

**Brady Wind Energy Center
Brady Wind, LLC
Stark County, North Dakota**

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



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 - Non-Federal Beam Path Study
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1. INTRODUCTION

Brady Wind, LLC (Brady Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NEER), is submitting this Application for a Certificate of Site Compatibility (Certificate) to construct the Brady Wind Energy Center (the Project). The proposed Project is located in Stark County, North Dakota (**Figures 1–3**), and will have a nameplate capacity of approximately 150 megawatts (MW) consisting of up to 87 wind turbines using both General Electric (GE) 1.715 MW Xle and GE 1.79 MW Xle wind turbine generators. Additional facilities include access roads, electrical collection systems and cabling, a collection substation, an operation and maintenance (O&M) building, meteorological towers, a construction laydown area, and a temporary turbine storage area (**Figure 2**). The Project also includes an approximately 19-mile, 230-kilovolt (kV) overhead transmission line to connect the Project to the Belfield to Rhame 230-kV transmission line, in Section 29 of Township 137 North, Range 98 West, approximately 19 miles southwest of the city of Dickinson and will transmit power into the Basin Electric Power Cooperative (Basin) transmission system. The transmission line must be permitted separately and Brady Wind will submit a separate application for a Certificate of Corridor Compatibility and Route Permit for the line and associated switchyard in December 2015.

NEER develops renewable projects throughout the United States and Canada. NEER is the largest generator of wind-powered electricity in North America, with nearly 11,300 MW of capacity in 19 states and Canada as of December 2014. In North Dakota specifically, NEER, through its affiliates, owns and operates 851 MW of wind generation and operates an additional 139 MW.

1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act Chapter 49-22

The North Dakota Energy Conversion and Transmission Facility Siting Act (the Act) requires an application for a Certificate to meet the criteria set forth in North Dakota Century Code (NDCC) Chapter 49-22 and North Dakota Administrative Code (NDAC) 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 (NDCC 49-22-02).

Brady Wind considered the exclusion and avoidance areas and selection and policy criteria set forth in NDAC Section 69-06-08-01 in the design of the Project and has provided information on such areas in this Application. In addition, sufficient Project design, wind resource, and technical information have been provided for a thorough evaluation of the proposed Project. **Table 1** outlines the information required to fulfill the requirements for a Certificate with the North Dakota Public Service Commission (PSC) and where these requirements are addressed in this document.

Table 1. Certificate Completion Checklist

State Authority	Description	Section
NDAC 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
	(2) The gross design capacity	1.0
	(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 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.	Appendix B
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 North Dakota Century Code Section 49-22-09.	1.3.1, 3.0, 10.0-10.12, Figures 1-3
f.	The Application shall contain 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, Table 6, Table 7, Table 8, Table 9, Figure 5
i.	A discussion of the mitigative measures that the application 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 4 and 5, 1.2, 3.0
l.	An 8-1/2 by 11-inch black and white map suitable for newspaper publication depicting the site area.	Provided on CD

Table 1. Certificate Completion Checklist

State Authority	Description	Section
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 1-15
NDCC 49-22-08 Application for a certificate		
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 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 2-3
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 Section 49-22-09 and the criteria established pursuant to Section 49-22-05.1.	10.0
i.	Such other information as the applicant may consider relevant or the commission may require.	Appendix C
NDCC 49-22-09 Factors to be considered in evaluating applications and designation of sites, corridors, and routes.		
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

Table 1. Certificate Completion Checklist

State Authority	Description	Section
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
11.	Problems raised by federal agencies, other state agencies, and local entities.	10.12

1.2 Flexibility in Siting

Wind facility siting is a process through which input is considered from several different entities. When considering where to locate this wind farm in North Dakota, Brady Wind identified the Project Area (see **Figures 1-3**) for further investigation based on the modeled wind resource and potential offtaker, as outlined in Section 1.3 below. The identified Project Area is considered optimal from a wind resource perspective. Brady Wind then analyzed the available land and initiated discussions with landowners and applied setbacks required by Stark County, the PSC, and Brady Wind's internal setbacks. Brady Wind then conducted environmental desktop and field studies in the Project Area, the results of which are incorporated in the appropriate sections of this application.

Brady Wind has entered into agreements with landowners that are interested in having wind turbines and associated facilities placed on their property. Simultaneously, Brady Wind has identified preliminary turbine locations based on initial site inspection, topographic maps, known environmentally sensitive areas, review of North Dakota's power plant siting exclusion and avoidance areas, and communications with local, state, and federal agencies. Brady Wind is not seeking a permit for each wind turbine indicated on **Figure 1** through **Figure 3**; rather, the preliminary layout indicates areas of the site with good wind resources and where there are no known environmental or regulatory siting issues or where any such issues can be mitigated.

Brady Wind seeks a Certificate of Site Compatibility for the Project Area, as opposed to specific turbine locations. Brady Wind suggests that the Certificate define the Project Area, number of turbines, and structures related to wind generation to be located within the Project Area based on the information presented in this Application. Within the permitted Project Area, Brady Wind proposes that conditions be included specifying that final turbine placement be subject to required setbacks from environmentally sensitive areas, and be sufficient to meet required noise levels.

Brady Wind is currently completing additional required studies, including final cultural resource surveys and wetland delineations. Brady Wind will also further evaluate the Project Area based on efficient construction of the Project. In addition, Brady Wind will seek further input from landowners regarding the location of wind turbines and associated facilities. Once these additional studies and communications are completed, preliminary turbine locations will be re-evaluated for consistency with anticipated Certificate conditions and buffers. A final site plan for the Project will be submitted to the PSC prior to construction and a pre-construction conference

call will be held with PSC staff to ensure that the site plan conforms to the Certificate requirements.

Brady Wind believes that the aforementioned siting process is consistent with North Dakota siting rules and provides Brady Wind with the flexibility necessary to develop a timely, cost-effective project in an environmentally responsible manner.

1.3 Project Summary

Brady Wind evaluated wind resources in North Dakota for siting a 150 MW wind generation facility. An explicit part of this review was consultation and coordination with a variety of community leaders and government officials to avoid or minimize any known concerns during siting. Based on this review, Brady Wind selected a Project Area approximately 85 miles west of the city of Bismarck and 15 miles south of the city Dickinson for additional study and preparation of an application for a Certificate to the PSC. The proposed Project Area was identified as optimal from wind resource, transmission interconnection, environmental, and economic perspectives. The proposed Project Area was selected considering the exclusion and avoidance criteria outlined in NDAC 69-06-08-01.

1.3.1 Proposed Project Area

The Project Area is the location within which Brady Wind has negotiated easements with landowners. The Project Area was selected to include all areas necessary for Brady Wind to optimize the wind resource while avoiding and minimizing impacts to environmental resources. Brady Wind currently has leases in Stark County (**Table 2**).

Table 2. Project Area Location

County	Township	Range	Sections
Stark County	137 N	95 W	1, 2, 9-16, 19-24, 27-34
	137 N	96 W	19-36
	137 N	97 W	25-29, 32-36
	138 N	95 W	35, 36

The Project Area encompasses approximately 29,981 acres (47 square miles) in southern Stark County. The amount of land within the Project Area participating in the Project is 17,665 acres. Although the turbines will be placed throughout the participating land within Project Area, the permanent Project structures will occupy up to 110 acres during operation (See **Tables 3 and 4 below**), or less than one percent of the total Project Area. **Table 3** summarizes the assumptions used to calculate impacts by Project facility. Permanent impacts are considered to be the Project footprint during operation. Temporary impacts are considered those impacts that result during construction to accommodate equipment and temporary activities outside of the areas that will remain as the permanent Project footprint during operation. **Table 4** summarizes the estimated impact for each Project component for both construction (temporary) and operation (permanent). The Project Area and Project layout are shown on **Figures 1-3**. The impact assumptions are shown on **Figure 4**.

Table 3. Project Impact Assumptions

Project Component	Temporary Construction Disturbance	Construction Disturbance to be Reclaimed	Permanent Disturbance (Operation)
Wind Turbines <u>a/</u>	4.5 acres per turbine	4.3 acres per turbine	0.2 acres per turbine
Access Roads <u>b/</u>	50 feet wide per linear foot of road	34 feet wide per linear foot of road	16 feet wide per linear foot of road
Collection Lines <u>c/</u>	50 feet wide per linear foot	50 feet wide per linear foot minus 12 feet x 8 feet for each junction box	12 feet x 8 feet for each junction box
O&M Facility	5 acres	0 acres	5 acres
Collection Substation	8 acres	0 acres	8 acres
Construction Laydown Area <u>d/</u>	22 acres	22 acres	0 acres
Meteorological Towers <u>e/</u>	1.25 acres per tower	1.25 acres per tower	5 sq. feet per tower
Turbine Storage Area <u>f/</u>	40 acres	40 acres	0 acres
Temporary Crane Paths	80 feet wide per linear foot	80 feet wide per linear foot	0 acres

- a/ Construction impacts assumed a 250-foot construction radius around the turbine, which equates to approximately 4.5 acres per turbine. Impacts during operation account for a 40-foot x 100-foot gravel pad with a 15-foot buffer, or 0.2 acres per turbine.
- b/ Easement width necessary for construction based on turbine types. Temporary and permanent impacts represent a conservative estimate of disturbance. Roads required to support crane access to turbines during operation would remain up to 38 feet wide; other access roads may be built at 16 feet or reduced later to 16 feet. Access road impacts also assume all proposed roads are new access roads and do not consider improvements to existing roads separately.
- c/ Where collection lines run parallel to access roads, the respective impact buffers generally do not overlap.
- d/ Assumes one 22-acre laydown area.
- e/ Area of impact is 1.25 acres per guyed tower during installation. Once installed, each tower has a 1 square-foot base plate and four 1 square-foot anchor points, or 5 square feet per tower.
- f/ Assumes one 40-acre turbine storage area.

Table 4. Project Impacts

Project Component	Temporary Construction Disturbance (acres)	Construction Disturbance to be Reclaimed (acres)	Permanent Disturbance (Operation) (acres)
Wind Turbines <u>a/</u> (87 turbines, not 16 alternates)	391.5	374.1	17.4
Access Roads <u>b/</u>	202.6	123.55	79.05
Collection Lines <u>c/</u>	222.73	222.68	0.05
O&M Facility	5	0	5
Collection Substation	8	0	8
Construction Laydown Area	22	22	0

Table 4. Project Impacts

Project Component	Temporary Construction Disturbance (acres)	Construction Disturbance to be Reclaimed (acres)	Permanent Disturbance (Operation) (acres)
Meteorological towers <u>d/</u>	12.5	12.5	0 (5 sq. ft.)
Turbine Storage Area	40	40	0
Temporary Crane Paths <u>e/</u>	126	126	0
Total	1,030.33	920.83	109.5

- a/ Assumes 87 turbines x 4.5 acres of ground disturbance during construction, 0.2 acre/turbine of that remaining as permanent. The 16 alternate turbines were not included in the calculation; calculations for the associated roads and collection lines included all roads and collection lines shown in the layout.
- b/ Assumes a 50-foot wide easement for roads during construction, 16 feet of that remaining during operation. Assumes total of approximately 40.9 linear miles of service roads. The overlapping area for turbines and the substation were excluded from the road impact calculations to avoid double counting the same footprint.
- c/ The overlapping areas between the collection line corridor buffer and the access road corridor buffer were removed from impact calculation. Approximately 24 miles of collection lines run parallel to the access roads, with a 150-foot distance designed between the collection line and access road centerlines. The impacts also include approximately 24 miles of collection lines not co-located with access roads. Junction boxes will be located on the ground throughout the Project Area and will each require approximately 12 feet x 8 feet. Currently 22 junction boxes are anticipated to be required.
- d/ 9 temporary and 1 permanent met towers x 1.25 acres = 12.5 acres disturbance during construction; 1 permanent met tower, assuming guyed, 5 square feet.
- e/ Assumes an 80-foot wide crane path for 13 miles that do not overlap with other infrastructure footprints.

1.3.2 Projected Output

The Project will have a nameplate (gross) capacity of approximately 150 MW. Assuming a net capacity factor of 53.3 percent, the projected average annual output is estimated at 700,362 MW hours per year. As with all wind projects, output is dependent upon wind resource, final design, site-specific features, and equipment.

1.4 Project Schedule

The commercial operation date is dependent upon permitting, equipment deliveries, and other development activities. Brady Wind is targeting site construction to begin in April 2016 provided all pre-construction permits and approvals have been obtained. Key schedule milestones include the items described below.

- 1. Certificate of Site Compatibility:** Brady Wind anticipates and has requested with this filing that the Certificate be issued by April 8, 2016.
- 2. Land Acquisition:** All land easement agreements for the wind generation facility were completed in November 2015.
- 3. Permits:** Brady Wind submitted an application for a Stark County Wind Energy Facility Siting Permit in November 2015 and anticipates receiving the Permit in January 2016. Brady Wind is responsible for undertaking all required environmental studies, and will obtain all permits and licenses that are required following issuance of the Certificate. Completing permits is on the “critical path” for the Project and will allow Brady Wind to move forward with other commitments on the Project.

4. **Equipment Procurement, Manufacture, and Delivery:** Brady Wind has ordered all long-lead equipment for the Project, including substation equipment, transformers, and has a purchase order in place with GE for the wind turbines.
5. **Construction:** Construction is scheduled to begin as early as April 2016, subject to road restrictions and weather. The engineering, procurement, and construction (EPC) contractor will be responsible for completing all project construction, including roads, wind turbine assembly, electrical, and communications work. Construction will take approximately six months to complete.
6. **Testing Operations:** Brady Wind anticipates testing to begin in August 2016.
7. **Commercial Operation:** Brady Wind anticipates commercial operation of the Project to occur by December 2016.
8. **Expansions or Additions:** NEER is currently developing another wind energy facility adjacent to this Project in Hettinger County. A separate Application for that project will be submitted in January 2016.

1.5 Project Ownership

Brady Wind will own the entire Project and, as a result, will manage the construction of all equipment and associated facilities related to the Project. Brady Wind will select a third-party EPC contractor to perform the majority of the engineering and construction of the wind farm. Brady Wind will procure the turbine/tower equipment directly from a manufacturer.

2. NEED FOR FACILITY

2.1 Need Analysis

Due partly to high heating demand in winter, North Dakota's per capita energy consumption is among the highest in the nation. Nearly three-tenths of North Dakota households use electricity as their primary energy source for home heating. Most of the coal used for power generation is supplied by several large surface mines in the central part of the state. Energy sources such as coal are finite and their combustion has environmental consequences.

In March 2007, North Dakota enacted legislation (H.B. 1506) adopting a voluntary renewable portfolio objective that aims to have ten percent of electricity used in the state generated from renewable sources by 2015. According to the Energy Information Administration (EIA 2014), in 2010, 79 percent of North Dakota's net electricity generation came from coal, 16 percent came from wind energy, and 5 percent came from conventional hydroelectric power sources. Consequently, the ten percent renewable portfolio objective is being met. However, other goals for renewable energy have been established. According to a March 2010 report prepared by the EmPower ND Commission, one of the state energy goals is to increase installed wind energy capacity to 5,000 MW by 2020 (EmPower ND 2010). North Dakota's energy-related goals include the following:

- General economic development and help the nation achieve greater energy independence
- Derive 25 percent of all energy produced in America from renewable sources by 2025
- Provide a fair and responsible regulatory environment that promotes energy development

A regional need exists for renewable energy produced in North Dakota. Eleven of the Midwest Independent System Operator (MISO) states currently have renewable portfolio standards (MISO 2012). According to the MISO Transmission Expansion Plan for 2012, the MISO region needs to add between 4,484 and 11,290 MW of new capacity or 3,865 and 9,733 MW of demand reduction to meet the minimum Planning Reserve Margins in 2022 (MISO 2012). From 2015 onward, 9,912 MW of retirements of fossil-fueled power plants are assumed to occur due to Environmental Protection Agency (EPA) regulations. Depending on the projection scenario, MISO assumes anywhere from 13 to 60 gigawatts (GW) of incremental wind penetration. Seventeen multi-value transmission projects have been integrated into the MISO planning models, which will relieve a major part of MISO's internal future congestion and deliver wind energy more efficiently.

Apart from renewable energy goals, in recent years, the Mid-Continent Area Power Pool (MAPP) has consistently reinforced the regional need for increased generating capacity in the coming decade. The most recent MAPP report available (2009) indicates that deficits are now expected by 2017 (**Table 5**).

Table 5. MAPP (US) Summer Season Surplus/Deficit

Year	MW
2008	2,377.3
2009	1,522.2
2010	1,044.8
2011	939.5
2012	785.7
2013	502.8
2014	657.8
2015	524.4
2016	227.5
2017	-19.3
2018	-367.3

Source: Page III-5 of the MAPP 2009 Load and Capability Report (MAPP 2009).

The Brady Wind Project will allow North Dakota to continue to provide capacity to meet those forecasted deficits with clean, efficient, renewable energy for at least the projected 30-year life of the Project.

On October 23, 2015, the EPA's final *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* (Clean Power Plan) was published in the Federal Register. Under the Clean Power Plan, the EPA established interim and final carbon dioxide emission performance rates for steam electric and natural gas fired power plants, as well as state-specific interim and final goals, based on these limits and each state's mix of power plants. The Clean Power Plan requires each state to develop and implement plans to ensure that the power plants in their state achieve the interim and the final carbon dioxide emission performance rates, and rate-based goals or mass-based goals by 2030. North Dakota's 2012 carbon dioxide emission rate was 2,368 pounds per megawatt-hour (MWh) and its 2030 goal is 1,305 pounds per MWh (EPA 2015a). The EPA anticipates that renewable energy will be a significant strategy for states and existing sources. New renewable energy facilities benefit mass-based states by avoiding emissions from affected fossil fuel-fired electric generating sources. States using a mass-based approach may provide additional support for renewable energy through direct allocations of emission allowances to renewables, or through distribution of proceeds from auctions of emission allowances to renewable energy generators (EPA 2015b). A renewable energy generator installed after 2012 in a rate-based state may be issued Emission Rate Credits (ERCs) for every MWh of zero-emission generation in 2022 and thereafter (EPA 2015b). Additionally, the Clean Power Plan facilitates trading of ERCs for compliance across state lines (EPA 2015b). The Project will contribute to meeting North Dakota's requirements under the Clean Power Plan to meet its interim and final carbon dioxide emission rate goals under either a mass-based or rate-based compliance regime.

In December 2014, Brady Wind signed a 30-year power purchase agreement with Basin Electric Power Cooperative (Basin) for the Project. Pursuant to this agreement, Basin will purchase all of the electrical output generated by the Project for 30 years. The Project will help to increase the renewable portion of Basin's generating portfolio to more than 1,400 MW when combined with

additional wind generation commitments made by Basin in 2013. The Project will help meet Basin member's energy needs while keeping member electricity rates low (Basin 2014).

2.2 Alternatives

Feasible technology alternatives to wind include electricity generation using coal, natural gas, or biomass. None of these alternatives were considered because these technologies do not meet the state's goal of adding new wind energy.

Although the Project will include 87 planned turbines, an additional 16 alternate turbine locations have been included in the Project layout in order to provide siting flexibility based on on-going environmental studies and landowner preferences.

2.3 10-Year Plan

As required by NDCC 49-22-04, Brady Wind will file a 10-Year Plan with the PSC and the Stark County Auditor by July 1, 2016.

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3. SITE SELECTION CRITERIA

Brady Wind is evaluating the proposed 29,981-acre (47 square-mile) Project Area to determine the best locations for up to 87 wind turbines. Siting turbines is a process through which input from several different entities is considered. The Project Area was identified as an optimal site from wind resource, transmission, landowner participation, economic, and environmental perspectives. An additional 16 alternate turbine locations have been included in the Project layout in order to provide siting flexibility based on on-going environmental studies and landowner preferences, however, only up to 87 wind turbines will be constructed.

Brady Wind has secured voluntary wind option agreements with landowners and identified preliminary turbine locations based on site inspection, topographic maps, known environmentally sensitive areas, review of North Dakota's power plant siting exclusion and avoidance areas, review of Stark County and state wind siting requirements, and communications with local, state, and federal agencies. NEER has used this siting process in developing recent wind turbine projects, including 12 projects in North Dakota. Through this process, NEER addresses environmental issues that commonly arise during project development and works within the parameters of State rules. North Dakota has several site selection criteria that are considered by the PSC to determine suitability of the site. Brady Wind has reviewed the criteria in Chapter 69-06-08 and has considered these criteria in Project design. These criteria are discussed in this section.

3.1 Exclusion Areas

In accordance with NDAC Section 69-06-08-01(1) and (2), the geographical areas listed in **Table 6** shall be excluded in the consideration of a site for an energy conversion facility. The area of exclusion shall include a buffer zone of a reasonable width to protect the integrity of the area. Exclusion areas are mapped for the Project Area on **Figure 5**.

3.2 Avoidance Areas

The Project complies with the requirement in NDCC 49-22-05.1 that areas within 500 feet of occupied rural residences be considered avoidance areas. In accordance with NDAC Section 69-06-08-01(3) and (4), the geographical areas listed in **Table 7** shall not be approved as a site for an energy conversion facility unless the applicant shows that, under the circumstances, there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the PSC 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. Avoidance areas are also mapped for the Project Area on **Figure 5**.

