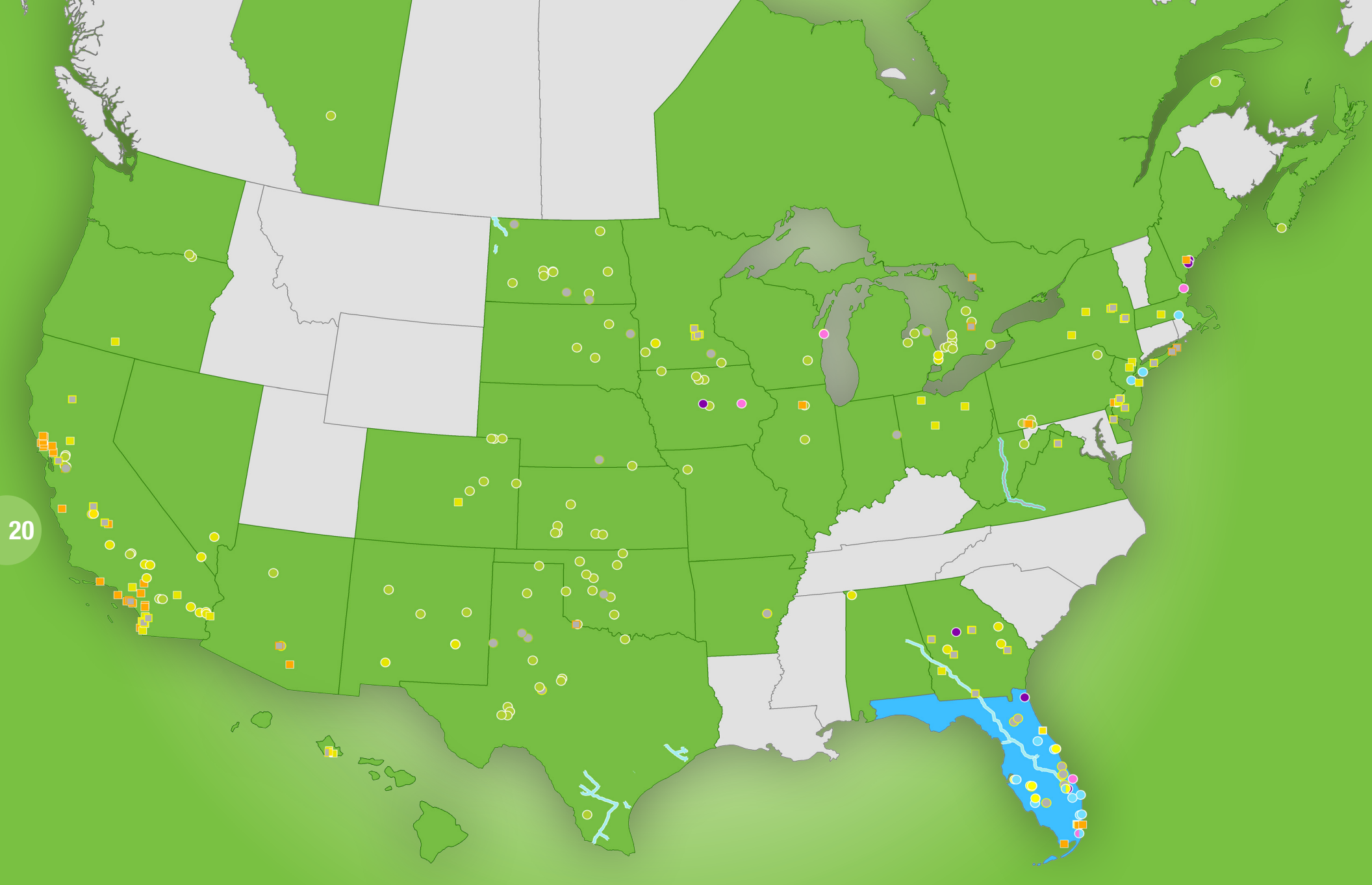
» **Commercial lighting solutions:** This program offers specialized lighting upgrades and retrofits for commercial and industrial customers. We install comprehensive energy efficient solutions that reduce costs, minimize risk and improve customers' bottom lines.

» **Energy savings performance contracting:** We develop, design and construct comprehensive, sustainable energy solutions for governments and businesses in Florida, Texas and other states through our family of Energy Service Companies (ESCOs) – FPLES, FPL Services, NextEra Energy Solutions and Gexa Energy Solutions. To date, our ESCO businesses have helped customers save more than \$198 million, using 1.6 million MWh less electricity and 5.3 billion gallons less water. That's enough electricity to power more than 134,630 homes for one year and enough water to fill more than 8,874 Olympic-size swimming pools.

NextEra Energy Partners, LP

NextEra Energy Partners, LP (NYSE: NEP) is a growth-oriented limited partnership formed by NextEra Energy, Inc. to acquire, manage and own contracted clean energy projects with stable, long-term cash flows. Headquartered in Juno Beach, Florida, NextEra Energy Partners owns interests in wind and solar projects in North America, as well as natural gas infrastructure assets in Texas. The renewable energy projects are fully contracted, use industry-leading technology and are located in regions that are favorable for generating energy from the wind and sun. The seven natural gas pipelines in the portfolio are all strategically located, serving power producers and municipalities in South Texas, processing plants and producers in the Eagle Ford Shale and commercial and industrial customers in the Houston area. The NET Mexico Pipeline, the largest pipeline in the portfolio, provides a critical source of natural gas transportation for low-cost, U.S.-sourced shale gas to Mexico. For more information about NextEra Energy Partners, visit NextEraEnergyPartners.com.





Providing Clean Energy Across North America

LEGEND:
 ● Wind ● Natural Gas ● Nuclear ● Solar (universal) ■ Solar
 ■ Battery Energy Storage ● Other ● Development/Construction ● Pipeline
 States and provinces served by: ■ NextEra Energy Resources ■ Florida Power & Light Company
 Locations with more than one facility are illustrated with a single dot; locations are those in operation as of February 2017.

CAUTIONARY STATEMENTS AND RISK FACTORS THAT MAY AFFECT FUTURE RESULTS

This report contains “forward-looking statements” within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are not statements of historical facts, but instead represent the current expectations of NextEra Energy, Inc. (together with its subsidiaries, NextEra Energy) regarding future operating results and other future events, many of which, by their nature, are inherently uncertain and outside of NextEra Energy’s control. In some cases, you can identify the forward-looking statements by words or phrases such as “will,” “may result,” “expect,” “anticipate,” “believe,” “intend,” “plan,” “seek,” “potential,” “projection,” “forecast,” “predict,” “goals,” “target,” “outlook,” “should,” “would” or similar words or expressions. You should not place undue reliance on these forward-looking statements, which are not a guarantee of future performance. The future results of NextEra Energy and its business and financial condition are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied in the forward-looking statements, or may require it to limit or eliminate certain operations. These risks and uncertainties include, but are not limited to, the following: effects of extensive regulation of NextEra Energy’s business operations; inability of NextEra Energy to recover in a timely manner any significant amount of costs, a return on certain assets or a reasonable return on invested capital through base rates, cost recovery clauses, other regulatory mechanisms or otherwise; impact of political, regulatory and economic factors on regulatory decisions important to NextEra Energy; disallowance of cost recovery based on a finding of imprudent use of derivative instruments; effect of any reductions or

modifications to, or elimination of, governmental incentives or policies that support utility scale renewable energy projects or the imposition of additional tax laws, policies or assessments on renewable energy; impact of new or revised laws, regulations, interpretations or other regulatory initiatives on NextEra Energy; capital expenditures, increased operating costs and various liabilities attributable to environmental laws, regulations and other standards applicable to NextEra Energy; effects on NextEra Energy of federal or state laws or regulations mandating new or additional limits on the production of greenhouse gas emissions; exposure of NextEra Energy to significant and increasing compliance costs and substantial monetary penalties and other sanctions as a result of extensive federal regulation of its operations and businesses; effect on NextEra Energy of changes in tax laws, guidance or policies as well as in judgments and estimates used to determine tax-related asset and liability amounts; impact on NextEra Energy of adverse results of litigation; effect on NextEra Energy of failure to proceed with projects under development or inability to complete the construction of (or capital improvements to) electric generation, transmission and distribution facilities, gas infrastructure facilities or other facilities on schedule or within budget; impact on development and operating activities of NextEra Energy resulting from risks related to project siting, financing, construction, permitting, governmental approvals and the negotiation of project development agreements; risks involved in the operation and maintenance of electric generation, transmission and distribution facilities, gas infrastructure facilities and other facilities; effect on NextEra Energy of a lack of growth or slower growth in the number of customers or in customer

usage; impact on NextEra Energy of severe weather and other weather conditions; threats of terrorism and catastrophic events that could result from terrorism, cyber attacks or other attempts to disrupt NextEra Energy’s business or the businesses of third parties; inability to obtain adequate insurance coverage for protection of NextEra Energy against significant losses and risk that insurance coverage does not provide protection against all significant losses; a prolonged period of low gas and oil prices could impact NextEra Energy’s gas infrastructure business and cause NextEra Energy to delay or cancel certain gas infrastructure projects and for certain existing projects to be impaired; risk of increased operating costs resulting from unfavorable supply costs necessary to provide full energy and capacity requirement services; inability or failure to manage properly or hedge effectively the commodity risk within its portfolio; effect of reductions in the liquidity of energy markets on NextEra Energy’s ability to manage operational risks; effectiveness of NextEra Energy’s risk management tools associated with its hedging and trading procedures to protect against significant losses, including the effect of unforeseen price variances from historical behavior; impact of unavailability or disruption of power transmission or commodity transportation facilities on sale and delivery of power or natural gas; exposure of NextEra Energy to credit and performance risk from customers, hedging counterparties and vendors; failure of counterparties to perform under derivative contracts or of requirement for NextEra Energy to post margin cash collateral under derivative contracts; failure or breach of NextEra Energy’s information technology systems; risks to NextEra Energy’s retail businesses from

compromise of sensitive customer data; losses from volatility in the market values of derivative instruments and limited liquidity in OTC markets; impact of negative publicity; inability to maintain, negotiate or renegotiate acceptable franchise agreements; occurrence of work strikes or stoppages and increasing personnel costs; NextEra Energy’s ability to successfully identify, complete and integrate acquisitions, including the effect of increased competition for acquisitions; NextEra Energy Partners, LP’s (NEP’s) acquisitions may not be completed and, even if completed, NextEra Energy may not realize the anticipated benefits of any acquisitions; environmental, health and financial risks associated with ownership and operation of nuclear generation facilities; liability of NextEra Energy for significant retrospective assessments and/or retrospective insurance premiums in the event of an incident at certain nuclear generation facilities; increased operating and capital expenditures and/or result in reduced revenues at nuclear generation facilities resulting from orders or new regulations of the Nuclear Regulatory Commission; inability to operate any owned nuclear generation units through the end of their respective operating licenses; effect of disruptions, uncertainty or volatility in the credit and capital markets on NextEra Energy’s ability to fund its liquidity and capital needs and meet its growth objectives; inability to maintain current credit ratings; impairment of liquidity from inability of credit providers to fund their credit commitments or to maintain their current credit ratings; poor market performance and other economic factors that could affect NextEra Energy’s defined benefit pension plan’s funded status; poor market performance and other risks to the asset values of nuclear decommissioning

funds; changes in market value and other risks to certain of NextEra Energy’s investments; effect of inability of NextEra Energy subsidiaries to pay upstream dividends or repay funds to NextEra Energy or of NextEra Energy’s performance under guarantees of subsidiary obligations on NextEra Energy’s ability to meet its financial obligations and to pay dividends on its common stock; the fact that the amount and timing of dividends payable on NextEra Energy’s common stock, as well as the dividend policy approved by NextEra Energy’s board of directors from time to time, and changes to that policy, are within the sole discretion of NextEra Energy’s board of directors and, if declared and paid, dividends may be in amounts that are less than might be expected by shareholders; NEP’s inability to access sources of capital on commercially reasonable terms could have an effect on its ability to consummate future acquisitions and on the value of NextEra Energy’s limited partner interest in NextEra Energy Operating Partners, LP; and effects of disruptions, uncertainty or volatility in the credit and capital markets on the market price of NextEra Energy’s common stock. NextEra Energy discusses these and other risks and uncertainties in its annual report on Form 10-K for the year ended December 31, 2016 and other SEC filings, and this report should be read in conjunction with such SEC filings made through the date of this report. The forward-looking statements made in this report are made only as of the date of this report and NextEra Energy undertakes no obligation to update any forward-looking statements.

ON THE COVER (clockwise from top left): Babcock Solar Energy Center, Punta Gorda, Florida; High Lonesome Mesa Wind Energy Center, Torrance County, New Mexico; Power Delivery Diagnostic Center, Jupiter, Florida.



NextEra Energy, Inc.
700 Universe Boulevard, Juno Beach, FL 33408

For more information:
NextEraEnergy.com
FPL.com
NextEraEnergyResources.com

Appendix B:

National Telecommunications and Information Administration Notification Letter

DoD Preliminary Screening Tool



UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and
Information Administration
Washington, D.C. 20230

APR 18 2017

Mr. Daniel C. Labate
Resource Modeling Analyst
WindLogics
700 Universe Blvd.
Juno Beach, FL 33408

Re: Burke Project: Burke County, ND

Dear Mr. Labate:

In response to your request on February 17, 2017, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Burke County Wind Project, located in Burke County, North Dakota.

After a 45+ day period of review, no agencies had issues with turbine placement in this area.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter A. Tenhula", with a long horizontal flourish extending to the right.

Peter A. Tenhula
Deputy Associate Administrator
Office of Spectrum Management



DoD Preliminary Screening Tool

[DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0](#)

Disclaimer:

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Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
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 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
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Screening Type: Geometry Type:

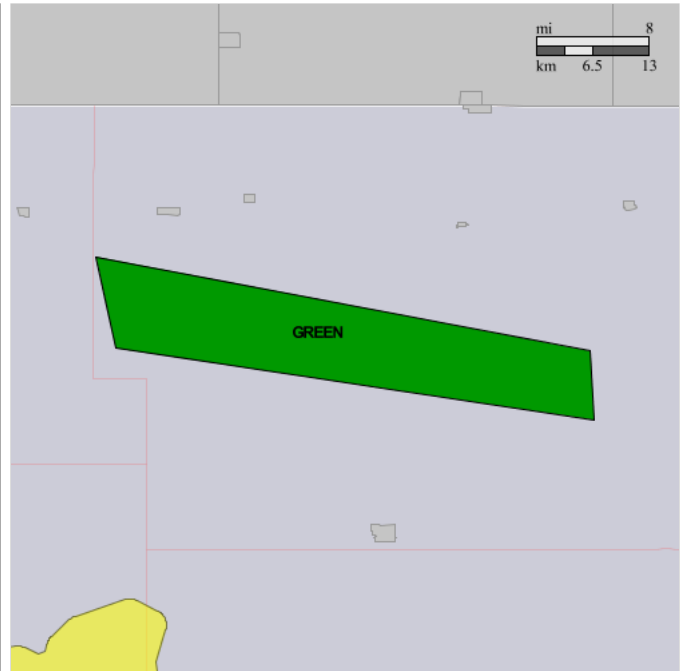
Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
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2	<input type="text" value="48"/>	<input type="text" value="45"/>	<input type="text" value="5.35"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="55"/>	<input type="text" value="1.0"/>	<input type="text" value="W"/>
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4	<input type="text" value="48"/>	<input type="text" value="44"/>	<input type="text" value="54.82"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="25"/>	<input type="text" value="59"/>	<input type="text" value="W"/>

Horizontal Datum:

Map Legend:

- Green:** No anticipated impact to Air Defense and Homeland Security radars. Aeronautical study required.
- Yellow:** Impact likely to Air Defense and Homeland Security radars. Aeronautical study required.
- Red:** Impact highly likely to Air Defense and Homeland Security radars. Aeronautical study required.

Note: Map colors will show as depicted in the map legend when using the 'Polygon' Geometry Type; map colors will be subdued when using the 'Single Point' Geometry Type.





DoD Preliminary Screening Tool

DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0

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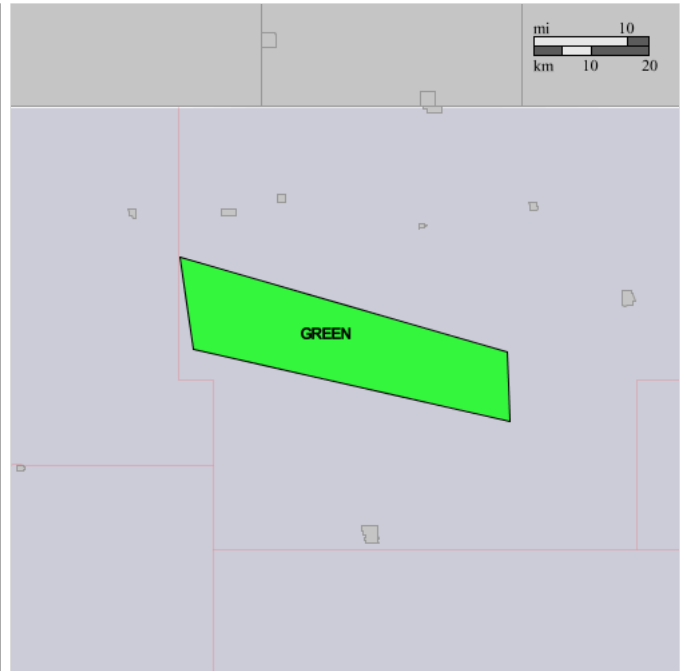
Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	48	50	41.6	N	102	56	13.9	W
2	48	45	5.35	N	102	55	1.0	W
3	48	40	42.5	N	102	25	45.6	W
4	48	44	54.82	N	102	25	59	W

Horizontal Datum:

Map Legend:

- Green: No Impact Zone.** Impacts not likely. NOAA will not perform a detailed analysis, but would still like to know about the project.
- Dk Green: Notification Zone.** Some impacts possible. Consultation with NOAA is optional, but NOAA would still like to know about the project.
- Yellow: Consultation Zone.** Significant impacts possible. NOAA requests consultation to discuss project details and to perform a detailed impact analysis. NOAA may request mitigation of significant impacts.
- Orange: Mitigation Zone.** Significant impacts likely. NOAA will likely request mitigation if a detailed analysis indicates that the project will cause significant impacts.
- Red: No-Build Zone.** Severe impacts likely. NOAA requests developers not build wind turbines within 3 km of the NEXRAD. Detailed impact analysis required.

Note: Map colors will show as depicted in the map legend when using the 'Polygon' Geometry Type; map colors will be subdued when using the 'Single Point' Geometry Type.



Because the NEXRAD can detect wind turbines occasionally at great distance, NOAA would like to know the location of all wind farm projects so that corrupted radar data can be flagged. Send project information directly to NOAA at wind.energy.matters@noaa.gov or through the National Telecommunications & Information Administration (NTIA) in the Dept. of Commerce. NOAA protects all wind project information as proprietary and sensitive.



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	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
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Horizontal Datum:

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact Dr. Thomas (Thom) H. Rennie at the USAF Regional Environmental Coordinator at (214)767-4678 for confirmation and documentation.

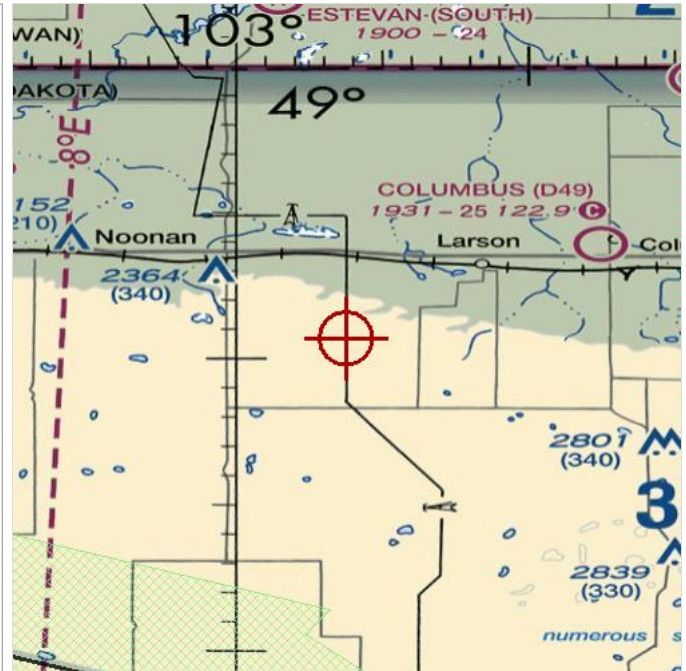
The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact LTC Owen B. Castlemain at the USA Regional Environmental Coordinator at (817) 222-5921 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USMC Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

This is a preliminary review of your proposal and does not preclude official FAA processes.

Your search data is not retained and the privacy of all your searches is assured.



Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil



DoD Preliminary Screening Tool

DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0

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DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100 % optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
 - Air Defense and Homeland Security radars(Long Range Radar)
 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Geometry Type:

Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	<input type="text" value="48"/>	<input type="text" value="40"/>	<input type="text" value="42.5"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="25"/>	<input type="text" value="45.6"/>	<input type="text" value="W"/>

Horizontal Datum:

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact Dr. Thomas (Thom) H. Rennie at the USAF Regional Environmental Coordinator at (214)767-4678 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact LTC Owen B. Castlemain at the USA Regional Environmental Coordinator at (817) 222-5921 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USMC Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

This is a preliminary review of your proposal and does not preclude official FAA processes.

Your search data is not retained and the privacy of all your searches is assured.



Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil



DoD Preliminary Screening Tool

DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0

Disclaimer:

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 - Air Defense and Homeland Security radars(Long Range Radar)
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 - Military Operations
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Screening Type: Geometry Type:

Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	<input type="text" value="48"/>	<input type="text" value="45"/>	<input type="text" value="5.35"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="55"/>	<input type="text" value="1.0"/>	<input type="text" value="W"/>

Horizontal Datum:

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The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact LTC Owen B. Castlemain at the USA Regional Environmental Coordinator at (817) 222-5921 for confirmation and documentation.

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The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

This is a preliminary review of your proposal and does not preclude official FAA processes.

Your search data is not retained and the privacy of all your searches is assured.



Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil

Appendix C:
Agency Correspondence

Agency Correspondence Letter

April 20, 2018

TO: [Mr. or Ms.][First Name][Last Name]
[Title]
[Department]
[Agency]
[Address]
[City],[State][Zip]

FROM: Atwell, LLC

DATE: April 20, 2018

SUBJECT: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota

Dear [Mr. or Ms.] [Last Name],

Atwell, LLC has been contracted by Burke Wind, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Burke County Wind Energy Center (WEC) and to prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line, in accordance with North Dakota Century Code Section 49-22-07. As part of the applications, we are conducting an investigation of the WEC, which is located approximately nine miles southwest of the City of Bowbells in Burke County, North Dakota, and the proposed transmission line, which is approximately four miles east of Tioga, North Dakota. Please refer to the attached **Site Location Map** and **Transmission Line Site Location Map**.

This proposed WEC has a nameplate capacity of up to 300 megawatts (MW) and would consist of a maximum of 111 GE 2.5 wind turbine generators and 12 GE 1.715 wind turbine generators and associated access roads and collection lines. The WEC would interconnect to the electrical grid via an approximately 39-mile-long transmission line from the WEC substation to the point of interconnect. The WEC would include portions of the following townships:

BURKE COUNTY

- **Keller Township**
T161N, R94W
- **Foothills Township:**
T161N, R92W
- **Fay Township:**
T162N, R93W
- **Harmonious Township:**
T161N, R94W,
- **Leaf Mountain Township:**
T161N, R93W
- **Kandiyohi Township**
T159N, R90W
- **Clearly Township**
T160N, R93W
- **Clayton Township:**
T161N, R91W
- **Ward Township:**
T161N, R90W
- **Lucy Township:**
T160N, R92W
- **Diamond Township:**
T160N, R91W
- **Roseland Township:**
T157N, R93W
- **Thorson Township**
T160N, R94W

The associated transmission line corridor includes the following townships and sections:

BURKE COUNTY

- **Leaf Mountain Township**
T161N, R93W, Sections 25, 26, 35
- **Cleary Township:**
T160N, R93W, Sections 4, 9, 10, 15, 22, 26,
27, 34, 35
- **Colville Township:**
T159N, R93W Sections 3, 4, 8, 9, 17, 20, 29,
32, 33, 34

MOUNTRAIL COUNTY

- **Powers Lake Township:**
T158N, R93W, Sections 3, 4, 9, 10, 15, 21, 22,
28, 33, 34
- **Sorkness Township:**
T157N, R93W, Sections 3, 4, 8, 9, 13, 14, 15,
17, 18, 20, 21, 22, 29

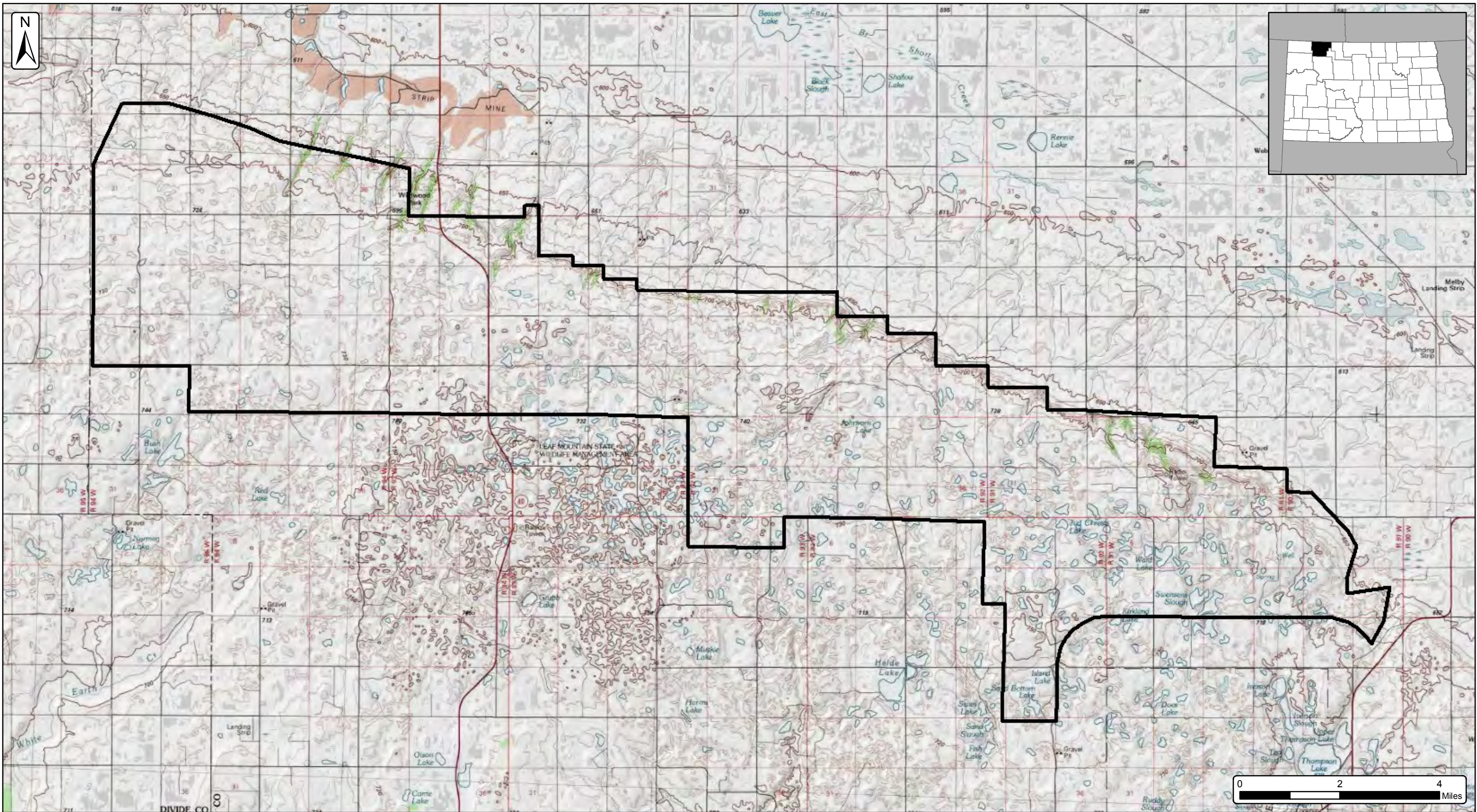
Per Section 69-06-01-05 of the North Dakota Public Service Commission’s administrative rules, we are consulting your agency for assistance in identifying concerns or issues within the boundaries of the townships and sections listed above that would influence a decision regarding the use of the land, as well as applicable permits that may be required from your office.

We would appreciate a response by May 15, 2018. Please contact me at 866.850.4200 or email at ejahnke@atwell-group.com if you have any questions. Thank you for your assistance.

Sincerely,


Ethan Jahnke
Project Manager
Environmental Services

Enclosures: Site Location Map
Burke Wind Transmission Line Location Map



Burke County Wind Energy Center Site Location Map
 Burke County, North Dakota
 Date: 4/11/2018

Client:
Burke Wind, LLC
Atwell, LLC Project:16000947

 Wind Resource Area
 01/25/2017 (±68,719 Ac.)

**BUSINESS CONFIDENTIAL
 NOT FOR DISTRIBUTION**
 SOURCE: USGS TOPO QUADRANGLES
 COLUMBUS SW (1949), BUSH LAKE (1974), GRAND VIEW (1974),
 GRUBB LAKE (1974), HELDE LAKE (1974), THOMPSON LAKE (1974),
 COLUMBUS SE (1981), BEAVER LAKE (1948), RENNIE LAKE (1949),
 WOBURN (1948), COTEAU (1948), VANVILLE NE (1950)



The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.

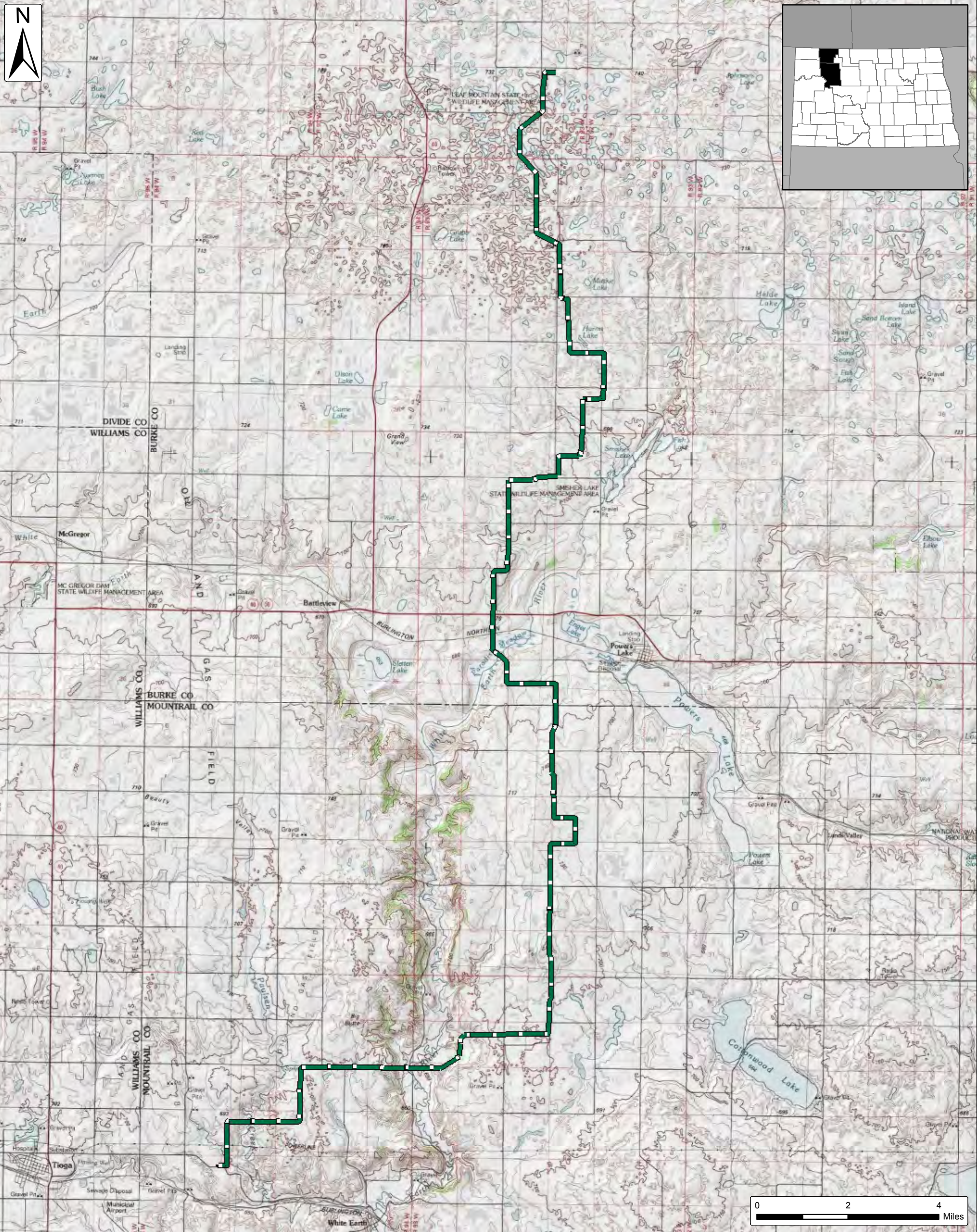
Burke County Wind Energy Center

Transmission Line Site Location Map

Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
4/11/2018
Atwell, LLC Project:
16000947



 Transmission Line (04/02/2018)

CONTAINS PRIVILEGED AND CONFIDENTIAL INFORMATION - NOT FOR PUBLIC DISCLOSURE

SOURCE: USGS TOPO QUADS
GRAND VIEW (1974), GRUBB LAKE (1974), HELDE LAKE (1974),
BATTLEVIEW (1978), POWERS LAKE (1977), LUNDS VALLEY (1978),
TIOGA (1979), WHITE EARTH (1969), ROSS NW (1969),
COTTONWOOD LAKE (1981), COLUMBUS SE (1981),
BEAVER LAKE (1948), RENNIE LAKE (1949)



The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.

Mr. or Ms.	First Name	Last Name	Title	Agency	Department/District	Address	City	State	Zip
	Mylynn	Tufte	State Health Officer	North Dakota Department of Health		600 East Boulevard Avenue	Bismarck	ND	58505-0200
Ms.	Jodi A.	Smith	Commissioner	North Dakota Department of Trust Lands		1707 North 9th Street, PO Box 5523	Bismarck	ND	58506-5523
Mr.	Tom	Sorel	Director	North Dakota Department of Transportation		608 East Boulevard Avenue	Bismarck	ND	58505-0700
Mr.	Doug	Goehring	Agriculture Commissioner	North Dakota Department of Agriculture		600 East Boulevard Avenue, Department 602	Bismarck	ND	58505-0020
Mr.	Edward C.	Murphy	State Geologist	North Dakota Geological Survey		600 East Boulevard Avenue	Bismarck	ND	58505-0840
Ms.	Claudia J.	Berg	Director	State Historical Society of North Dakota		612 East Boulevard Avenue	Bismarck	ND	58505
Mr.	Garland	Erbele	State Engineer	North Dakota State Water Commission		900 East Boulevard, Dept. 770	Bismarck	ND	58505-0850
Mr.	Kyle C.	Wanner	Director	North Dakota Aeronautics Commission		2301 University Drive, Building 22, PO Box 5020	Bismarck	ND	58502-5020
Ms.	Melissa	Baker	Director	North Dakota Parks and Recreation Department		1600 E. Century Ave., Suite 3 PO Box 5594	Bismarck	ND	58506-5594
Ms.	Susan	Quinnell	Review and Compliance Coordinator	ND State Historic Preservation Office	State Historical Society of North Dakota	612 East Boulevard Avenue	Bismarck	ND	58505
Mr.	Thomas	Wheeler	District 1 Director	North Dakota Township Officers Association		6561-115 Ave. NW	Ray	ND	58849-9411
Mr.	Wayne	Stenehjem	Attorney General			600 East Boulevard Avenue, Department 125	Bismarck	ND	58505-0040
Mr.	Christopher	Jones	Executive Director	Department of Human Services		600 East Boulevard Avenue, Dept 325	Bismarck	ND	58505-0250
Ms.	Michelle	Kommer	Commissioner of Labor	North Dakota Department of Labor and Human Rights		600 East Boulevard Ave Dept 406	Bismarck	ND	58505-0340
Mr.	Mark	Wagner	Director	North Dakota Department of Career and Technical Education		600 East Boulevard Avenue, Dept. 270	Bismarck	ND	58505-0610

Mr.	Jay	Schuler	Commissioner	Department of Commerce		1600 E. Century Ave., Suite 2	Bismarck	ND	58503
Ms.	Karlene	Fine		North Dakota Industrial Commission		600 E Boulevard Ave. Dept. 405	Bismarck	ND	58505-0840
Mr.	Doug	Burgum	Govenor	Office of Governor, State of North Dakota		600 E Boulevard Ave	Bismarck	ND	58505
	Naika	Doglod	Equal Opportunity Officer	Job Service of North Dakota		PO Box 5507	Bismarck	ND	58506-5507
Mr.	Dennis	Renner	Chair	Soil Conservation Committee		2718 Gateway Ave., Suite 304	Bismarck	ND	58503
Mr.	James N.	Mattis	Secretary of Defense	United States Department of Defense		1400 Defense Pentagon	Washington	DC	20301-1400
Ms.	Shari	Lares	Environmental Protection Specialist	Federal Aviation Administration		2301 University Drive, Building 23B	Bismarck	ND	58504
Mr.	John	Weeda	Director	North Dakota Transmission Authority		600 E. BOULEVARD AVE. DEPT. 405	Bismarck	ND	58505-0840
Mr.	Justin	Kringstad		North Dakota Pipeline Authority		600 E. Boulevard Ave. Dept. 405	Bismarck	ND	58505-0840
Ms.	Debbie	Kuryn	Chairman	Burke County Commissioners		103 Main St.	Bowbells	ND	58721
Mr.	Allen	Ryberg		Burke County Commissioners		103 Main St.	Bowbells	ND	58721
Mr.	Jarret	Van Berkom		Burke County Commissioners		103 Main St.	Bowbells	ND	58721

Department of Defense

From: [Lignowski, Michael J CTR \(US\)](#)
To: [Ethan Jahnke](#)
Subject: Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota
Date: Tuesday, May 01, 2018 1:44:26 PM

Mr. Jahnke

We were recently notified of correspondence sent to the Secretary of Defense regarding the Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota. We at the Military Aviation and Installation Siting Clearinghouse (DoD Siting Clearinghouse) handle energy siting and compatibility for the Office of the Secretary of Defense and work in coordination with the Military Departments and other entities to ensure minimal impacts to military readiness and training. The Clearinghouse acts as a single point of contact for Federal agencies; State, Indian tribal, and local governments; developers; and landowners, and provides a central forum for internal staffing. Our systematic process is defined in Part 211 of Title 32 of the Code of Federal Regulations. For a better understanding of The Clearinghouse and what we do please visit our website at <https://www.acq.osd.mil/dodsc/> and please ensure all future correspondence is provided to us.

Thank you,

Michael Lignowski
Military Aviation & Installation Assurance Siting Clearinghouse
Office# 571-372-6853
michael.j.lignowski.ctr@mail.mil

From: [Sample, Steven J CIV OSD OUSD ATL \(US\)](#)
To: [Ethan Jahnke](#)
Cc: [Miller, Brin A CTR \(US\)](#); [Lignowski, Michael J CTR \(US\)](#)
Subject: Burke Co Wind Energy Center Review (UNCLASSIFIED)
Date: Thursday, May 31, 2018 10:49:17 AM

CLASSIFICATION: UNCLASSIFIED

Mr. Jahnke, the Department of Defense has received your request for an informal review of your energy project in North Dakota. Our review process includes an assessment by all military stakeholders and will be complete in a few weeks. We will send the completed assessment to this email address

<https://www.acq.osd.mil/dodsc/>

In the future, you'll received a quicker response if you submit through the standard process on our website rather than send to the Secretary of Defense. Please contact me if you have any questions.

V/r,

Steve Sample
Military Aviation and Installation Assurance Siting Clearinghouse
Office of the Assistant Secretary of Defense (Energy, Installations & Environment)
703-571-0076

Email: steven.j.sample4.civ@mail.mil

CLASSIFICATION: UNCLASSIFIED



ENERGY,
INSTALLATIONS
AND ENVIRONMENT

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

July 11, 2018

Ethan Jahnke
Project Manager
Atwell, LLC
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Dear Mr. Jahnke,

As requested, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated within DoD an informal review of the Burke County Wind Energy Center and Transmission Line. The results of our review indicated that the dual wind and transmission project located in Burke and Mountrail Counties, ND, as proposed, may have an impact on military operations conducted in the area.

The proposed siting location of the dual wind and transmission project may impact US Air Force low-level flight training. Please contact Mr. Jamie Flanders at jamie.a.flanders.civ@mail.mil to discuss this proposal.

Please note that this informal review by the DoD Military Aviation and Installation Assurance Siting Clearinghouse does not constitute an action under 49 United States Code Section 44718 and that the DoD is not bound by the conclusion arrived at under this informal review. If you have any questions, please contact me at steven.j.sample4.civ@mail.mil or at 703-571-0076.

Sincerely,

A handwritten signature in blue ink, appearing to read "SJS", is positioned above the typed name of the sender.

Steven J. Sample
Deputy Director
Military Aviation and Installation
Assurance Siting Clearinghouse



ENERGY,
INSTALLATIONS
AND ENVIRONMENT

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

July 26, 2018

Ethan Jahnke
Project Manager
Atwell, LLC
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Dear Mr. Jahnke,

As requested, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated within DoD an informal review of the Burke County Wind Energy Center and Transmission Line Project located in Burke and Mountrail Counties, ND.

Our initial review indicated potential impacts to US Air Force operations. After subsequent discussions with you, we have conducted further analysis and determined that the Burke County Wind Energy Center and Transmission Line Project will have minimal impact on military operations.

Please note that this informal review by the DoD Military Aviation and Installation Assurance Siting Clearinghouse does not constitute an action under 49 United States Code Section 44718 and that the DoD is not bound by the conclusion arrived at under this informal review. If you have any questions, please contact me at steven.j.sample4.civ@mail.mil or at 703-571-0076.

Sincerely,

A handwritten signature in blue ink, appearing to read "SJS", written over a light blue horizontal line.

Steven J. Sample
Deputy Director
Military Aviation and Installation
Assurance Siting Clearinghouse

North Dakota Department of Health



May 7, 2018

Mr. Ethan Jahnke
Atwell
143 Union Blvd., Suite 700
Lakewood, CO 80228

Re: Burke County Wind Energy Center and Transmission Line
Burke and Mountrail Counties in North Dakota

Dear Mr. Jahnke:

This department has reviewed the information concerning the above-referenced project submitted under date of April 20, 2018, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
2. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.
3. The proposed construction project overlies the White Earth and Shell Creek-White Lake glacial drift aquifers, both of which are considered sensitive groundwater areas. The project also overlies the Lucy, Clayton, Foothills, and Foothills South glacial drift aquifers. Several domestic and stock water supply wells lie in close proximity to the proposed project location(s). Care should be taken to avoid spills of any materials that may have an adverse

Mr. Ethan Jahnke

2.