Table 6. Exclusion Areas

Exclusion Area	Present within Project Area?	Description	Section Addressed
Designated or registered national areas: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	None	N/A	3.5, 7.3, Figures 5 and 10
Designated or registered state areas: 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	An archaeological survey is underway; archaeological sites have been identified through a file search and field survey, but the Project layout will avoid all newly documented sites. The sites are not shown on Figure 5 due to confidentiality. The field survey is anticipated to be completed in December 2015.	7.7, 7.8, 7.9, 7.15, 7.17
County parks and recreational areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands.	None	N/A	7.8, 7.17
Prime farmland and unique farmland, as defined by the land inventory and monitoring division of the soil conservation service, United States department of agriculture, 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, such exclusion shall not apply.	Present	The Project Area contains 12,969 acres (43%) of soils of statewide importance and 2,026 acres (approximately 7%) of prime farmland soils. Prime farmland has been avoided to the extent practical. Permanent impacts to soils of statewide importance and prime farmland soils from turbine placement and access roads are expected to be up to 31 acres and 4 acres, respectively, which is less than 1% of the Project Area.	7.9, 7.10, Figure 14
Irrigated land	None	N/A	7.9
Areas critical to threatened or endangered animal or plant species	None	The eastern portion of the Project Area is within the whooping crane migration corridor, but there is no designated critical habitat within the Project Area.	7.16, 7.17
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	None	N/A	7.13, 7.14, 7.15, 7.16, 7.17
Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	None	N/A	7.3.1

Table 6. Exclusion Areas

Exclusion Area	Present within Project Area?	Description	Section Addressed
Wind-energy specific exclusion areas	N/A	The Project complies with the following exclusion areas: 1.1 x height of turbine from interstate and state road rights-of-way 1.1 x height of turbine plus 75 feet from centerline of county or maintained township roadways 1.1 x height of turbine from railroad right-of-way 1.1 x height from 115kV or higher transmission lines 1.1 x height from property line of non-participating landowners	4.1.1

Table 7. Avoidance Areas

Avoidance Areas	Present within Project Area?	Description and Proposed Buffer	Section Addressed
Historical resources which are not designated as exclusion areas	Present	Historic farmsteads are present within the Project Area. All historic resources will be avoided by the Project footprint, and a report evaluating potential visual effects is underway.	7.7, 7.17
Areas within the city limits of a city or the boundaries of a military installation	None	N/A	7.3, Figures 1-3
Areas within known floodplains as defined by the geographical boundaries of the 100-year flood	Present	Approximately three percent of the Project Area is within the 100-year floodplain. These areas occur primarily within creek beds and will be avoided or permitted as required by Stark County.	7.12, 7.17
Areas that are geologically unstable	None	N/A	7.11, 7.17
Woodlands and wetlands	Present	Permanent impacts to jurisdictional wetlands will be avoided and minimized as practicable. Few woodland impacts are anticipated, and all trees that are removed will be replaced at a 2 to 1 ratio as required by the PSC.	7.13, 7.14, 7.17, Figures 13 and 15
Areas of recreational significance which are not designated as exclusion areas	None	N/A	7.3
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 dBA.	None	Noise modeling results indicated that received sound levels are all 50 dBA within 100 feet of an inhabited residence.	7.6.2

3.3 Selection Criteria

In accordance with NDAC Section 69-06-08-01(5), a site shall be approved in an area only when it is demonstrated to the PSC by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate

to the criteria listed in **Table 8**, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

Table 8. Selection Criteria

Selection Criteria	Potential Adverse Effects	Section Addressed
The impact upon agriculture:		
Agricultural production	Up to 110 acres of land will be affected by the turbines, associated access roads, and other infrastructure during operation. Additional temporary impacts during construction for turbine installation, road construction, cable trenching, laydown and construction staging, and turbine storage would be up to 921 acres. 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. As a result, the Project will not result in significant impacts to agricultural production.	7.3, 7.9
Family farms and ranches	The Project will comply with state and county setbacks. Although some land area will be converted to wind turbine foundations and pads, access roads, 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.	4.1.1, 7.2, 7.3, 7.10, Table 10, 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, Figures 14 and 15
Surface drainage patterns and ground water flow patterns	A wetlands and waters survey was completed in November 2015. The wind turbines will be built on uplands in order to avoid streams and drainages. Access roads to the turbines will be built to avoid impacts to surface waters to the extent practicable, and will be designed in such a manner that runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. Temporarily disturbed areas will be returned to their original contours.	7.11, 7.12, 7.13, Figure 15
The agricultural quality of the cropland	Minimal impacts to the agricultural quality of the cropland are anticipated. Landowner agreements include compensation for crop damage, if any, during surveys and construction. If compaction of soils occurs during construction, Brady Wind will work with the landowners to alleviate the compaction.	7.9, 7.10
The impact upon the availability and adequacy of:		
Law enforcement	No impacts are anticipated.	7.4
School systems and education programs	No adverse effects are expected.	7.4
Governmental services and facilities	Governmental services and facilities will not be negatively affected.	7.4
General and mental health care facilities	General and mental health care facilities will not be negatively affected.	7.4
Recreational programs and facilities	No impacts are anticipated.	7.4, 7.8, 7.17
Transportation facilities and networks	An increase in vehicle trips per day is anticipated for the duration of Project construction, but is expected to be temporary and not significant. During facility operation, no significant impacts are anticipated.	7.4, Figure 11

Table 8. Selection Criteria

Selection Criteria	Potential Adverse Effects	Section Addressed
Retail service facilities	No adverse impacts are anticipated. Local services such as motels, restaurants, and convenience stores are likely to experience an increase in business during Project construction.	7.4
Utility services	The Project will utilize station service from Roughrider Electric Cooperative, Inc., which will suggest appropriate configurations for the electrical system, and Brady Wind will abide by the recommendations to prevent impacts to the transmission system.	1.0, 2.0, 6.0, 7.4
The impact upon:		
Local institutions	No impacts are anticipated.	7.4
Noise sensitive land uses	The noise sensitive land uses within the Project Area are the residences near turbine locations. The sound impacts from the Project turbines will be within the PSC limit at occupied residences.	7.6, 7.17
Rural residences and businesses	The Project will comply with state and local setbacks.	7.2, 7.3, Figure 5
Aquifers	No impacts will occur.	7.11
The impact upon:		
Human health and safety	No impacts to human health and safety are anticipated based on the implementation of the mitigative measures discussed in Section 7.5.3 and maintenance schedules.	6.3, 6.5.27.5
Animal health and safety	No impacts to livestock are anticipated from construction or operation of the facility. Based on avian surveys performed to date, mean raptor use was generally low compared to other wind facilities. For other avian species, fatalities from the Project, if any, are not anticipated to have population-level effects. Brady Wind will implement measures to avoid and minimize effects to wildlife by siting facilities away from active raptor nests and wetlands to the extent practicable. A Bird and Bat Conservation Strategy (BBCS) is being prepared for the Project. In addition, Brady Wind will implement a post-construction Wildlife Response and Reporting System (WRRS) and one year of post-construction bird and bat mortality monitoring for the Project in order to monitor avian/turbine interaction.	7.15, 7.16
Plant life	The Project will result in up to 110 acres of permanent impact. Land where the turbines will be sited is primarily undeveloped pasture/hay, cropland, and grassland.	7.14, Figure 13
Temporary and permanent housing	Existing temporary housing, such as hotels, will be utilized during construction. No adverse impacts are anticipated.	7.2
Temporary and permanent skilled and unskilled labor	No adverse effects are anticipated. Local contractors employed for construction will result in increased wages.	7.2
The cumulative effect 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, noise, safety and health issues, and cultural resources. Socioeconomic impacts are anticipated to be positive, as the rural economy and energy production is diversified. Wind energy development removes less total land from agricultural use than other forms of energy generation development.	10.11

3.4 Policy Criteria

In accordance with NDAC Section 69-06-08-01(6), the PSC may give preference to an applicant that will maximize benefits that result from the adoption of the policies and practices listed in **Table 9**, and may require the adoption of such policies and practices as appropriate.

Table 9. Policy Criteria

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Recycling of the conversion byproducts and effluents	Not applicable.	N/A
Energy conservation through location, process, and design	Brady Wind is developing the site to maximize energy output and will develop a site layout that optimizes wind resources while minimizing the impact on land resources and any potentially sensitive areas. Wind-powered electric generation is entirely dependent on the availability of the wind resource at a specific location. The energy available from the wind increases at the third power of the wind speed. In other words, a doubling of the wind speed will increase the available energy by a factor of eight.	4.2
Training and utilization of available labor in this state for the general and specialized skills required	Brady Wind will use local labor to the extent practicable.	7.2
Use of a primary energy source or raw material located within the state	The energy generated at the site will utilize the wind resources of the State of North Dakota.	5.2
Non-relocation of 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. As such, it is not anticipated that areas adjacent will be dedicated to recreation, agriculture, or wildlife management, although much of the Project Area is already used for agriculture.	7.3, 7.8, 7.9, 7.15, Figures 5 and 10
Economies of construction and operation	Brady Wind will utilize local contractors to the extent practicable.	7.2
Secondary uses of appropriate associated facilities for recreation and enhancement of wildlife	None.	N/A
Use of citizen coordinating committees	Brady Wind has coordinated with County officials on the location of the proposed Project, held an open house on November 4, 2015, and will continue to work with landowners of properties for the Project.	8.0
A commitment of a portion of the energy produced for use in this state	Energy transmitted will be injected into the Belfield to Rhame Transmission Line and will be delivered to Basin's grid system. Basin's service area includes North Dakota, and a portion of the energy produced will be used in-state.	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 location of the wind farm and associated facilities.	3.0, 3.6
Monitoring of impacts	Brady Wind and the EPC contractor will employ best management practices during construction to monitor soil impacts and segregate topsoil. A storm water prevention plan will be prepared for the Project. Brady Wind will conduct 1 year of post-construction bat and bird fatality monitoring and rely on the WRRS system for the life of Project operations.	7.10, 7.11, 7.12, 7.15, 7.16

3.5 Design and Construction Limitations

Key design and construction limitations when building any wind farm are wind resources, landowner easements, regulatory setbacks (local and state), and available transmission. The wind resource is essential to selecting and designing a wind farm. Brady Wind has conducted an analysis of the proposed Project Area to ensure that the site has ample wind energy to generate revenue for the wind farm. Easements allowing construction of turbine towers and transmission facilities are also critical to the Project. Brady Wind has secured voluntary land agreements with landowners necessary to develop the Project.

3.6 Economic Considerations

Economics were considered when selecting a location for the Project. As discussed above, it is important to select a site with a wind resource capable of generating energy. The proposed Project Area takes advantage of the wind resource in the area. Information on the wind resource at the site is discussed in **Sections 5.2-5.3**.

One of the most important economic considerations related to the Project is the need to qualify for the Federal Production Tax Credit (PTC). The PTC is an income tax credit of 2.3 cents/kilowatt-hour allowed for the production of electricity from utility-scale wind turbines. This incentive was created under the Energy Policy Act of 1992, and has been renewed and expanded many times, most recently by the Tax Increase Prevention Act of 2014. On March 11, 2015, the Internal Revenue Service provided guidance that extended the date by which construction must have begun for a qualifying renewable energy facility to be eligible for the PTC. To qualify, facilities must either begin physical work or incur 5 percent or more of the total cost of the facility (Safe Harbor), and are required to make continuous progress toward completion once construction has begun. Qualifying facilities have until January 1, 2017 to complete construction if construction began before January 1, 2015. The Brady Wind Project includes the use of 7 turbines that were purchased prior to 2015 and satisfy the Safe Harbor requirement. Accordingly, the Project should be eligible for the PTC.

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4. GENERAL DESCRIPTION OF THE PROPOSED FACILITY

4.1 Wind Power Technology

As the wind passes over the blades of a wind turbine, it creates lift and causes the rotor to turn. The rotor is connected by a hub and main shaft to a system of gears, which are connected to a generator. Exact turbine models are subject to change to ensure selection of a turbine that is both cost effective and optimizes land and wind resources. Brady Wind is proposing to install up to 87 wind turbines. The current layout includes 80 GE 1.715 MW and 7 GE 1.79 MW Xle turbines. Brady Wind is seeking flexibility from the PSC 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 1.715 MW Xle utility-grade wind turbine has a nominal nameplate rating of 1.715 MW. Each turbine will have an 80-meter (262 feet) hub height and a 103-meter (338 feet) rotor diameter (**Figure 6**). The GE 1.79 MW Xle turbine has a nominal nameplate rating of 1.79 MW, an 80-meter hub height, and a 100-meter (328 feet) rotor diameter. Both turbines begin operation in wind speeds of 3.5 meters per second (m/s), or 7.8 miles per hour (mph), and reach their rated capacity at a wind speed of 11.5 m/s (25.7 mph). The turbine is designed to operate in wind speeds of up to 25 m/s (56 mph).

Each tower will be secured by a concrete foundation that can vary in design 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 with the turbine's control system to signal when sufficient winds are present for operation. Turbines feature variable-speed control and independent blade pitch to assure aerodynamic efficiency.

The electricity generated by each turbine is brought to a pad-mounted transformer where the voltage is raised (stepped up) to power collection line voltage of 34.5 kV. The electricity is collected by a system of underground power collection lines within the Project Area (**Figure 7**). Both power collection lines and communication cables will be buried on private property or public right-of-way.

Each wind turbine will be accessible via all-weather, aggregate-surfaced roads between 16 and 38 feet in width that will connect with public roads. At the point where the access and public roads meet, the communication and power lines will continue as underground feeder lines. The feeder system distributes power to the Project substation. **Figure 7** is a diagram of the path of energy from a wind farm to energy users and **Figure 8** shows a typical wind farm facility layout. The power will be transformed to 230 kV at a collection substation that will be constructed on Section 25 of Township 137 North, Range 96 West (**Figure 3**). The substation will be located along 109th Avenue SW (**Figure 9**) and will be connected to the Belfield to Rhame Transmission Line via an approximately 19-mile overhead transmission line that will be permitted separately.

4.1.1 Wind Energy Center Layout

Brady Wind is developing a wind farm layout that optimizes the wind resource while minimizing the impact on land resources and any potentially sensitive areas. Wind-powered electric generation is entirely dependent on the availability of the wind resource at a specific location. The energy available from the wind increases at the third power of the wind speed. In other words, a doubling of the wind speed will increase the available energy by a factor of eight times. Analysis of wind direction data suggests that the optimal turbine string alignments are generally from southwest to northeast. Design of the turbine array and collection system will minimize energy loss due to wind turbine wakes (e.g., adverse impacts of one turbine on an adjacent turbine) and turbulence, and electrical line losses.

The setbacks used in designing the Project are the most restrictive of those required by Stark County, the PSC, GE, or NEER's internal standards. The Project also complies with or exceeds the following wind energy-specific exclusion areas provided in Section 69-06-08-01 (2):

- 1.1 x height of turbine from interstate and state road rights-of-way
- 1.1 x height of turbine plus 75 feet from centerline of county or maintained township roadways
- 1.1 x height of turbine from railroad right-of-way
- 1.1 x height from 115kV or higher transmission lines
- 1.1 x height from property line of non-participating landowners

Table 10 lists the setbacks utilized in designing the Project layout. The distances are based on the GE 1.715 MW turbine, which has a larger rotor diameter than the GE 1.79 MW turbine model and has a total turbine height (from the bottom of the turbine tower to the top of the blade when vertical) of 475 feet. The Conditional Use Permit (CUP) from Stark County specifies that the Project turbines must not be located within 200 feet of a public road or within 2,000 feet of any existing residence. Brady Wind will comply with all applicable county setbacks.

Table 10. Setback Distances for Wind Turbines

Setback Type	Distance
PSC Exclusion Areas	
Interstate and state road rights-of-way	1.1 x turbine height (475 feet)
Centerline of county or maintained township roadways	1.1 x turbine height plus 75 feet (550 feet)
Railroad rights-of-way	1.1 x turbine height (475 feet)
115kV or higher transmission lines	1.1 x turbine height (475 feet)
Property line of non-participating landowners	1.1 x turbine height (475 feet)
Stark County Setbacks	
Occupied structures and Facilities (residence, commercial building or publicly-used structure)	2,000 feet
Public roads	200 feet (from center of right-of-way)
Above ground communication and electrical lines	200 feet (from center of right-of-way)

Table 10. Setback Distances for Wind Turbines

Setback Type	Distance
Wind Energy Facility Perimeter	2.5 x the rotor diameter of the wind turbine (845 feet for the 1.715 MW turbines and 820 feet for the 1.79MW turbines)
Other	
GE-provided setback from barns, abandoned houses, and roads (more conservative than PSC setback)	1.5 x turbine height (900 feet)

4.2 Associated Facilities

The electricity generated by each turbine is stepped up to a power collection line voltage of 34.5 kV via a pad-mounted transformer at the base of each turbine. The electricity generated at each turbine will be collected by a system of underground power collection lines within the Project Area and brought to the Project collection substation where it will be further raised to 230 kV and transmitted via an approximately 19-mile overhead transmission line to the Belfield to Rhame Transmission Line. A separate application for the transmission line will be submitted to the PSC for a Certificate of Corridor Compatibility and Route Permit. The Project also includes access roads. An O&M building and a temporary 22-acre laydown yard are also required. A temporary 40-acre turbine storage area will be used for storage of turbine components during construction.

A total of nine temporary meteorological towers have been or will be installed for the Project, and one additional permanent meteorological tower will be installed.

4.3 Land Rights

Brady Wind has secured easements in Stark County for the proposed 150 MW Project. Land rights will encompass the proposed wind farm and all associated facilities, including but not limited to wind and buffer easements, wind turbines, access roads, underground collection lines, meteorological towers, and overhead transmission line. The land for the Project substation and O&M building will be purchased.

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5. PROPOSED SITE

5.1 Identification of Project Area

Brady Wind selected the Project Area based on its wind resource, land-use patterns, and low presence of environmentally sensitive features. The Project Area boundary encompasses an area of 29,981 acres (47 square miles). However, the land occupied by turbines and other wind farm infrastructure during operation will be less than 1 percent of this area. It is anticipated that the area of permanent land use during operation will be up to 110 acres for the turbines, aggregate-surfaced access or service roads up to 16 feet wide, electrical junction boxes, one permanent meteorological tower, a collection substation, and O&M building. Total temporary land disturbance during construction for the Project is expected to be up to approximately 1,030 acres, including temporary disturbance due to turbine installation, road construction of roads up to 38 feet wide, collection line trenching, up to nine temporary meteorological towers, and the laydown/turbine storage areas. See **Table 4** in **Section 1.3.1** and **Section 7.0** for a detailed description of the Project Area impacts. **Figure 3** shows the proposed turbine locations, which are subject to shifts during micro-siting to avoid sensitive resources.

5.2 Wind Resource Areas—General

The U.S. Department of Energy's Wind Program and the National Renewable Energy Laboratory published a wind resource map for the state of North Dakota. This resource map shows wind speed estimates at 50 meters above the ground and depicts the resource that could be used for utility-scale wind development. As a renewable resource, wind is classified according to wind power classes, which are based on typical wind speeds. These classes range from Class 1 (the lowest) to Class 7 (the highest). In general, at 50 meters, wind power Class 4 or higher can be useful for generating wind power with large turbines. The map indicates that North Dakota has wind resources consistent with utility-scale production. Good-to-excellent wind resource areas are located throughout North Dakota; winds within the Project vicinity generally consist of Class 4 and 5 winds (USDOE 2014).

5.3 Wind Characteristics in Project Area

Brady Wind has utilized wind data from meteorological towers in the Project Area to characterize the wind resource. Brady Wind has secured information from other long-term references to aid in correlating the wind data on-site, including 30-year re-analysis data processed by the National Aeronautics and Space Administration (NASA) and processed by NEER. Industry standard software, such as Windographer, Openwind, WRF, and ArcGIS as well as internal NEER tools were used to analyze the available wind data and make corrections for site effects (topography, surface roughness, and obstacles) to produce a site independent characterization of the local wind climate. The resulting local wind climate was applied in conjunction with the Project Area effects to predict the spatial wind variations in the Project Area. Various site layouts and wind turbine generator parameters can be tested to predict energy production and array efficiency in order to optimize the site layout and turbine selection. Project site data have been compared to regional wind measurements using a parallel time period. Based on analysis by the internal wind resource group Wind Logics within NEER, there

is good correlation between the long-term wind measurements and the short-term Project-specific wind measurements.

6. ENGINEERING AND OPERATIONAL DESIGN ANALYSIS

This section provides a summary description of the Project, which includes a description of the Project layout, turbines, electrical system, and associated facilities. Additional design components addressed in this section are Project construction, schedule, operation, and decommissioning of the site. There are other turbines that are feasible choices for the Project Area that are available from various manufacturers and Brady Wind wishes to reserve the right to select alternative turbines representative of the 1.715 MW and 1.79 MW class of wind turbines. Turbine type may affect the number and configuration of the turbine array. Details for the GE 1.715 MW and 1.79 MW Xle turbines are presented below.

6.1 Project Layout and Associated Facilities

The Project will consist of an array of wind turbines and transformers. The turbines will be interconnected by fiber optic communication cables and 34.5 kV power collection cables within the wind farm.

Land will be graded on-site for the turbine pads. Drainage systems, access roads, storage areas, and construction laydown/turbine storage areas will be installed as necessary to fully accommodate all aspects of Project construction, operation, and maintenance.

Electrical system design and interconnection details will be determined as a result of studies and discussions with Basin. The Project includes a computer-controlled communications system that permits automatic independent operation, and remote supervision, thus allowing the simultaneous control of many wind turbines. Brady Wind will be responsible for operation and maintenance for the life of the Project and will contract with an appropriate supplier of O&M services at the time of operation, to assure timely and efficient operations.

6.2 Description of Wind Turbines

The Project is currently designed to include a total of 87 turbines: 80 GE 1.715 MW and 7 GE 1.79 MW Xle turbines. Brady Wind is seeking flexibility from the PSC 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.

6.2.1 Turbine

Both turbine models would have a hub height of 262 feet (80 meters); the 1.715 MW turbines would measure 431 feet from the base of the tower to the tip of the upright blade (**Figure 6**), and the 1.79 MW turbines would measure 427 feet. Both turbine models begin operation in wind speeds of 3.5 m/s (7.8 mph) and reach the rated capacity at a wind speed of 11.5 m/s (25.7 mph). The turbines are designed to operate in wind speeds of up to 25 m/s (56 mph).

The turbines have active yaw and pitch regulation and asynchronous generators. The turbines use a bedplate drive train design, where all nacelle components are joined on common structures to improve durability.

The turbines have Supervisory Control and Data Acquisitions (SCADA) communication technology to allow control and monitoring of the wind farm. The SCADA communications system permits automatic, independent operation and remote supervision, thus allowing the simultaneous control of many wind turbines. Operations, maintenance, and service for the Project will be structured so as to provide for timely and efficient operations. The computerized data network will provide detailed operating and performance information for each wind turbine. Brady Wind will maintain a computer program and database for tracking each wind turbine's operational history.

Other specifications of the turbines include:

- Rotor blade pitch regulation
- Gearbox with three-stage planetary/helical system
- Double fed three-phase asynchronous generator and an asynchronous 4-pole generator with a wound rotor
- A braking system for each blade (three self-contained systems) and a fail-safe disc brake
- Yaw systems are electromechanically driven

6.2.2 Rotor

The rotor consists of three blades mounted to a rotor hub. The hub is attached to the nacelle, which houses the gearbox, generator, brake, cooling system, and other electrical and mechanical systems. The 1.715 MW turbines have a 103-meter (338 feet) rotor diameter, with a swept area of 8,332 square meters (89,685 square feet) and a rotor speed of 17.14 revolutions per minute (rpm). The 1.79 MW turbines have a 100-meter (328 feet) rotor diameter, with a swept area of 5,346 square meters (57,544 square feet) and a rotor speed of 16.8 rpm.

6.2.3 Tower

The towers will all be conical tubular steel with a hub height of up to 80 meters (262 feet). The portion of the foundation that is above ground is 15 to 16 feet wide at the base of the tower. The turbine towers, on which the nacelle is mounted, consist of three to four sections manufactured from certified steel plates. All welds are made by automatically controlled power welding machines and ultrasonically inspected during manufacturing per American National Standards Institute specifications. All surfaces are sandblasted and multi-layer coated for protection against corrosion. Access to the turbine is through a lockable steel door at the base of the tower.

6.2.4 Lightning Protection

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

6.3 Description of Electrical System

At the base of each turbine, a step-up transformer will be installed to step up the voltage 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 that are generally

located alongside the Project access roads. Collection lines will be buried 42 to 48 inches deep and will not affect farming equipment. At the point where the access and public roads meet, the collection system will continue as underground lines. All the collection system cables will terminate at an on-site Project collector substation, which includes a power transformer to step up the voltage from 34.5 kV to 230 kV and provides the necessary protection and control for interconnection to the transmission grid. The Project substation (**Figure 9**) will be located along 109th Avenue SW in the northwest quarter of Section 25 in Township 137 North, Range 96 West. The Project substation will be connected to the Belfield to Rhame Transmission Line via an approximately 19-mile 230-kV overhead transmission line.

All utility protection and metering equipment will meet Brady Wind and National Electric Safety Code standards for parallel operations. The construction manager will ensure that proper interconnection protection is established.

6.4 Project Construction

Several activities must be completed prior to the proposed commercial operation date. The majority of the activity relates to equipment ordering lead-time, as well as design and construction of the facility. Below is a preliminary schedule of activities necessary to develop the Project. Pre-construction, construction, and post-construction activities for the Project include:

- Ordering of all necessary components including towers, nacelles, blades, foundations, and transformers
- Final turbine micro-siting
- Complete survey to micro-site locations of structures and roadways
- Soil borings, testing, and analysis for proper foundation design and materials
- Complete construction of access roads, to be used for construction and maintenance
- Construction of underground feeder lines
- Design and construction of the Project substation
- Installation of tower foundations
- Installation of underground and aboveground cables
- Tower placement and wind turbine setting
- Acceptance testing of facility
- Commencement of commercial operation

Private turbine access roads will be built adjacent to the towers, allowing access to the turbines during and after construction. Access roads will be 16 feet wide¹ and will have an aggregate surface as cover, and will be adequate to support the size and weight of maintenance vehicles. The specific turbine placement will determine the amount of private roadway that will be constructed for the Project.

During the construction phase, several types of light, medium, and heavy-duty construction vehicles will travel to and from the site, as well as private vehicles used by construction personnel. Brady Wind estimates that there will be approximately 50 additional trips per day in the area during peak construction periods. That volume will occur during the peak time when the

¹ Roads required to support crane access to turbines during operation will remain up to 38 feet wide; all other roads may be built at 16 feet wide or reduced later to 16 feet.

majority of the road, foundation and tower assembly are taking place. At the completion of each construction phase, this equipment will be removed from the site or reduced in number.

6.4.1 Construction Management

An EPC contractor will be primarily responsible for the construction management of the Project. The EPC contractor will use the services of local contractors, where possible, to assist in Project construction. The EPC contractor, in coordination with local contractors, will undertake the following activities:

- Securing building, electrical, grading, road, and utility permits
- Perform detailed civil, structural and electrical engineering
- Schedule execution of construction activities
- Forecast Project labor requirements and budgeting

The EPC contractor also serves as key contact and interface for subcontractor coordination. The EPC contractor will oversee the installation of communication and power collection lines as well as the substation. The EPC contractor will also oversee the installation of roads, concrete foundations, towers, and blades, 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 local contractors. The construction consists of the following tasks:

- Site development, including roads
- Foundation excavation
- Concrete foundations
- All electrical and communications installation
- Tower assembly and machine erection
- System testing

The construction team will be on site to handle materials purchasing, construction, quality control, testing, and start-up. The EPC contractor will manage local subcontractors to complete all aspects of construction. Throughout the construction phase, ongoing coordination will occur between the Project development and the construction teams. 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 is integrated into the construction phase of the Project. The construction manager and the O&M staff manager will work together continuously to ensure a smooth transition from construction through wind farm commissioning and, finally, operations.