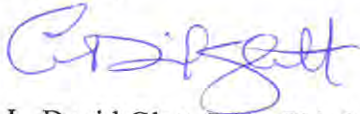
May 7, 2018

effect on groundwater quality. All spills must be immediately reported to this Department and appropriate remedial actions performed.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,



L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

North Dakota Department of Transportation



North Dakota Department of Transportation

Thomas K. Sorel
Director

Doug Burgum
Governor

May 14, 2018

Ethan Jahnke
Project Manager
Environmental Services
143 Union Boulevard, Suite 700
Lakewood, CO 80228

PROPOSED BURKE COUNTY WIND ENERGY CENTER AND TRANSMISSION LINE,
BURKE AND MOUNTRAIL COUNTIES, NORTH DAKOTA

We have reviewed your April 20, 2018, letter.

This project should have no adverse effect on the North Dakota Department of Transportation (NDDOT) highways.

However, if because of this project any work needs to be done on highway right of way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Joel Wilt at 701-774-2700.

A handwritten signature in blue ink that reads "Robert Fode".

ROBERT A. FODE, P.E., DIRECTOR - OFFICE OF PROJECT DEVELOPMENT

57\raf\js

c: Joel Wilt, Williston District Engineer

North Dakota Department of Trust Lands

May 4, 2018

ETHAN JAHNKE
ENVIRONMENTAL SERVICES PROJECT MANAGER
ATWELL
143 UNION BOULEVARD SUTIE 700
LAKEWOOD CO 80228

Re: Information Request for the Proposed Burke County Wind Energy Center
and Transmission Line in Burke and Mountrail Counties, North Dakota

Dear Mr. Jahnke:

We are in receipt of your April 20, 2018 letter, regarding a request for information for the proposed Burke Wind Energy Center and proposed transmission line in Burke and Mountrail Counties, North Dakota. There are common schools trust fund surface interests that are managed by the North Dakota Department of Trust Lands, on behalf of the Board of University and School Lands which are included in the Wind Project Area, as shown on the **Site Location Map and Transmission Line Site Location Map**. These surface interests are as follows:

<i>County</i>	<i>Township</i>	<i>Range</i>	<i>Section</i>	<i>Subdivisions</i>
Burke	161	91	36	ALL
Burke	161	92	16	ALL
Burke	161	92	36	ALL
Burke	161	93	16	NW4, SW4
Burke	161	94	16	NW4, SW4
Burke	162	94	36	ALL

No common schools trust fund surface interests appear to be included in the Transmission Line Area.

An application for a Wind Farm Easement Agreement was received from Deanna Julsen of NextEra Energy, for the Burke Wind Project in March of 2017. The application remains in pending status until more details are received for this project. Separate applications will need to be submitted for buried electric collection lines for common school trust fund surface interests having no wind tower improvements and for Transmission lines crossing common schools trust fund surface interests.

The surface tracts within the project area will need to be evaluated for inclusion in the wind farm project. Prior to the Board considering a Wind Energy Easement Agreement, an onsite inspection of the trust property is required. The inspection would include review of wind tower locations, associated access road, collection lines, construction crane access paths and transmissions line corridors, as well as the following items which may be considered in the review of an easement application:

1. Financial benefit to the trusts;
2. Availability of alternate encumbrance site or route;
3. The least environmentally damaging site or route regardless of property ownership;
4. Physical stability of the landscape;
5. Other potential future uses for the trust lands, including urban development;

6. Potential mineral and other material development including oil, gas, coal, cement materials, sodium sulfate, sand and gravel, road material, building stone, chemical substances, metallic ores, uranium ores, or colloidal or other clays;
7. Feasibility for reclamation;
8. Maintenance of existing wetlands and water flows;
9. Any cultural, historical, archeological, and paleontological resources;
10. Federally listed threatened and endangered species;
11. Location of the proposed route or site in relation to section lines, quarter section lines and corridors;
12. Potential liability to the trusts;
13. Applicant's past encumbrances on trust lands;
14. Applicant's financial stability; and
15. Any other information relevant to the application which would assist in the determination.

Any proposed wind tower locations would be subject to review and approval by the Board of University and School Lands. The Board of University and School Lands will not move forward with the completion of Wind Energy Easement Agreements until site inspection and review has been completed and all local and state approvals have been obtained.

If you have any questions, feel free to contact our office at 701-328-2800.

Sincerely,



Michael Humann
Surface Division Manager

cc: Clay Cameron
NextEra Energy
700 Universe Blvd
Juno Beach FL, 33408

Tom VonBische
NextEra Energy
7217 41st ST CT N
Oakdale MN, 55128

Deanna Julsen
NextEra Energy
700 Universe Blvd
Juno Beach FL, 33408

Bourke Thomas

From: Vonbische, Thomas <THOMAS.VONBISCHE@nexteraenergy.com>
Sent: Thursday, June 14, 2018 2:52 PM
To: Cameron, Clay; Johnson, Alex; Lane, Barry; Bourke Thomas
Subject: FW: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure
Attachments: STATE OF NORTH DAKOTA NE 16-161-92 ISSUED 06-06-18.pdf; STATE OF NORTH DAKOTA NW 16-161-93 ISSUED 06-06-18.pdf; STATE OF NORTH DAKOTA SE 16-161-92 ISSUED 06-06-18.pdf; STATE OF NORTH DAKOTA SW 16-161-92 ISSUED 06-06-18.pdf; STATE OF NORTH DAKOTA SW 16-161-93 ISSUED 06-06-18.pdf; atwell ltr.pdf; 8045 ltr.pdf

All:

Please see the attached email from Michael Humann at ND Trust Lands.
If you know the answers to their questions below, please advise.

Respectfully,

Tom VonBische

Community Development Leader



Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

From: Humann, Michael T. [<mailto:mhumann@nd.gov>]
Sent: Thursday, June 14, 2018 9:51 AM
To: Vonbische, Thomas <THOMAS.VONBISCHE@nexteraenergy.com>
Cc: Barth, Cory J. <cjbarth@nd.gov>; Graber, Kayla M. <kgraber@nd.gov>; Stegmiller, Joseph H. <jstegmiller@nd.gov>; Jacobs, Deb K. <djacobs@nd.gov>
Subject: RE: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure

CAUTION - EXTERNAL EMAIL

Tom,

I have reviewed the information and have determined we will need to meet on-site to review proposed turbine locations, transmission line routes and construction easement locations and routes. Please be reminded the transmission line is handled with a separate easement which NextEra applied for in September of 2017 and is tracked as ROW#8132. An application will also need to be filed for the construction route as this will also be handled by its own agreement. Please explain the following questions that have arisen from the information received in your email:

- Will there be turbines on the following tracts as reviewed in a previous on-site inspection NE4, NW4, SW4 section 36-161-91? **No there are not. TVB**
- Why has the number of turbine sites and the location of turbine sites changed in section 16-161-92 since the completion of the onsite inspection?
- The transmission line known as ROW#8132 was for section 16-160-93 and W2-36-161-93, the transmission line is now proposed for the W2-16-161-93 – please explain the change to the transmission line route. **Went on the property to the east.**
- Please explain the need for the construction line routes across the SW-16-161-93 – are alternative routes available?
- What is the status of this project at the local (township and County) and State (PSC) levels?

Please be reminded can work on siting and drafting agreements but acquisition cannot occur until after local and State approvals are secured for the project. Let me know if you have any questions. Thanks

From: Vonbische, Thomas [<mailto:THOMAS.VONBISCHE@nexteraenergy.com>]
Sent: Wednesday, June 13, 2018 7:40 PM
To: Humann, Michael T. <mhumann@nd.gov>
Cc: Cameron, Clay <Clay.Cameron@nexteraenergy.com>
Subject: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure

<p>CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.</p>
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Michael:

Hope this email finds you doing well. The attached exhibits are for our application with the Trust for ROW# 8045 and the Burke Wind project. Can we discuss the next steps for easement acquisition and addition of parcels from the ND Trust Lands.

Respectfully,

Tom VonBische

Community Development Leader



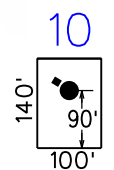
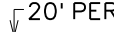

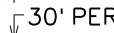
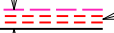
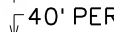
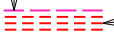
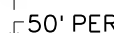
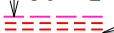

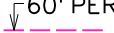

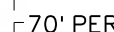

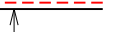



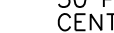
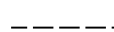
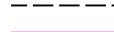


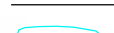

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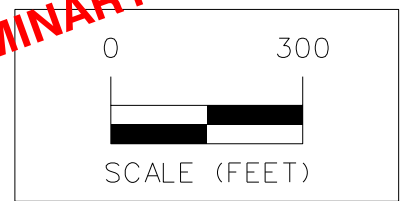


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PRELIMINARY



ISSUE DATE: 06-06-2018

MARK	REVISION	DATE	BY
Engineer: BJF	Checked By: MCG	Scale: 1" = 300'	Field Bk:
Technician: DW	Date: 09-05-17	Field Bk:	Pg:
Project No: 1170725			Sheet 1 of 1

NEXTERA ENERGY - BURKE WIND
 EXHIBIT B - State of North Dakota SW 16-161-93
 SNYDER & ASSOCIATES, INC.

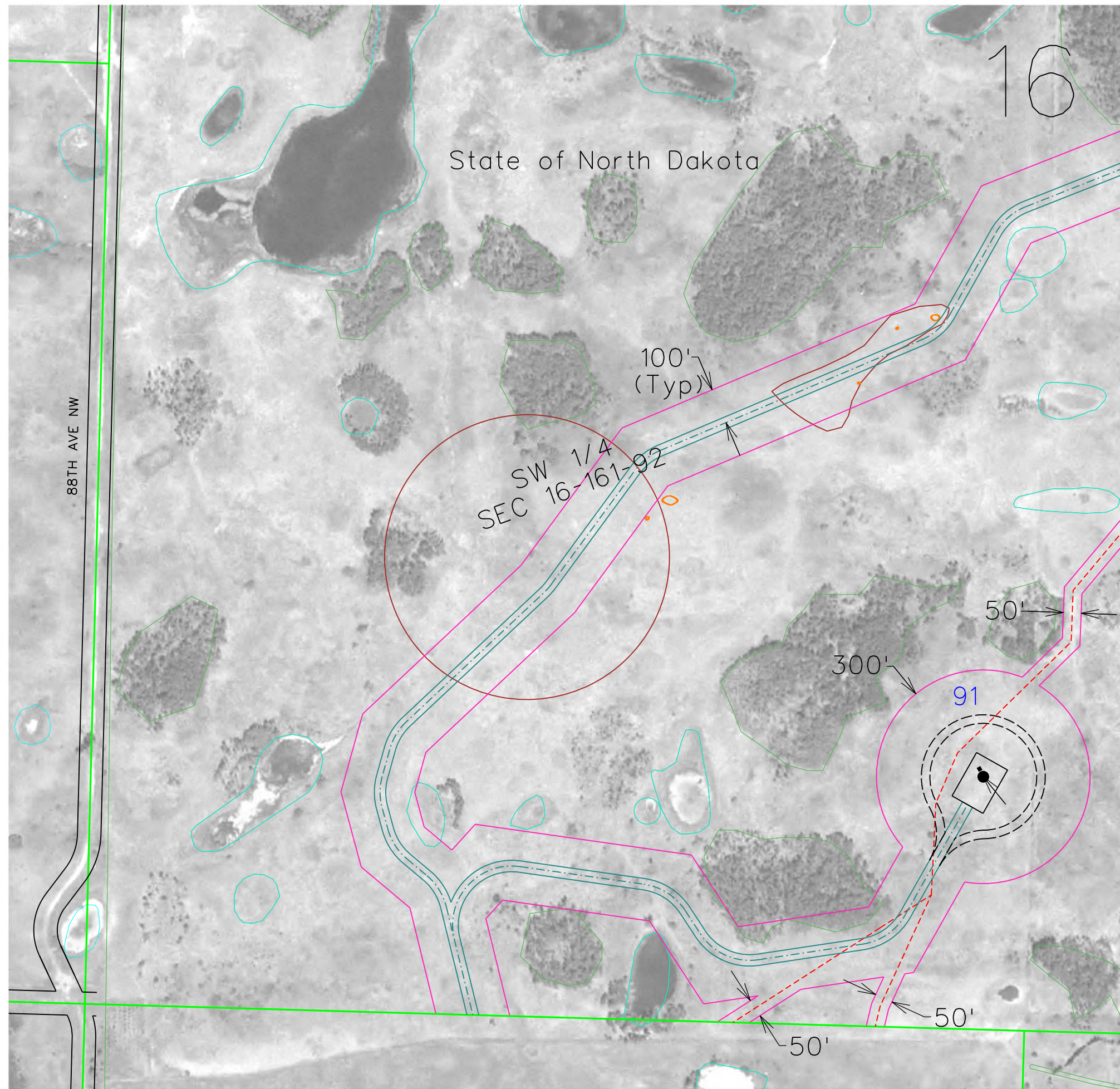
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Project No: 1170725

Sheet 1 of 1

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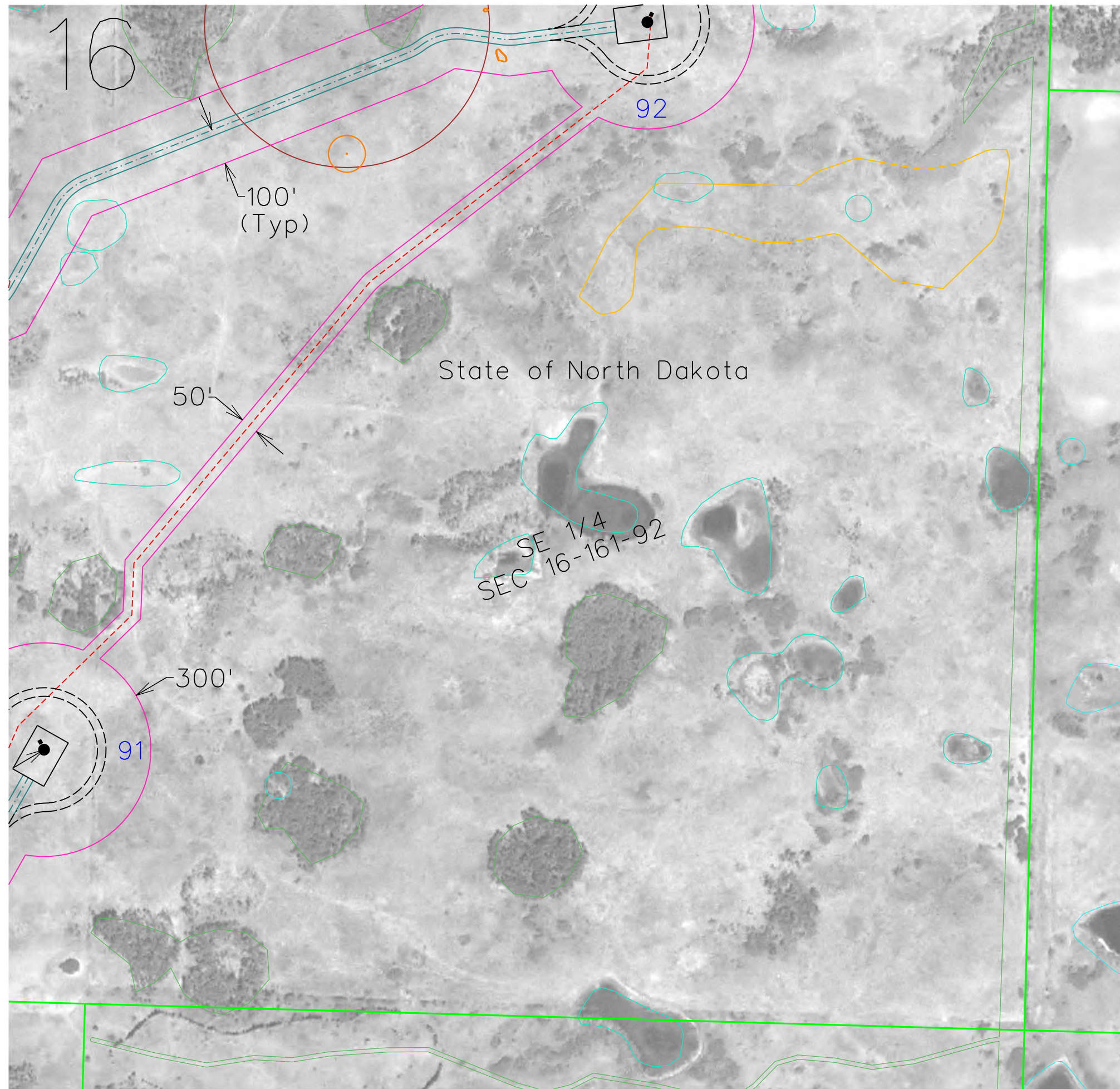
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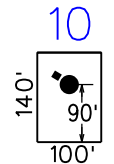
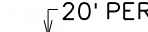


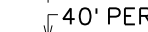

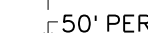


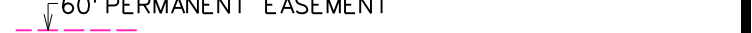









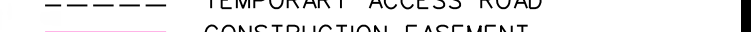
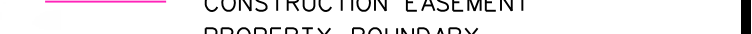
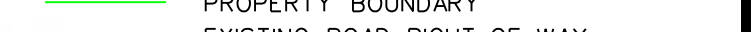


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Sheet 1 of 1

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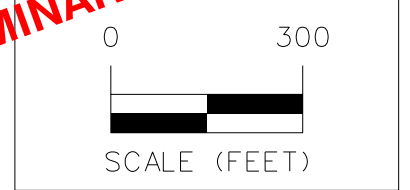


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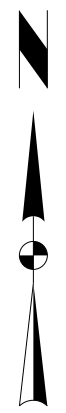
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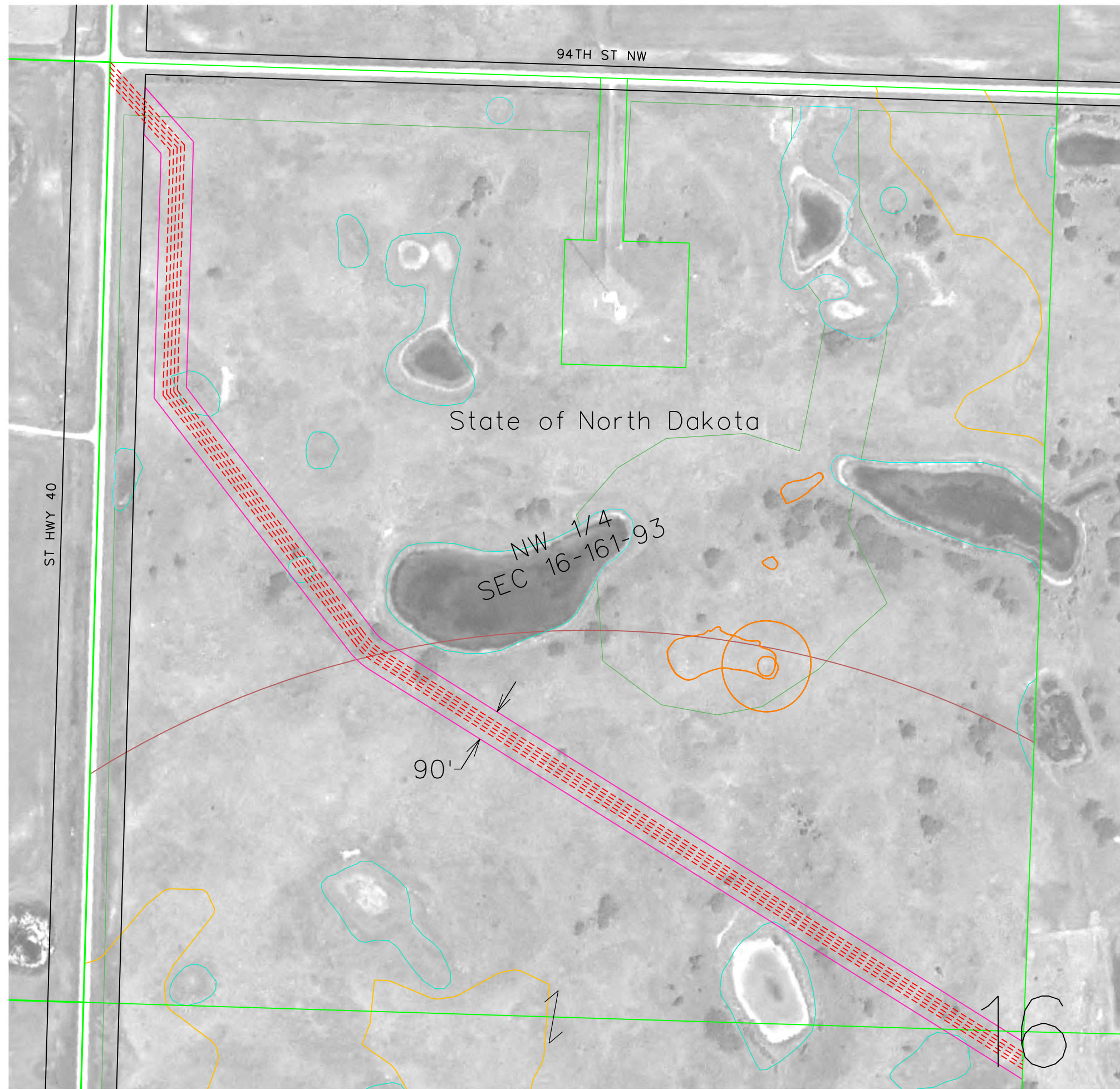
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Technician: DW	Date: 09-05-17	Field Bc:	Pg:
Project No: 1170725			Sheet 1 of 1

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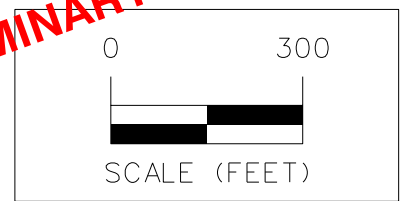


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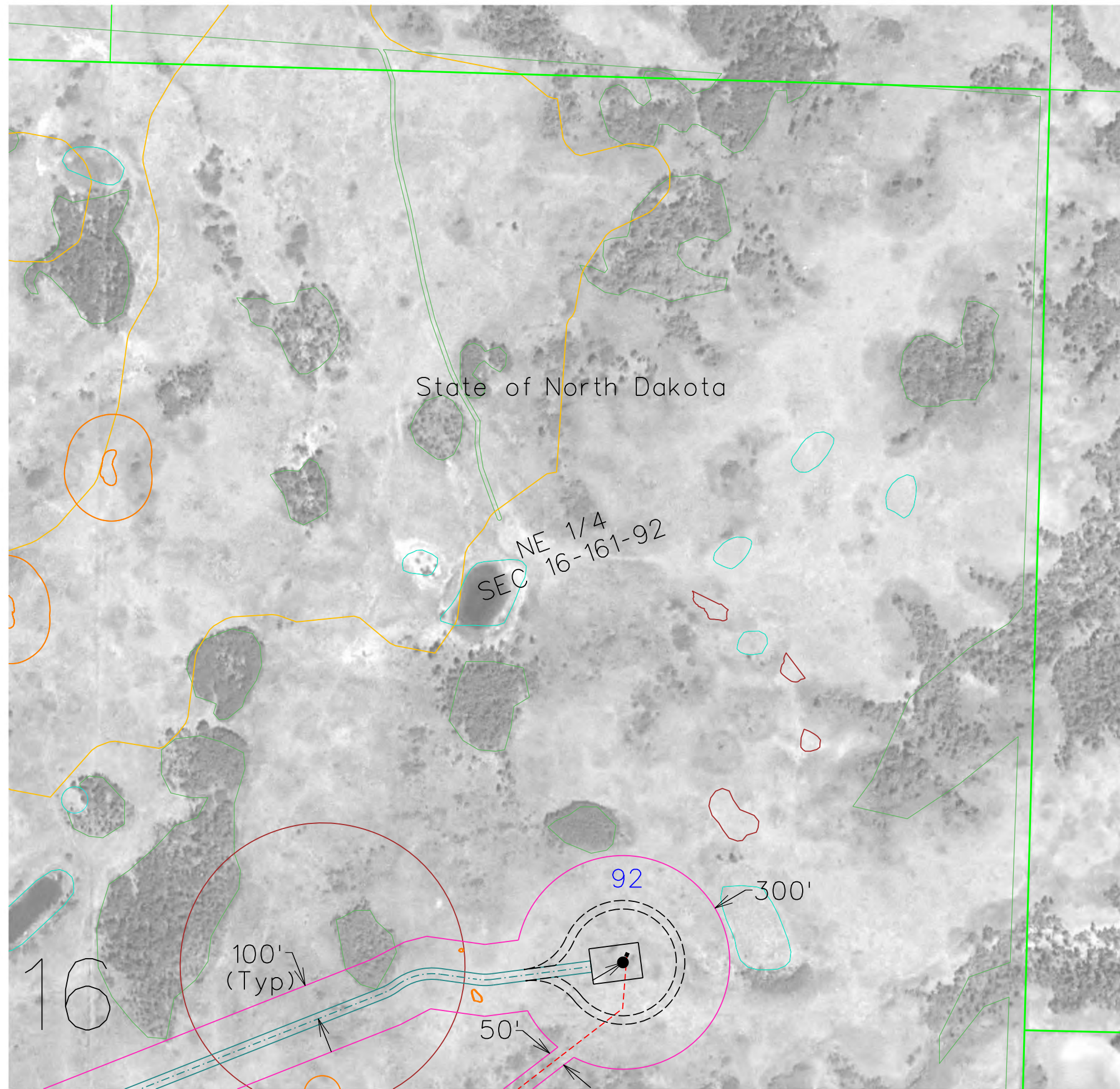
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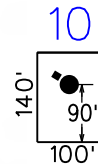
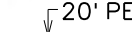

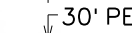

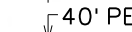

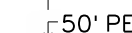

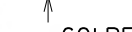
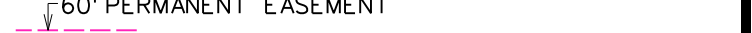









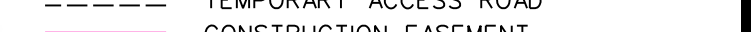
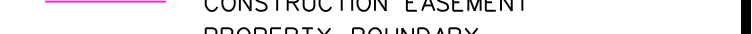
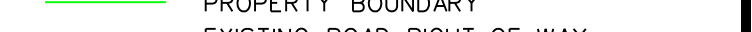


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Project No: 1170725
 Sheet 1 of 1

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SNYDER & ASSOCIATES

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Sheet 1 of 1

Bourke Thomas

From: Vonbische, Thomas <THOMAS.VONBISCHE@nexteraenergy.com>
Sent: Friday, July 13, 2018 4:08 PM
To: Graber, Kayla M.; Cameron, Clay; Bourke Thomas; Wells, Kimberly; Matt Stern; Dean Wedemeyer
Subject: RE: ROW#8045 - NextEra Energy Resources
Attachments: STATE OF NORTH DAKOTA SW 16-161-93 ISSUED 07-12-18.pdf; STATE OF NORTH DAKOTA SE 16-161-92 ISSUED 07-11-18.pdf; STATE OF NORTH DAKOTA SW 16-161-92 ISSUED 07-11-18.pdf

Thanks Kayla! I will need to get with our environmental and survey team on a site visit date. Any suggestions on your part, but next week after Tuesday, we have people in the field in Burke.

The team is cc into this email for their comments.

Respectfully,

Tom VonBische

Community Development Leader



Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

From: Graber, Kayla M. [<mailto:kgraber@nd.gov>]
Sent: Friday, July 13, 2018 1:51 PM
To: Vonbische, Thomas <THOMAS.VONBISCHE@nexteraenergy.com>
Subject: ROW#8045 - NextEra Energy Resources

CAUTION - EXTERNAL EMAIL

Good afternoon Tom,

Please forward an email notice regarding the removal of turbines and that this ROW request is just for a collector line now.

I have attached our boilerplate easement document to use as a guide for this ROW request. As far as consideration goes, I need to do a little research but please make an offer. Also, let me know a date that may work to revisit the site as the route has changed.

I think that is all for this ROW at the moment until we move forward again.

Please let me know if you have any questions.

Thank you,

Kayla Graber

Land Management Specialist

North Dakota Department of Trust Lands

1707 North 9th St.

Bismarck, ND 58501

Phone: (701) 328-1916

Email: kgraber@nd.gov

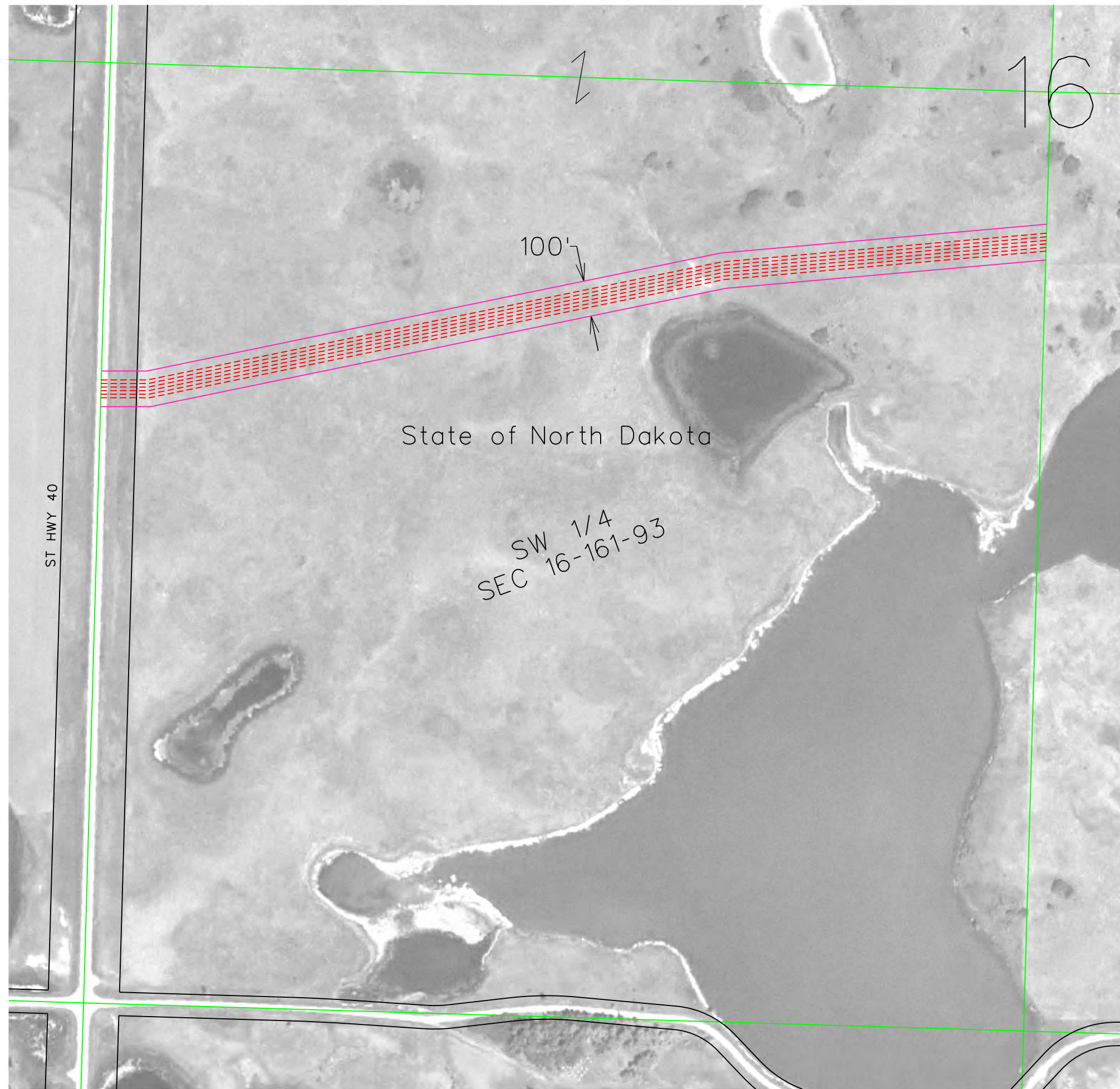
Web: <https://land.nd.gov>



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Note: You can apply for a ROW online or track the real time status and contact information for a right-of-way application anytime at <https://land.nd.gov/SurfaceROW/RightOfWay> using either the ROW number or by entering at least the first three letters of a company name.

D:\117-0725-10\Deliverables\EXHIBIT B\STATE OF NORTH DAKOTA_SW_16-161-93.dgn 7/12/2018 6:07:49 AM
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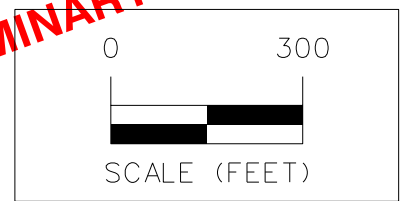


LEGEND

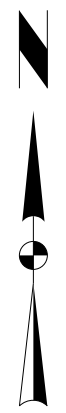
- TURBINE WITH NUMBER
- 20' PERMANENT EASEMENT
- ONE CABLE UNDERGROUND COLLECTION LINE
- 30' PERMANENT EASEMENT
- TWO CABLE UNDERGROUND COLLECTION LINE
- 40' PERMANENT EASEMENT
- THREE CABLE UNDERGROUND COLLECTION LINE
- 50' PERMANENT EASEMENT
- FOUR CABLE UNDERGROUND COLLECTION LINE
- 60' PERMANENT EASEMENT
- FIVE CABLE UNDERGROUND COLLECTION LINE
- 70' PERMANENT EASEMENT
- SIX CABLE UNDERGROUND COLLECTION LINE
- 32' ROAD
- ACCESS ROAD
- 50' PERMANENT EASEMENT (25' EACH SIDE OF CENTERLINE ACCESS ROAD)
- TEMPORARY ACCESS ROAD
- CONSTRUCTION EASEMENT
- PROPERTY BOUNDARY
- EXISTING ROAD RIGHT-OF-WAY

PROPERTY OWNER APPROVAL	
OWNER _____	DATE _____
OWNER _____	DATE _____

PRELIMINARY



ISSUE DATE: 07-12-2018



MARK	REVISION	DATE	BY
Engineer: BJJ	Checked By: MCG	Scale: 1" = 300'	Field Bk:
Technician: DW	Date: 09-05-17	Field Bk:	Pg:
Project No: 1170725			Sheet 1 of 1

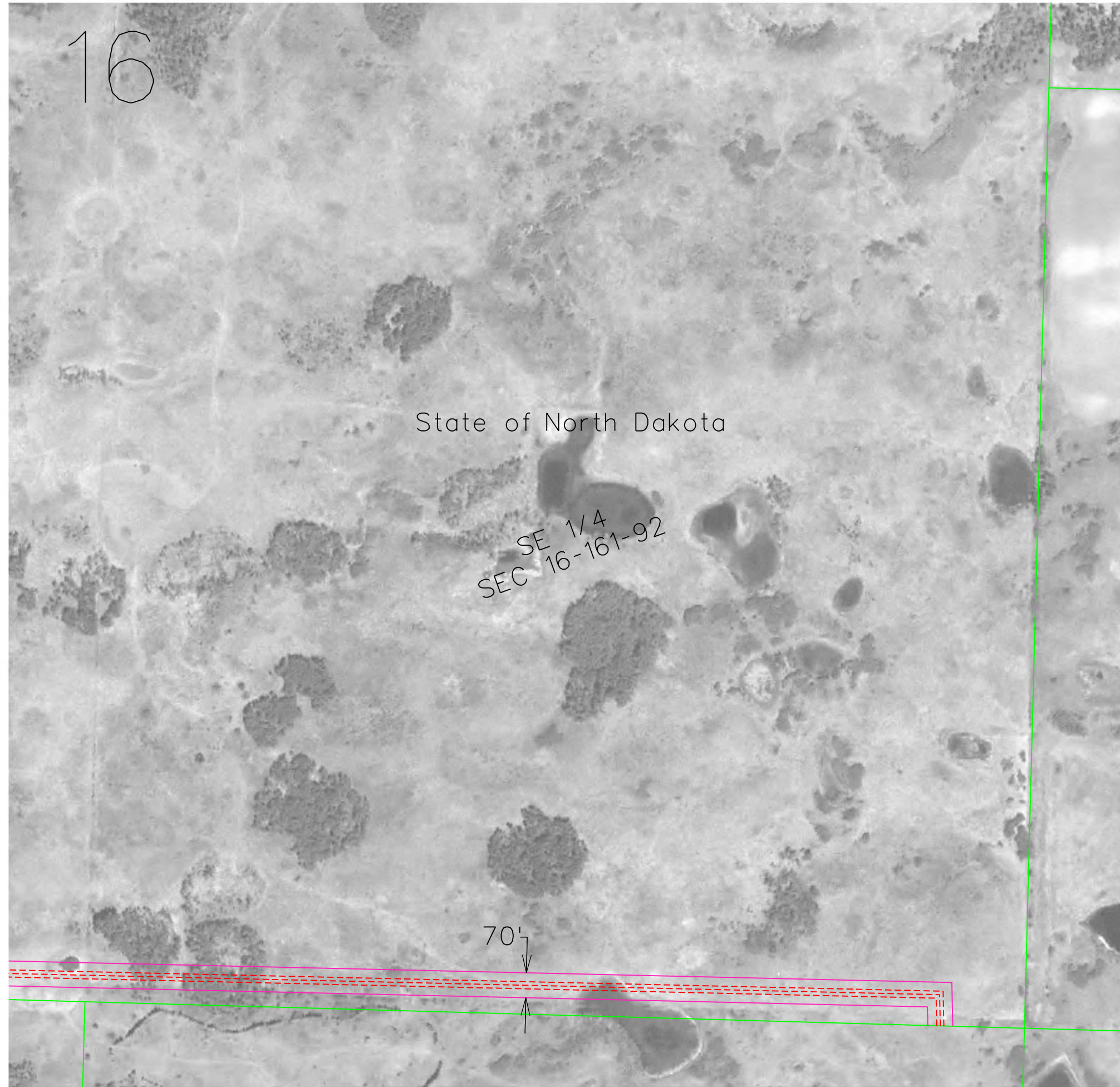
NEXTERA ENERGY - BURKE WIND
 EXHIBIT B - State of North Dakota SW 16-161-93
 SNYDER & ASSOCIATES, INC.

BURKE COUNTY, NORTH DAKOTA
 1751 MADISON AVENUE
 COUNCIL BLUFFS, IA 51503
 712-322-3202 | www.snyder-associates.com



Project No: 1170725
 Sheet 1 of 1

V:\ReLibreria\CADD\Standards\WorkSpace\Standards\Printing\Per... Tables\Date.tbl
V:\ReLibreria\CADD\Standards\WorkSpace\Standards\Printing\Print_Drivers\Color_VisColorHalfPostscript.plt
7/11/2018 6:04:44 AM
7/11/2018 6:04:44 AM
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Snyder
1:500

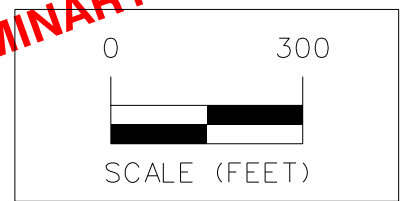


LEGEND

- TURBINE WITH NUMBER
- 20' PERMANENT EASEMENT
- ONE CABLE UNDERGROUND COLLECTION LINE
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- EXISTING ROAD RIGHT-OF-WAY

PROPERTY OWNER APPROVAL	
OWNER _____	DATE _____
OWNER _____	DATE _____

PRELIMINARY



ISSUE DATE: 07-11-2018

MARK	REVISION	DATE	BY
	Checked By: MCG		
	Engineer: BJF		
	Technician: DW	Date: 09-05-17	Field Bc: Pg:
Project No: 1170725			Sheet 1 of 1

NEXTERA ENERGY - BURKE WIND
EXHIBIT B - State of North Dakota SE 16-161-92
SNYDER & ASSOCIATES, INC.

BURKE COUNTY, NORTH DAKOTA

1751 MADISON AVENUE
COUNCIL BLUFFS, IA 51503
712-322-3202 | www.snyder-associates.com



Bourke Thomas

From: Graber, Kayla M. <kgraber@nd.gov>
Sent: Friday, July 13, 2018 4:22 PM
To: 'Vonbische, Thomas'; Cameron, Clay; Bourke Thomas; Wells, Kimberly; Matt Stern; Dean Wedemeyer
Subject: RE: ROW#8045 - NextEra Energy Resources

Tom,

We have a bunch of policy, training, and software demonstration meetings in the coming days so our schedule is pretty full... the soonest that I can see open is Aug 1st. Otherwise I see Aug 7 or 8th could be options as well, I will get with Mike on Monday and talk it over with him.

Have a good weekend!

Thank you,

Kayla Graber

Land Management Specialist

North Dakota Department of Trust Lands

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From: Vonbische, Thomas [<mailto:THOMAS.VONBISCHE@nexteraenergy.com>]
Sent: Friday, July 13, 2018 3:08 PM
To: Graber, Kayla M. <kgraber@nd.gov>; Cameron, Clay <Clay.Cameron@nexteraenergy.com>; Bourke Thomas <bthomas@atwell-group.com>; Wells, Kimberly <Kimberly.Wells@nexteraenergy.com>; Matt Stern <mstern@swensonhagen.com>; Dean Wedemeyer <dwedemeyer@snyder-associates.com>
Subject: RE: ROW#8045 - NextEra Energy Resources

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Thanks Kayla! I will need to get with our environmental and survey team on a site visit date. Any suggestions on your part, but next week after Tuesday, we have people in the field in Burke.

The team is cc into this email for their comments.

Respectfully,

Tom VonBische

Community Development Leader



Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

From: Graber, Kayla M. [<mailto:kgraber@nd.gov>]

Sent: Friday, July 13, 2018 1:51 PM

To: Vonbische, Thomas <THOMAS.VONBISCHE@nexteraenergy.com>

Subject: ROW#8045 - NextEra Energy Resources

CAUTION - EXTERNAL EMAIL

Good afternoon Tom,

Please forward an email notice regarding the removal of turbines and that this ROW request is just for a collector line now.

I have attached our boilerplate easement document to use as a guide for this ROW request. As far as consideration goes, I need to do a little research but please make an offer. Also, let me know a date that may work to revisit the site as the route has changed.

I think that is all for this ROW at the moment until we move forward again.

Please let me know if you have any questions.

Thank you,

Kayla Graber

Land Management Specialist

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1707 North 9th St.

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Michael:

Re: Follow-up on phone request as to the reason(s) for removal of turbines from Trust Lands.

Kim Wells, NextEra Energy's Environmental Services Manager has provided me with the following explanation of the removal of turbines in the Burke Wind project:

"Burke Wind elected to drop five turbines located on native prairie within the project as a risk reduction measure during project siting. Field surveys confirmed the area contained native prairie which is of concern to the wildlife resource agencies and is also higher risk for cultural and tribal sites compared to crop areas. More specifically, these turbines were dropped because this area also has suitable habitat for the federally listed Dakota Skipper, which is a butterfly listed on the Endangered Species Act managed by the USFWS."