6.4.2 Foundation Design

The wind turbines' freestanding 80-meter (262-foot) tubular towers will be connected by anchor bolts to an underground concrete foundation. Geotechnical surveys, turbine tower load specifications, and cost considerations will dictate final design parameters of the foundations. Foundations for similar sized turbines are generally octagonal, approximately 40 to 60 feet across at the base, and extend seven to 10 feet below grade. The wind turbine foundation

design shall be prepared by a registered professional engineer licensed to practice in the State of North Dakota.

6.4.3 Civil Works

Completion of the Project will require various types of civil works and physical improvements to the land. These civil works may include the following:

- Improvement of existing public access roads to the Project Area
- Construction of roads adjacent to the wind turbine strings (turbine access roads) to allow construction and continued servicing of the wind turbines
- Clearing and grading for wind turbine tower foundation installations
- Installation of underground cabling for connecting the individual wind turbines
- Installation of an on-site feeder system for connecting wind turbine strings for delivery to the electricity collection/metering location
- Installation of any site fencing and security
- Restoration and re-vegetation of disturbed land when construction activities are completed

Any improvements to existing public access roads will consist of re-grading and filling of the surface to allow access in inclement weather. No asphalt or other paving is anticipated. Turbine access roads will be constructed along turbine strings or arrays. These roads will be sited in consultation with local landowners and completed in accordance with local building requirements where these roads intersect with public roads. Turbine access roads will be located to facilitate both construction (cranes) and continued operation and maintenance. Siting roads in areas with unstable soil will be avoided wherever possible. All roads will include appropriate drainage and culverts while still allowing for the crossing of farm equipment. The roads will be 16 to 38 feet wide and will be covered with road base designed to allow passage under inclement weather conditions. The roads will consist of graded dirt and will be covered with an aggregate surface. Once construction is completed, the roads will be re-graded, filled, and dressed as needed.

6.4.4 Commissioning

The Project will be commissioned after completion of the construction phase. The Project will undergo detailed inspection and testing procedures prior to final turbine commissioning. Inspection and testing will occur for each component of the wind turbines, as well as the communication system, meteorological system, obstruction lighting, high voltage collection and feeder system, and the SCADA system.

6.4.5 Project Operation and Maintenance

Brady Wind will operate the wind energy facility for the life of the Project. Approximately 8 people will be employed on-site to operate and maintain the facility. The O&M staff will have full responsibility for the facility to ensure O&M are conducted consistent with the approved permits, prudent industry practice, and equipment manufacturer recommendations for the turbines.

In addition to the on-site O&M staff, NEER's Fleet Performance and Diagnostic Center (FPDC) will control, monitor, operate, and maintain the Project remotely by means of a SCADA

computer software program. The operation of the entire wind farm, including discrete settings for individual turbines, is managed by the onsite operations staff and remotely via the FPDC.

The SCADA system offers access to wind turbine generation or production data, availability, meteorological, and communications data, as well as alarms and communication error information. Performance data and parameters for each machine (generator speed, wind speed, power output, etc.) can also be viewed, and machine status can be changed. There is also a “snapshot” facility that collects frames of operating data to aid in diagnostics and troubleshooting of problems.

The primary 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
- Provide information reporting on a regular basis

Maintenance Schedule

Brady Wind’s on-site operations staff will be responsible for the maintenance of the Project on a daily basis. This monitoring will be accompanied by visual inspections by the on-site operating staff. Several daily checks will be made in the first three months of commercial operation to verify that the Project is operating within expected parameters. Once installed, the Project service and maintenance is carefully planned and divided into the following intervals:

- A. First Service Inspection.** The first service inspection will take place one to three months after the turbines have been commissioned. At this inspection, particular attention is paid to tightening all bolts by 100 percent, a full greasing, and filtering of gear oil.
- B. Semiannual Service Inspection.** Regular service inspections commence six months after the first inspection. The semiannual inspection consists of lubrication and a safety test of the turbine.
- C. Annual Service Inspection.** The annual service inspection consists of a semi-annual inspection plus a full component check. Bolts are checked with a torque wrench. The check covers 10 percent of every bolt assembly. If any bolts are found to be loose, all bolts in that assembly are tightened 100 percent and the finding is recorded.
- D. Two-Year Service Inspection.** The two-year service inspection consists of the annual inspection, plus checking and tightening of terminal connectors.

E. Five-Year Service Inspection. The five-year inspection consists of the annual inspection, an extensive inspection of the wind braking system, and checking and testing of oil and grease, balance check, and tightness of terminal connectors.

6.4.6 General Maintenance Duties

O&M field duties include performing all scheduled and unscheduled maintenance, including periodic operational checks and tests, regular preventive maintenance on all turbines, related plant facilities and equipment, safety systems, controls, instruments, and machinery, including:

- Maintenance of the wind turbines and of the mechanical, electrical power, and communications system
- 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 the 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 Project substation
- Provision of all labor, services, consumables, and parts required to perform scheduled and unscheduled maintenance on the wind farm, including repairs and replacement of parts and removal of failed parts
- Cooperation with avian and other wildlife studies as may be required, to include reporting and monitoring
- Management of lubricants, solvents, and other hazardous materials as required by local and/or state regulations
- Maintenance of appropriate levels of spare parts in order to maintain equipment. Order and maintain spare parts inventory
- 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

Brady Wind affiliate NextEra Energy Operating Services will also remotely monitor the Project on a daily basis.

6.4.7 Operations and Maintenance Facility

The O&M facility will be constructed adjacent to the substation along 109th Avenue SW in the northwest quarter of Section 25, Township 137 North, Range 96 West, and will occupy approximately 5 acres.

6.5 Decommissioning and Restoration

Brady Wind will develop a Decommissioning Plan in accordance with NDCC 49-02-27, NDAC 69-09-09, and Stark County Ordinance 6.19.7. Additionally, Brady Wind has a contractual obligation to the landowners to remove the wind facilities, including foundations to a depth of

three feet below ground, when the wind easement expires and to restore the area to the same physical condition that existed immediately before the construction of the turbines. Brady Wind also reserves the right to explore alternatives regarding Project decommissioning at the end of the Project Certificate term. For example, retrofitting the turbines and power system with upgrades based on new technology may allow the wind farm to produce efficiently and successfully for many more years. Based on estimated costs of decommissioning and the salvage value of decommissioned equipment, the salvage value of the wind farm is expected to exceed the cost of decommissioning.

7. ENVIRONMENTAL ANALYSIS

This section provides a description of the environmental conditions that exist within the Project Area. Consistent with the North Dakota Energy Conversion and Transmission Facility Siting Act, exclusion and avoidance criteria, as well as selection and policy criteria, were considered in the selection and design of the site. To support this siting process, maps of the Project Area were generated that indicate the presence or absence of many of the criteria highlighted in NDCC 69-06-08-01.

7.1 Description of Environmental Setting

The Project Area is located in southern Stark County in western North Dakota, a primarily rural agricultural area located approximately 15 miles south of Dickinson, North Dakota.

7.2 Demographics

7.2.1 Description of Resources

The proposed Project is located in the southern portion of Stark County, North Dakota, a primarily rural agricultural region. The Project Area is located in southcentral Stark County between U.S. Highway 85 to the west and State Highway 8 to the east. State Highway 22 crosses through the center of the Project Area. There are no incorporated communities within the Project Area. The Project Area is approximately two miles and a half mile from the small unincorporated communities of Lefor and Scheffield, respectively (part of the Dickinson Micropolitan Statistical Area, 2010 population 24,982; U.S. Census Bureau 2015b). The community of New England (2010 population 600) is located approximately six miles south of the Project Area (U.S. Census Bureau 2015b). There are a few homes and agricultural operations, and there is no indication of any new residential construction within the Project Area.

Stark County had a population of 24,199 persons in 2010, a 6.5 percent increase from the 2000 population (U.S. Census Bureau 2015b). The county contains 1,335 square miles of land, with a density of approximately 18 persons per square mile. The majority of the county population and the Dickinson Micropolitan Statistical Area (73 percent and 72 percent, respectively) reside in Dickinson, located approximately 15 miles north of the Project (U.S. Census Bureau 2015b). The population density within the rural area surrounding the Project Area is much lower than the county average. Approximately 94 percent of the population of Stark County is composed of white persons who are not of Hispanic or Latino origin. As of 2014, it is estimated that approximately 13 percent of the county population is 65 years or older, while approximately 8 percent of the population is under five years of age (U.S. Census Bureau 2015b).

According to the 2013 U.S. Census Bureau American Community Survey (U.S. Census Bureau 2015a) over 20 percent of the county workforce worked in education, health, and social services, and over 14 percent worked in agriculture, forestry, fishing and hunting, and mining. Retail trade accounted for approximately 10 percent of the jobs in the county. Per capita income estimated in 2013 was \$31,412 and the median household income was \$62,559 (U.S. Census Bureau 2015a). In 2013, approximately 7.6 percent of the county population lived below the

poverty level (U.S. Census Bureau 2015a), compared to 15.4 percent nationwide (U.S. Census Bureau 2015c).

Agriculture continues to play a significant role in the county's land use and economy. In 2012, there were 837 farms in Stark County, comprising approximately 97 percent of the land area. According to the 2012 Census of Agriculture (USDA 2012), total market value of agricultural products produced in Stark County was \$152,583,000, 78 percent of which was from crops and 22 percent from livestock sales. The primary livestock is cattle and the principal crops include wheat and spring wheat. Winter and durum wheat are also grown.

7.2.2 Impacts

No residents would be displaced due to the Project. The proposed Project would have positive economic impacts for the local population, including lease and royalty payments for participating landowners, employment, and property and sales tax revenue.

Brady Wind estimates that the Project will provide over \$20 million in tax revenue to Stark County over 30 years. This revenue includes \$8.5 million to support the New England School District, \$2 million in road improvements, and \$500,000 to support emergency services. In addition, the Project will create approximately 200 construction jobs and up to 10 permanent full-time jobs. The Project will also provide over \$24 million in payments to participating landowners over 30 years, which will not only benefit those landowners, but also the local economy as that money is reinvested in local goods and services.

Up to 110 acres of the total Project Area will be permanently affected due to conversion to turbine sites, access roads, a collector substation, O&M building, and meteorological towers. Landowner compensation has been established under individual lease agreements, and includes compensation for crop damage during surveys and construction. In general, agricultural areas surrounding each turbine can still be farmed. In addition, in an environment of uncertain and often declining agricultural prices and yields, the supplemental income provided to farmers from wind energy leases is expected to provide stability to farm incomes and thus will help assure the continued viability of farming in the Project Area. Project construction will not cause additional impacts to leading industries within the Project Area. There is no indication that any minority or low-income population is concentrated in any one area of the Project, or that the wind turbines will be placed in an area occupied primarily by any minority group.

To the extent that local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in Stark County will contribute to the total personal income of the region. Additional personal income will be generated for residents in the county as well as the state by circulation and recirculation of dollars paid out by the applicant as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies and other products and services will benefit businesses in the county and the state.

Up to 200 construction workers are expected to be required for six to eight months for construction of the Project. It is likely that general skilled labor is available either in the county or the state to serve the basic infrastructure and site development needs of the Project.

Specialized labor will be required for certain components of wind farm development. It is likely that this labor will be imported from other areas of the state or from other states, as the relatively short duration of construction does not warrant special training of local or regional labor. Balancing the use of local contractors and imported specialized contractors will likely alleviate any labor relations issues.

No effects on permanent housing are anticipated. During construction, out-of-town laborers will likely use lodging facilities in and around the city of Dickinson. Operation and maintenance of the facility will require six to 10 full-time employees, most of which are expected to reside locally. Sufficient permanent housing is available within the county to accommodate these new employees.

Long-term beneficial impacts to the county's tax base as a result of the construction and operation of the wind farm will contribute to improving the local economy in this area of North Dakota. The development of wind energy in this region has been important in diversifying and strengthening the economic base of southeast North Dakota. In addition, establishing the central region of North Dakota as an important producer of renewable energy, such as wind, has spurred the development of wind-related businesses in the area and in turn contribute to the economic growth in the region; there are at least four wind energy-related manufacturing facilities in North Dakota (AWEA 2015).

A previous case study evaluated the socioeconomic impacts of a wind energy facility constructed in 2007 and 2008 in Cavalier County, northeastern North Dakota (Leistriz and Coon 2009). The study authors stated that the project area was typical of Great Plains communities where many similar wind energy projects are being constructed. Leistriz and Coon (2009) found that the 159 MW project resulted in a peak workforce of 269 workers during construction, 10 permanent jobs, and \$1.4 million in annual expenditures to local businesses and households. This includes payments to landowners totaling \$413,000 the first year, annual local property taxes to the County and school district, and direct payments for wages and materials in Cavalier County and adjacent counties. **Table 11** summarizes the economic impacts from the construction and operation of the project.

Table 11. Economic Impacts of Wind Project in Cavalier County, ND

Impact	Construction (one-time) in millions of dollars	Operation (annual) in millions of dollars
Direct	\$56.4	\$1.4
Secondary (indirect and induced)	\$169.3	\$3.0
Total	\$225.7	\$4.4

During construction, temporary housing in Cavalier County was full, and local service businesses (hotels, restaurants, etc.) experienced a short-term increase. An increase in traffic on local roadways during shift changes was noticeable. There were little or no impacts to public services, as only five percent of the construction workers brought their families and most of the long-term jobs were filled locally. There were no added costs to the County, school district, or state. The increase in property taxes to the school district and the County were largely due to

payments from the project, but also due to an anticipated increase in residential and property values (Leistriz and Coon 2009).

On a per-MW basis, the project's economic impacts were: \$8,900 in local expenditures during construction; \$2,600 per year in landowner payments; and \$2,900 per year in property taxes. Project-specific impacts would vary based on the local availability of materials, services, and labor. Assuming comparable economic impacts for the 150 MW Brady Project, the Project would result in approximately \$1,335,000 being spent locally during construction and a total of \$825,000 per year in landowner payments and property taxes during operation.

7.2.3 Mitigative Measures

Socioeconomic impacts associated with the Project will be primarily positive, with an influx of wages and expenditures made at local businesses during the Project construction and an increase in the county's tax base due to construction and operation of the wind turbines and associated infrastructure. In addition, the lease payments paid to landowners will offset potential financial losses associated with removing land from agricultural production.

7.3 Land Use

7.3.1 Description of Resources

The land in Stark County within the Project Area boundary is primarily agricultural with scattered farmstead residences. The Project will be located on privately-owned land in southern Stark County, approximately 15 miles south of Dickinson. Brady Wind proposes to install a 150-MW wind generating facility, consisting of up to 87 wind turbines within a 47-square mile (29,981-acre) Project Area. Current land use within the Project Area is primarily agricultural, supporting both crops and livestock grazing. No city limits are within the Project Area. The Project Area is not within any known military installation (**Appendix B**) or near an ICBM launch or launch control facility.

Natural resource development in the Project Area consists primarily of agriculture. There are coal reserve/deposits and sand and gravel sites within the Project Area. Agricultural production and limited oil/gas production are anticipated to continue in the future.

Table 12 and **Figure 13** identify current land use in the Project Area based on 2011 US Geological Survey (USGS) National Land Cover data. Land use in the Project Area is dominated by cultivated crops (55 percent), followed by grassland/herbaceous (25 percent). Pasture/hay land and developed, open space land are also present but limited, accounting for 14 and 4 percent of the Project Area, respectively. Forest, wetland, and water categories were each one percent or less of the Project Area.

Table 12. Land Cover within the Project Area

Land Cover	Acreage	Percent of Project Area
Cultivated Crops	16,436	55
Grassland/Herbaceous	7,465	25
Pasture/Hay	4,307	14
Developed, Open Space	1,222	4
Shrub/Scrub	271	Less than 1

Table 12. Land Cover within the Project Area

Land Cover	Acreage	Percent of Project Area
Woody Wetlands	213	Less than 1
Deciduous Forest	30	Less than 1
Open Water	29	Less than 1
Emergent Herbaceous Wetlands	21	Less than 1
Developed, Low Intensity	20	Less than 1
Barren Land	4	Less than 1
Developed, Medium Intensity	2	Less than 1
Evergreen Forest	2	Less than 1

Source: Homer et al. 2015.

The National Resource Conservation Service (NRCS) administers a number of conservation-based programs for private landowners. The Conservation Reserve Program (CRP) conserves soil and water resources and provides wildlife habitat by removing enrolled tracts from agricultural production, generally for a period of 10 years. These tracts cannot be hayed, tilled, seeded, or otherwise disturbed without the authorization of the NRCS. Based on NCED data, there are no lands within the Project Area enrolled in CRP or other NRCS easements, although this must be confirmed with participating landowners.

The North Dakota Game and Fish Department (NDGF) administers and regulates the Private Lands Open to Sportsmen (PLOTS) program to allow hunting access on private lands through lease agreements with landowners. PLOTS allow for walk-in hunting during the legal hunting season. No properties that participate in PLOTS have been identified within the Project Area.

7.3.2 Impacts

The development of the Project will not result in a significant change in land use. The development of the Project will not displace any residents or existing or planned industrial facilities. Wind turbines will be sited a minimum of 2,000 feet from occupied residences. The area will largely retain the rural characteristics of the vicinity. At other wind developments in North Dakota, landowners frequently plant crops and/or graze livestock to the edge of the access roads and turbine pads. The access roads will be between 16 and 38 feet wide² and low profile to allow cross-travel by farm equipment. Brady Wind will work closely with landowners in locating access roads to minimize land use disruptions to the extent possible. Consideration will be taken in locating access roads to minimize impact on current or future row crop agriculture and environmentally sensitive areas. During the construction of the wind power facilities, additional areas may be temporarily disturbed for contractor staging areas and underground power lines. These areas will be graded to original contour and, if necessary, reseeded with appropriate vegetation.

It is estimated that installation of up to 87 turbines and the associated access roads, collection substation, O&M building, and meteorological towers will result in the conversion of up to 110 acres of land. An additional 921 acres are estimated to be temporarily disturbed during the construction phase of the Project, primarily for installation of the turbines, road construction,

² Roads required to support crane access to turbines during operation will remain up to 38 feet wide; all other roads may be built at 16 feet wide or reduced later to 16 feet.

collection line trenching, a 22-acre laydown/staging area, a 40-acre turbine storage area, and nine temporary meteorological towers.

7.3.3 Mitigative Measures

Brady Wind is working closely with landowners and seeking input from local, state, and federal agencies in locating wind turbines and access roads to minimize land use disruptions and impacts to environmentally sensitive areas to the extent possible. Operation of the wind farm will not change the land use in the Project Area. The proposed land use will not involve any ongoing industrial use of non-renewable resources or emissions into the environment.

7.4 Public Services

7.4.1 Description of Resources

Local Services

The Project is located in a sparsely populated, rural area in western North Dakota. There is an established transportation and utility network that provides access and necessary services to the small cities, homesteads, and farms existing near the Project. There are no incorporated communities within the Project Area. The closest communities are the small unincorporated communities of Lefor and Scheffield, located approximately 2 miles east and 0.5 miles north, respectively (approximately 1.5 miles and 2.5 miles, respectively, from the nearest planned Project turbines). Dickinson, the county seat, is located approximately 15 miles north of the Project Area and New England is approximately 6 miles south of the Project Area. Dickinson provides sanitary sewer, water, utility services, educational facilities, and recreational facilities and parks to its residents and visitors. Dickinson's local services include emergency services, ambulance service, a hospital, clinics, a landfill, and a police department. New England provides many of these services for the homes in the Project Area, and the Project Area is located in the New England School District.

Electrical Service

Electrical service is provided by Montana-Dakota Utilities Company, and rural service by Roughrider Electric Cooperative Inc. (Stark County 2010a).

Roads

County and township (section line) roads characterize the existing roadway infrastructure in and around the Project. The Project Area is accessed via I-94, U.S. Highway 85, State Highway 22, State Highway 8, and other local two-lane paved and gravel county roads.

Traffic

Existing traffic volumes on the area's major roadways are documented in **Table 13** and **Figure 11**. Determining the specific capacity of any highway is a complex process. However, general estimates are used for planning purposes. For purposes of comparison, the functional capacity of a two-lane paved rural highway is approximately 5,000 vehicles per day, or Average Annual Daily Traffic (AADT).

Additional county and township roads run through the Project Area, but no vehicle count data are available for them. In general, the North Dakota Department of Transportation (NDDOT)

indicated that roads with vehicle counts under 100 AADT are rarely counted. According to NDDOT, vehicle counts on routes with no count data are likely lower than those with count data.

Table 13. Existing Daily Traffic Levels

Roadway Segment	Existing AADT/Commercial Truck Traffic
Interstate 94 west of State Highway 22	12,990/5,865
Interstate 94 east of State Highway 22	10,990/2,330
State Highway 22 north of Interstate 94	7,245/2,465
State Highway 22 south of Interstate 94	4,425/475
State Highway 22 through New England	1,530/215
44 th Street west of State Highway 22	105/-
50 th Street east of State Highway 22	50/-
51 st Street west of State Highway 22	75/-

Source: 2014 Traffic Volumes (NDDOT 2014).

Water Supply

The Southwest Water Authority supplies potable water to communities within and near the Project Area via the Southwest Pipeline Project. Brady Wind would likely obtain water for construction from the Southwest Water Authority; water would be trucked to the construction site. Water for the O&M facility may be obtained from the Southwest Water Authority, from the city of New England, or via an on-site water well. Brady Wind will consult with the Southwest Water Authority to determine the location of Southwest Pipeline Project facilities within the Project Area. If Project facilities would cross the Southwest Pipeline Project, Brady Wind would obtain a Southwest Pipeline crossing permit from the Southwest Water Authority.

Communications

In October 2015, Brady Wind conducted a preliminary telecommunications study to identify all non-federal microwave telecommunication systems within the Project Area. There are several beam paths crossing the Project Area (**Appendix B**).

With the switch to digital television in 2009 throughout the United States, the concern of ghost images and flickering that may be caused by wind turbine interference with analog signals is no longer an issue.

Federally operated communications systems can be identified through consultation with the National Telecommunications and Information Administration (NTIA). The NTIA was contacted in October 2015 but no response has been provided to date.

7.4.2 Impacts

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

Local Services

No impact is expected to local services.

Electrical Service

The Project will require station service from the local electric provider when the Project is not generating electricity.

Roads

Construction of the Project will require approximately 41 miles of new aggregate-surfaced access roads. During operation of the Project, the access roads will be used by operation and maintenance crews while inspecting and servicing the wind turbines. The access roads will be between towers, offset as necessary to allow for adequate crane access. One road will be required for each string of turbines. Although a 38-foot wide temporary disturbance area is likely during construction, the permanent access roads will primarily be 16 feet wide and low profile to allow cross-travel by farm equipment.

Traffic

There will be a temporary increase in truck traffic during construction activities. The maximum construction workforce is expected to generate approximately 50 additional vehicle trips per day on each road within the Project Area. Using any combination of state and county highways and other township roads throughout the Project Area, the traffic impacts are considered negligible. Approximately 30 concrete trucks will be required to pour the foundation for each turbine. This is typically completed within two days. While there may be some noticeable increase in heavy vehicle traffic in discrete locations for limited amounts of time, for the Project Area as a whole, the capacity of route and level-of-service to the traveling public will be negligible as any combination of state and county highways and other township roads throughout the Project Area would be used.

Truck access to the Project site is provided by Highway 22, which runs north and south through the center of the Project Area. A preliminary haul route plan from GE indicating the primary roads anticipated to be used for transporting turbines within the Project Area is shown on **Figure 11**. Specific additional truck routes will be dictated by delivery location. Additional operating permits will be issued by the State or County for over-sized truck movements.

Water Supply

Construction and operation of the Project will not significantly impact local water supply. Construction of the Project will require approximately three million gallons of water for foundations, backfill, and compaction; five million gallons of water for road construction and civil infrastructure; and 10 million gallons of water for dust control. Construction water estimates are subject to change due to final site investigation and weather. The construction water will be brought on-site via trucks, most likely from the Southwest Water Authority, the city of Dickinson, or the city of New England. Water for operation of the O&M facility may be obtained from the Southwest Water Authority or via an on-site water well. The abandonment of wells is not required for the Project. The Project will not require appropriation of surface water or permanent dewatering. Temporary dewatering of groundwater may be required during construction of turbine foundations.

Communications

Telephone and fiber optic cables within the Project Area will be located in the field by the respective utility companies prior to construction and will not be negatively affected during construction.

No response has been received yet from the NTIA. No impacts to FCC-licensed microwave beams are anticipated from the Project turbines because a setback of blade length (51.5 meters) plus 10 meters (total 61.5 meters, or 202 feet) has been incorporated in the turbine layout.

The extent of the interference created by wind turbines on AM and FM radio and television has been gradually diminished over the past decade due to advances in turbine manufacturing and transmitter/receiver antenna design. This has reduced the impact on AM and FM radio systems to the point where only small degradation of signal is noticed a few meters from a turbine location. Coverage of AM and FM radio services are not expected to be impacted by the wind farm because turbines will be constructed a sufficient distance from each dwelling. With the switch to digital television in 2009, the concern of ghost images and flickering caused by wind turbine interference with analog signals is no longer an issue.

7.4.3 Mitigative Measures

Construction and operation of the Project will be in accordance with all associated local, state, and federal permits and laws, as well as industry construction and operation standards. Due to the minor impacts expected on the existing communications infrastructure during Project construction and operation, additional mitigation measures are not required.

Local Services

With the addition of substation and transmission capacity, no impact to local services is anticipated, and no mitigation is required.

Electrical Service

Brady Wind will purchase station service from Roughrider Electric Cooperative, which will suggest appropriate configurations for the electrical system that Brady Wind will abide by to prevent impacts to the transmission system. Brady Wind has established a setback of 475 feet (110 percent the turbine height) from existing transmission lines (**Table 10**). No additional mitigation is necessary.

Roads

Brady Wind is working closely with local landowners to locate access roads in order to minimize land-use disruptions to the extent possible. The preliminary layout of the turbines and access roads is shown in **Figure 3**.

Traffic

The capacity of any route and level-of-service to the traveling public will not be affected and as such, no mitigation is necessary.

Water Supply

The abandonment of wells is not required for the Project. However, in the event wells are abandoned, they will be sealed as required by North Dakota law. If temporary dewatering of groundwater is required during construction activities, discharge of dewatering fluid will be conducted under the requirements of the National Pollutant Discharge Elimination System (NPDES) permit and Storm Water Pollution Prevention Plan (SWPPP).

Communications

Collection and telecommunication lines will be buried underground to avoid collisions, to the extent practicable. An underground utilities locator company will be contacted prior to construction to locate and avoid underground facilities. To the extent Project facilities cross or otherwise affect existing communications systems, Brady Wind will enter into agreements with service providers as necessary to avoid interference with their facilities.

7.5 Human Health and Safety

7.5.1 Description of Resources

Air Traffic

There is one public airport within 6 nautical miles of the Project Area – the Dickinson – Theodore Roosevelt Regional Airport (FAA ID KDIK); there are no private airports/airstrips within 6 nautical miles of the Project Area. Nautical miles are the standard measure for aviation; 1 nautical mile is equal to 1.15 statute miles. The nearest airport certified for commercial carrier operations is the Dickinson – Theodore Roosevelt Regional Airport, located 3.5 miles south of Dickinson and approximately 6 nautical miles north of the Project Area.

Federal Radar Interference

Wind turbines may interfere with radar systems and airspace navigation. Tetra Tech queried the online Department of Defense (DoD) Preliminary Screening Tool to obtain a preliminary review of potential impacts to Long Range Radar (FAA 2015). The latitude and longitude of four points encompassing the Project Area were submitted for review.

The Federal Aviation Administration (FAA) reviews potential impacts to DoD radar as part of its aviation hazard review of structures that file a Notice of Proposed Construction or Alteration (FAA Form 7460-1). The FAA will request that the DoD and the U.S. Department of Homeland Security (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 to the radar, and the number and configuration of the turbines.

The Project is not anticipated to impact Air Defense and Homeland Security radars. The results of the Preliminary Screening Tool indicate that the entire Project Area appears as green on the map produced by the screening tool (**Appendix B**).

National Weather Service Radar

The results of the Preliminary Screening Tool indicate that no impacts are to Weather Surveillance Radar—1988 Doppler (WSR-88D) weather radar operations. The National Oceanic and Atmospheric Administration would not perform a detailed analysis, but that agency

requested that they be made aware of the Project. The entire search area appears as green on the map produced by the screening tool (**Appendix B**).

Military Training Routes and Special Use Airspace

From the results of the Preliminary Screening Tool it was determined that impacts to military airspace are unlikely (**Appendix B**).

Electromagnetic Fields

Use of electricity in our everyday lives creates electric and magnetic fields (EMF). Electric and magnetic fields occur both naturally and from man-made sources. Power lines and utility facilities are among several sources of EMFs. People are exposed to EMF from many sources at many different levels and durations throughout their daily environments. These sources include kitchen and home appliances, wiring in buildings, power lines and utility facilities, and electrical equipment and devices we use at work. Examples of natural sources of EMF include static electricity and the earth's static magnetic field which guides a compass needle.

Shadow Flicker

A wind turbine's moving blades can cast a moving shadow on locations within a certain distance of a turbine. These moving shadows are called shadow flicker, and can be a temporary phenomenon experienced by people at nearby residences or public gathering places. The impact area depends on the time of year and day (which determines the sun's azimuth and altitude angles) and the wind turbine's physical characteristics (height, rotor diameter, blade width, and orientation of the rotor blades). Shadow flicker generally occurs during low angle sunlight conditions, typical during sunrise and sunset times of the day.

Hazardous Materials / Hazardous Waste

The site is located in a relatively rural area of North Dakota. Hazardous wastes from large industrial or commercial activities are not likely. Potential hazards may exist in rural areas from farm dumps and agricultural chemicals. A Phase I Environmental Site Assessment (ESA) will be conducted in the Project Area in prior to construction to identify any recognized environmental conditions that may exist.

Potentially hazardous materials associated with the Project include fluids found in association with turbines and substation/transformer equipment. There will be three types of fluids used in the operation of the wind turbines, all of which are petroleum products. These fluids are necessary for the operation of each turbine and include gear box oil, hydraulic fluid, and gear grease. The transformers contain mineral oil.

Security

The Project Area is located in an area that has a low population density. Construction and operation of the Project will have minimal impact on the security and safety of the local communities.

7.5.2 Impacts

Air Traffic

The installation of wind turbines creates a potential for air traffic collision. The wind turbines and meteorological towers will have lighting and markings that comply with FAA requirements and

the FAA's review will include the evaluation of any potential interference with air traffic. Brady Wind will submit Notices of Proposed Construction or Alteration to the FAA for all Project turbines.

Electromagnetic Fields

There have been thousands of scientific studies related to EMF. One of the largest EMF research and evaluation programs (\$45 million) was established by the U.S. Congress in 1992 and was completed by the U.S. National Institute of Environmental Health Sciences (NIEHS) in 1999. None of these organizations has found that exposure to power frequency EMF causes or contributes to cancer or any other disease or illness. Low-level power frequency EMF will occur around the wind turbine generators (in the nacelles), around the GSU transformers, along the collector lines and at the Project substation. All Project facilities would be set back from residences as required by state and county regulation. At these distances EMF levels would not be above background levels. The only exposure will be brief exposure to maintenance workers, primarily at the substation. Based on the above, no significant adverse impacts are anticipated.

Shadow Flicker

Shadow flicker impacts are not regulated in applicable county, state, or federal law, and there is no permitting threshold with regard to hours per year of anticipated impacts to a receptor from a wind energy project. An analysis of potential shadow flicker impacts from the Project turbine layout dated November 6, 2015 was conducted using the WindPro software package. The WindPro analysis was conducted to determine shadow flicker impacts under realistic impact conditions (actual expected shadow flicker, which accounts for historical sunshine probability, wind speed, and wind direction). This analysis calculated the total amount of time (hours and minutes per year) that shadow flicker could occur at receptors out to 2,500 meters (8,202 feet). The analysis assumes that the receptors all have a direct in line view of the incoming shadow flicker sunlight and does not account for trees or other obstructions which may block sunlight. In reality, the windows of many houses will not face the sun directly to be affected by the key shadow flicker impact times.

A total of 139 structures were identified within and near the Project Area; of these, 89 were determined to be occupied residences and are considered potential shadow flicker receptors for the purpose of this analysis. The predicted shadow flicker impacts are less than 30 hours per year at all but two identified occupied receptors; these two receptors are residences owned by landowners that are participating in the Project. The maximum predicted shadow flicker impact at any occupied residence receptor is 44 hours and 55 minutes per year at a residence owned by a landowner that is participating in the Project. As a result of the analysis, no significant shadow flicker impacts are anticipated to sensitive receptors.

Hazardous Materials/Hazardous Waste

A Phase I ESA will be conducted and results will be used to minimize risk associated with potential recognized environmental conditions that may pose a threat to human health and safety. Significant findings are not anticipated due to the known historic uses of the property.

As with any construction activity, there is the possibility of accidentally spilling fuel, hydraulic fluid, or other hazardous substances during construction of the Project. The potential of such

events would be minimized through implementation of a Spill Prevention, Control, and Countermeasures (SPCC) plan, which would include the following:

- Construction equipment will be equipped with spill cleanup kits.
- Equipment refueling will take place at secure areas, away from wetlands or drainages.
- Workers will be trained in spill clean-up and the use of the spill cleanup kits.

These measures would ensure that surface and groundwater quality would not be degraded through inadvertent spillage of contaminants.

Security

Project construction and operation will have minimal impacts to the security and safety of the local communities.

7.5.3 Mitigative Measures

Air Traffic

Brady Wind will submit Form 7460-1 to FAA for each turbine to determine whether the Project layout and lighting will impact navigable airspace or communications technology used in aviation operations. The response from FAA will be submitted to the PSC when received. Wind turbines and meteorological towers will have lighting and markings according to FAA requirements that minimize any potential for air traffic impacts.

Electromagnetic Fields

Since no significant adverse impacts are anticipated, no mitigative measures are proposed at this time.

Shadow Flicker

The primary mitigation measure used to minimize shadow flicker from wind turbines is setback distance. Brady Wind is committed to a 2,000-foot setback distance from all existing occupied residential structures, as required by the Stark County Zoning Ordinance. Because no significant impacts are anticipated, no additional mitigation is proposed at this time.

Hazardous Materials / Hazardous Waste

Since no significant findings are anticipated, no mitigation is proposed at this time. All petroleum fluids will be contained within the wind turbines and electrical equipment. Any petroleum wastes generated will be handled and disposed of in accordance with local, state, and federal regulations.

Security

The following security measures will be taken to reduce the chance of physical and property damage, as well as personal injury, at the site:

- The towers will be placed at least 200 feet from road right-of-way and 2,000 feet from occupied homes. These distances are considered to be safe based on developer experience, and are consistent with the required local setbacks.

- Security measures will be taken during the construction and operation of the project, including temporary and permanent (safety) fencing, warning signs, and locks on equipment and wind power facilities.
- Turbines will sit on solid steel-enclosed tubular towers in which all electrical equipment will be located, except for the pad-mounted transformer. Access to the tower is only through a solid steel door that will be locked when not in use.
- Where necessary or requested by landowners, Brady Wind will construct gates or fences such as those around the collection substation.
- Brady Wind will provide educational materials to landowners within the site boundaries and upon request to interested persons about the Project.

7.6 Noise

7.6.1 Description of Resources

The Project Area is primarily rural and agricultural. There are no populated towns within the Project Area. The nearest planned Project turbines are approximately 1.5 miles and 2.5 miles, respectively from the small unincorporated communities of Scheffield and Lefor. The acoustic environment is defined primarily by Highway 22, which runs through the Project Area north to south, as well as aircraft flyover events, farming equipment and local traffic. In addition to anthropogenic noise sources, the windy conditions of this site define a somewhat elevated ambient sound level, which increases with wind speed. Windy conditions can generate noise caused by the rustling of grass and tree leaves.

7.6.2 Impacts

The PSC's rules (NDAC 69-06-08-01(4)) specify that sound levels from a wind facility may not exceed 50 dBA within one hundred feet of an inhabited residence or a community building, unless waived in writing by the owner. In addition, according to Article VI Section 6.7 of the Stark County Zoning Ordinance, sustained noises over eighty (80) decibels (dB) during the day and seventy (70) decibels (dB) at night is prohibited.

Wind turbine generators produce noise through a number of different mechanisms roughly grouped into mechanical and aerodynamic sources. Modern wind turbines include design features that minimize mechanical sound sources. The interaction of air and the turbine blades produces aerodynamic noise through a variety of processes as air passes over and past the blades. Unlike other sound sources, wind turbines generally radiate more noise as wind speed increases. However, at elevated wind speeds the wind tends to generate significant background noise by moving trees and grasses, which can create a masking effect and may aid in reducing the audibility of wind turbine sound.

In November 2015, an acoustic engineering analysis was developed to address sound levels resulting from wind turbine operations, as well as the consideration of sound from the electrical substation and sound generated during Project construction and maintenance activities.

Wind turbine operation was analyzed for the Project employing the GE 1.715 MW and 1.79 MW turbine models and the substation located in the northeast corner of the northwest quarter of Section 12, Township 139 North, Range 94 West. The GE 1.715 MW and 1.79 MW turbine noise specifications were used for their respective proposed turbine locations according to the

turbine layout dated November 6, 2015. Acoustic modeling was completed at both wind turbine cut-in and maximum rotational conditions, inclusive of the entire range of future Project operational conditions. Project compliance was assessed at a total of 139 receptors in and near the Project Area, 89 of which were determined to be occupied structures.

The noise modeling results indicate that the received sound levels at all 89 occupied receptors are all below the North Dakota noise requirement (Chapter 69-06-08-01(4)), which prescribes a limit of 50 dBA within 100 feet of an inhabited residence. The highest modeled sound level for an occupied residence was 47 dBA at a participating landowner.

Project construction may cause short-term but unavoidable noise impacts. The sound levels resulting from construction activities vary significantly depending on several factors such as the type and age of equipment, the specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers. Sounds generated by construction activities are typically exempt from state and local noise oversight provided that they occur within weekday, daytime periods as may be specified under local zoning or legal codes. Reasonable efforts will be made to minimize the impact of noise resulting from construction activities.

Construction activity will generate traffic having potential noise effects, such as trucks traveling to and from the site on public roads. At the early stage of the construction phase, equipment and materials will be delivered to the site, such as hydraulic excavators and associated spreading and compacting equipment needed to form access roads and foundation platforms for each turbine. Once the access roads are constructed, equipment for lifting the towers and turbine components will arrive. Traffic noise is categorized into two categories: (1) the noise that will occur during the initial temporary traffic movements related to turbine delivery, haulage of components and remaining construction; and (2) maintenance and ongoing traffic from staff and contractors, which is expected to be minor.

7.6.3 Mitigative Measures

The primary mitigation measure used for wind turbines is setback distance. Brady Wind is committed to a minimum 2,000-foot setback distance from all existing occupied residential structures, as required by the Stark County Zoning Ordinance. It should be noted that the acoustic model conservatively predicts outdoor sound levels and assumes no shielding or attenuation by trees or other vegetation. If a complaint is registered and sound is measured above the 50 dBA level, Brady Wind can provide improved insulation, landscaping, or other appropriate candidate mitigation measures.

7.7 Cultural and Archaeological Impacts

7.7.1 Description of Resources

Archaeological Resources

Tetra Tech performed a Class I Literature Review for archaeological and architectural resources for the area of potential effects (APE) and a 1-mile buffer around the APE. The APE is the area surveyed for the proposed construction footprint of the Project. The file review was completed at the State Historical Society North Dakota in July 2015. This file review included identifying

previously recorded archaeological sites identified during previous surveys, and historic structures, bridges, and cemeteries within the APE and within 1 mile of the APE.

The literature review results identified a total of seven previously recorded archaeological sites and five cultural resources site leads that are recorded within the Project APE and within 1 mile of the APE (**Table 14**). Site leads refer to resources that lack sufficient information to fully record and complete all necessary data fields on the North Dakota Cultural Resources Survey (NDCRS) site forms. Examples of site leads include: (1) locations recorded from various historic documents, (2) locations reported by a landowner or other non-professional, (3) isolates, a location with five or fewer surface visible artifacts which, in the professional judgment of the archaeologist, is likely to be a limited surface expression of a former occupation area where most of the artifacts are still buried, and/or (4) locations recorded by a cultural resource specialist outside of their project area(s), and thus not fully recorded. The five recorded site leads are all prehistoric isolates.

Of the seven previously recorded sites, six are prehistoric sites (lithic and cultural material scatters) and one is historic (rock feature). Two previously recorded prehistoric sites are located within the APE. Of the five previously recorded isolates, two are located within the APE (**Table 14**).

Table 14. Previously Recorded Archaeological Sites and Isolates within the direct APE and within 1 Mile of the APE

Smithsonian Number	Resource Type	Description	Avoidance
Archaeological Sites within APE			
32SK81	Prehistoric	CM Scatter	Avoid direct impacts to site
32SK86	Prehistoric	CM Scatter	Avoid direct impacts to site
Archaeological Sites within 1 mile of APE			
32HT28	Prehistoric	CM Scatter	Avoid direct impacts to site.
32HT32	Prehistoric	CM Scatter	Avoid direct impacts to site.
32HT69	Prehistoric	CM Scatter	Avoid direct impacts to site.
32SK902	Prehistoric	Lithic Scatter	Avoid direct impacts to site
32SK911	Historic	Other - Rock Pile	Avoid direct impacts to site.
Isolates within APE			
32SKx86	Prehistoric	--	No further management necessary.
32SKx166	Prehistoric	--	No further management necessary.
Isolates within 1 mile of APE			
32SKx83	Prehistoric	--	No further management necessary.
32SKx227	Prehistoric	--	No further management necessary.
32SKx226	Prehistoric	--	No further management necessary.

Note: CM = cultural material

Architectural Resources

The Class I Literature Review identified 15 architectural resources and five cultural resources leads (32SKx84, 32SKx85, 32SKx89, 32SKx163, and 32SKx 201). These architectural and cultural resources consist of farmsteads, a coal mine, and 4 bridges. Of the identified resources, 14 resources are within the APE, and 6 are within 1 mile of the APE (**Table 15**).

Table 15. Previously Recorded Architectural Resources within 1 Mile of the APE

Smithsonian Number	Resource Type	Description	Avoidance
Architectural Resources within APE			
32SK113	Euro American - 1948 to ca.1995	Bridge	Avoid direct impacts to site.
32SK153	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK156	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK157	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK169	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK176	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK189	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SKx89	Euro American - ca.1924	Coal Mine	Avoid direct impacts to site.
32SKx201	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SKx84	Euro American - post 1950	Bridge	Avoid direct impacts to site.
32SKx85	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SKx163	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK77	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK85	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
Architectural Resources within 1 mile of APE			
32SK849	Euro American - post 1950	Bridge	Avoid direct impacts to site.
32SK188	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK180	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK167	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK161	Euro-American - ca. 1900 to Present	Farmstead	Avoid direct impacts to site.
32SK116	Euro American - ca. 1938	Bridge	Avoid direct impacts to site.

A Class III Cultural Resources Inventory for both archaeology and architectural resources is currently underway. Brady Wind and Tetra Tech have coordinated with the SHSND on the appropriate scope and level of survey for the Project. The survey report will be submitted to the SHSND for review and concurrence once complete, and will also be provided to the PSC. Brady Wind will avoid directly impacting all National Register of Historic Places (NRHP)-eligible sites.

Native American Consultation

In August 2015, Brady Wind sent a letter to the North Dakota Indian Affairs Commission notifying the agency about the Project and the preparation of this application for a Certificate.

7.7.2 Impacts

Architectural Resources

After coordination with SHSND, an architectural historian conducted a survey of architectural resources within 2 miles of proposed Project turbines in November 2015. The Project will not directly impact any architectural resources. A report that evaluates potential visual effects on historic properties is underway. This report will be submitted to the SHSND when complete for review and concurrence, and will also be submitted to the PSC.

Archaeological Resources

Brady Wind will avoid newly documented sites and the previously-documented cultural resources within the direct effects APE. Avoidance buffers will be created for these sites and the buffers will be delineated prior to construction to ensure that historic properties are avoided. The pedestrian survey and shovel probing, if necessary, will be completed as weather permits in winter 2015 – spring 2016 and the cultural resources inventory report will be submitted to the SHSND for review and concurrence in the once it is complete.

7.7.3 Mitigative Measures

The sites that will be avoided during construction will be fenced to reduce the potential that they will be inadvertently disturbed.

An Unanticipated Discovery Plan will be prepared for the proposed Project outlining the procedure that would be followed to prepare for and address any unanticipated discoveries of cultural resources, including previously undiscovered archaeological sites and possible human remains. It will provide direction to on-site personnel and their consultants as to the proper procedure to follow in the event that unanticipated discoveries were to be made during construction of the Project. No significant impacts to cultural resources would, therefore, be anticipated from the proposed Project.

In the event that burials or cultural sites with Native American religious values are identified during construction of the proposed Project, work would immediately halt within 200 feet of the site and the site would be protected until SHSND and the North Dakota Indian Affairs Commission (NDIAC) are consulted, in addition to any involved Tribes that express interest in the Project and identify a potential impact.

If confirmed or potential human skeletal remains are discovered, the Stark County Sheriff's office will be contacted. The Sheriff will call 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.

7.8 Recreational Resources

7.8.1 Description of Resources

Recreational opportunities in Stark County primarily include hunting and wildlife observation. The closest park to the Project Area is the Dickinson Reservoir-Edward Arthur Patterson Lake. Other recreation near the Project Area include the Old Red/Old Ten Scenic Byway and the Enchanted Highway.

The Dickinson Reservoir-Edward Arthur Patterson Lake is located on the Heart River, approximately one mile west of Dickinson and approximately 15 miles north of the Project Area. Recreational activities include boating, fishing, camping, and water sports (USBR 2015). The park is managed by the Dickinson Park and Recreation District.

The Old Red/Old Ten Scenic Byway is a state-designated byway located approximately 15 miles north of the Project Area. The byway is oriented east to west and parallels Interstate 94 in Dickinson (**Figure 1**). The North Dakota Scenic Byway Program is a tourism program managed by the North Dakota Parks and Recreation Department and the NDDOT.

The Enchanted Highway is a local tourist attraction consisting of various roadside art sculpture installations placed along Stark County Highway 100 ½ SW, each with a parking area and kiosk. The Enchanted Highway is oriented north and south and begins at I-94 near Gladstone and terminates 30 miles south in the small town of Regent. The Enchanted Highway passes through the small town of Lefor, two miles east of the Project Area. The two closest sculptures to the Project Area are Grasshoppers and Fisherman's Dream, located approximately 2 miles east and 5 miles northeast, respectively. The Enchanted Highway is not a federal or state designated scenic highway.

7.8.2 Impacts

No recreational resources will be directly affected by the Project. Recreational impacts will be auditory and visual in nature and limited to individuals using public or private property in and near the Project Area for hunting, fishing, or nature observation. The turbines would introduce a new visual element into the landscape, but the area already has transportation and utility infrastructure such as transmission lines, railroads, and Interstate 94. There are also six existing wind farms in the vicinity of the Project, including Sunflower Wind Project northeast of the Project Area near Hebron in Stark/Morton counties, Thunder Spirit Wind Farm south of the Project Area near Hettinger in Adams County, and the four-phased Bison Wind Energy Center northeast of the Project Area near New Salem in Oliver and Morton counties.

Viewers at Dickinson Reservoir-Edward Arthur Patterson Lake will have limited visibility of the Project components due to the distance from the park to the Project, topography, and vegetation. A small portion of the turbines may be visible on the horizon, but at this distance they would not be noticeable to the casual observer.

Travelers along the Old Red/Old Ten Scenic Byway will have also limited visibility of the Project components, due to the distance from the Project Area, existing infrastructure, and topography.