Respectfully,

Tom VonBische

Community Development Leader



Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

From: Humann, Michael T. <mhumann@nd.gov>

Sent: Thursday, June 14, 2018 9:51 AM

To: Vonbische, Thomas <THOMAS.VONBISCHE@nexteraenergy.com>

Cc: Barth, Cory J. <cjbarth@nd.gov>; Graber, Kayla M. <kgraber@nd.gov>; Stegmiller, Joseph H. <jstegmiller@nd.gov>; Jacobs, Deb K. <djacobs@nd.gov>

Subject: RE: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure

CAUTION - EXTERNAL EMAIL

Tom,

I have reviewed the information and have determined we will need to meet on-site to review proposed turbine locations, transmission line routes and construction easement locations and routes. Please be reminded the transmission line is handled with a separate easement which NextEra applied for in September of 2017 and is tracked as ROW#8132. An application will also need to be filed for the construction route as this will also be handled by its own agreement. Please explain the following questions that have arisen from the information received in your email:

- Will there be turbines on the following tracts as reviewed in a previous on-site inspection NE4, NW4,

8/7/2018

SW4 section 36-161-91?

- Why has the number of turbine sites and the location of turbine sites changed in section 16-161-92 since the completion of the onsite inspection?
- The transmission line known as ROW#8132 was for section 16-160-93 and W2-36-161-93, the transmission line is now proposed for the W2-16-161-93 – please explain the change to the transmission line route.
- Please explain the need for the construction line routes across the SW-16-161-93 – are alternative routes available?
- What is the status of this project at the local (township and County) and State (PSC) levels?

Please be reminded can work on siting and drafting agreements but acquisition cannot occur until after local and State approvals are secured for the project. Let me know if you have any questions. Thanks

From: Vonbische, Thomas [<mailto:THOMAS.VONBISCHE@nexteraenergy.com>]
Sent: Wednesday, June 13, 2018 7:40 PM
To: Humann, Michael T. <mhumann@nd.gov>
Cc: Cameron, Clay <Clay.Cameron@nexteraenergy.com>
Subject: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure

CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Michael:

Hope this email finds you doing well. The attached exhibits are for our application with the Trust for ROW# 8045 and the Burke Wind project. Can we discuss the next steps for easement acquisition and addition of parcels from the ND Trust Lands.

Respectfully,

Tom VonBische

Community Development Leader



Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

Tom and Kimberly,

Last fall our department met with NextEra and sited 8 wind turbine locations on trust lands – 3 turbine locations on section 36, Township 161 North, Range 91 West and 5 turbine locations on section 16, Township 161 North, Range 92 West. It seems from this email you have elected to drop the five turbines in section 16, Township 161 North, Range 92 West. Please let us know what you plans (keeping or dropping and if dropping reason for dropping) are for 3 turbines sited on section 36, Township 161 North, Range 91 West. Thank you

Michael Humann

From: Vonbische, Thomas [mailto:THOMAS.VONBISCHE@nexteraenergy.com]

Sent: Tuesday, August 7, 2018 11:07 AM

To: Humann, Michael T. <mhumann@nd.gov>; Wells, Kimberly <Kimberly.Wells@nexteraenergy.com>

Cc: Graber, Kayla M. <kgraber@nd.gov>; Cameron, Clay <Clay.Cameron@nexteraenergy.com>; Bourke Thomas <bthomas@atwell-group.com>

Subject: RE: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure

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Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

8/7/2018

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Cc: Barth, Cory J. <cjbarth@nd.gov>; Graber, Kayla M. <kgraber@nd.gov>; Stegmiller, Joseph H. <jstegmiller@nd.gov>; Jacobs, Deb K. <djacobs@nd.gov>
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To: Humann, Michael T. <mhumann@nd.gov>
Cc: Cameron, Clay <Clay.Cameron@nexteraenergy.com>
Subject: ROW# 8045 Burke Wind LLC - Additional parcels and infrastructure

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8/7/2018

Respectfully,

Tom vonBische

Community Development Leader



Phone: (612) 670-8469

thomas.vonbische@nexteraenergy.com

North Dakota Game and Fish Department

From: [Johnson, Sandra K.](#)
To: [Wells, Kimberly](#)
Cc: [Bourke Thomas](#)
Subject: RE: New data sharing agreement
Date: Wednesday, January 11, 2017 9:19:19 AM
Attachments: [WC use in ND \(map\).pdf](#)

Hi Kimberly,

There are no known Bald or Golden Eagle nest sites in Burke County in our database. The closest known Bald Eagle nest is about 5 miles east of the northeast corner of Burke County. I do have a few more recent Ferruginous Hawk nest observations, if you are interested in those. Do you mind sending the shapefile first and then I will query those nests and draft a data sharing agreement?

As far as other data, I'd suggest Bourke Thomas download the Whooping Crane intensity use layer that is publicly available at <https://www.sciencebase.gov/catalog/item/56253ce5e4b0fb9a11dd3d2b> Portions of eastern and northern Burke County and Divide County are frequently used as stopover sites by Whooping Cranes.

In our discussions Kimberly, I can't recall if we've mentioned the ND State Wildlife Action Plan Focus Areas. These areas are based on extant native vegetation and key biological information that indicate where a maximum number of Species of Conservation Priority may occur. This layer could be used in conjunction with the native prairie and woodland layers we shared with you. Search for "action plan focus areas" here <https://apps.nd.gov/hubdataportal/srv/en/main.home>
Also see <https://gf.nd.gov/wildlife/swap>

Thanks,
Sandy

Sandy Johnson
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expwy.
Bismarck, ND 58501-5095
Phone: 701-328-6382
sajohnson@nd.gov
<http://gf.nd.gov/>

-----Original Message-----

From: Wells, Kimberly [<mailto:Kimberly.Wells@nexteraenergy.com>]
Sent: Friday, January 6, 2017 4:30 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Bourke Thomas <bthomas@atwell-group.com>
Subject: New data sharing agreement

***** CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

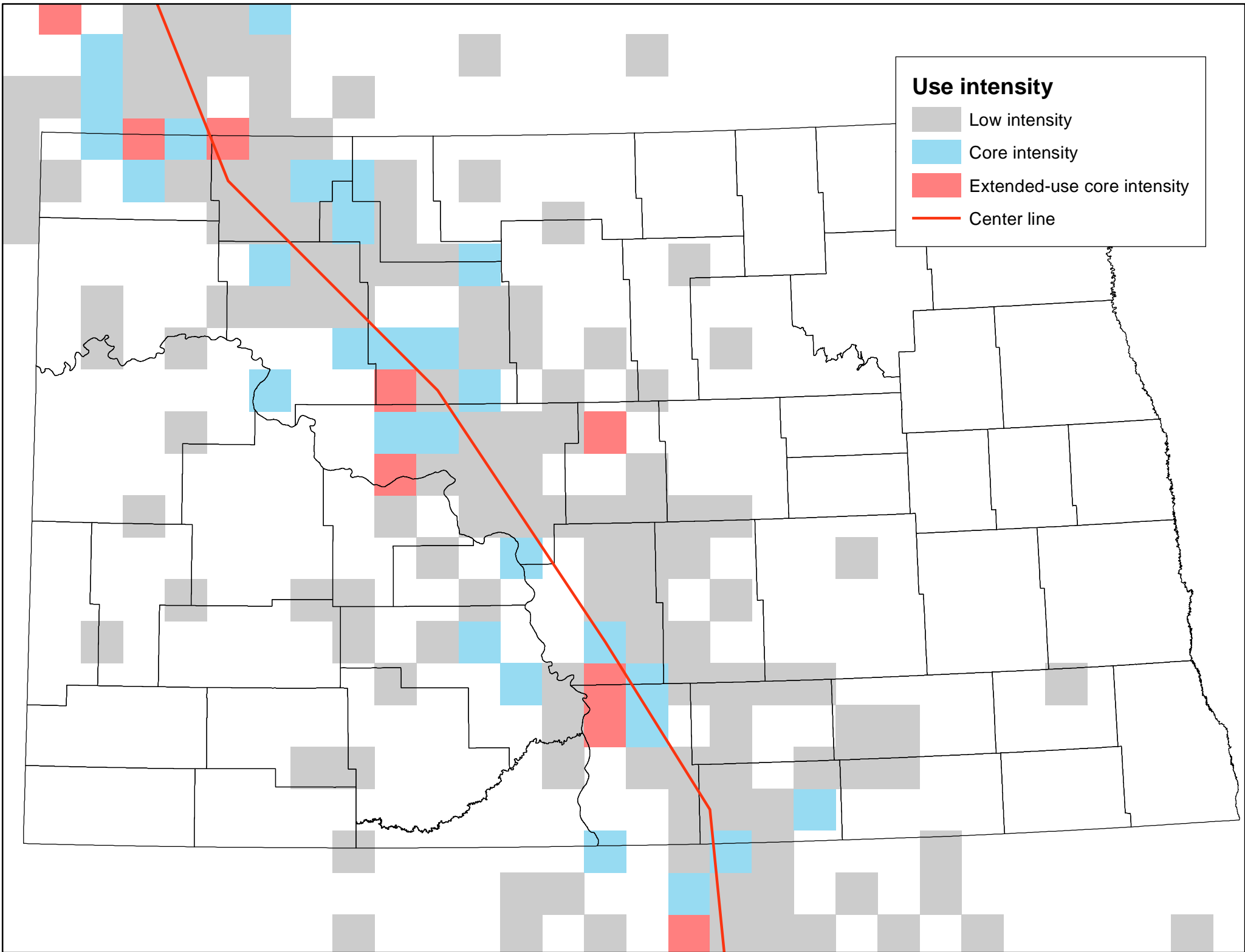
Hi Sandi,

Could you please send Bourke Thomas of Atwell (copied here) and I a new data sharing agreement for our proposed wind project in Burke County? This is one of the early stage projects in our pipeline for 2019 that we discussed with the agencies last year at a high level. We can send back our current target area shapefiles to support the query.

We are interested in any eagle or other special-status species info along with your native habitat layers.

Thanks!

Kim Wells
Manager, Mid Continent Region
Environmental Services
NextEra Energy Resources
832.538.7935 (cell)



From: Johnson, Sandra K. [<mailto:sajohnson@nd.gov>]
Sent: Friday, February 24, 2017 11:36 AM
To: Wells, Kimberly
Cc: Bourke Thomas
Subject: RE: Burke ND Wind: shape files for data sharing request

Kimberly and Bourke,

Attached is the data sharing agreement. There are signature lines for both of you.

In addition to the considerable amount of native prairie within the prospecting area, there are substantial wetland resources that support several level I species of conservation priority such as Horned Grebe. Therefore, in addition to the known Ferruginous and Swainson's Hawk nests sites within 10 miles, I am also including waterbird data from a recent waterbird survey. Recognize they did not survey every wetland in this area.

The U.S. Fish and Wildlife Service has developed spatially explicit models that prioritize habitats which are the most important to upland nesting waterfowl. This is sometimes referred to as the "waterfowl thunderstorm map" or "duck priority map." The categories range from 0-10 pairs of ducks per square mile to > 100 pairs of ducks per square mile. Almost your entire prospecting area is in the >100 ducks per square mile. I have asked the USFWS if we may share the duck priority map with you in planning for this project and other wind projects in North Dakota.

There are several Piping Plover critical habitat lakes near but not within the project area. This data is publicly available on www.data.gov

The NDGF does not have any Sharp-tailed Grouse census blocks within this area. However, I'm sure Aaron Robinson would attest that grouse and leks are abundant.

Were you able to download the ND State Wildlife Plan Focus Areas? The entire prospecting area lies within the Missouri Coteau Breaks focus area. The species of conservation priority associated with this important landscape are found on page 46 of the SWAP and wetland associated species are on page 63.

In summary, the prospecting area contains some of the most important habitat in North Dakota for a host of the state's species of conservation priority. Placing turbines in this resource rich area has a high potential of negatively impacting these resources. We hope that we are early enough in the process that you have considerable flexibility in the siting of the turbines and/or changing the prospecting area.

Thanks,
Sandy

Sandy Johnson
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expwy.
Bismarck, ND 58501-5095
Phone: 701-328-6382
sajohnson@nd.gov

<http://gf.nd.gov/>

-----Original Message-----

From: Wells, Kimberly [<mailto:Kimberly.Wells@nexteraenergy.com>]
Sent: Thursday, February 23, 2017 2:06 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Bourke Thomas <bthomas@atwell-group.com>
Subject: RE: Burke ND Wind: shape files for data sharing request

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Hi Sandi,

Have you had a chance to get this started for us?

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
601 Travis Street, Suite 1900
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

-----Original Message-----

From: Wells, Kimberly
Sent: Thursday, February 16, 2017 6:07 PM
To: 'Johnson, Sandra K.'
Cc: Bourke Thomas; Wells, Kimberly
Subject: Burke ND Wind: shape files for data sharing request

Hi Sandi,

Here are the geospatial files (both GE and shape file format) of our prospecting area for Burke Wind that you requested. We added the t-line to the south so that is the long narrow thread coming south out of the larger prospecting area for the wind farm. Could you please send Bourke and I a new data sharing agreement?

Thanks!

Kim

From: [Johnson, Sandra K.](#)
To: [Bourke Thomas](#)
Cc: [Wells, Kimberly](#)
Subject: RE: Burke ND Wind: shape files for data sharing request
Date: Tuesday, February 28, 2017 11:57:45 AM
Attachments: [ndgf_birds.shp](#)
[ndgf_birds.shx](#)
[ndgf_birds.dbf](#)
[ndgf_birds.prj](#)
[ndgf_birds.sbn](#)
[ndgf_birds.sbx](#)
[WaterfowlPair2013.zip](#)

Attached is a shapefile containing point locations for the hawk nest and waterbird sites. The waterfowl pair map is the zipped file. Use the "description" field to display number of duck pairs per square mile. Please let me know if you have any questions on either dataset.

I'll let you know if anything else comes to mind that may help you in this planning process.

Thanks,
Sandy

Sandy Johnson
Conservation Biologist
North Dakota Game and Fish Department
100 N. Bismarck Expwy.
Bismarck, ND 58501-5095
Phone: 701-328-6382
sajohnson@nd.gov
<http://gf.nd.gov/>

-----Original Message-----

From: Bourke Thomas [<mailto:bthomas@atwell-group.com>]
Sent: Monday, February 27, 2017 2:37 PM
To: Johnson, Sandra K. <sajohnson@nd.gov>
Cc: Wells, Kimberly <Kimberly.Wells@nexteraenergy.com>
Subject: RE: Burke ND Wind: shape files for data sharing request

***** CAUTION: This email originated from an outside source. Do not click links or open attachments unless you know they are safe. *****

Good afternoon Sandy,

Please find the attached data share agreement executed by both NEER and Atwell.

Have a great day,

Bourke Thomas
Team Leader
Environmental Services

ATWELL, LLC
Two Towne Square, Suite 700, Southfield, MI 48076
Tel: 248.447.2059 Mob: 586.601.6497 Fax: 248.447.2001 www.atwell-group.com

-----Original Message-----

From: Johnson, Sandra K. [<mailto:sajohnson@nd.gov>]
Sent: Friday, February 24, 2017 11:36 AM



"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

GOVERNOR, *Doug Burgum*

DIRECTOR, *Terry Steinwand*

DEPUTY, *Scott A. Peterson*

November 16, 2017

Bourke Thomas
Atwell
10100 Reunion Place, Suite 700
San Antonio, TX 78216

Re: Comprehensive Pre-construction Avian Services Study Plan for Burke County Wind Resource Area

Dear Mr. Thomas

The North Dakota Game and Fish Department (Department) has reviewed the comprehensive avian resources and use study in the Burke Wind Energy Center (WEC). While we compliment Atwell and NextEra to conduct surveys for species of concern to implement voluntary avoidance/minimization, we are unsure as to the current status of the study. In other words, have surveys already been conducted in spring 2017? If so, we hope the following can be considered for studies in 2018.

First of all, recognize the Department believes strongly that pre-construction studies should focus on surveying and mapping the habitat in the project area, particularly native prairie (uncultivated grassland), native woodlands, and wetlands. To adequately document the avian resources of a given area, multiple (at least 3 years) of surveys should be implemented. Given the short timeline for conducting avian surveys, it is unlikely the full suite of avian resources will be detected. Additional emphasis should be placed on delineating habitat and characterizing the wildlife resources based on species ranges or spatial models.

Regarding the sensitive grassland breeding bird surveys, we recommend all grassland/pasture habitat be included in the point count surveys, not just areas deemed "suitable." Also note that the land cover class grassland should be categorized as either 1) native prairie/uncultivated grassland (i.e. land that has never been converted from its natural prairie state to other land covers, such as cropland, regardless of invasion of non-native vegetation); or 2) planted grassland (i.e. land that had been converted to other land covers such as cropland but currently seeded to tame or other introduced grasses). Recognize that land use, such as grazing (i.e. pasture) or haying, should not be construed as "unsuitable" grassland. They are merely uses of grasslands and deemed beneficial, when properly applied. Given the short timeline for the study, land use and climatic conditions can result in dramatically different land cover structure and perceived land quality from year to year. Some grassland species of conservation priority

thrive on grazed uncultivated grassland, such as Chestnut-collared Longspur and Sprague's Pipit, while others prefer more lightly grazed or rested grassland, such as Grasshopper Sparrow.

The list of sensitive grassland species, specifically the NDGF Grassland-associated Species of Conservation Priority, is not complete. Short-eared Owl, Northern Harrier and Western Meadowlark should be added to the list. Grassland birds can be rather challenging to identify, particularly the emberizine sparrows, as they are often heard and not seen. Are the technicians conducting the surveys proficient with northern grassland bird identification by sight and sound?

We question the validity and use of the breeding waterfowl density survey. Once again, given the short study timeframe, an accurate assessment of breeding waterfowl density is likely to be biased to the year of survey. For example, if surveys were conducted in the summer of 2017, results will be biased low due to the extreme drought conditions experienced in North Dakota this past year. Wetlands are dynamic and experience frequent drought/deluge cycles. Therefore, we suggest you consider forgoing the waterfowl survey and refer to the U.S. Fish and Wildlife Service Habitat and Population Evaluation Team's Waterfowl Breeding Pair Survey (aka "Thunderstorm Map"). This spatial analysis combines 30+ years of waterfowl population and habitat information. Nearly the entire WEC project area is accessible to >100 ducks pairs/square mile, the highest category possible. Contact the Department's Conservation Biologist, Sandra Johnson (sajohnson@nd.gov), if you do not have access to this spatial layer.

There is a lack of mention of surveys for both Sandhill and Whooping Cranes. This area contains high priority habitat for these species and both frequently use the area. Furthermore, there is no mention of surveys for wetland associated birds other than herons and cormorants. The WEC project area has extremely high wetland density, as high as 100-150 wetlands per square mile or more. Wetland sensitive Species of Conservation Priority such as Horned Grebe, American White Pelican, American Bittern, American Avocet, Willet, Wilson's Phalarope and Marbled Godwit (though mentioned in grassland surveys), Franklin's Gull or Black Tern, are likely quite common to abundant given the wetland density. Consider studying proposed turbine placement and whether the tower and blades will create shadow flicker on wetlands and how to avoid/minimize this impact.

We look forward to seeing the results of the study, including habitat mapping, and a strategy for how the results will be used to inform decision making regarding where wind turbines and associated roads will be placed to minimize impacts to habitat and species.

Thank you for consideration of these recommendations.

Sincerely,



Greg Link

Chief, Conservation and Communications Division

cc: Kevin Shelley, Supervisor, North Dakota Field Office, U.S. Fish and Wildlife Service
Kimberly Wells, NextEra Energy Resources, LLC



"VARIETY IN HUNTING AND FISHING"

NORTH DAKOTA GAME AND FISH DEPARTMENT

100 NORTH BISMARCK EXPRESSWAY BISMARCK, NORTH DAKOTA 58501-5095 PHONE 701-328-6300 FAX 701-328-6352

GOVERNOR, *Doug Burgum*

DIRECTOR, *Terry Steinwand*

DEPUTY, *Scott A. Peterson*

22 May 2018

Bourke Thomas
Director, Environmental Services
Atwell, LLC
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Dear Mr. Thomas:

RE: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, ND

The North Dakota Game and Fish Department has been in discussion with proponents of the Burke Wind Energy Center since 2016. The Department has openly expressed great concern about the potential impacts to wildlife on a number of occasions, most recently in a joint meeting on 29 January 2018, as well as in a letter dated 16 November 2017, and a meeting with NextEra on 27 September 2016. The area proposed for development is extremely important to an uncommonly high number of wildlife species due to its high degree of relatively undisturbed native habitats, including nearly 12,000 acres of native prairie and over 6,000 wetlands, and central location amid other valuable habitat areas (the project is only one mile from Lostwood National Wildlife Refuge). Because of this, the Department has openly expressed its concerns of development on such a uniquely vital landscape for wildlife and our concerns have not changed. There are few places that compare to its wildlife value in the state or even within the Prairie Pothole Region. To say the least, the proposed project area is some of the "best of the best" prairie-wetland habitat in North America.

Native prairie is the most endangered habitat type in North Dakota and, as a grassland state, the majority of our native wildlife species are linked to prairie. Disturbance, fragmentation, and loss of native prairie have adversely impacted a wide variety of species and these negative impacts will only continue to compound as more development takes place on the landscape. The remaining tracts of unbroken prairie are becoming more and more vital to many declining bird and pollinator species. A large portion of the wind resource area and transmission line area is composed of native, unbroken prairie (55%) which may support 30 or more of the 115 Species of Conservation Priority identified in the North Dakota State Wildlife Action Plan (Dyke et. al 2015). Species of Conservation Priority, such as the Chestnut-collared Longspur, which has declined 86%, or the Loggerhead Shrike which has declined 74% since 1974 (Rosenberg et. al 2016), will be further negatively impacted by the loss and fragmentation of native prairie in the

project area.