Stark County has previously requested a 1-mile setback from the Enchanted Highway, and Brady Wind has accommodated this request. The nearest turbine is approximately three miles from the closest sculpture (the Grasshopper sculpture) to the Project Area. Views of the Project from the Grasshopper sculpture would be completely screened by an existing windrow located west of the parking area. Visual impacts are not anticipated for the Fisherman's Dream sculpture because viewers would be looking east towards the art installation and the Project Area would be located behind them. The Project may be visible to travelers along the Enchanted Highway; however, views will be partially screened by topography and/or vegetation.

Portions of the Project components that are visible may be noticeable to the casual observer but at this distance they will appear as subordinate features in the landscape; therefore, the Project will have no adverse effect to the Enchanted Highway.

7.8.3 Mitigative Measures

Since the Project is not anticipated to result in significant adverse impacts to recreational resources, no mitigative measures are proposed.

7.9 Effects on Land-Based Economies

7.9.1 Description of Resources

Agriculture/Farming

The majority of the Project Area is either pasture/hay or cropland (**Figure 13**). Most crop fields within the Project Area are spring wheat and alfalfa fields.

Agriculture has historically played a dominant role in the local economy, and continues to play a significant role in the county's land use and economy (Stark County 2010b). In 2012, there were 837 farms in Stark County, comprising approximately 97 percent of the land area; approximately 60 percent of the land in farms is cropland, and 36 percent is pasture. According to the 2012 Census of Agriculture (USDA 2012), total market value of agricultural products produced in Stark County was \$152,583,000, 78 percent of which was from crops and 22 percent from livestock sales. The primary livestock is cattle and the principal crop is wheat.

Prime farmland is the land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. The NRCS also identifies farmland of statewide and local importance, which is land that is important for the production of food, feed, fiber, forage, and oilseed crops. Generally, additional farmlands of statewide or local importance include those that are nearly prime and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce a yield as high as prime farmland if conditions are favorable. **Table 14** lists the soils within the Project Area, including those considered prime farmland and soils of statewide or local importance. **Figure 14** shows the prime farmland soil distribution in the Project Area.

Two prime farmland soils occur within the Project Area, comprising 2,026 acres or 6.75 percent of the Project Area; 26 soil types are considered farmland of statewide importance, totaling 12,969 acres or 43.25 percent of the Project Area.

Woodlands

Economically important forestry resources are not found in the Project Area. Trees and shrubs in the Project Area are sparse, and limited to windbreaks around residential properties and between fields, or those found in and along drainages and wetlands. Trees observed on-site include plains cottonwood (*Populus deltoids*), green ash (*Fraxinus pensylvanica*), peach-leaved willow (*Salix amygdaloides*), coyote willow (*Salix exigua*), Siberian elm (*Ulmus pumila*), wild plum (*Prunus americana*), blue spruce (*Picea pungens*), and boxelder (*Acer negundo*).

7.9.2 Impacts

Agriculture/Farming

Wind energy development removes less total land from agricultural use than other forms of development. No impacts are anticipated to animal health and safety due to the construction or operation of the wind farm and associated facilities. Except for the physical locations of the turbines, access roads, and substation, all the land surrounding the Project facilities will be available for grazing. Cattle have been observed using shade from turbines as a refuge at other wind energy projects.

Actual impacts to agricultural production will be determined once turbine and road locations are finalized. Exact impact acreages will not be known until turbine siting is finalized, but expected permanent impacts will be approximately 110 acres, including turbine foundations, access roads, and the Project collection substation. It is possible that some of this land is not used for agricultural purposes, thus the actual impacts to agricultural production cannot be determined until turbine and road locations are finalized.

The Project will permanently disturb approximately four acres of soils classified as prime farmland and approximately 31 acres in farmland soils of statewide importance, not including the collection lines, which will be buried and would be a temporary disturbance of soil. This would be a negligible impact to agricultural production in the county. As noted earlier, wind lease payments will provide farmers with a supplemental source of income, helping assure that farmers can continue to operate financially viable farms, and thus helping to assure the continuation of farming in Stark County.

No turbines will be placed within 2,000 feet of occupied homes. Other impacts to homes are discussed throughout **Section 7.0**. Family farms will be affected due to the loss of land associated with the construction of the turbines and access roads. The extent of impacts will not be known until final turbine locations are determined in conjunction with the landowners.

Woodlands

No significant impacts are anticipated to woodlands.

7.9.3 Mitigative Measures

Agriculture/Farming

The wind turbines and access roads will be located so that the most productive farmland (prime farmland) will be avoided as much as practicable. Only land for the turbines, substation, and access roads will be unavailable for crop production. Brady Wind will work with landowners to minimize impacts to their land. Once the wind turbines are constructed, all land surrounding the turbines can still be farmed or grazed. All construction areas will be separated from grazing animals by temporary or permanent fencing.

Woodlands

If trees are removed as part of the Project, they will be replaced per PSC's Tree and Shrub Mitigation Specifications.

7.10 Soils

7.10.1 Description of Resources

The U.S. Department of Agriculture (USDA) has mapped over 70 soil map units within the Project Area (USDA 2015). These soils are primarily well-drained loams, silt loams, and to a lesser extent fine sandy, and sandy loams. These soils are primarily derived from the underlying bedrock that consist of sandy and clayey unconsolidated materials including alluvium derived from mudstone, weathered mudstone, and, to a lesser extent, siltstones and sandstones. Sixteen soil types comprise approximately 87 percent of the Project Area. The most extensive of these are the Arnegard loam (16.5 percent of the Project Area), Amor-Shambo loams (12.6 percent), Amor-Cabba loams (12.5 percent of the Project Area), Belfield-Daglum complex (5.9 percent), Sen-Janesburg silt loam (4.5 percent), Lefor fine sandy loam (4.2 percent), and Shambo loam (4.1 percent). **Table 16** provides a summary of the soil map units within the Project Area, including their acreages and percentages of the Project Area.

Table 16. Soil Map Units Within the Project Area

Map Unit Name	Area (acres)	Percentage of Project Area	Farmland Classification
Amor-Arnegard loams	1,129	3.8	Farmland of statewide importance
Amor-Brandenburg complex	19	0.1	Not prime farmland
Amor-Cabba loams	3,756	13	Not prime farmland
Amor-Shambo loams	3,775	12.6	Farmland of statewide importance
Arnegard loam	1,487	16.5	All areas are prime farmland
Arnegard loam, saline	39	0.1	Not prime farmland
Barkof-Janesburg complex	331	1.1	Not prime farmland
Beisigl-Flasher-Telfer loamy fine sands	175	0.6	Not prime farmland
Belfield-Daglum clay loams, saline	21	0.1	Not prime farmland
Belfield-Daglum complex	1,782	5.9	Not prime farmland
Belfield-Grail clay loams	888	3.0	Farmland of statewide importance
Belfield-Grail-Arnegard complex, saline	75	0.3	Not prime farmland
Belfield-Savage-Daglum complex	396	1.3	Farmland of statewide importance
Cabba-Amor-Savage complex, very stony	529	1.8	Not prime farmland
Cabba-Badland complex	12	<0.1	Not prime farmland
Cabba-Chama-Sen silt loams	64	0.2	Not prime farmland
Cabba-Chama-Shambo loams	715	2.4	Not prime farmland
Chama-Cabba-Sen silt loams	223	0.7	Not prime farmland
Chama-Sen-Cabba silt loams	201	0.7	Farmland of statewide importance
Cherry silt loam	89	0.3	Farmland of statewide importance
Daglum fine sandy loam	5	<0.1	Not prime farmland
Daglum-Rhoades complex	974	3.2	Not prime farmland
Dimmick silty clay	24	0.1	Not prime farmland
Dumps, mine-Ustorthents complex	10	<0.1	Not prime farmland
Ekalaka-Parshall-Desart fine sandy loams	12	<0.1	Not prime farmland
Farfeld-Cedarpan loams	51	0.1	Not prime farmland
Farland silt loam, 0 to 2 percent slopes	39	0.1	Farmland of statewide importance
Farnuf loam, 0 to 2 percent slopes	17	0.1	Farmland of statewide importance
Felor loam, 0 to 6 percent slopes	82	0.3	Farmland of statewide importance

Table 16. Soil Map Units Within the Project Area

Map Unit Name	Area (acres)	Percentage of Project Area	Farmland Classification
Flasher-Rock outcrop-Vebar complex	37	0.1	Not prime farmland
Flasher-Vebar-Parshall complex	56	0.2	Not prime farmland
Grail silty clay loam	539	1.8	All areas are prime farmland
Grail-Savage silty clay loams	150	0.5	Farmland of statewide importance
Harriet loam, occasionally flooded	172	0.6	Not prime farmland
Havrelon-Fluvaquents complex, channeled, frequently flooded	26	0.1	Not prime farmland
Heil silty clay loam	45	0.2	Not prime farmland
Janesburg fine sandy loam	30	0.1	Not prime farmland
Janesburg-Belfield-Cabba silt loams, very stony	31	0.1	Not prime farmland
Janesburg-Dogtooth silt loams	29	0.1	Not prime farmland
Korchea-Fluvaquents complex, channeled, frequently flooded	191	0.6	Not prime farmland
Korell-Daglum-Fluvaquents complex, channeled, frequently flooded	290	1.0	Not prime farmland
Korell-Rhoades-Daglum complex	22	0.1	Not prime farmland
Lallie silty clay, occasionally flooded	17	0.1	Not prime farmland
Lambert-Badland-Cabba complex	100	0.3	Not prime farmland
Lawther silty clay	76	0.3	Farmland of statewide importance
Lefor fine sandy loam	1,269	4.2	Farmland of statewide importance
Lefor fine sandy loam	755	2.5	Not prime farmland
Lihen-Parshall complex	61	0.2	Not prime farmland
Manning fine sandy loam	17	0.1	Not prime farmland
Manning-Schaller-Wabek complex	7	<0.1	Not prime farmland
Moreau-Barkof silty clays	235	0.8	Farmland of statewide importance
Moreau-Barkof silty clays, moderately steep	21	0.1	Not prime farmland
Moreau-Regent complex, very stony	23	0.1	Not prime farmland
Moreau-Wayden silty clays	117	0.4	Not prime farmland
Morton-Farland silt loams	254	0.8	Farmland of statewide importance
Parshall fine sandy loam	330	1.1	Farmland of statewide importance
Reeder-Farnuf loams	1,085	3.6	Farmland of statewide importance
Regan silt loam, saline, occasionally flooded	40	0.1	Not prime farmland
Regent-Janesburg complex	275	0.9	Not prime farmland
Regent-Savage silty clay loams	526	1.8	Farmland of statewide importance
Rhoades-Daglum complex	1,047	3.5	Not prime farmland
Savage silty clay loam	304	1.0	Farmland of statewide importance
Savage-Daglum complex	231	0.8	Not prime farmland
Savage-Grail silty clay loams	100	0.3	Farmland of statewide importance
Sen-Golva silt loams	13	<0.1	Farmland of statewide importance
Sen-Janesburg silt loams	1,344	4.5	Not prime farmland
Shambo loam	1,231	4.1	Farmland of statewide importance
Shambo loam, gravelly substratum	21	0.1	Farmland of statewide importance
Stady loam	16	0.1	Farmland of statewide importance
Stady-Lehr loams	5	<0.1	Farmland of statewide importance

Table 16. Soil Map Units Within the Project Area

Map Unit Name	Area (acres)	Percentage of Project Area	Farmland Classification
Vebar-Cohagen fine sandy loams	593	2.0	Not prime farmland
Vebar-Flasher-Tally complex	526	1.8	Not prime farmland
Vebar-Parshall fine sandy loams	740	2.5	Farmland of statewide importance
Vebar-Tally fine sandy loams	33	0.1	Not prime farmland
Water	4	<0.1	Not prime farmland
Watrous-Felor loams	1	<0.1	Farmland of statewide importance
Wayden-Moreau silty clays	5	<0.1	Not prime farmland

Source: USDA 2015.

Fifty percent of the soils within the Project Area are prime farmland or farmland of statewide importance. Approximately 7 percent of the soils in the Project Area (with the exception of areas mapped as “Water”, which are unrated) have high susceptibility to erosion by water (i.e., K-factors greater than 0.37). Twenty-four percent of the soils also have high susceptibility to wind erosion (i.e., USDA Wind Erosion Groups of less than 6) (USDA 2015).

7.10.2 Impacts

The impact to soils within the Project Area will be limited to areas removed from agricultural production by occupancy of Project components, including turbines, roads, collection lines, and a Project substation. Construction disturbance activities including grading for roads and turbine footprints, excavation for turbine foundations and underground lines and other infrastructure has the potential to contribute to soil erosion through exposure of soils that were previously vegetated or stable. Access roads will be 16- to 38-foot wide³ aggregate-surfaced roadways. Impacts include permanent operations disturbance to soils due to turbine placement, access road construction, and a Project substation. If cuts are made during construction, top soil will be segregated and reapplied after final contours have been graded.

7.10.3 Mitigative Measures

Wind and water erosion are potential hazards for the soils found in the Project Area. To minimize erosion during and after construction, best management practices (BMPs) for erosion and sediment control will be utilized. Construction sites will maintain sediment control practices in accordance with the SWPPP. A Project-specific erosion control protocol based on the SWPPP will be developed to treat disturbed and exposed soil surfaces and prevent erosion and contamination of natural water resources. Since towers will not be located on significant slopes, only non-structural practices should be required. These practices include temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, and sod stabilization. In addition, during construction and operation, vehicle speed will be limited to 25 mph on Project roads to minimize dust.

³ Roads required to support crane access to turbines during operation will remain up to 38 feet wide; all other roads may be built at 16 feet wide or reduced later to 16 feet.

7.11 Geologic and Groundwater Resources

7.11.1 Description of Resources

Southwestern North Dakota and the area of the Project lie within the Unglaciaded Missouri Plateau section of the Great Plains physiographic province and on the south-central flank of the Williston Basin, a broad structural depression underlying parts of North and South Dakota, Montana, Manitoba, and Saskatchewan (USGS 1975). Stark County and the Project Area are located southwest of the glaciaded area of North Dakota, and within the Rolling Soft Shale Plain major land resource area (MLRA) which is an old, moderately dissected, rolling plain with local badlands, buttes, and isolated hills (NRCS 2006). Gentle slopes characterize most of the Project Area and local relief ranges from less than 800 to over 850 feet (see **Figure 3**). The rolling plateau surface of Stark County is highly dissected by erosion. Scattered buttes, capped by resistant sandstone, limestone, or scoria beds, are remnants of sedimentary strata that once covered the area more extensively (USGS 1975).

Unconsolidated surface deposits include alluvium and terrace deposits of the Oahe Formation of Pleistocene age. These surficial sediments are underlain by the Tertiary Age bedrock Sentinel Butte and Golden Valley Formations (USGS 1975, NDGS 1980). The Sentinel Butte formation is mapped within the entire Project Area and consists of layers of silt, clay and sand with interbedded sandstone, lignite, baked clay, and limestone. The formation forms rolling topography over broad areas and has been eroded to badlands near rivers. The Golden Valley formation consists of clayey and sandy layers that are commonly found on hills, along the sides of buttes, and over upland areas (USGS 1975). Recent/Pleistocene landslide and mass movement deposits are not mapped within or in the surrounding area (NDGS 2015a).

The most important mineral resource in Stark County is sand and gravel. North Dakota Geological Survey (NDGS) maps (Anderson 2010) indicate two potential viable sand and gravel resource areas within the northeastern Project Area (SW Section 12, T137N, R95W; and SE Section 35, T138N, R 95W), as well as two inactive and historical sand and gravel mining operations in the southwestern Project Area (SW Section 32, T137N, R97W; S/SE Section 34, T137N, R97W).

Desktop data from the North Dakota Department of Mineral Resources oil and gas database (NDDMR 2015a) lists 9 exploration wells in the vicinity of the Project Area; all of these wells are listed as “dry, abandoned and plugged, or permit now cancelled.”

Lignite (coal) is known to occur in the Sentinel Butte Formation. There is one economically viable mapped lignite reserve area approximately 315 acres in size within the eastern portion of the Project Area based on a review of available North Dakota Geological Survey maps (NDGS 2015b). The lignite reserve is located within SW Section 16, NW Section 21, and NE Section 20, T137N, R95W. There are no historic mining operations mapped within the Project Area according to the same map. No coal mines were observed in site visits to the Project Area.

According to the USGS, North Dakota is located in an area of very low seismic risk (USGS 2014). There are no known active tectonic features or faults known to generate earthquakes with magnitudes of 6 or greater in North Dakota (USGS 2015). Related geologic hazards, such as soil liquefaction, are therefore also unlikely.

Thick beds of sandstone in the lower part of the Sentinel Butte formation are important sources of groundwater in the Project Area (USGS 1975). These beds are also referred to as the Sentinel-Tongue River aquifer. The Tongue River formation is approximately 500 feet below ground surface in the Project Area and has a thickness from less than 50 to 200 feet. The Sentinel Butte sandstone aquifer can reach as much as 245 feet in thickness (USGS 1975). Water levels below ground surface are about 20 feet in the Sentinel Butte aquifer and yields can reach up to 100 gallons per minute (gpm). The Hell Creek formation is also a source of groundwater in the Project Area; and occurs at depths of 800 feet and greater and has a thickness of 220 to 510 feet. The formation consists of sandstone, siltstone, shale, and claystone; and well yields are generally less than 10 gpm. The Golden Valley aquifer system and Quaternary deposits are also sources of shallow water in Stark County. Well yields are generally 25 to 75 gpm.

Review of driller logs available from the North Dakota State Water Commission database (NDSWC 2015) indicates that 6 wells have been drilled within the Project Area. Most of these wells did not have depth information but two well logs indicate depths between 40 and 800 feet that tap the Sentinel-Tongue River aquifer. The wells are indicated for domestic, stock, and observation uses. One deep domestic well (1,100 feet) is noted to tap the Hell Creek formation.

7.11.2 Impacts

Impacts of the Project to available mineral resources are likely to be very limited. No coal resources are known to be actively or historically mined in the Project Area, however an economic deposit of lignite coal is present within the Project Area. Currently there are only six operations mining 32 million tons of coal annually in North Dakota (NDGS 2015c). Four operations are mining coal to feed steam boilers for electric generating plants in North Dakota. Two smaller operations are mining Leonardite (oxidized lignite) to be used in soil stabilization and as drilling fluid additives. Per landowner agreements, Brady Wind will coordinate with landowners to facilitate the compatibility of any future coal resource development.

A few viable sand and gravel resources occur within the northeast portion of the Project Area. Per landowner agreements, Brady Wind will coordinate with landowners to facilitate the compatibility of any future development of these resources. Even if the Project affects any of these sand and gravel deposits, the regional supply of these materials would not incur adverse effects, because the resource is abundant in the area.

The Project Area is located in a region of low seismic risk and landslide areas are not located in the Project Area based on review of available landslide information (NDGS 2015a).

Consequently, geologic hazards are unlikely to impact the proposed Project, and the proposed Project would not affect geologic hazards. No significant impacts to geology would, therefore, be anticipated.

Impacts to groundwater resources in the Project Area are anticipated to be minimal. Major withdrawals of groundwater will not be necessary due to the limited water supply needs of the Project. A new well may be drilled to provide water for the O&M building; other water sources for the Project would be obtained from the Southwest Water Authority in Dickinson or the city of New England. Based on the small amount of increased impervious surface area that would be

created by Project components relative to the separation of these components and the size of the entire Project Area, the Project will likely have minimal impacts to regional groundwater recharge. There are only a small number of private wells in the Project Area and Project construction activities such as excavation and construction of foundations are unlikely to affect groundwater quality or flow patterns. Brady Wind is coordinating with participating landowners to ensure that private water wells are not directly or indirectly impacted by the Project. In addition, each turbine would be located a minimal distance of 2,000 feet away from existing residential structures, thereby minimizing the risk of impacts to private wells in the area, which are assumed to be located in proximity to the structures they serve.

Development of the turbine foundations may require subsurface blasting, which could potentially fracture bedrock and affect groundwater flow in the immediate vicinity of the disturbance. In the event that subsurface blasting is required, potential disturbances due to blasting would be localized and temporary, with groundwater likely to resume its natural course of flow down gradient of the foundation. Although it is not anticipated, if dewatering of excavations is necessary, water would be discharged to the surrounding surface, allowing it to infiltrate back into the ground to minimize potential impacts and in compliance with a stormwater permit.

7.11.3 Mitigative Measures

Brady Wind is coordinating with land owners and mineral rights owners to identify potential future development issues. However, these resources are relatively abundant in Stark County and southwestern North Dakota, and it is expected that impacts to these resources would not result in overall adverse impacts to development of sand and gravel, and coal resources in the greater region.

Wind turbine locations will not impact the use of existing water wells because the turbines will not be sited within 2,000 feet of occupied structures. In the event that subsurface blasting is required, a blasting plan would be developed and implemented to keep the impacts localized and fracture the least amount of bedrock necessary for construction.

7.12 Surface Water and Floodplain Resources

7.12.1 Description of Resources

Surface water and floodplain resources for the Project Area were identified by reviewing U.S. Geological Survey topographic maps, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, and USFWS National Wetlands Inventory (NWI) data, and surface water features were surveyed for Project facilities. There are numerous intermittent, unnamed tributaries within the Project Area (see **Figure 15**). The majority of the Project Area is drained to the north by small unnamed intermittent streams into Antelope Creek. Jimmy Creek, located within the very northeastern portion of the Project Area, also drains northward into Antelope Creek. The Antelope River flows into the Heart River to the east/southeast. The Heart River is a major river that is a tributary of the Missouri River.

A small drainage in the very southwest Project Area flows to the south; and small drainages in the very southeast Project Area flow to the southeast. The unnamed intermittent streams drain into the Cannonball River and Thirtymile Creek, respectively. Thirtymile Creek is a tributary of the Cannonball River which flows east/southeast to eventually join the Missouri River.

According to electronic data from FEMA, approximately three percent of the Project Area is within 100-year floodplains (**Figures 5 and 15**; FEMA 2015). These areas occur along the small streams and drainages that are tributaries to Antelope Creek, the Cannonball River and Thirtymile Creek. The 100-year floodplain is defined as the area that will be inundated by a flood event having a one percent chance of occurring in any given year.

7.12.2 Impacts

Construction of the wind turbines, transformer pads, and access roads will disturb land within the Project Area. The wind turbines will be built on uplands in order to avoid Jimmy Creek, intermittent streams/drainages, and 100-year floodplains. Access roads to the turbines will be built to avoid impacts to surface waters to the extent practicable.

7.12.3 Mitigative Measures

Access roads constructed adjacent to Jimmy Creek, intermittent streams/drainages, and 100-year floodplains will be designed in such a manner that runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. An application (Notice of Intent) to obtain coverage under the NPDES general permit for storm water discharges associated with construction activity will be submitted to the North Dakota DOH prior to construction of the Project.

7.13 Wetlands

7.13.1 Description of Resources

Wetlands are an important natural resource providing a number of critical ecosystem functions. Some of these functions include flood flow attenuation, streambank stabilization, discharge and recharge of ground water, detention and removal of sediments, and the detention, removal, and transformation of nutrients and contaminants. Wetlands also may provide habitat for wildlife and sites for human recreation, education, and aesthetic enjoyment.

Desktop analysis was employed to identify probable locations of wetlands and waterbodies prior to field work. Desktop analysis included review of NWI maps (USFWS 2014a), aerial photo imagery (USDA NAIP 2014), web soil survey maps (NRCS 2013), and national hydrography dataset (USGS 2010).

The initial desktop analysis was followed by a site visit to microsite turbine locations in September 2015. Wetland delineations were conducted for the Project in October and November 2015. The delineations were conducted using the methodologies cited in the U.S. Army Corps of Engineers (USACE) Jurisdictional Determination Form Instruction Guidebook (USACE and EPA 2007), including the December 2, 2008 revised Rapanos guidance (EPA and USACE 2008). Delineated features will be avoided where feasible. A report of findings will be provided upon completion.

7.13.2 Impacts

Brady Wind has committed to minimizing impacts to jurisdictional wetlands or other WoUS to the extent practicable. Based on desktop analysis and preliminary field surveys, the Project is not expected to have any "single and complete project" that will meet or exceed the 0.10-acre impact threshold that would require a preconstruction notification (PCN) to the USACE Bismarck

Regulatory Office. By “single and complete project,” we are referring to each discrete intersection between planned Project infrastructure and jurisdictional wetlands and other WoUS. Horizontal directional drilling may be used where necessary to avoid impacts to wetlands from collection line trenching during construction.