The proposed project area is located within the Missouri Coteau, a landscape that not only has a considerable amount of native prairie, but an extremely high concentration of wetlands, some of the highest in North America. Prairie Pothole wetlands are the most productive wildlife habitat in North Dakota and they make up a large portion of the project area. These wetlands support 54 Species of Conservation Priority, as well as a considerable number of waterfowl, shorebirds and cranes throughout the year.

Though the Department believes the best way to protect our Species of Conservation Priority is by taking a habitat focused approach, we would be remiss to not also reiterate the following species-specific concerns.

1. The Whooping Crane's migration corridor enters North Dakota in the northwest corner of the state, angling through Burke County and directly through the proposed project area. The migration corridor then proceeds south to just north of the Van Hook Arm on Lake Sakakawea and follows just east of the Missouri River and its reservoirs until it exits the southern portion of the state. This federally listed endangered species uses a wide variety of shallow wetlands for roosting and foraging. Whooping cranes have been documented staging within both the wind project boundary and the transmission line boundary on multiple occasions. Nearly the entire Burke County Wind Energy Center project area falls within the highest ranked landscape-level habitat used by migrant Whooping Cranes (Niemuth et al. 2018). The risk of Whooping Cranes striking a turbine or a transmission line will be elevated in this area. While no fatalities have been documented of Whooping Cranes from collision with wind turbines in the United States, collisions with transmission lines are the leading known cause of death in the wild for whooping cranes. Contact the US Fish and Wildlife Habitat and Population Evaluation Team (HAPET) in Bismarck to request the Whooping Crane model of predicted use of landscapes.
2. The project area is extremely important to waterfowl production. HAPET has developed a Local Siting Decision Support Tool (DST) to estimate the number of duck pairs that are displaced based on research conducted in the Dakotas (Loesch et al. 2013, Loesch 2016). The research documented 20% avoidance of wetlands by five species of ducks. We ran the model using the Burke County Wind Energy Center project area and the project area supports some of the highest numbers and densities of breeding pairs of ducks in the entire Prairie Pothole Region. The project would result in a reduction of nearly 3,300 breeding duck pairs. Breeding ducks are territorial; as such, they won't reliably find a breeding territory that is as suitable as that found in the proposed project area, and other surrounding areas will likely not be able to support additional breeding pairs. The model also produces an approximation of the number of wetlands requiring restoration that offset the displacement of these breeding pairs, and that number is around 770 basins (2-acre seasonal wetlands). The model is built to assess wetland within ½ mile of turbine locations, therefore the actual numbers will change based on final turbine siting. However, these numbers reiterate the importance of this area to breeding waterfowl and the resource deficiency that will result from the project. Contact the HAPET office to request the DST.

3. While there are no known Bald Eagle nests in the immediate area, both Bald and Golden Eagles were observed within the project boundary. Though their numbers are low in the winter months, both species are likely to be common in the project area during the rest of year, specifically spring and fall.
4. A large number of Sharp-tailed Grouse were observed in the project area. Twenty-eight leks were confirmed, averaging 11.6 grouse per lek. That is approximately 325 male birds. This does not include males that went undetected, or females. In fall, based on these estimates, the area could produce upwards of 3,500 huntable birds. And as prairie grouse generally avoid areas with human disturbance and tall structures (Leddy et al. 1999, Hagen et al. 2004, Manville 2004, Pruett et al. 2009) this project could impact the local population.
5. Despite an extremely short survey period (one summer, as compared to the minimum of 3 years that should be implemented), a number of species of conservation concern were observed in the project area, including: Sprague's Pipit, Grasshopper Sparrow, Nelson's Sparrow, Marbled Godwit, Northern Harrier, Upland Sandpiper, Bobolink, and Western Meadowlark. All of these species are sensitive to habitat loss and fragmentation and this project has the potential to further negatively impact these, already declining, species. Of particular concern is the Sprague's Pipit. Pipits were historically found throughout much of North Dakota but the species range has contracted in the state. The Burke County Wind Energy Center, particularly the transmission line, overlaps with one of the few places in the state where a high concentration of pipits still persist (Lipsey et al. 2015). Male pipits conduct a flight display about 50-100 meters above the ground that last from several minutes to several hours. This project could impact the core area for pipits, including the risk of increased mortality to this skylarking (a breeding display) species.

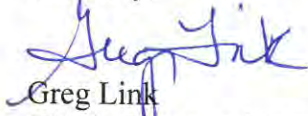
The Department is also uncertain of the protocols for creating and maintaining a transmission line. If a road needs to be created for its construction, a sizeable loss to native prairie and an increase in habitat fragmentation would result. If that road is to be maintained, it is likely that disturbance will have long lasting impacts to species of conservation concern, specifically those sensitive to habitat fragmentation.

As we continue to address the challenges of stemming the decline of our state's most sensitive species, we cannot endorse or consent to the disturbance, fragmentation, and loss of the remaining high value habitats essential to Species of Conservation Priority without recommending that suitable replacement or offsets be applied back onto the landscape. Ensuring these habitats remain on the landscape is the only way to stem the decline of these species and prevent listings through the Endangered Species Act, which could impact both the state and its citizens by restricting further construction of infrastructure, energy development, recreational activities, grazing, vegetation control, and land-use changes or conversion on both public and private land.

To address the losses associated with this project, we suggest that a voluntary offset package be developed for both the direct and indirect permanent impacts of roads, turbine pads, and associated infrastructure constructed within native habitats (i.e. unbroken native prairie \geq 160

acres and wetlands). The developer has a draft copy of North Dakota Native Wildlife Resources: Guidelines for Reducing Impacts from Wind Energy Development, and can use this guide, as well as consulting directly with us, on creating an appropriate offset package.

Sincerely,



Greg Link
Chief, Conservation and Communications Division

Cc: Kevin Shelley, US Fish and Wildlife Service
ND Public Service Commission

North Dakota Geological Survey (NDGS)



North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.state.nd.us/ndgs

April 30, 2018

Ethan Jahnke
Project Manager-Environmental Services
Atwel Group
143 Union Boulevard, Suite 700
Lakewood, CO 80228

Re: Burke Co. Wind Energy Center and Transmission Line – Information Request for Certificate of Site Compatibility and Route Permit

The North Dakota Geological Survey appreciates the notification and opportunity to review and provide comment on the proposed wind energy development project. The information request letter was received by our office on April 24, 2018 was reviewed on April 30, 2018. We dropped in the approximate route of the proposed project area and transmission line corridor on our landslide base maps and compared the proposed route to the locations of landslides that have been identified by detailed mapping work previously completed by our office.

From this comparison, it appears that the proposed transmission line corridor, along the reach that traverses the White Earth River valley north of White Earth and northeast of Tioga, travels near previously mapped landslide areas in northwestern Mountrail County. There should be careful examination of route selection and construction practices in these potentially unstable areas. Areas like these should be avoided whenever possible.


Downloadable Areas of Landslides maps and detailed LiDAR elevation mapping and data products for the 1:24,000 and 1:100,000 scale quadrangles that encompass the proposed wind energy center area and associated transmission line corridor can be found on our website at:

<https://www.dmr.nd.gov/ndgs/landslides/>

You may also contact our offices directly, with any additional questions or comments, at (701) 328-8000.

Sincerely,

North Dakota Geological Survey:


Fred Anderson
Geologist

FJA\

North Dakota Industrial Commission

From: [Holweger, Todd L.](#)
To: [Ethan Jahnke](#)
Cc: [Haugen, Tyler B.](#)
Subject: ND Wind project info
Date: Thursday, May 03, 2018 7:21:47 AM
Attachments: [3438_001.pdf](#)

Ethan,

We are currently reviewing your request, however we need additional information. Please supply a shape file of each map that was provided with your initial request. You may email it to me directly.

Thank you,

Todd L. Holweger

Permit Manager

[NDIC-DMR-OGD](#)

(701) 328-8024



ONE COMPANY
INFINITE SOLUTIONS

Received

TO: Ms. Karlene Fine
North Dakota Industrial Commission
600 E Boulevard Ave. Dept. 405
Bismarck, ND 58505-0840

MAY 9 2018

ND Oil & Gas
Division

FROM: Atwell, LLC

DATE: April 20, 2018

SUBJECT: Information Request for the Proposed Burke County Wind Energy Center and Transmission Line in Burke and Mountrail Counties, North Dakota

Dear Ms. Fine,

Atwell, LLC has been contracted by Burke Wind, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Burke County Wind Energy Center (WEC) and to prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line, in accordance with North Dakota Century Code Section 49-22-07. As part of the applications, we are conducting an investigation of the WEC, which is located approximately nine miles southwest of the City of Bowbells in Burke County, North Dakota, and the proposed transmission line, which is approximately four miles east of Tioga, North Dakota. Please refer to the attached **Site Location Map** and **Transmission Line Site Location Map**.

This proposed WEC has a nameplate capacity of up to 300 megawatts (MW) and would consist of a maximum of 111 GE 2.5 wind turbine generators and 12 GE 1.715 wind turbine generators and associated access roads and collection lines. The WEC would interconnect to the electrical grid via an approximately 39-mile-long transmission line from the WEC substation to the point of interconnect. The WEC would include portions of the following townships:

BURKE COUNTY

- **Keller Township**
T161N, R94W
- **Foothills Township:**
T161N,R92W
- **Fay Township:**
T162N, R93W
- **Harmonious Township:**
T161N, R94W,
- **Leaf Mountain Township:**
T161N, R93W
- **Kandiyohi Township**
T159N, R90W
- **Clearly Township**
T160N, R93W
- **Clayton Township:**
T161N, R91W
- **Ward Township:**
T161N, R90W
- **Lucy Township:**
T160N, R92W
- **Diamond Township:**
T160N, R91W
- **Roseland Township:**
T157N, R93W
- **Thorson Township**
T160N, R94W



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The associated transmission line corridor includes the following townships and sections:

BURKE COUNTY

- **Leaf Mountain Township**
T161N, R93W, Sections 25, 26, 35
- **Cleary Township:**
T160N, R93W, Sections 4, 9, 10, 15, 22, 26, 27, 34, 35
- **Colville Township:**
T159N, R93W Sections 3, 4, 8, 9, 17, 20, 29, 32, 33, 34

MOUNTRAIL COUNTY

- **Powers Lake Township:**
T158N, R93W, Sections 3, 4, 9, 10, 15, 21, 22, 28, 33, 34
- **Sorkness Township:**
T157N, R93W, Sections 3, 4, 8, 9, 13, 14, 15, 17, 18, 20, 21, 22, 29

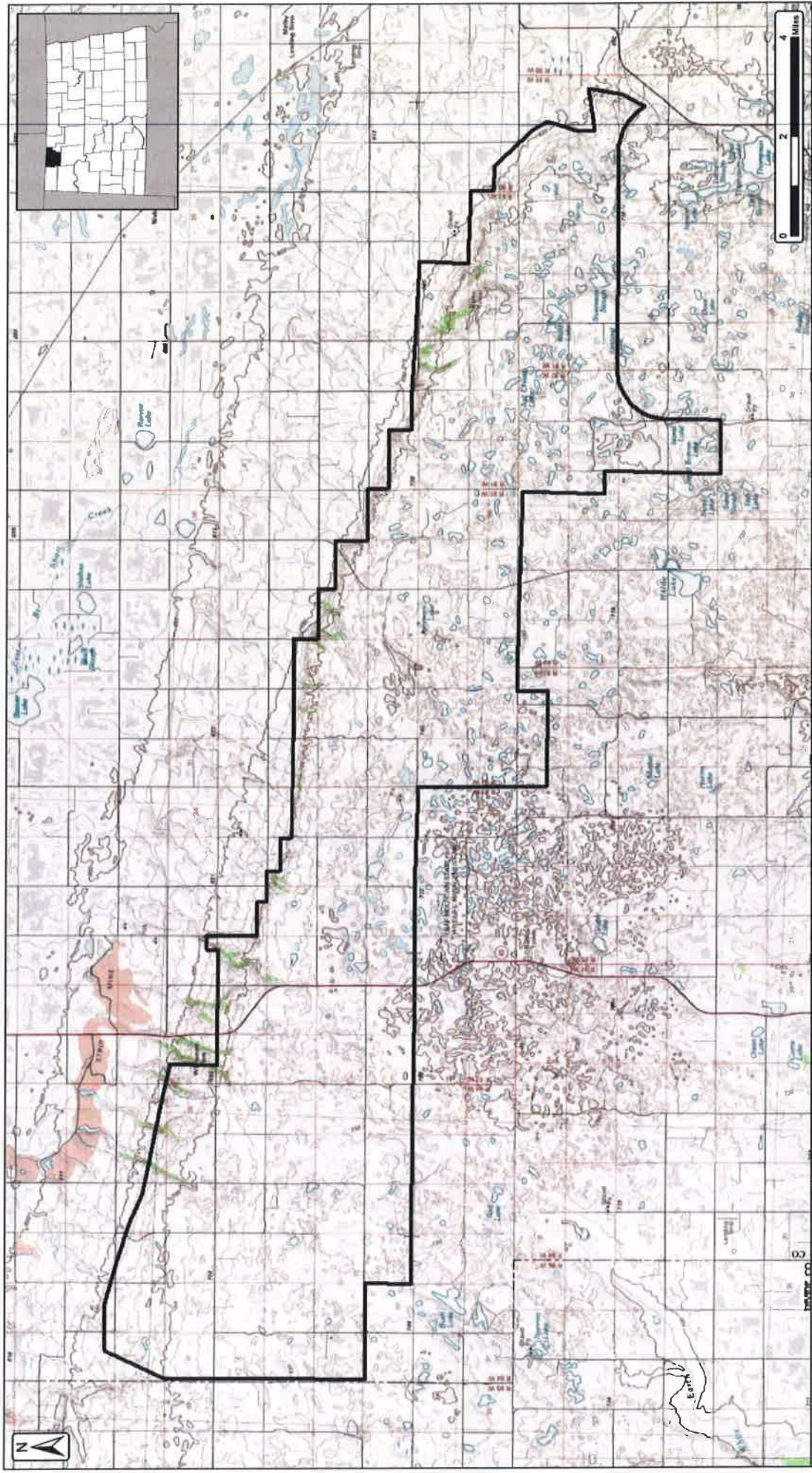
Per Section 69-06-01-05 of the North Dakota Public Service Commission’s administrative rules, we are consulting your agency for assistance in identifying concerns or issues within the boundaries of the townships and sections listed above that would influence a decision regarding the use of the land, as well as applicable permits that may be required from your office.

We would appreciate a response by May 15, 2018. Please contact me at 866.850.4200 or email at ejahnke@atwell-group.com if you have any questions. Thank you for your assistance.

Sincerely,

Ethan Jahnke
Project Manager
Environmental Services

Enclosures: Site Location Map
Burke Wind Transmission Line Location Map



<p>Burke County Wind Energy Center Site Location Map Burke County, North Dakota Date: 4/11/2018</p>	<p>Client: Burke Wind, LLC Atwell, LLC Project:16000947</p>	<p> Wind Resource Area 01/25/2017 (#68,719 Ac.)</p>	<p>BUSINESS CONFIDENTIAL NOT FOR DISTRIBUTION <small>COLUMBUS SW LAKE, HEDGE LAKE, BUSH LAKE, GRAND VIEW (1774), GRUBBLE LAKE (1774), HEDGE LAKE (1774), THOMPSON LAKE (1774), WOODBURN (1748), COYEAU (1748), WAINWALE NE (1762)</small></p>
 <p>The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.</p>			

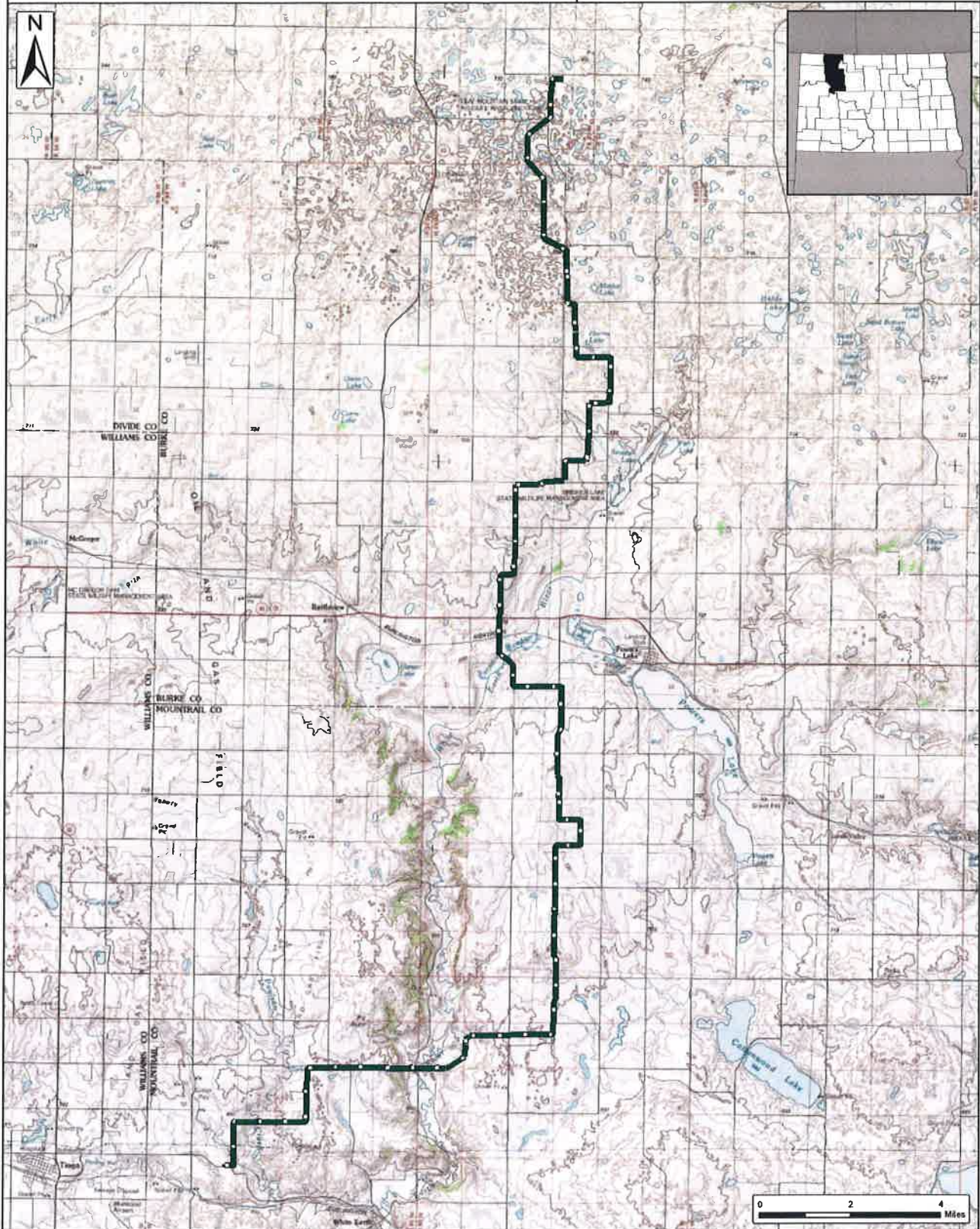
Burke County Wind Energy Center

Transmission Line Site Location Map

Burke County and Mountrail County, North Dakota

Client:
Burke Wind, LLC

Issue Date:
4/11/2018
Atwell, LLC Project:
16000947



 Transmission Line (04/02/2018)

CONTAINS PRIVILEGED AND CONFIDENTIAL INFORMATION- NOT FOR PUBLIC DISCLOSURE

SOURCE: USGS TCPO QUADS
 CRAND VIEVE (1774), GRUBB LAKE (1774), HELDE LAKE (1774)
 BATHLEVEY (1779), FIDERS LAKE (1779), LINDS VALLEY (1779)
 TOSCA (1779), WHITE LAKE (1779), ROSS NW (1909)
 COTTONWOOD LAKE (1911), CCLAREUS SE (1911)
 BEAVER LAKE (1945), BEHNE LAKE (1945)



The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.

North Dakota State Water Commission



North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701) 328-2750 • TTY 1-800-366-6888 or 711 • FAX (701) 328-3696 • <http://swc.nd.gov>

May 9, 2018

Ethan Jahnke
Atwell
143 Union Boulevard, STE 700
Lakewood, CO 80228

Dear Mr. Jahnke:

This is in response to your request for a review of the environmental impacts associated with the Burke County Wind Energy Center and Transmission Line project located in Burke and Mountrail Counties, ND.

The proposed project has been reviewed by State Water Commission staff, and the following comments are provided:

- Initial review indicates the project does not require a conditional or temporary permit for water appropriation. However, if surface water or groundwater will be diverted for construction of the project, a water permit will be required per North Dakota Century Code (NDCC) § 61-04-02. Please consult with the Water Appropriations Division of the Office of the State Engineer (OSE) if you have any questions regarding this comment at 701-328-2754 or waterpermits@nd.gov.

The State Water Commission (SWC) maintains a network of observation wells across the state for monitoring the water levels and quality in glacial and bedrock aquifers. These wells are often installed in road and highway rights-of-way to limit inconvenience to the adjacent landowners. SWC observation wells have a yellow protective casing extending between 1 and 3 feet above ground surface, and their locations are marked with a stake. If an observation well is encountered during project activities and must be removed, please contact the Water Appropriations Division. The SWC hopes to keep all observation wells, but otherwise will ensure the well is properly abandoned.