Based on discussions with the USACE, the Project will likely meet the authorization criteria for a Section 404 Nationwide Permit (NWP) 12 (Utility Line Activities) and/or NWP 14 (Linear Transportation Projects). No Section 404 written permit is anticipated to be required as a result of construction of this Project because it is not anticipated that the Project will exceed the 0.10-acre threshold for PCN for NWP 12 or NWP 14. Nevertheless, if the Project does cause minor impacts less than 0.10-acre in jurisdictional wetlands/WoUS, then general and state of North Dakota NWP requirements will be adhered to. These requirements are included in the USACE response letter in **Appendix C**.

A wetland survey report is underway and will be submitted upon completion.

Brady Wind will obtain a stormwater runoff permit from the North Dakota Department of Health prior to construction. Compliance with the conditions of this permit and those of the associated stormwater pollution prevention plan would ensure that surface water would not be adversely affected by runoff from areas disturbed by Project construction activities.

7.13.3 Mitigative Measures

Brady Wind has committed to avoiding and minimizing impacts to potentially jurisdictional wetlands and other WoUS, as practicable. Wetlands will be delineated and flagged prior to construction when in close proximity to Project features.

7.14 Vegetation

7.14.1 Description of Resources

The Project Area is in a rural location with farming and livestock grazing and related agricultural operations dominating the land use. According to the NLCD data, 80 percent of the Project Area land use is either agricultural crops (55 percent) or grasslands/herbaceous or hay/pasture (25 percent; Homer et al. 2015). A native prairie assessment for the Project Area was conducted in September 2015 and revised in November 2015. Areas identified via desktop assessment were field-verified in August 2015, where possible from public rights of way. Approximately 21 percent of the Project Area was identified as potential native prairie in a desktop review.

7.14.2 Impacts

Areas of highest quality native prairie were avoided. Access road construction will result in the greatest effects to native vegetation resulting in permanent loss of these habitats where they occur along selected routes. Installation of the proposed buried collector system will result in some temporary effects to native and non-native grasslands.

7.14.3 Mitigative Measures

Brady Wind will work to avoid and to minimize impacts to existing trees and shrubs. Trees and shrubs anticipated to be cleared will be inventoried for replacement. Tree replacement will be on a 2 to 1 basis with 2-year-old saplings; shrub replacement will be on a 2 to 1 basis with stem

cuttings. Trees and shrubs will be replaced by the same species or similar species, according to the PSC Tree and Shrub Mitigation Specifications.

Impacts to grassland vegetation will be mitigated by reseeding the construction areas with native grasses following completion of construction activities, if approved by the landowner. Areas currently in crop will be replaced with crop in coordination with landowner preferences.

7.15 Wildlife

7.15.1 Description of Resources

Although wind energy provides a clean, renewable energy source, wind energy facilities have the potential to negatively impact wildlife, especially birds and bats, which can be killed or injured as a result of colliding with turbine blades. To address these concerns, several preconstruction wildlife studies were conducted to document existing use of the Project Area by migratory and resident birds and bats. A bat desktop habitat assessment was conducted in July 2015 (revised in November 2015, Tetra Tech 2015a), and bat acoustic monitoring was conducted from July to November 2015; the report is currently underway. Fall avian point-count and eagle use surveys began in August 2015. A ground-based raptor nest survey was conducted in June 2015, a fall nest inventory will be conducted after the deciduous trees lose their leaves (mid-November 2015), and an aerial and follow-up ground-based raptor nest survey will be conducted in spring 2016. A desktop likelihood assessment for whooping crane (*Grus americana*) was also conducted (Tetra Tech 2015b). Spring avian point-count surveys will be conducted in spring 2016.

Avian Species

In accordance with the voluntary USFWS Land-Based Wind Energy Guidelines (USFWS 2012), Brady Wind has conducted a preliminary site evaluation and will conduct field studies to document wildlife and habitat within the Project Area. Based on the location of the Project Area and the habitat present (based on field observations in fall 2015), it is expected that the majority of avian species present within the Project Area will be those typically associated with agriculture and grassland habitats. Additionally, birds migrating between breeding and wintering grounds may also pass through the Project Area given its position within the Central Flyway (USFWS 2015a).

Bats

A total of 10 bat species are known to occur in North Dakota. Based on available information, five of these species (big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and silver-haired bat (*Lasionycteris noctivagans*) are expected to have a moderate or high potential to occur within, and in the vicinity of the Project Area. Migratory tree-roosting bats, such as eastern red bats, silver-haired bats, and hoary bats, travel long distances at altitudes that may overlap with the height of wind turbine blades, making them particularly susceptible to direct mortality from wind turbines. These species have been the predominant species found during post-construction mortality studies at operational wind energy facilities in North America (Arnett et al. 2008). The remaining bat species found in North Dakota (fringed bat (*Myotis thysanodes*), long-eared bat (*Myotis evotis*), long-legged bat (*Myotis Volans*), western small-footed bat (*Myotis ciliolabrum*),

and Northern long-eared bat (*Myotis septentrionalis*) are expected to have a low potential of occurrence.

All bats known to occur in North Dakota are insectivorous, and feed on a variety of prey, including moths, beetles, flies, and mosquitoes (Kunz and Fenton 2003). Bats typically forage in areas with high prey concentrations (i.e., high nocturnal insect densities) in riparian areas (Waldien and Hayes 2001), over waterbodies (Henry et al. 2002, Lacki et al. 2007), and along forest edges (Hayes and Gruver 2000, Rogers et al. 2006). Non-developed and non-agricultural types of habitats (open water, forested, wetlands, and scrub/shrub) provide the best foraging opportunities for bats and account for less than 2.0 percent of the Project Area. The small size and small number of wooded parcels in the Project Area likely limits the density and diversity of bats in the Project Area.

Suitable natural roosting habitats in the Project Area are limited to individual trees, windrows, woodlots, and riparian zones. The availability of tree-roosting habitat in the Project Area is limited due to the small size and fragmented nature of the wooded habitat and accounts for less than 1 percent of the Project Area. Farmstead buildings (houses, barns, etc.) could also provide potential roosting locations within the Project Area; however, the suitability of these man-made structures has not been evaluated. There are no known abandoned mines within the Project Area that bats could use for roosting (PSC 2013). Therefore, bat migration through the Project Area is likely to be low given the limited availability of roosting habitat. Bat acoustic monitoring was conducted in the Project Area from July through November 2015, and a report is underway.

7.15.2 Impacts

Potential impacts from the Project to avian and bat species include collisions with wind turbines, transmission lines, and guyed meteorological towers, as well as loss of habitat.

Avian

The collision risk for birds at the Project will likely be low based on records of fatalities at other wind energy facilities. Recent meta-analyses relevant to the Project have estimated an average all-bird fatality rate of 1.81 birds/MW/year in the Great Plains (Loss et al. 2013) and 2.29 small birds/MW/year in the Prairie biome (Erickson et al. 2014). Discrepancies between the two rates are most likely due to differences in the way geographic areas were defined in the studies; however, both regions encompassed the Project Area and it is likely that rates of collision at the Project would be within the range defined by these studies. Rates of bird all-bird fatalities in the Great Plains are typically lower than the national average (4.12 birds/MW/year, although Erickson et al. (2014) reported that the small bird fatality rate in the Prairie biome was slightly higher than the national average (2.15 small birds/MW/year).

Bats

The collision risk for bats at the Project will likely be low based on records of fatalities at other wind energy facilities in the Great Plains which average 3.07 bats/MW/year and range from 0.12 to 10.85 bats/MW/year (Hein et al. 2013). Rates of bat fatalities in the Great Plains are typically lower than the national average (5.71 bats/MW/year; Hein et al. 2013).

As stated in the USFWS voluntary wind energy guidelines, a species of habitat fragmentation concern is a species “for which a relevant federal, state, tribal, and/or local agency has found

that separation of their habitats into smaller blocks reduces connectivity such that the individuals in the remaining habitat segments may suffer from effects such as decreased survival, reproduction, distribution, or use of the area” (USFWS 2012). The USFWS North Dakota field office has developed a list of species of habitat fragmentation concern for the state (USFWS 2013a). The primary range for seven of the eleven designated species cover the Project Area – Baird’s sparrow, chestnut-collared longspur, grasshopper sparrow, northern harrier, sharp-tailed grouse, Sprague’s pipit, and upland sandpiper (USFWS 2013a). Habitat fragmentation from the construction of a wind energy project may potentially create barriers for such species. However, because the proposed Project will be largely located in already disturbed agricultural areas which are generally considered suboptimal habitat for most wildlife species, habitat fragmentation is likely to be minimal to most species. Some wildlife short-term displacement in grassland areas would be expected from construction activities, but the effects would be mostly limited to the construction period, and individuals would be expected to return after construction activities cease (Pearce-Higgins et al. 2012).

Potential impacts to sensitive species are discussed in more detail in **Section 7.16.2** below.

7.15.3 Mitigative Measures

Brady Wind is conducting environmental studies of the Project Area to aid in the final placement of turbines, roads, and associated facilities to avoid and minimize impacts to wildlife and native habitat. The following measures will be used, to the extent practicable, by Brady Wind to help avoid potential impacts to wildlife in the Project Area during selection of the turbine locations and subsequent development and operation:

- Siting access roads and turbines away from wetlands and waterbodies to the greatest extent practicable.
- Designing the layout of the proposed Project so that no permanent impacts to potentially jurisdictional wetland areas would occur. Avoiding wetland impacts would generally reduce potential impacts to migratory birds and bats and sensitive habitat.
- Reseeding or planting disturbed areas with native material, if approved by landowner.
- Install bird diverters on the transmission line associated with the Project following APLIC suggested practices (APLIC 2012) to avoid and minimize risk of injury or fatality to birds from collisions.
- Implementing a Wildlife Response and Reporting System (WRRS) once turbine construction is completed. The WRRS will include protocols for field technicians to report and document bird and bat mortalities during routine maintenance operations.
- Conducting post-construction mortality monitoring surveys for 1 year following construction of the Project.
- Developing a voluntary Bird and Bat Conservation Strategy, which includes an adaptive management approach, so that information gathered and experience gained from post-construction monitoring can be used to inform future management decisions at the Project.
- Proposing in its lighting plan to use the minimum number of aviation hazard lights acceptable to the FAA to avoid attracting migrating birds and bats to the turbines. Brady Wind will also install motion-activated lighting or down-shielded lighting on other Project facilities that require lighting at night (i.e., the collection substation) to avoid the potential to draw birds and bats toward the facility.

- During construction and operation, limiting vehicle speed limited to 25 mph on Project roads to minimize wildlife collisions.

7.16 Rare and Unique Natural Resources

7.16.1 Description of Resources

The Endangered Species Act (ESA), as administered by the USFWS, mandates protection of species federally listed as threatened or endangered and their associated habitats. Candidate species receive no statutory protection from the USFWS unless they are formally listed.

Brady Wind identified federally-listed species with the potential to occur in Stark County, North Dakota based on the USFWS endangered species database organized by county. The following listed species have potential to occur within the county and potentially the Project Area: whooping crane, black-footed ferret (*Mustela nigripes*), and northern long-eared bat (USFWS 2015b). Additionally, there is potential for bald and golden eagles to occur within the Project Area; both species are protected under the Bald and Golden Eagle Protection Act (BGEPA).

Whooping Crane (Federally Endangered)

The whooping crane was considered endangered in the United States in 1970 and the endangered listing was 'grandfathered' into the ESA of 1973 (CWS and USFWS 2007). The whooping crane population was reduced to 16 individuals belonging to one flock that migrated between Wood Buffalo National Park in Canada and the Aransas National Wildlife Refuge in Texas. With conservation efforts the Aransas-Wood Buffalo National Park population, the single self-sustaining wild population, has been steadily rising with the population estimate at 304 individuals (with a 95% probability of actual flock size being between 260-354 birds) during the 2013-2014 winter census (USFWS 2014b). A 200-mile wide migration corridor has been delineated for this population that contains 95 percent of all verified sightings. Spring migration occurs primarily in April and May whereas fall migration occurs primarily in October and November (Lewis 1995). Stopover habitat during migration includes a variety of croplands with roosting occurring in shallow, freshwater inland wetlands (Lewis 1995). Four additional areas associated with major stopover areas are designated as critical habitat: Quivira National Wildlife Refuge and Cheyenne Bottoms State Wildlife Management Area in Kansas; a section of the Platte River in Nebraska; and the Salt Plains National Wildlife Refuge in Oklahoma (USFWS 2012). Wind energy development has been identified as a threat to the species due to the potential for displacement due to the presence of the turbines, and potential for collisions with operational wind turbines and new power lines (USFWS 2012).

A desktop likelihood assessment for whooping crane (*Grus americana*) was conducted for the Project Area and associated transmission line (Tetra Tech 2015b). Although there is foraging and roosting habitat within the Project Area, only the northeast corner of the Project Area is within the whooping crane migration corridor. The likelihood of whooping cranes occurring within the Project Area is low based on the location of the Project Area on the outer edge of the migration corridor.

Black-footed Ferret (Federally Endangered)

The black-footed ferret, a medium-sized member of the weasel family, was listed as endangered in 1967 (USFWS 2014c). The black-footed ferret is an obligate predator of prairie

dogs and occurs exclusively in prairie dog colonies which it depends upon for food and shelter (USFWS 2014c). Previously believed extinct, 18 individuals were discovered in 1986 and were then used to develop a breeding and reintroduction program (USFWS 2010). It is estimated that over 1,000 black-footed ferrets occur in the wild with another 300 within breeding facilities (USFWS 2014c). No reintroductions of black-footed ferrets have been made in North Dakota (USFWS 2014c), and it is thought to be extirpated from the state (NDGF 2012).

Although there is potential for prairie dog colonies to occur with the Project Area, the habitat within the Project Area is highly fragmented. Black-footed ferrets only occur in large, unfragmented prairie dog colonies. Based on the range, known reintroduction locations of black-footed ferrets, and habitat within the Project Area, it is unlikely the black-footed ferret would occur within the Project Area.

Northern Long-eared Bat (Federally Threatened)

The northern long-eared bat was listed as threatened with an interim 4(d) rule effective May 4, 2015 (USFWS 2015c). The interim 4(d) rule limits the prohibition of take to areas affected by white-nose-syndrome (WNS) and an additional 150-mile buffer around this area. Under the interim 4(d) rule, all other take incidental to other lawful activities would be allowed in those areas of the northern long-eared bat range. North Dakota, and the Project Area specifically, fall outside of the area where take is prohibited as currently mapped by the USFWS. The interim 4(d) rule will either be affirmed or amended by May 2016.

Northern long-eared bats have been found from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, reaching into eastern Montana and Wyoming (USFWS 2013b). The northern long-eared bat is considered common only in discrete portions of its western range, including the Black Hills of South Dakota (USFWS 2013b). This species roosts in trees during the spring, summer, and fall (USFWS 2013b). The species prefers large, contiguous tracks of upland forested habitat during the summer residency period. Suitable natural roosting habitats in the Project Area are limited to individual trees, wind breaks and woodlots. Northern long-eared bats do not undertake long-distance seasonal migrations between summer and winter ranges, but do undertake shorter distance movements between summer roosts and winter hibernacula. These seasonal movements are generally between 35 miles and 55 miles, but may be substantially longer in some areas, perhaps as great as 168 miles (USFWS 2013b). Information on habitat use during migration is limited, but individuals in transit are likely to use foraging habitats at least part of the time. Northern long-eared bats spend winter hibernating in caves and mines. However, there are no known wintering hibernacula within North Dakota (USFWS 2013b).

The NLEB has a low likelihood to occur in the Project Area during the summer residency period (approximately May 15–August 15) because of the lack of large contiguous woodlots and due to the species being uncommon in the far western extent of its range, which includes the Project Area. The species could occur in the Project Area during seasonal movements to and from hibernacula; however, no hibernacula are known to occur in the state. Therefore it is unlikely that the northern long-eared bat would occur within the Project Area.

Bald Eagle (Federally Protected under BGEPA)

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

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

There are two known bald eagle nests within 10 miles of the Project Area. The nests were located during spring 2015 aerial raptor nest surveys conducted in support of another proposed wind energy facility (now canceled) approximately 8 miles to the northeast of the Project Area. The nearest bald eagle nest is located approximately three miles to the east of the Project in an isolated stand of trees surrounded by agricultural habitat. The other bald eagle nest is located approximately 8.5 miles to the northeast of the Project, along the Heart River. However, no bald eagle nests were found within the Project area or 2-mile buffer surrounding the Project Area during a nest inventory conducted in June 2015.

Bald eagles are unlikely to occur in the Project Area during the winter given the absence of large bodies of water that remain unfrozen within or near the Project Area. Although bald eagles are unlikely to breed within the Project Area due to a lack of suitable habitat, nearby nesting and migrating bald eagles could occur in the Project Area.

Golden Eagle (Federally Protected under BGEPA)

Golden eagles are common in western North America west of the 100th meridian with small populations also present in the eastern portions of Canada and the United States (Kochert et al. 2002). Golden eagles in the western U.S. are most commonly associated with open and semi-open habitats such as shrublands, grasslands, woodland-brushlands, and coniferous forests as well as in farmland and riparian habitats (Kochert et al. 2002). Both year-round and migratory golden eagles occur in North Dakota (NDFG 2015). Golden eagles nest on cliffs, utility poles, and in large trees in open areas from late January through August (Kochert et al. 2002). Golden

eagles in North Dakota nest mainly west of the Missouri River (Johnson 2015) and egg-laying occurs from late March to early May (Stewart 1975, DeLong 2004). The species feeds upon a wide variety of prey species but tends to hunt small to medium-sized mammals such as hares, rabbits, ground squirrels, marmots, and prairie dogs depending upon local availability (Bloom and Hawks 1982; Kochert et al. 2002).

There are six known golden eagle nests within 10 miles of the Project Area. The golden eagle nest locations were provided by North Dakota Game and Fish Department (NDGF) in response to a request for locations of known significant ecological communities and sensitive plant and wildlife occurrences within the vicinity of the initial Dickinson Wind Energy Project; all of these nests are located on large clustered sandstone buttes at least 8 miles to the northwest of the Project Area. No golden eagle nests were found within the Project area or 2-mile buffer surrounding the Project Area during a nest inventory conducted in June 2015. Golden eagles may occur in the Project Area during any time of the year but are unlikely to be breeding within the Project Area due to a lack of suitable habitat.

7.16.2 Impacts

Based on operational data from the WRRS protocol in use at NEER's 12 operating wind farms in North Dakota, there have been no fatalities of any federal candidate species, federally-listed species, or eagles. . Per the WRRS protocol, if an injured bird is found, it must be left undisturbed and reported to USFWS.

Whooping Crane

Collisions with turbines, meteorological towers, or transmission lines are a potential impact from the Project. However, sandhill cranes have been documented altering flight direction in response to turbines at a wind facility in South Dakota (Nagy et al. 2012), and multiple studies have documented sandhill cranes gradually climbing as they approach marked power lines (Morkill and Anderson 1991, Murphy et al. 2009). Therefore, this avoidance behavior may minimize the potential for Project-related collisions. Furthermore, no whooping crane fatalities have been recorded at wind facilities to date, suggesting that likelihood of collision may be low.

The potential for indirect impacts resulting from habitat loss is likely to be low. This is because the potential roosting habitat within the Project Area is minimal. Less than 1 percent of the Project Area is categorized as open water or emergent herbaceous wetlands that would be favorable for cranes (**Table 12**).

Based on location of the Project Area on the edge of the migration corridor and the avoidance and minimization measures discussed in Section 7.16.13 (e.g., buried collection systems, and marking the transmission line within 0.5 mile of suitable stopover habitat), the proposed Project is not likely to impact the whooping crane.

Black-footed Ferret

Given that NDGF believes that the black-footed ferret is extirpated from the state (NDGF 2012), it is unlikely that the Project will affect the black-footed ferret.

Northern Long-eared Bat

There is little suitable roosting or foraging habitat in the Project Area and no known hibernacula in North Dakota for the northern long-eared bat. The species could potentially collide with operational turbines during the spring and fall periods when migrating between summer roosts and winter hibernaculum. Although northern long-eared bat fatalities have occurred at wind energy facilities, there have only been 41 confirmed records, all of which occurred at wind energy facilities located east of the Mississippi River (USFWS 2015c). No northern long-eared bat fatalities from wind energy facilities have been documented in North Dakota (USFWS 2015c). The northern long-eared bat is considered to be rare in North Dakota and the Project Area is located at the edge of the species' range (USFWS 2013b, Dyke 2014). Therefore, it is unlikely that the Project will affect the northern long-eared bat.

Bald Eagle

Six bald eagle mortalities associated with wind energy facilities within the United States were reported from 1997 through June 2012 (Pagel et al. 2013). To date, one bald eagle mortality has been reported at a wind energy facility in North Dakota (Public Prairie Broadcasting 2015). Bald eagles are believed to be at less risk of turbine collision than golden eagles because they tend to focus their hunting efforts for fish and waterfowl in lakes and rivers (Buehler 2000). Although the landscape within the Project Area does not support any large waterbodies or an abundance of smaller waterbodies that would attract bald eagles for nesting or foraging, there are two known bald eagle nests that occur within 9 miles of the Project Area. The presence of occupied bald eagle nests in the vicinity of the Project Area suggests that the species may hunt or pass through the Project Area during the breeding season. Eagles use surveys are underway to evaluate risk of Project activities to bald eagles.

Golden Eagle

Seventy-nine golden eagle mortalities associated with wind energy facilities within the United States were reported from 1997 through June 2012, excluding the Altamont Pass Wind Resource Area in California (Pagel et al. 2013.); however, to date no golden eagle mortalities have been reported at wind energy facilities in North Dakota. Golden eagles are believed to be more at risk of turbine collision than bald eagles because they hunt for land-based prey along topographic contours where turbines are often located (Kochert et al. 2002).

Several known golden eagle nests occur on sandstone bluffs within 10 miles of the Project Area. The landscape within the Project Area does not support cliff nesting sites; therefore, it is unlikely that golden eagles will nest within the Project Area. Golden eagles may use the rangelands within the Project Area for foraging during the breeding season because home ranges during the breeding season average 7.7–12.7 sq. mi; (Kochert et al. 2002). Golden eagles may also occur within the Project Area during migration and winter seasons; however, there are no known features that would concentrate golden eagles within the Project Area compared to the surrounding area. Eagles use surveys are underway to evaluate risk of Project activities to golden eagles.

7.16.3 Mitigative Measures

General avoidance and minimization practices for vegetation and wildlife are discussed in **Sections 7.14.3** and **7.15.3**, respectively. Brady Wind has committed to the following additional

avoidance and minimization measures which are specific to potential impacts to federally threatened and endangered species:

- Brady will bury collection lines from the turbines to the collection substation to avoid collision risk following the APLIC (2006) suggested practices, if practicable.
- The proposed associated overhead transmission line located within 0.5 miles of wetlands that may provide stopover habitat for whooping cranes will be outfitted with bird flight diverters.
- Brady Wind will implement a WRRS, whereby if any dead or injured birds or bats are found within the Project boundaries by Project personnel, its location will be marked and reported promptly to the on-duty Plant Lead/Site Supervisor. Dead or injured birds or bats will not be moved by any unpermitted individual. In addition, if an injured or dead endangered or threatened animal is found in the Project Area, Brady Wind employees will immediately notify the USFWS after completing the WRRS documentation process.
- In addition to the training provided via the WRRS, Brady Wind will provide all construction and maintenance staff with training in federally listed species identification and will provide identification guides for whooping cranes to be kept in all vehicles.
- Brady Wind will conduct bird and bat post-construction fatality surveys for 1 year following construction of the Project.

7.17 Summary of Impacts

Table 17 summarizes the resources that will be affected as a result of the Project and the appropriate mitigation.

Table 17. Summary of Impacts and Mitigation

Resource	Impact	Mitigation
Socioeconomics	Primarily positive due to increased expenditures during construction and the long term benefits of lease payments and an increased tax base of the county due to property taxes.	N/A
Land Use	Up to 110 acres of land will be affected by turbines, associated access roads, and a substation during operation. Temporary impacts during construction for turbine installation, road construction, cable trenching, laydown and contractor staging, and turbine storage would require an additional 921 acres.	Brady Wind will work with landowners and regulatory agencies to minimize impacts of the Project.
Public Services	No impacts are anticipated.	The Project will utilize station service from the local electrical utility and will abide by the recommendations to prevent impacts to the transmission system.
Human Health and Safety	No adverse impacts are anticipated. No non-participating, occupied residences are predicted to have more than 30 hours per year of shadow flicker.	Turbines will be lighted to comply with FAA requirements. A variety of security measures will be implemented to reduce the chance of physical and property damage.
Noise	No adverse impacts are anticipated to noise-sensitive resources (occupied residences).	Noise modeling results indicated that received sound levels are all below the North Dakota noise requirement (Chapter 69-06-08-01(4)), which prescribes a limit of 50 dBA within 100 feet of an inhabited residence.