- Through the National Flood Insurance Program, a floodplain development permit is required for all development that takes place within a Special Flood Hazard Area, as identified by FEMA. Please work with the local floodplain administrator(s) for additional information and permit requirements from their jurisdictions. This list may not include all jurisdictions impacted: Three Affiliated Tribes, Cliff Whitman, 701-627-4805, cwhitman@mhanation.com. White Earth, Kelly Woessner, 701-862-3459, cityauditor@restel.com.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 701-328-4967.

Sincerely,

Jared Huibregtse
Water Resource Planner IV

JH:dm/1570

State Historical Society of North Dakota



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

Doug Burgum
Governor of North Dakota

North Dakota
State Historical Board

Terrance Rockstad
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

H. Patrick Weir
Medora - Secretary

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Albert I. Berger
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Steve C. Martens
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Daniel Stenberg
Watford City

Sara Otte Coleman
*Director
Tourism Division*

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Melissa Baker
*Director
Parks and Recreation Department*

Thomas Sorel
*Interim Director
Department of Transportation*

Claudia J. Berg
Director

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April 23, 2018

Mr. Ethan Jahnke
Project Manager
Atwell
143 Union Boulevard, Suite 700
Lakewood, CO 80228

**ND SHPO REF: 18-0733 ND Public Service Commission – Proposed 300 MW
Burke County Wind Energy Center & Transmission Line in Burke and
Mountrail Counties, North Dakota**

Dear Mr. Jahnke,

Thank you for your preliminary information on ND SHPO REF: 18-0733 ND Public Service Commission – Proposed 300 MW Burke County Wind Energy Center & Transmission Line in Burke and Mountrail Counties, North Dakota. We recommend survey for cultural resources as follows:

- A current Class I (file search) to determine any additional recorded cultural resources in the project area.
- A Class III (pedestrian) survey by a permitted architectural historian for standing buildings and structures (including cemeteries) over 50 years old in the visual Area of Potential Effect (APE). This is within a 2 mile radius of individual turbine locations. The purpose is to evaluate any architectural or structural features that may be eligible for nomination to the National Register of Historic Places. At least three out of the seven aspects of integrity used to evaluate historic properties could be impacted by the proposed project: the setting, feeling, and association of historic sites.
- A Class III archaeological survey of all areas of direct impact including crane paths, met towers, access roads, turbine locations and staging areas, unless the footprint has been recently surveyed for cultural resources.

Thank you for the opportunity to review preliminary information on this project. We look forward to further review. If you have questions please contact or Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

for 
Claudia J. Berg
Director, State Historical Society of North Dakota

U.S Army Corps of Engineers

From: [McQueary, Patricia L CIV USARMY CENWO \(US\)](#)
To: [Bourke Thomas](#)
Cc: kimberly.wells@nee.com; richard.estabrook@nee.com
Subject: Follow-up
Date: Friday, December 16, 2016 11:11:28 AM
Attachments: [Minimum Standards for Delineations.pdf](#)

Hi All!

I just wanted to follow up on a couple of things we talked about. First is the 401 Water quality certification for the project - you will still need a 401 WQC with a non-reporting NWP 12.

Here is the website: <https://www.ndhealth.gov/WQ/>

Our contact person is:

Pete Wax
pwax@nd.gov

918 East Divide Avenue, 4th Floor
Bismarck, ND 58501-1947

I have also attached our minimum standards for delineations - but as per our conversation - I would expect photo interpretation of a large majority of these with field verification on a sampling.

Thanks for stopping by - I appreciate the early coordination!

Happy Holidays!

Patricia L. McQueary
U.S. Army Corps of Engineers
North Dakota State Program Manager
1513 South 12th Street
Bismarck, North Dakota 58504
Office: (701) 255-0015
Cell: (701) 204-3443
Patricia.l.mcqueary@usace.army.mil



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
3319 University Drive
BISMARCK ND 58504

February 16, 2018

NWO-2016-02466-BIS

Atwell, LLC
Attn: Mr. Bourke Thomas
Two Towne Square Suite 700
Southfield, Michigan 48076

Dear Ms. Wells:

We are responding to your December 20th, 2017 request for an approved jurisdictional determination for the NextEra Northwest North Dakota Wind Project. The project site is located in a large portion of Burke County, North Dakota, centered at approximately Latitude 48.755331°, Longitude -102.697716°.

Based on available information, **we concur with the estimate of waters of the United States, as depicted on the enclosed January 19, 2018 wetland review maps prepared by Atwell, LLC.** The approximately **8009.685-acre** of waters identified as "Isolated" on the above drawing are intrastate isolated waters with no apparent interstate or foreign commerce connection. As such, these waters are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to your activities.

An approved (JD) has been completed for the wetland areas identified in your request and is enclosed for your information. The JD may also be viewed at our website located at: <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota/JurisdictionalDetermination.aspx>. The JD will be available on the website within 30 days. You may also request copies of the supporting materials the Corps used in determining this JD. If you are not in agreement with the JD, you may request an administrative appeal under Corps regulations found at 33 CFR 331. The request for appeal (copy enclosed) must be received within 60 days from the date of this correspondence. If you would like more information on the jurisdictional appeal process, contact this office. It is not necessary to submit a Request for Appeal if you do not object to the JD. The JD will be valid for a period of 5 years from the date of this letter.

This determination is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you

object to this determination, you may request an administrative appeal under Corps regulations at 33 Code of Federal Regulations (CFR) Part 331.

A Notification of Appeal Process (NAP) and Request for Appeal (RFA) form is enclosed. If you request to appeal this determination you must submit a completed RFA form to the Northwestern Division Office at the following address:

US Army Corps of Engineers, Northwestern Division
Attn: Regulatory Appeals Review Officer
P.O. Box 2870
Portland, OR 97208-2870
Telephone (503) 808-3888

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 60 days from the date of this letter. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

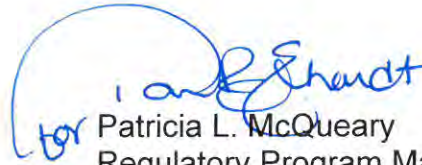
You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Please refer to identification number **NWO-2016-02466-BIS** in any correspondence concerning this project. If you have any questions, please contact Zackary Poetzsch by email at Zackary.M.Poetzsch@usace.army.mil, or telephone at (701) 255-0015 X 2002. For more information regarding our program, please visit our website at <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx>.

Sincerely,


for Patricia L. McQueary
Regulatory Program Manager
North Dakota

Enclosed: Isolated Aquatic Resource Table; Approved Jurisdictional Determination Form; Appeals Form

cc: Richard Estabrook (NEXTera) – Co-Applicant – 700 Universe Boulevard, JES/JB, Juno Beach, Florida 33408

Kimberly Wells (NEXTera Energy) – Co-Applicant – 601 Travis Street Suite 1900, Houston, Texas 77002

U.S. Fish and Wildlife Service

From: [Williams, Scott](#)
To: [Wells, Kimberly](#)
Subject: Fwd: Burke County, ND Wind Project
Date: Monday, September 26, 2016 12:38:18 PM
Attachments: [image001.jpg](#)
[Burke_300MW.pdf](#)
[disclaimer.docx](#)
[fws_easements.zip](#)

Hi Kim,

Sue provided the requested information below. Let me know if you have any questions,

S

Scott A. Williams
Federal Wildlife Officer

Crosby Wetland Management District
United States Fish and Wildlife Service
10100 HWY 42 NW
Crosby, ND 58730

701.965.6488 Office
701.339.1450 Cell
701.965.6487 Fax

----- Forwarded message -----
From: **Sue Kvas** <sue_kvas@fws.gov>
Date: Mon, Sep 26, 2016 at 1:37 PM
Subject: RE: Burke County, ND Wind Project
To: Scott Williams <scott_a_williams@fws.gov>

Hey Scott,

Here is the data for the request below. One is the zip file with the FWS easements within the boundary they provided, another a map and lastly a disclaimer that they must use on any maps produced with FWS easements on it. If you have any questions, please let me know.

Thanks,

Sue

Susan Kvas

Supervisory Fish and Wildlife Biologist

US Fish & Wildlife Service

Habitat and Population Evaluation Team – HAPET

3425 Miriam Ave.

Bismarck, ND 58503

Office : 701-355-8541

From: Williams, Scott [mailto:scott_a_williams@fws.gov]

Sent: Monday, September 26, 2016 9:40 AM

To: Sue Kvas

Subject: Fwd: Burke County, ND Wind Project

Hi Sue,

Any chance you could populate this shapefile or release the .shp on just this area, don't remember where we stand on that at the latest..

Hope you are doing well,

S

Scott A. Williams

Federal Wildlife Officer

Crosby Wetland Management District

United States Fish and Wildlife Service

10100 HWY 42 NW

Crosby, ND 58730

701.965.6488 Office

701.339.1450 Cell

701.965.6487 Fax

----- Forwarded message -----

From: **Wells, Kimberly** <Kimberly.Wells@nexteraenergy.com>

Date: Fri, Sep 23, 2016 at 4:08 PM

Subject: RE: Burke County, ND Wind Project

To: "Williams, Scott" <scott_a_williams@fws.gov>

Cc: "Wells, Kimberly" <Kimberly.Wells@nexteraenergy.com>

Hi Scott,

Thanks for providing your contact info. I can only guess how many Scott Williams the USFWS might have 😊

I have attached a shape file of the narrowed down area we are looking for a potential 300 MW wind farm in Burke County and the PDF Sue provided recently. If possible to get a shape file that is parcel specific, that would help. If not, we can georeference from the PDF as you suggested.

Thanks for any help and the pointers already provided.

Kim

Kimberly Wells, Ph.D.

Manager, Environmental Services

Mid Continent Region

NEXtera Energy Resources, LLC

601 Travis Street, Suite 1900

Houston, TX 77002

713.951.5372 (office)

832.538.7935 (mobile)

Kimberly.Wells@NEE.com



From: Williams, Scott [mailto:scott_a_williams@fws.gov]

Sent: Friday, September 23, 2016 11:19 AM

To: Wells, Kimberly

Subject: Burke County, ND Wind Project

CAUTION - EXTERNAL EMAIL

Hi Kim,

No worries, sorry I missed you on this end.

My contact info...

Take care,

S

Scott A. Williams

Federal Wildlife Officer

Crosby Wetland Management District

United States Fish and Wildlife Service

10100 HWY 42 NW

Crosby, ND 58730

701.965.6488 Office

701.339.1450 Cell

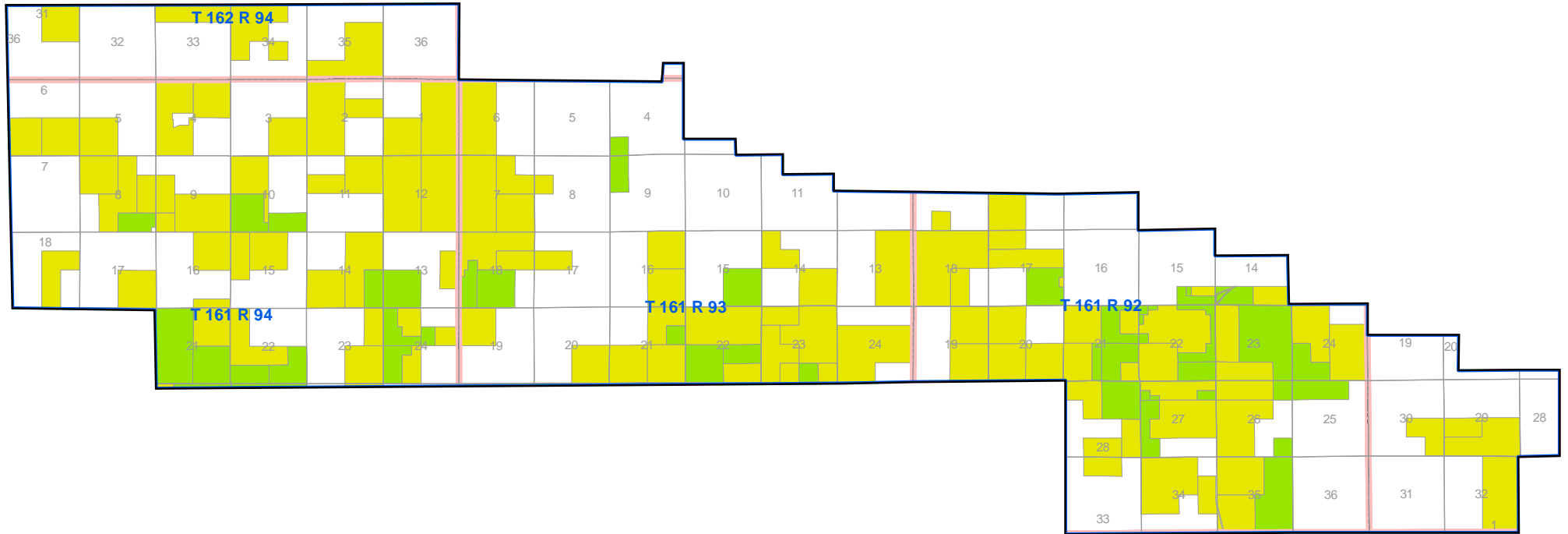
701.965.6487 Fax



U.S. Fish & Wildlife Service

Burke 300MW Project Area

Burke County, North Dakota



DISCLAIMER:

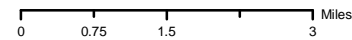
The USFWS makes no claim as to the accuracy or completeness of the displayed information. Shaded areas depicting the location of USFWS WPA fee lands and limited interest easements are for illustrative purposes only and do not represent legal boundaries. For more detailed information, please contact one of the USFWS Realty Offices located in Bismarck and Minot, North Dakota, Sand Lake and Huron, South Dakota, or Great Falls, Montana.

The USFWS easement layer is current through October 2015. Please contact the appropriate Wetland Management District for any newly acquired easements.

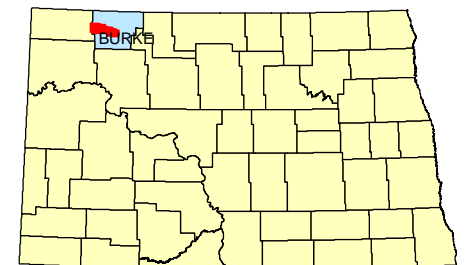
Map was produced by the HAPET Office, Bismarck, ND
September 2016.

Legend

- County Boundary
- USFWS Wetland Easement
- USFWS Grassland Easement
- USFWS Conservation Easement
- Section
- Waterfowl Production Area
- National Wildlife Refuge
- Township
- Highway



Location Map - North Dakota



From: [Loesch, Chuck](#)
To: [Wells, Kimberly](#)
Cc: [Kevin Shelley](#); [Niemuth, Neal](#); [Ethan Jahnke](#); [Bourke Thomas](#); [Ronald Pritchert](#)
Subject: Re: [EXTERNAL] Burke meeting follow up
Date: Friday, April 27, 2018 7:44:05 AM
Attachments: [DataSummary.xlsx](#)
[DuckPairPctGrassFWSHAPET.gdb.zip](#)

Kim,

Attached is a zipped geodatabase that contains 2 layers of waterfowl related information and a document defining the contents of the data layers.

Please let me know if you have any questions.

Chuck

Chuck Loesch
USFWS - HAPET
3425 Miriam Avenue
Bismarck, ND 58501
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

“A duck call in the hands of the unskilled is one of conservation’s greatest assets” – Nash Buckingham

On Wed, Apr 25, 2018 at 8:07 AM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:

Thanks Chuck. We appreciate the help.

From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Wednesday, April 25, 2018 6:54 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Niemuth, Neal; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

CAUTION - EXTERNAL EMAIL

Kimberly,

I should be able to get the information to you by Friday at the latest.

Chuck

Chuck Loesch

USFWS - HAPET

[3425 Miriam Avenue](#)

[Bismarck, ND 58501](#)

o: 701-355-8537

c: 701-527-0996

chuck_loesch@fws.gov

“A duck call in the hands of the unskilled is one of conservation’s greatest assets” – Nash Buckingham

On Tue, Apr 24, 2018 at 10:00 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:

Kevin/Ethan/Chuck,

Thanks for your time yesterday discussing our Burke project. As a follow up, I am providing shapefiles of our proposed wind farm and 1-mile study corridor along our tline route.

Chuck - could you provide the refined surface for the breeding duck data you mentioned and the Roger Clawson crop insurance/CRP PDF galley you referenced?

Neal - could we also get the surface model for your grassland bird models in the area and the Condor 2017 underlying PDF you referenced?

If possible to get our project area plus whatever surrounding buffer you think is appropriate for landscape context, that would help us.

Kim

From: [Ethan Jahnke](#)
To: [Ethan Jahnke](#)
Subject: FW: [EXTERNAL] Burke meeting follow up
Date: Tuesday, October 30, 2018 1:50:50 PM
Attachments: [Whooping_crane_read_me.txt](#)
[WHCR_Migration_BurkeCo_90m_relprob.img](#)
[WHCR_Migration_BurkeCo_90m_relprob.img.aux.xml](#)
[WHCR_Migration_BurkeCo_90m_relprob.rrd](#)

From: Niemuth, Neal [mailto:neal_niemuth@fws.gov]
Sent: Thursday, May 17, 2018 2:03 PM
To: Wells, Kimberly
Subject: Re: [EXTERNAL] Burke meeting follow up

Hi Kim,

Attached is an Imagine file with the whooping crane relative probability of occurrence data for Burke County that you requested, along with a readme file describing the data. Grassland bird data are still being prepped for distribution, but I will get them to you.

Holler if you have questions.

Neal

"They tried to bury us. They didn't know we were seeds." Dinos Christianopoulos

Neal D. Niemuth

Integrated Conservation Scientist

Habitat and Population Evaluation Team (HAPET)

U.S. Fish and Wildlife Service

3425 Miriam Avenue

Bismarck, ND 58501

701-355-8542 (tel)

701-355-8533 (fax)

On Tue, Apr 24, 2018 at 10:00 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:

Kevin/Ethan/Chuck,

Thanks for your time yesterday discussing our Burke project. As a follow up, I am providing shapefiles of our proposed wind farm and 1-mile study corridor along our tline

route.

Chuck - could you provide the refined surface for the breeding duck data you mentioned and the Roger Clawson crop insurance/CRP PDF galley you referenced?

Neal - could we also get the surface model for your grassland bird models in the area and the Condor 2017 underlying PDF you referenced?

If possible to get our project area plus whatever surrounding buffer you think is appropriate for landscape context, that would help us.

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXtera Energy Resources, LLC
[601 Travis Street, Suite 1900](#)
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

This file accompanies spatial data showing predicted use of landscapes by migrant whooping cranes across North Dakota and/or South Dakota. Files are provided as 1) categories showing ten ranked habitat classes, or deciles, with each representing 10% of the combined area of North Dakota and South Dakota; and 2) relative probability of use across the entirety of North Dakota and South Dakota, from which the ten ranked habitat classes were derived.

Whooping cranes are infrequently found in the region, and relative probabilities must not be interpreted as actual probabilities. Using the ten decile habitat classes simplifies interpretation by identifying and ranking areas from most likely to be used to least likely to be used; relative probabilities enable discrimination within classes but are not as readily interpretable.

These models are based in part on remotely sensed landcover data, which contain error. In addition, land use is subject to change over time. Consequently, individual sites might vary from what the landcover data and models predict, but overall patterns will generally be accurately represented.

Models were developed using a circular moving window with a radius of 1,200 m. Consequently, actions considered for a location should consider the landscape out to 1,200 m, as whooping crane habitat use appears to be affected by the surrounding landscape up to 1,200 m. Even though the models were developed using data from a large surrounding landscape, output is provided at a resolution of 90 m. This is somewhat larger than the resolution of the landcover data used in model development, but still allows the output to reflect biological relationships that would be obscured with providing data at a coarser resolution while reducing file size.

For more information about the specifics of this data file, including metadata, please view the data layer's item description in ArcGIS.

Please do not distribute these files, but refer interested parties to the USFWS Habitat and Population Evaluation Team in Bismarck, North Dakota to request the data.

U.S. Fish and Wildlife Service

Habitat and Population Evaluation Team

3425 Miriam Ave

Bismarck, ND 58501

701-250-4413 or 701-355-8535

For more information about the models and process used to develop them, refer to Niemuth, N. D., A. J. Ryba, A. T. Pearce, S. M. Kvas, D. A. Brandt, B. Wangler, J. E. Austin, and M. J. Carlisle. 2018. Opportunistically collected data reveal habitat selection by migrating whooping cranes in the U.S. Northern Plains. *The Condor* 120:343-356.

From: [Shelley, Kevin](#)
To: [Bourke Thomas](#)
Subject: Fwd: Dakota Skipper Information
Date: Monday, May 22, 2017 12:13:24 PM
Attachments: [Burke County Wind.pdf](#)
[Pearse et al. 2015 Whooping crane stopover site use intensity in Great Plains USGS.pdf](#)

Kevin Shelley, Supervisor
U.S. Fish and Wildlife Service
3425 Miriam Ave.
Bismarck, ND 58501
Office: 701.355.8512 Mobile: 701.989.4233

----- Forwarded message -----

From: **Shelley, Kevin** <kevin_shelley@fws.gov>
Date: Tue, May 9, 2017 at 2:06 PM
Subject: Re: Dakota Skipper Information
To: Bourke Thomas <bthomas@atwell-group.com>
Cc: "Wells, Kimberly" <Kimberly.Wells@nexteraenergy.com>

Kim and Bourke;

I asked Allen, one of my Team members who is handy with GIS, to develop a draft T&E species occurrence map for the most obvious species of interest in the proximity of Burke County project using the project shape file you provided. The species data sources include:

- the WC observational database (blue points) maintained by the USFWS, through 2007. We will be updating the point data in the near future to get the most recent information. These are largely verified sightings, but I don't believe all are verified (I will be able to better address the data quality issue following a conversation with the data stewards).
- the WC use area (green polygon) as presented in Pearse et al. (2015; paper attached). We did not differentiate the relative use as recorded from the whooping cranes that were fitted with transmitters for the study.
- the Dakota skipper sites (green plus signs; 2 formerly occupied sites noted within 15mi...currently with an unknown status). We have no records of any (occupancy) survey attempts within the project boundaries.
- the designated critical habitat for the piping plover (red polygons).