Table 17. Summary of Impacts and Mitigation

Resource	Impact	Mitigation
Cultural and Archaeological	No impacts to previously identified cultural resources are anticipated. An archaeological survey is underway, and the Project layout will avoid all newly documented sites. The sites are not shown on Figure 5 due to confidentiality. The field survey is anticipated to be completed in December 2015.	Sites near the Project will be fenced prior to construction. An unanticipated discoveries plan will be prepared prior to construction.
Recreational Resources	No direct impacts to recreational resources are anticipated.	No mitigation measures are proposed at this time.
Land Based Economies	Up to 110 acres of land will be permanently affected. An additional 921 acres will be temporarily disturbed for turbine installation, road construction, cable trenching, laydown and contractor staging, and turbine storage.	Brady Wind has worked with landowners to minimize impact to their land.
Soils	Same as above.	BMPs for erosion and sediment control will be utilized to minimize wind and water erosion at the site in association with the project SWPPP. Only land needed for the facility will be permanently affected. Temporarily disturbed areas will be restored.
Geologic and Groundwater Resources	No impacts to groundwater resources are anticipated.	N/A
Surface Water and Floodplain Resources	Access roads, turbines, and other Project facilities will be located and constructed in such a manner that no impacts are anticipated.	Impacts to surface waters will be avoided. Brady Wind will implement BMPs to minimize erosion and sedimentation at the site in association with the project SWPPP.
Wetlands	Impacts to wetlands and WoUS will be avoided and minimized to the extent practicable.	Wetlands in close proximity to the construction easement will be delineated and flagged prior to construction. Horizontal directional drilling will be used where necessary to avoid permanent impacts to wetlands from collection line trenching during construction.
Vegetation	Up to 110 acres of land will be permanently affected. An additional 921 acres will be temporarily disturbed during construction.	Brady 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 prairie mix in accordance with landowner preferences.
Wildlife	Potential avian and bat collisions may occur, but are anticipated to be relatively few.	A variety of mitigative measures will be implemented, as discussed in Section 7.15.3. The Project's WRRS will be implemented after construction of the Project as described in Section 7.15.3. and the Project will complete one year of post-construction mortality monitoring.

Table 17. Summary of Impacts and Mitigation

Resource	Impact	Mitigation
Rare and Unique Natural Resources	The northeast corner of the Project Area is within the whooping crane migration corridor, and the likelihood of whooping cranes occurring within the Project Area is low. No other federally listed species are expected to be affected by the Project.	Brady Wind has committed to burying collection lines as feasible, marking portions of the associated overhead transmission line within 0.5 mile of suitable crane habitat, and minimizing permanent impacts to jurisdictional wetlands.

8. PUBLIC AND AGENCY COORDINATION

Per Section 69-06-01-05 of the PSC’s administrative rules, Brady Wind and its representatives have contacted key local, state, and federal agencies in August 2015 to inform them of the Project and for assistance in identifying concerns or issues within the Project Area. Agency correspondence and responses received as of November 6, 2015 are included in **Appendix C; Table 18** summarizes the responses received from agencies to date.

Principal stakeholders in the Project are landowners that have entered into agreements with Brady Wind to provide wind rights for the Project. Brady Wind will continue to meet with county officials as the Project moves forward and Brady Wind seeks any necessary local permits (e.g. building permit).

Table 18. Summary of Agency Responses

Agency	Response Date	Response Summary
USACE	08/19/15	If a Section 10 and/or Section 404 permit is required, a permit application must be submitted to USACE. NWP 12 requirements and general conditions were provided.
SHSND	08/21/15	Recommends Class I file search and Class III Intensive Cultural Resources Inventories for archaeological sites and historic structures.
ND Geological Survey	08/24/15	There are economic coal deposits within or adjacent to the Project Area. The agency has not initiated a landslide mapping project within this area.
ND Department of Health	08/26/15	The agency believes the environmental impacts of the Project will be minor. Fugitive dust emissions should be minimized during construction. Impacts to streams should be avoided and disturbed areas should be revegetated. Projects disturbing one or more acres must have a permit to discharge storm water runoff. Noise from construction activities can be minimized by ensuring that construction equipment is equipped with a working muffler. The agency believes the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.
NDPRD	08/31/15	No state park lands or Land and Water Conservation Fund lands are in the Project Area. There are several significant ecological communities documented in the Project Area. The agency recommends that any impacted areas be revegetated with species native to the Project Area.
NDSWC	09/04/15	There are floodplains in the Project Area. The online link for well locations was provided. There is Southwest Pipeline Project infrastructure in the area; contact information for the Southwest Water Authority was provided. All waste materials associated with the Project must be disposed of properly and not placed in floodway areas. No sole-source aquifers have been designated in North Dakota.

Table 18. Summary of Agency Responses

Agency	Response Date	Response Summary
NDGF	09/25/15	Suggests use of USFWS Land-Based Wind Energy Guidelines; recommends avoidance of wetland impacts and maintaining existing drainage patterns, and replacing wetlands that are affected. Requests burying of collection lines, marking overhead lines near streams or wetlands; recommends conducting aerial surveys for raptor nests prior to construction and implementing a ½ mile buffer around active eagle nest sites; recommends monitoring for avian and bat mortality, and requests GPS coordinates of turbines once Project is constructed.

9. POTENTIAL PERMITS/APPROVALS

The federal and state permits or approvals that have been identified as potentially required for the construction and operation of the Project are shown in **Table 19**. Permits dependent on the final site layout will be applied for after receiving PSC approval, but prior to construction.

Table 19. Potential Permits and Approvals Required for Construction and Operation of the Proposed Facility

Agency	Type of Approval	Status*	Need
Federal Approvals			
USACE	Nationwide Permit 12 and 14	3	Wetland surveys are currently underway to ensure that the Project minimizes impacts to WoUS and stays below the pre-construction notification threshold.
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.
EPA	SPCC	2	Required if more than 1,320 gallons of oil are stored on-site.
State of North Dakota			
PSC	Certificate of Site Compatibility	1	Required for construction of generation facility over 0.5 MW in size.
	Certificate of Corridor Compatibility and Route Permit	1	Required for transmission lines over 115kV.
SHSND	Concurrence with effect determinations	1	Class I File Search is complete and a Class III Intensive Cultural Resources Inventory for archaeology is underway; a Class III Cultural Resources Inventory for historic structures is also underway. The reports will be submitted to SHSND for review when complete.
North Dakota Department of Health	NPDES Permit: General Construction Storm Water	2	Required for disturbance of over 1 acre of land. Must prepare a SWPPP.
North Dakota Highway Patrol	Overheight/Overweight Permit	2	Permit required for hauling construction equipment and materials 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 right-of-way.
ND State Water Commission	Drainage Permit	3	Required if draining a wetland with a drainage area of 80 acres or more.
	Water Permit	3	Required if drilling a well for the O&M facility.
Local Permits			
Stark County	Wind Energy Facility Siting Permit	1	Brady Wind submitted the application in November 2015.
	Haul Road Agreement	2	Required to use roads and bridges to transport Project equipment and construction materials will be finalized after the wind energy facility siting permit is approved.

Table 19. Potential Permits and Approvals Required for Construction and Operation of the Proposed Facility

Agency	Type of Approval	Status*	Need
	Road Crossing Agreement	2	Utility permit granting permission to install collection lines and transmission line across county right-of-way.
	Right-of-Way Permit	3	Permit to place collection lines and transmission line within County right-of-way; not currently anticipated to be required.
	Road Agreement	3	Permit to build roads on county section lines; not currently anticipated to be required.
Southwestern Water Authority	Pipeline Crossing Permit	3	Required if Project facilities will cross the Southwest Pipeline Project.

* Status Explanation:

1 Applied and/or Decision Pending

2 Will Apply Prior to Construction

3 Final Layout will Determine Whether Permit/Approval is Needed

10. FACTORS CONSIDERED

The North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the PSC in the evaluation and designation of the site of the facility.

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

The preceding sections discuss the research and investigations relating to the effects of the proposed facility on public health and welfare, natural resources, and the environment. These effects and the proposed mitigation to minimize these effects are summarized in **Section 7.17**.

10.2 Technologies to Minimize Adverse Environmental Effects

Brady Wind will utilize the most current technologies that minimize impacts to the environment. Current wind turbine technologies, including the equipment and siting tools, optimize the wind and land resources.

10.3 Potential for Beneficial Uses of Waste Energy

This factor is not applicable to this Project. No waste energy is created using wind energy.

10.4 Unavoidable Adverse Environmental Effects

Unavoidable adverse environmental effects are described for each resource area in Section 7. The Project is expected to impact up to 110 acres of land during operation, which will not be available for other uses. An additional 921 acres of land will be temporarily affected due to turbine pad construction, road construction, collection line trenching, laydown and contractor staging areas, turbine storage, and temporary meteorological towers. Additional unavoidable effects include visual effects and increased habitat fragmentation.

10.5 Alternatives to the Proposed Site

Brady Wind believes that the proposed site is the most viable alternative. Brady Wind is committed to being flexible on the preliminary site layout and will work closely with landowners and to examine all reasonable alternatives to the preliminary site layout.

10.6 Irreversible and Irretrievable Commitment of Natural Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but these include those resources primarily related to construction. Construction of the Project in this particular location may make the 315-acre coal deposit in the eastern portion of the Project Area unavailable.

Labor and natural resources will be used in the fabrication and preparation of construction materials. These materials are usually not retrievable. Construction resources that will be used

include aggregate resources, concrete, steel, and hydrocarbon fuel. Each steel turbine requires the construction of a concrete base 40 to 60 feet across and 7 to 10 feet thick. Access roads will require aggregate resources for their construction and maintenance. During construction, vehicles will be traveling to and from the site, utilizing hydrocarbon fuels. These resources are not in short supply, and their use will not have an adverse effect on the availability of these resources. In addition, the overall anticipated environmental and economic benefits of the Project will balance the irretrievable commitment of resources resulting from the construction of the Project (see **Section 10.7**).

10.7 Direct and Indirect Economic Impacts

Economic impacts include impacts associated with the temporary disturbance of up to 1,030 acres of land during construction. Permanent impacts will be lower, at approximately 110 acres. In general, agricultural areas surrounding each turbine can still be farmed, and landowner compensation has been established in individual lease agreements.

The remaining direct and indirect economic impacts are primarily positive. Wind energy development removes less total land from agricultural use than other forms of development. The rural economy and energy production in the county and state is diversified. To the extent that local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in Stark County will contribute to the total personal income of the region. Additional personal income will be generated for residents in the county and the state by circulation and recirculation of dollars paid out by the Applicant as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services benefit businesses in the county and the state.

Long-term beneficial impacts to the county's tax base as a result of the construction and operation of the wind farm will contribute to improving the local economy in this area of North Dakota. The development of wind energy in this region will be important in diversifying and strengthening the economic base of western North Dakota. Additional revenues are expected from property and income taxes.

Continuing to establish the central region of North Dakota as an important producer of alternative energy sources may spur the development of wind-related businesses in the area, in turn contributing to economic growth in the region.

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

No conflicts are anticipated with existing state and local government and private entities' development plans.

10.9 Effect of Site on Cultural Resources

As described in **Section 7.7**, a Class I Literature Review was conducted and a Class III Cultural Resources Inventory for archaeology in the APE for direct effects is underway. The literature review results identified a total of 9 previously recorded archaeological sites and 7 cultural resource leads that are recorded within the Project direct APE and within 1 mile of the direct APE.

Brady Wind will avoid newly documented sites and the previously-documented cultural resources within the direct effects APE. The pedestrian survey and shovel probing, if necessary, will be completed as weather permits in winter 2015 – spring 2016 and the cultural resources inventory report will be submitted to the SHSND for review and concurrence in the once it is complete.

The Class I Literature Review identified a total of 18 architectural resources and 4 cultural resource leads within the Project direct APE and within 1 mile of the direct APE. A Class III Cultural Resources Inventory for historic structures was completed in November 2015 and the report is underway. The architectural survey report will be submitted to SHSND for review and concurrence once complete, and will also be provided to the PSC. Brady Wind will avoid directly impacting all NRHP-eligible sites.

10.10 Effect of Site on Biological Resources

The impact of the Project on wildlife is expected to be low. Brady Wind has sited the Project following the voluntary USFWS Wind Energy Guidelines (USFWS 2012) and designed the Project following suggested APLIC practices (APLIC 2006). There is potential for avian and bat collisions with facility turbines, power lines, and meteorological towers, as well as the potential for habitat loss and fragmentation; however, Brady Wind will implement measures to avoid and minimize potential impacts to biological resources from the proposed Project. Electrocution risk is avoided by using pad-mounted transformers and designing the associated transmission line per APLIC 2006 recommendations. Risks of collision will be minimized by siting facilities away from wetlands, burying collection lines, and marking portions of the associated transmission line within 0.5 mile of suitable whooping crane habitat. Similarly, risk of impacts to habitat will be avoided and minimized by reseeding or planting disturbed areas with native material, if approved by landowner. Eagles use surveys and raptor nest surveys are underway to evaluate risk of Project activities to bald and golden eagles.

Detailed discussion of potential impacts and proposed mitigation measures on biological resources is provided in **Section 7.14** (Vegetation), **Section 7.15** (Wildlife), and **Section 7.16** (Rare and Unique Natural Resources).

10.11 Cumulative Effects

Activities that currently exist within the Project Area and vicinity are primarily limited to agriculture. The exploitation of oil is an existing industrial component of the landscape in Stark County, with approximately 26 percent of the county covered by oil fields (NDDMR 2015a). Oil production is expected to increase in the county (NDDMR 2015b). In addition to the proposed Project, there are six existing wind farms in the vicinity of the Project, including Sunflower Wind Project northeast of the Project Area near Hebron in Stark/Morton counties, Thunder Spirit Wind Farm south of the Project Area near Hettinger in Adams County, and the four-phased Bison Wind Energy Center northeast of the Project Area near New Salem in Oliver and Morton counties. It is likely that wind energy development will continue in southwestern North Dakota.

Wind energy development is anticipated to have a positive cumulative impact on air quality, and minimal impacts to geology, soils, water, noise, safety and health issues, and cultural resources. Socioeconomic impacts are anticipated to be positive, as the rural economy is stimulated and

local energy production is diversified. The potential negative cumulative impacts are anticipated to be primarily on land use, mineral resources, vegetation, and wildlife.

With the increase in the amount of land being used for wind energy generation activities, farming activities may decrease slightly. This potential shift in land use in rural communities that have historically made their living from agricultural activities may lead to a cumulative impact; however, the additional income to farmers from wind development may make it more feasible for them to keep most of their land in agricultural uses rather than being developed for residential, commercial, or industrial uses. By enabling farmers to keep land in agriculture, wind energy development may lead to a net positive cumulative impact as less total land from agricultural use than other forms of development.

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

10.12 Agency Comments

Agency coordination and potential permits/approvals are discussed in **Section 8** and **Section 9**, respectively. A copy of agency response letters is included in **Appendix C**.

11. QUALIFICATIONS OF CONTRIBUTORS

Name Project Role	Education and Professional Experience
MELISSA HOCHMUTH Project Manager, Development NEER	Ms. Hochmuth joined NEER in August 2008 and serves as NEER's lead developer for North Dakota. Melissa has seven years of experience in various roles with NEER. She spent five years in the environmental compliance and regulatory departments and began her role as lead developer for wind projects in North Dakota in October 2013. Melissa is responsible for managing and coordinating key functions of project development including site prospecting, meteorological tower deployment, financial analysis, land acquisition, contract negotiations including leases and obtaining all state, local, and environmental permits. Melissa holds a BA, Masters of Educational Administration and Law Degree from the University of Florida.
KIMBERLY WELLS, PH.D. Environmental Services Project Manager NEER	Dr. Wells has 15 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 ESA, 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 is the environmental permitting manager for the Mid-Continent Region that includes North Dakota.
JASON UTTON Director Development NEER	Mr. Utton currently directs all wind energy development efforts in the Midwest ISO and PJM markets. Jason joined NEER in 2007. While with NEER, he has successfully developed over 500 MW of clean, renewable energy, which reflects a total company investment of over \$2.0B. Jason is the lead negotiator for all commercial contracts in North Dakota.
CHRIS WESTRICK Sr. Project Manager Construction NEER	Mr. Westrick 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. Chris has over 10 years of experience in construction and project management.
BRIAN BJELLA Attorney for Applicants Crowley Fleck PLLP	Applicant's counsel. J.D. and Bachelor's degree, both from University of North Dakota.
ANNE-MARIE GRIGER, AICP Project Manager Tetra Tech, Inc.	Ms. Griger has ten years of experience in environmental planning and permitting, including NEPA compliance, for large-scale infrastructure projects including wind energy generating facilities, solar energy facilities, and highways. She serves as Project Manager for wind energy projects in Kansas, North Dakota, South Dakota, and Texas. Master's in Urban and Regional Planning and Bachelor's degree in Environmental Policy and Planning, both from Virginia Tech.
SARAH MCCALL Senior Environmental Planner Tetra Tech, Inc.	Ms. McCall has more than 12 years of experience as an environmental planner and natural resources specialist/policy analyst. Responsibilities have included project management and technical support of NEPA documents and other land use permits, focusing largely on renewable energy projects. Ms. McCall received her Master of Public Administration in Environmental Management at Indiana University, her Master of Science in Environmental Science at Indiana University, and her Bachelors of Science in Zoology at the University of Wisconsin.

Name Project Role	Education and Professional Experience
<p>JAKE ENGELMAN GIS Analyst Tetra Tech, Inc.</p>	<p>Mr. Engelman prepared the application figures, impact calculations, and other GIS tasks in support of this permit application. He is a GIS specialist with four years of experience in environmental resource and utility planning projects. His skills include geographic information systems (GIS), cartographic and graphic design, remote sensing, natural and cultural environmental resource mapping, and global positioning system (GPS) data collection. He uses these skills to produce high-quality graphic products of proposed projects, ranging from generation scale utility projects to single parcel substations. Mr. Engelman received his Bachelors of Science in Geography at Minnesota State University-Mankato.</p>
<p>ADAM HOLVEN Archaeologist Tetra Tech, Inc.</p>	<p>Mr. Holven led the Class I and Class III Cultural Resources Inventory for archaeology for the Project. He has extensive archaeological field experience, including large-scale multi-square mile cultural resource surveys for wind farms in North Dakota, South Dakota, and Minnesota. Mr. Holven obtained his Master's off Arts in Anthropology at Iowa State University, his Bachelors of Arts in Anthropology at University of Northern Iowa, and his Bachelors of Science in Geology at University of Northern Iowa.</p>
<p>STEVE YARBROUGH Wetlands Biologist Tetra Tech, Inc.</p>	<p>Mr. Yarbrough led the wetlands delineation surveys for the Project. He is a certified professional ecologist with the Ecological Society of America and a director on the board of the Colorado Native Plant Society, and has 26 years of experience as a biologist and environmental scientist in the environmental consulting field. Mr. Yarbrough obtained his (Master of Arts in Biology at the University of Colorado, Denver, and his Bachelor of Arts in Environmental Studies at the University of Kansas.</p>
<p>RICH YOUNG Wildlife Biologist Tetra Tech, Inc.</p>	<p>Mr. Young is a wildlife biologist with over 20 years of experience. He has overseen the avian and eagle surveys for the Project. Mr. Young specializes in biological assessments of sensitive and rare wildlife, inventories and censuses of wildlife populations, habitat restoration and management, and impacts of anthropogenic disturbance. He has managed and supervised a variety of field-intensive projects involving the inventory and assessment of sensitive species and habitats. Mr. Young received his Bachelor of Science in Fisheries and Wildlife Biology at Iowa State University.</p>

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13. DEFINITIONS

AADT	Average Annual Daily Traffic
APE	Area of Potential Effects
Asynchronous Generator	A cage-wound generator, also called an induction generator, used to generate alternating current
BBCS	Bird and Bat Conservation Strategy
BGEPA	Bald and Golden Eagle Protection Act
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
CRP	Conservation Reserve Program
CUP	Conditional Use Permit
Distribution	Relatively low-voltage lines that deliver electricity to the retail customer's home or business
Electromechanical	Of, relating to, or being a mechanical process or device actuated or controlled electrically; especially being a transducer for converting electrical energy to mechanical energy
EMF	Electromagnetic Field
EPC	Engineering, procurement, and construction
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GE	General Electric
Gearbox	An assembly of parts including the speed-changing gears and the propeller shaft by which the power is transmitted from an automobile engine to a live axle; the speed-changing gears in such an assembly
Generator	A machine by which mechanical energy is changed into electrical energy
Geotechnical	A science that deals with the application of geology to engineering
Hub	The central part of a circular object (as a wheel or propeller)
Interconnection	To be or become mutually connected
kV	kilovolt
m/s	meters per second
Mph	miles per hour
MW	megawatt
MAPP	Mid-Continent Area Power Pool
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	Midwest Independent System Operator
NDDOT	North Dakota Department of Transportation
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDGF	North Dakota Game and Fish Department
NDGS	North Dakota Geological Survey
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service

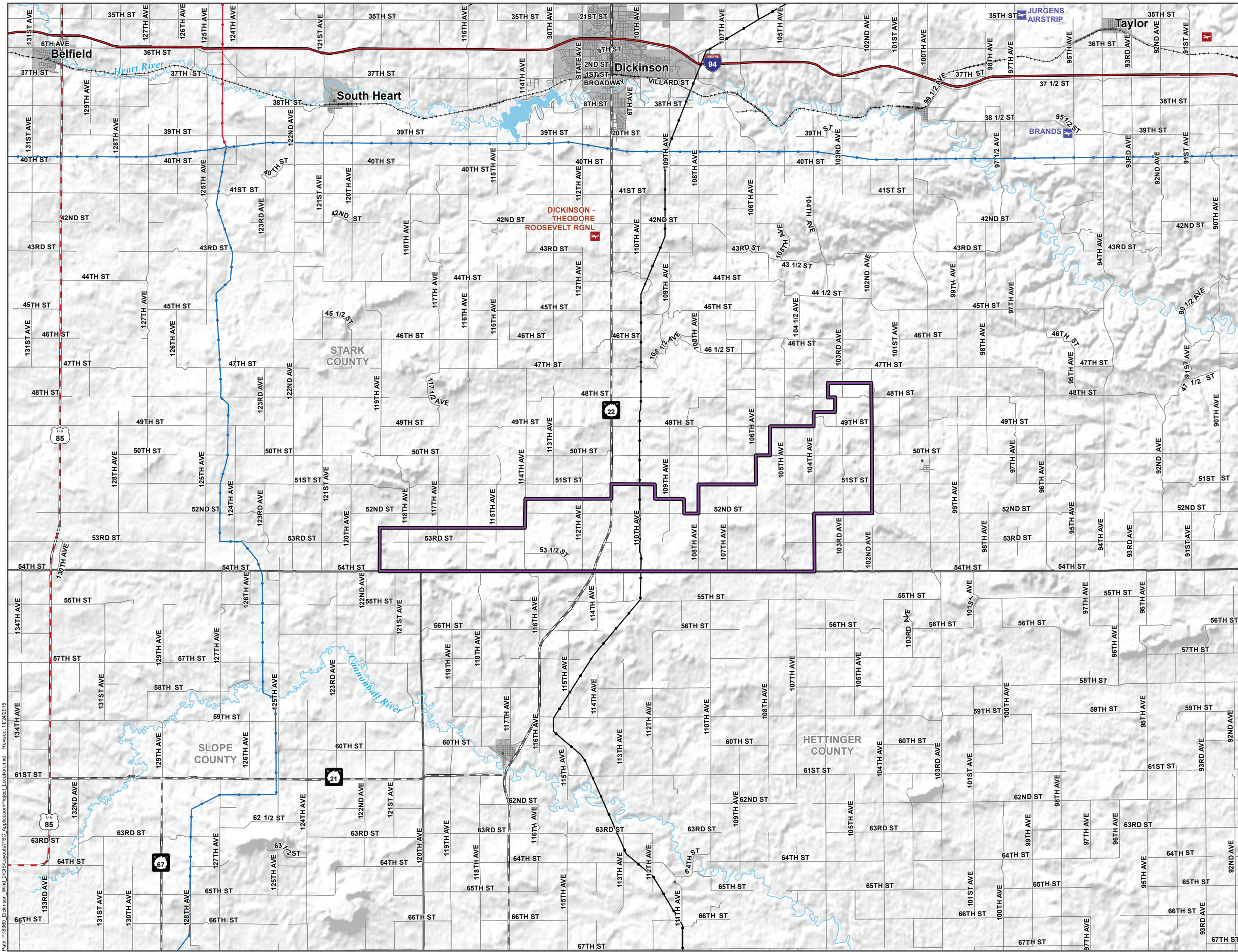
NTIA	National Telecommunications and Information Administrations
NWI	National Wetlands Inventory
NWP	Nationwide Permit
O&M	Operations and maintenance
Pitch	The action or a manner of pitching; especially an up-and-down movement
PLOTS	Private Lands Open to Sportsmen
Project, the	Brady Wind Energy Center
PSC	North Dakota Public Service Commission
PTC	Production Tax Credit
Resistance	The opposition offered by a body or substance to the passage through it of a steady electric current
Rotor	The rotor consists of three blades mounted to a rotor hub
rpm	Revolutions per minute
SCADA	Supervisory Control and Data Acquisitions (communications technology)
SHSND	State Historical Society of North Dakota
Step-up Transformer	A transformer that increases voltage
Substation	A subsidiary station in which electric current is transformed
SWPPP	Storm Water Pollution Prevention Plan
Torque	A force that produces or tends to produce rotation or torsion; also a measure of the effectiveness of such a force that consists of the product of the force and the perpendicular distance from the line of action of the force to the axis of rotation : a turning or twisting force
Transformer	An electrical device by which alternating current of one voltage is changed to another voltage
Transmission	An assembly of parts including the speed-changing gears and the propeller shaft by which the power is transmitted from an automobile engine to a live axle; the speed-changing gears in such an assembly
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WoUS	water of the United States
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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Brady Wind Energy Center