I anticipate you may have questions or ideas that may improve the map to be more useful for your planning purposes so feel free to give me a call. K

Kevin Shelley, Supervisor
U.S. Fish and Wildlife Service
3425 Miriam Ave.
Bismarck, ND 58501
Office: 701.355.8512 Mobile: 701.989.4233

On Tue, May 2, 2017 at 2:47 PM, Bourke Thomas <bthomas@atwell-group.com> wrote:

Good afternoon Kevin,

Thank you, and sorry for the delayed response. I have been in training all week.

Please find the attached SHP for the Burke County boundary.

Feel free to call with any questions,

Bourke

1-586-601-6497 Mobile

From: Shelley, Kevin [mailto:kevin_shelley@fws.gov]
Sent: Monday, May 01, 2017 10:01 AM
To: Bourke Thomas
Cc: Wells, Kimberly
Subject: Re: Dakota Skipper Information

Bourke: If you send me a shapefile, I'll have one of my folks make a map with the DASK sites.

Here's the list of surveyors who said they were willing to share their contact information handy

- Dennis Skadsen: cell 605-880-2406; diskadsen@venturecomm.net
- Jim Reiser: 402-676-0599; jimreiser@cox.net
- Neil Dankert: 308-440-7096; neildankert@q.com
- Gerald Selby: jselby@mchsi.com
- Scott Krych (HDR): Scott.Krych@hdrinc.com
- SWCA - Jake Powell and Ken Kingsley: (701) 258-6622

I'm aware of two additional permits that were issued for the butterflies, but those permittees didn't want their info shared.

Kevin Shelley, Supervisor

U.S. Fish and Wildlife Service

3425 Miriam Ave.

Bismarck, ND 58501

Office: 701.355.8512 Mobile: 701.989.4233

On Fri, Apr 28, 2017 at 8:01 AM, Bourke Thomas <bthomas@atwell-group.com> wrote:

Good morning Kevin,

Thanks again for meeting with us on Tuesday, it was very helpful.

As a follow up, are you able to share any historical and/or current Dakota Skipper habitat or use data in and around the project study boundary?

Would you also be able to share the names of approved Skipper survey biologists?

Thanks and have a great Friday,

Bourke Thomas

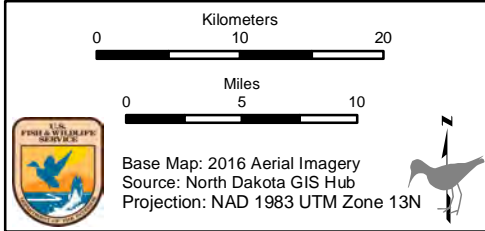
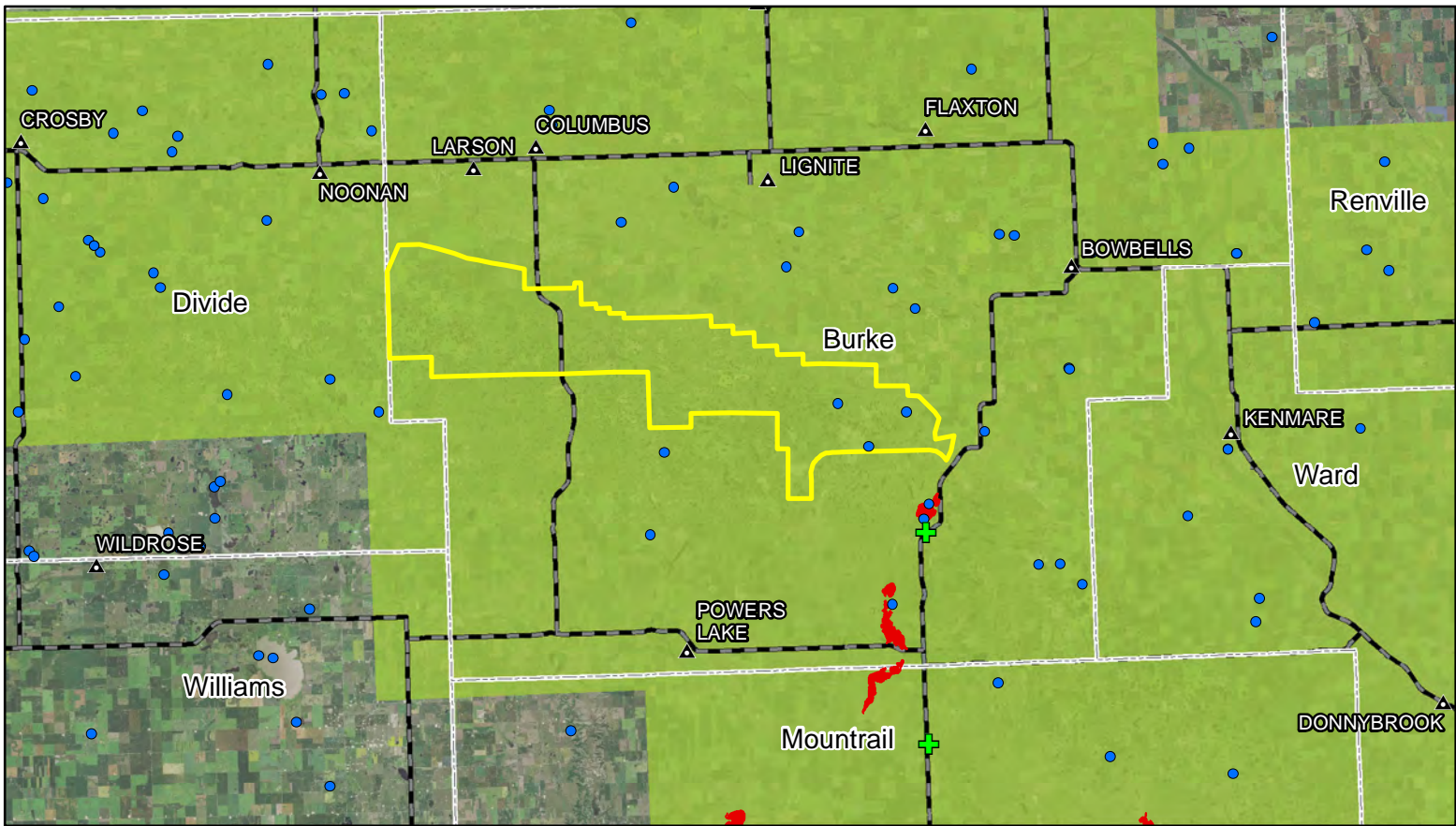
Team Leader

Environmental Services

ATWELL, LLC

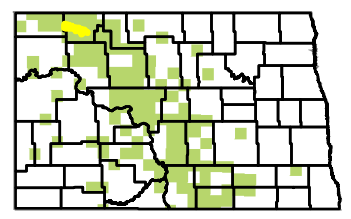
Two Towne Square, Suite 700, Southfield, MI 48076

Tel: 248.447.2059 Mob: 586.601.6497 Fax: 248.447.2001



Proposed Burke County Wind Project

- ▲ Cities
- Whooping Crane Observations Through 2007
- ⊕ Dakota Skipper Surveys
- Existing Highways
- ▭ Proposed Project Boundary
- Piping Plover Critical Habitat
- Whooping Crane Use Area
- - - County Boundary



From: Reinisch, Jerry [mailto:jerry_reinisch@fws.gov]
Sent: Wednesday, March 21, 2018 2:09 PM
To: Bourke Thomas
Cc: Kevin Shelley; Jerry Reinisch
Subject: Dakota skipper

Bourke

Attached is a map of the Dakota observations in relation to the project area.
The Whooping crane manuscript that was requested will be available after April 18, 2018.

If you have additional questions please feel free to contact me.

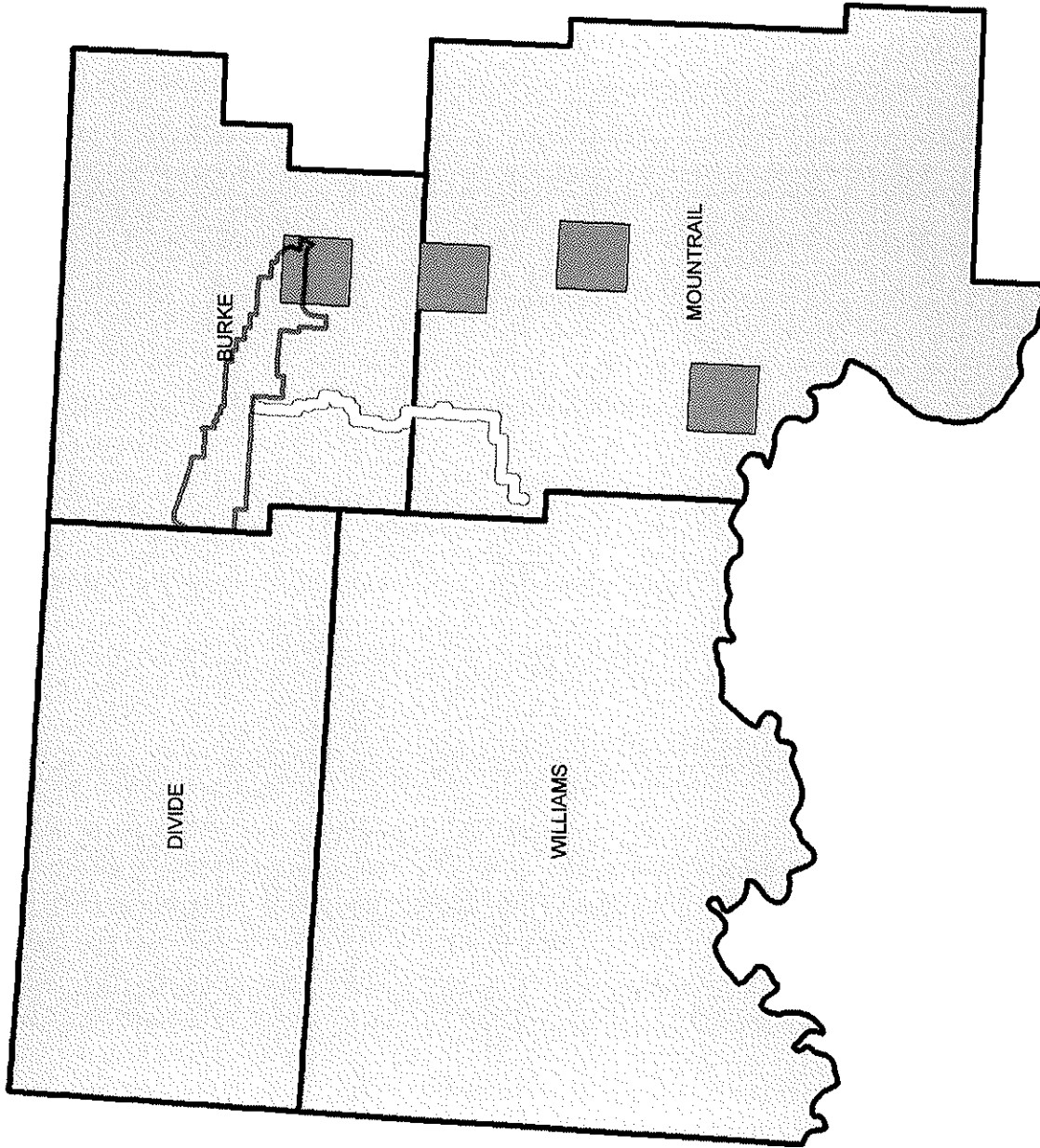
Thanks

Jerry D. Reinisch
Fish & Wildlife Biologist
Ecological Services
US Fish & Wildlife Service
3425 Miriam Drive
Bismarck, North Dakota 58501

(M) 701-250-4481 Ext 8267
(D) 701-333-0267
(C)701-425-2133



North Dakota Townships with Dakota Skipper Observations thru 2016

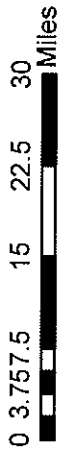


Legend

SymbolID

- 0
- Transmission Line
- DASK_Presence_Burke_CO_Wind Township
- North Dakota Counties

DISCLAIMER:
 The USFWS makes no claim as to the accuracy or completeness of the displayed information. Species occurrence information is provided for illustrative purposes only. Federal action agencies and project proponents should contact the USFWS North Dakota Field Office for more detailed species information and technical assistance in evaluating potential project impacts to fish and wildlife resources.
 Map produced 02/08/2018 by USFWS Ecological Services, Bismarck, ND.



From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Friday, April 27, 2018 8:03 AM
To: Niemuth, Neal
Cc: Wells, Kimberly; Kevin Shelley; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

Kim,

Attached is a manuscript that will be coming out in the next month or so. Please do not distribute. We identified "native sod" as predominantly rangeland from NRI. This coincides closely with rangeland in NLCD data. It is important to recognize that use of grassland as rangeland for cattle does not eliminate the value of the grassland for grassland birds and upland nesting waterfowl.

Chuck

Chuck Loesch
USFWS - HAPET
3425 Miriam Avenue
Bismarck, ND 58501
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

From: Niemuth, Neal [mailto:neal_niemuth@fws.gov]
Sent: Friday, April 27, 2018 7:49 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Loesch, Chuck; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

Hi Kim,

Attached is a copy of the Condor article that you requested. As always, please feel free to e-mail or call if you have questions.

I'm up against a couple of deadlines at the moment, but will try to get some models to you next week.

Neal

"They tried to bury us. They didn't know we were seeds." Dinos Christianopoulos

Neal D. Niemuth
Integrated Conservation Scientist
Habitat and Population Evaluation Team (HAPET)
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501
701-355-8542 (tel)
701-355-8533 (fax)

On Tue, Apr 24, 2018 at 10:00 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:
Kevin/Ethan/Chuck,

Thanks for your time yesterday discussing our Burke project. As a follow up, I am providing shapefiles of our proposed wind farm and 1-mile study corridor along our tline route.

Chuck - could you provide the refined surface for the breeding duck data you mentioned and the Roger Clawson crop insurance/CRP PDF galley you referenced?

Neal - could we also get the surface model for your grassland bird models in the area and the Condor 2017 underlying PDF you referenced?

If possible to get our project area plus whatever surrounding buffer you think is appropriate for landscape context, that would help us.

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
601 Travis Street, Suite 1900
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Friday, April 27, 2018 7:44 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Niemuth, Neal; Ethan Jahnke; Bourke Thomas; Ronald Pritchert
Subject: Re: [EXTERNAL] Burke meeting follow up

Kim,

Attached is a zipped geodatabase that contains 2 layers of waterfowl related information and a document defining the contents of the data layers.

Please let me know if you have any questions.

Chuck

Chuck Loesch
USFWS - HAPET
3425 Miriam Avenue
Bismarck, ND 58501
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

“A duck call in the hands of the unskilled is one of conservation’s greatest assets” – Nash Buckingham

On Wed, Apr 25, 2018 at 8:07 AM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:
Thanks Chuck. We appreciate the help.

From: Loesch, Chuck [mailto:chuck_loesch@fws.gov]
Sent: Wednesday, April 25, 2018 6:54 AM
To: Wells, Kimberly
Cc: Kevin Shelley; Niemuth, Neal; Ethan Jahnke; Bourke Thomas
Subject: Re: [EXTERNAL] Burke meeting follow up

CAUTION - EXTERNAL EMAIL

Kimberly,

I should be able to get the information to you by Friday at the latest.

Chuck

Chuck Loesch
USFWS - HAPET

[3425 Miriam Avenue](#)
[Bismarck, ND 58501](#)
o: 701-355-8537
c: 701-527-0996
chuck_loesch@fws.gov

“A duck call in the hands of the unskilled is one of conservation’s greatest assets” – Nash Buckingham

On Tue, Apr 24, 2018 at 10:00 PM, Wells, Kimberly <Kimberly.Wells@nexteraenergy.com> wrote:
Kevin/Ethan/Chuck,

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Chuck - could you provide the refined surface for the breeding duck data you mentioned and the Roger Clawson crop insurance/CRP PDF galley you referenced?

Neal - could we also get the surface model for your grassland bird models in the area and the Condor 2017 underlying PDF you referenced?

If possible to get our project area plus whatever surrounding buffer you think is appropriate for landscape context, that would help us.

Kim

Kimberly Wells, Ph.D.
Manager, Environmental Services
Mid Continent Region
NEXTera Energy Resources, LLC
[601 Travis Street, Suite 1900](#)
Houston, TX 77002
713.951.5372 (office)
832.538.7935 (mobile)
Kimberly.Wells@NEE.com

From: [Williams, Scott](#)
To: [Bourke Thomas](#)
Cc: [Ethan Jahnke](#); [Wells, Kimberly \(Kimberly.Wells@nexteraenergy.com\)](#)
Subject: Re: [EXTERNAL] Mountrail Burke County USFWS Easements
Date: Tuesday, June 12, 2018 11:56:24 AM

Hi Bourke,

Responses below per your email,

Can you confirm that the following locations in Mountrail and Burke counties do not include USFWS wetland or grassland easements?

1. Wetland Easement in the south half of the north half of sections 09 in 157N 93W?
No Easements
2. Grassland Easement in section 03 of 157N 93W?
No Easements
3. Grassland Easement in section 34 of 158N 93W?
No Easements
4. Wetland Easement in section 34 159N 93W?
No Easements- Fee Title Waterfowl Production Area approx NE1/4, NE1/4
5. Wetland Easement in the southwest ¼ section of section 26 of 160N 93W?
No Easements
6. Wetland/Grassland Easement in the east ½ of section 35 of 161N 93W?
Wetland Easement

Let me know if you have any questions,

Take care,

S

Scott A. Williams
Federal Wildlife Officer

Crosby Wetland Management District
United States Fish and Wildlife Service
10100 HWY 42 NW
Crosby, ND 58730

701.965.6488 Office
701.339.1450 Cell
701.965.6487 Fax

On Mon, Jun 11, 2018 at 5:06 PM, Bourke Thomas <bthomas@atwell-group.com> wrote:

|

Good afternoon Scott, thanks again for call this today.

Can you confirm that the following locations in Mountrail and Burke counties do not include USFWS wetland or grassland easements?

1. Wetland Easement in the south half of the north half of sections 09 in 157N 93W?
2. Grassland Easement in section 03 of 157N 93W?
3. Grassland Easement in section 34 of 158N 93W?
4. Wetland Easement in section 34 159N 93W?
5. Wetland Easement in the southwest ¼ section of section 26 of 160N 93W?
6. Wetland/Grassland Easement in the east ½ of section 35 of 161N 93W?

Also as we discussed, later this week I will likely be sending you over a second email requesting input on the protection status of certain wetland basins within existing wetland easements.

Thanks again for all of your support on this.

Bourke Thomas

Director

Environmental Services

ATWELL, LLC

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From: [Kevin Shelley](#)
To: [Wells, Kimberly](#)
Cc: [Bourke Thomas](#); [Ethan Jahnke](#)
Subject: RE: [EXTERNAL] Burke: native prairie analysis update - inclusion of ephemeral wetlands
Date: Wednesday, May 09, 2018 9:52:51 AM

Hello Kim; I'm pleased you undertook another look at the native prairie calcs. Chuck certainly has much more experience than I (and he may have a different data layer he relies on) but I'm not that surprised that the acreage of ephemeral (seasonal and temporary) wetlands is negligible. I agree with you that we need to verify that we are all working from a mutually agreed upon understanding of baseline conditions, so with Chuck and Neal I will look into the wetland definitions and calculation methodology they envisioned, before we embark on the impact assessment...and will keep this close-hold and under the deliberation label. K

Kevin Shelley, Supervisor
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From: Wells, Kimberly [mailto:Kimberly.Wells@nexteraenergy.com]
Sent: Wednesday, May 09, 2018 10:28 AM
To: Kevin Shelley
Cc: Bourke Thomas; Ethan Jahnke; Wells, Kimberly
Subject: [EXTERNAL] Burke: native prairie analysis update - inclusion of ephemeral wetlands

Hi Kevin,

During our in person meeting on 4/23 in your office with Chuck and Neal, Chuck noted he was surprised there wasn't more native prairie and indicated he thought that estimate may go up if the ephemeral wetlands were included instead of excluded from the Atwell analysis. I had Atwell recalculate native prairie including the ephemeral wetlands and the results show a **negligible increase** of 5 acres for the wind farm (from 11,824 acres to 11,829) and **a negligible decrease** of 6 acres for the transmission line (from 4,12 acres to 4,116). In our view, this re-analysis provides a second line of evidence that we believe demonstrates the existing Atwell native prairie analysis we presented is solid and not sensitive to the inclusion or exclusion of ephemeral wetlands.

As the USFWS starts thinking about impact assessment, I think it is critical we are all on the same

page about baseline conditions, particularly when it comes to the definition and extent of native prairie. I would be interested in your reactions when you have time for review. I didn't copy Chuck or Neal as not sure how ES is coordinating with refuge scientists, but feel free to share if you find appropriate.

These materials are confidential and not for public distribution, so please keep limited to only those necessary and advise of their sensitivity if shared with others internally.

Kim

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Sincerely,

CROWLEY FLECK PLLP

A handwritten signature in blue ink, appearing to read 'Casey A. Furey', is written over the company name. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Casey A. Furey
Enc.

Cc: Jerry Lein (*via e-mail*)
Mitchell Armstrong (*via e-mail*)
Patrick J. Ward (*via e-mail*)