Stark County, ND



Legend

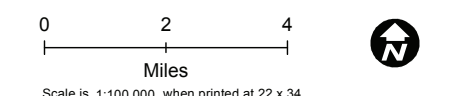
- Proposed Project Boundary
- County Boundary
- Major River
- Municipal Boundary

Existing Electrical Transmission (Ventyx 2015)

- 115kV Transmission Line
- 230kV Transmission Line
- 345kV Transmission Line

Transportation (BTS 2013)

- Public Airport
- Private Airport
- Interstate Highway
- U.S. Highway
- State Highway
- Rail








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Figure 1: Project Location

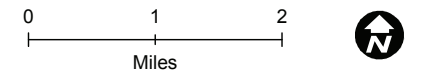
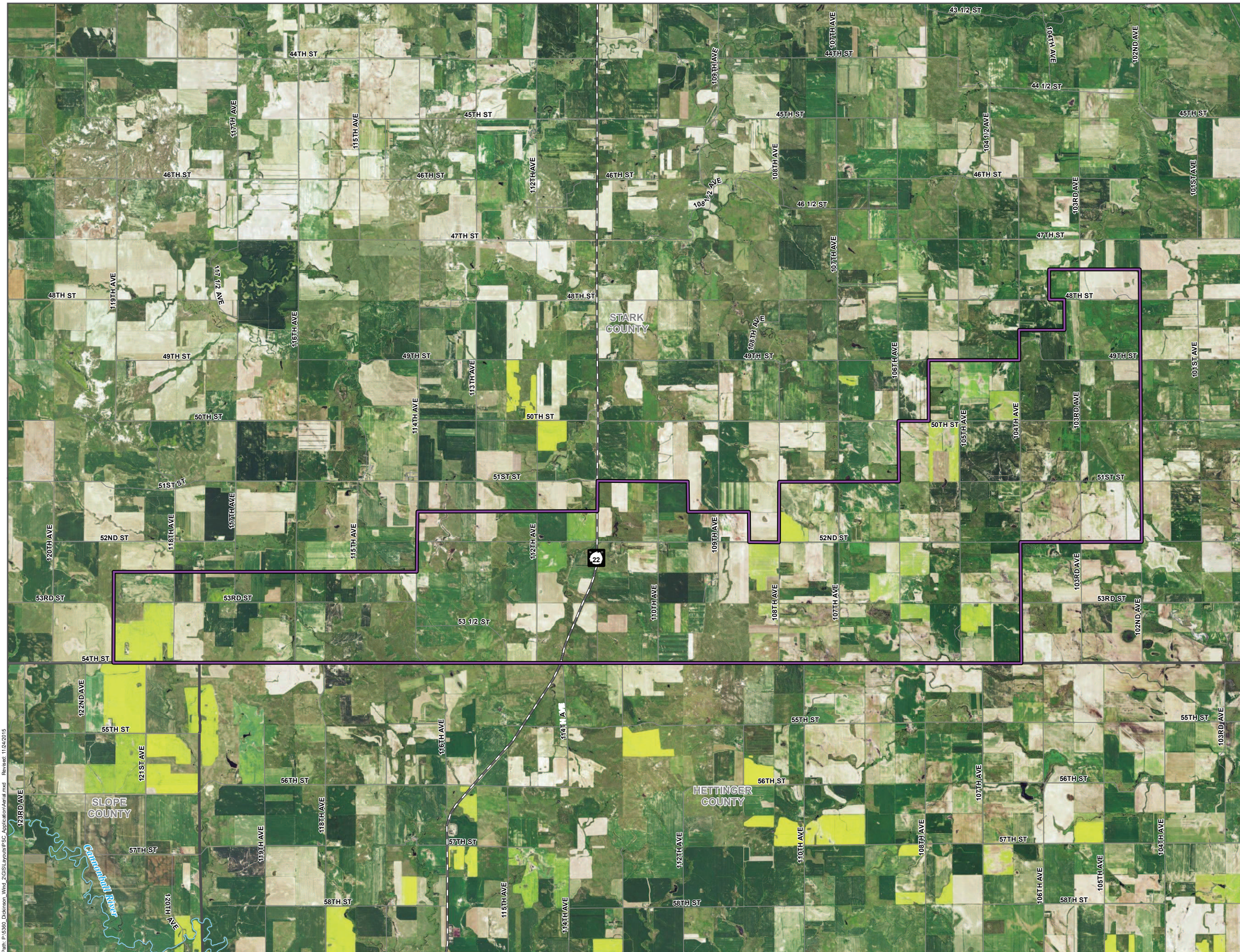
Brady Wind Energy Center

Stark County, ND

Legend

-  Proposed Project Boundary
-  County Boundary
-  Major River
- Transportation**
-  State Highway
-  County Road

*NAIP 2014 Aerial Imagery



Scale is 1:48,000 when printed at 22 x 34



Path: P:\580_Dickinson_Wind_2\GIS\Layouts\FSC_Application\Verbal.mxd Revised: 11/24/2015

Figure 2: Project Area (Aerial)

Brady Wind Energy Center

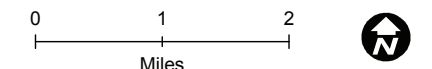
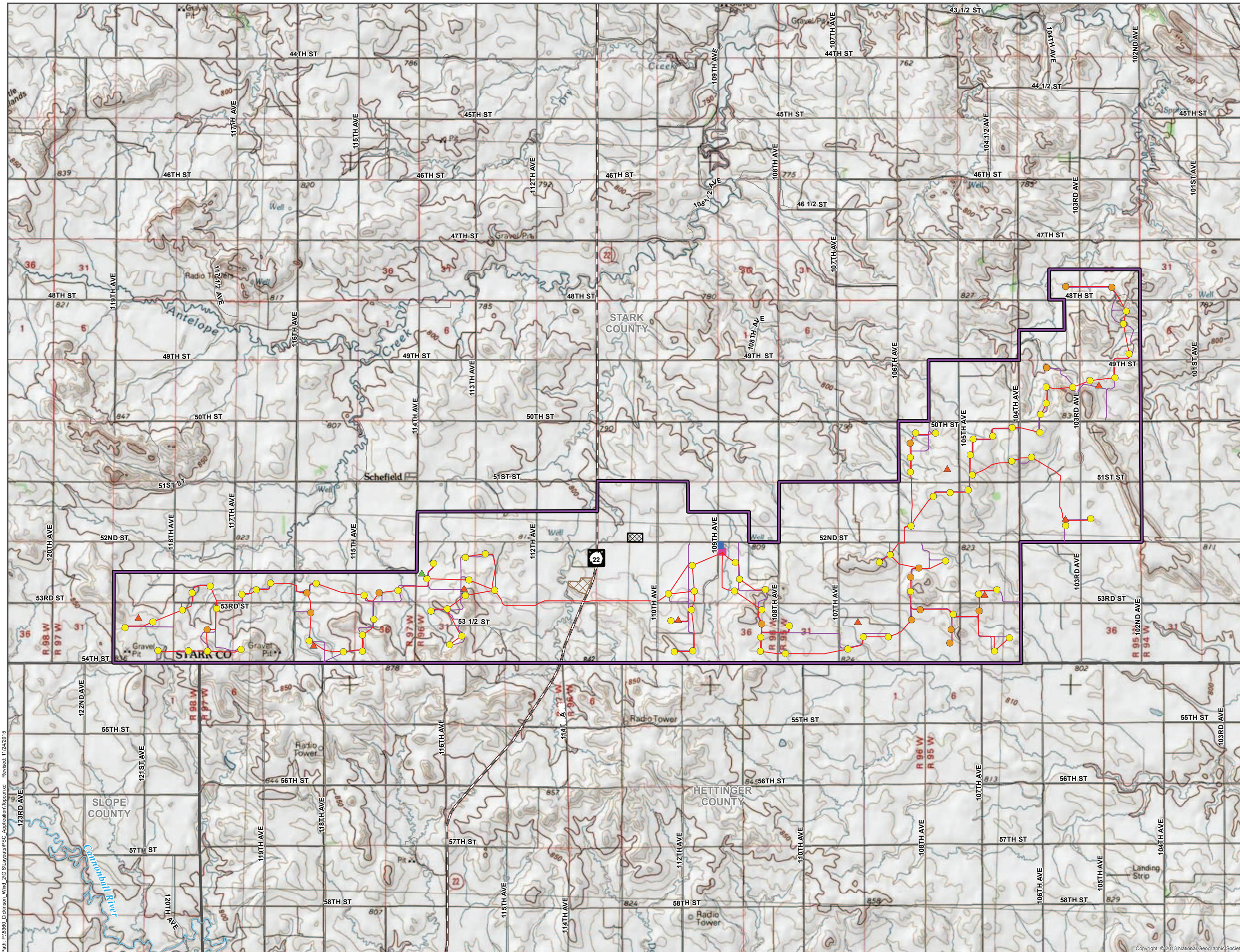
Stark County, ND

Legend

Proposed Project Features

- ▲ Permanent Met Tower
- ▲ Temporary Met Tower
- Proposed Turbine (10/30/15)
- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

*USGS Topo



Scale is 1:48,000 when printed at 22 x 34

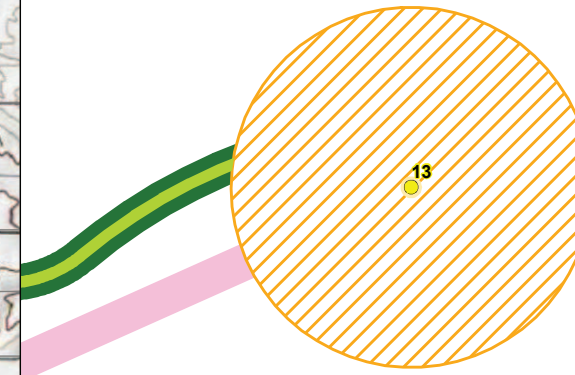


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Figure 3: Project Area (Topographical)

Impact Buffer Inset



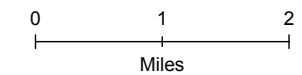
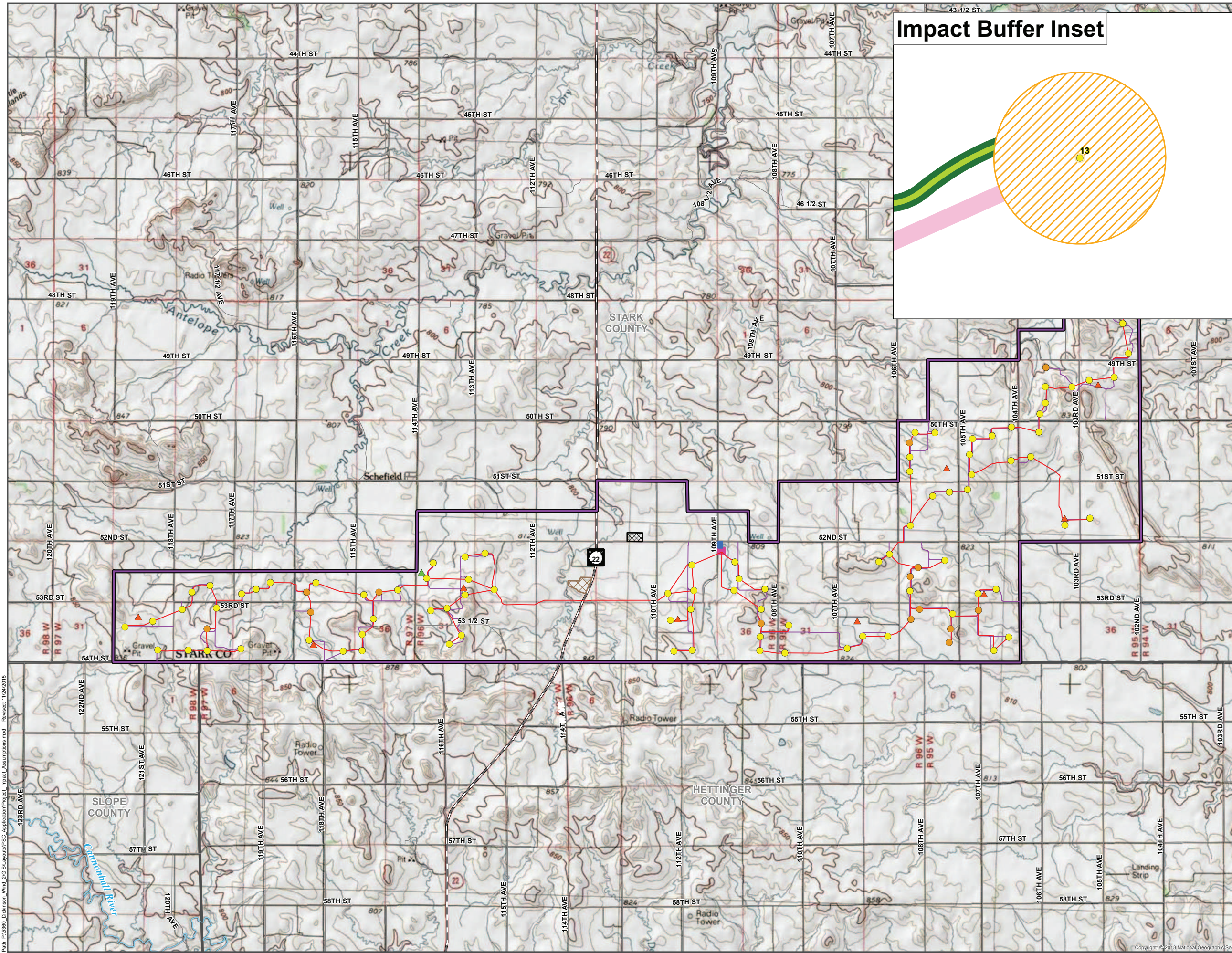
Legend

Proposed Project Features

- ▲ Permanent Met Tower
- ▲ Temporary Met Tower
- Proposed Turbine (10/30/15)
- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

Proposed Impact Assumptions

- Temporary Service Road Impact Buffer
- Temporary Turbine Impact Buffer
- Temporary Collection Line Buffer
- Permanent Turbine Impact Buffer
- Permanent Service Road Impact Buffer



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Figure 4: Project Impact Assumptions

Brady Wind Energy Center

Stark County, ND

Legend

Proposed Project Features

- ▲ Permanent Met Tower
- ▲ Temporary Met Tower
- Proposed Turbine (10/30/15)
- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

Exclusion*

(NRCS SSURGO 2013)

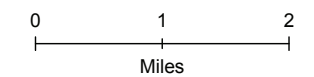
- Prime Farmland

*Archaeological Sites are not shown due to confidentiality.

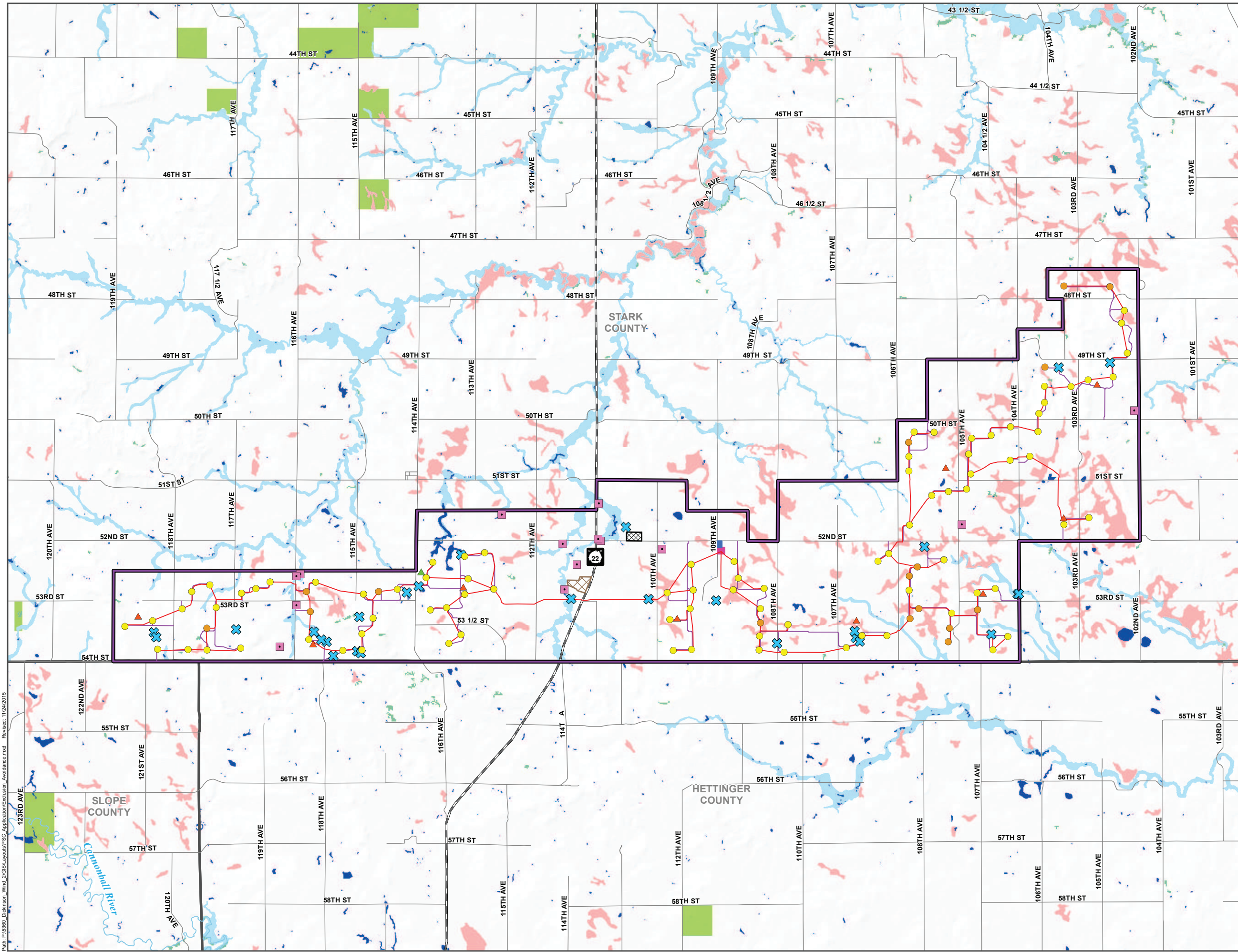
Avoidance

(NLCD 2011, NWI 2014, FEMA 2014, NDGIS Hub 2014)

- Historical Resources
- × Surveyed Wetland
- 100-year Floodplain
- NLCD Forest
- NWI Wetland
- North Dakota Game & Fish Conservation PLOTS Recreational Easement (Private Land Open to Sportsmen)

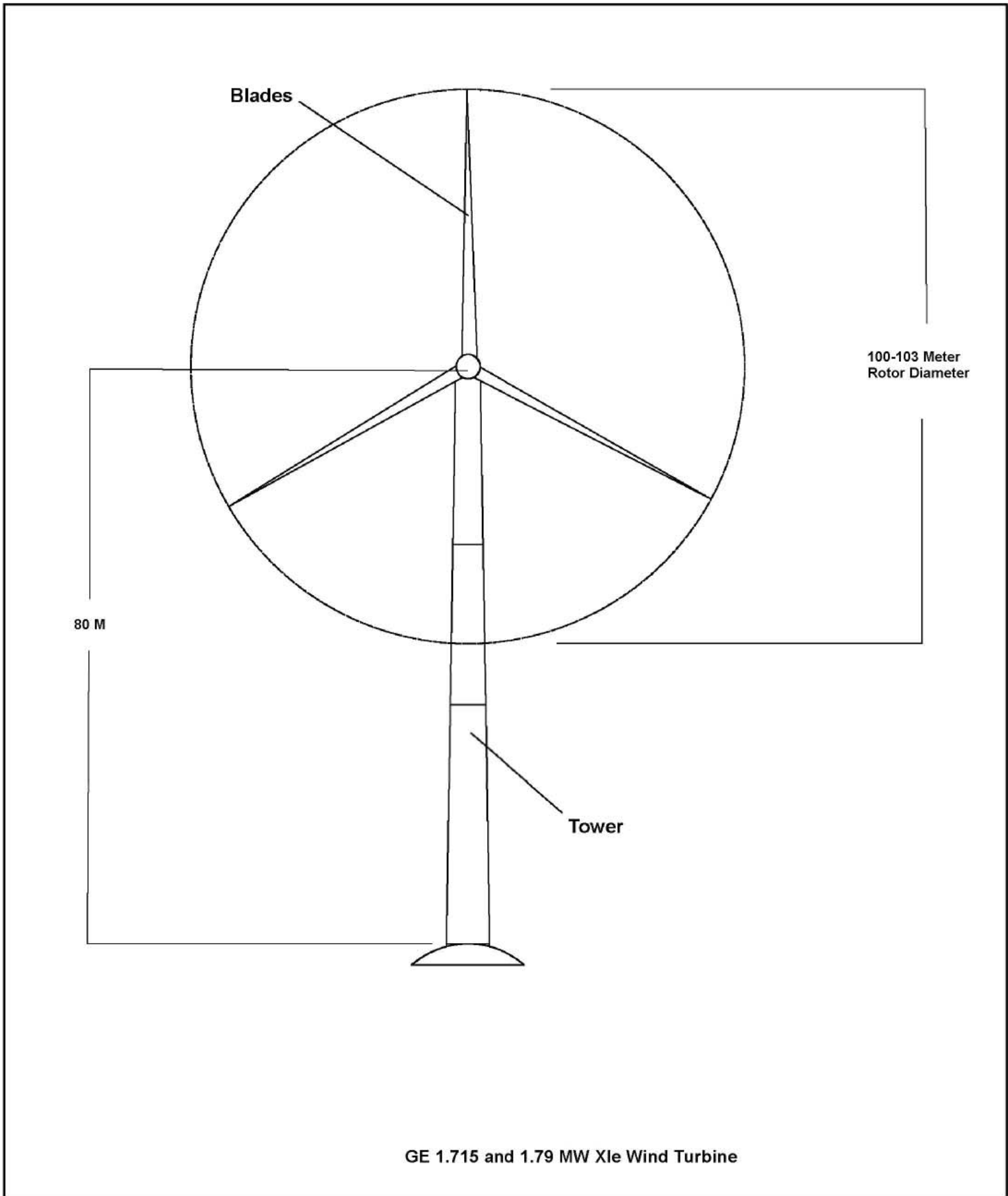


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Figure 5: Exclusion and Avoidance Areas



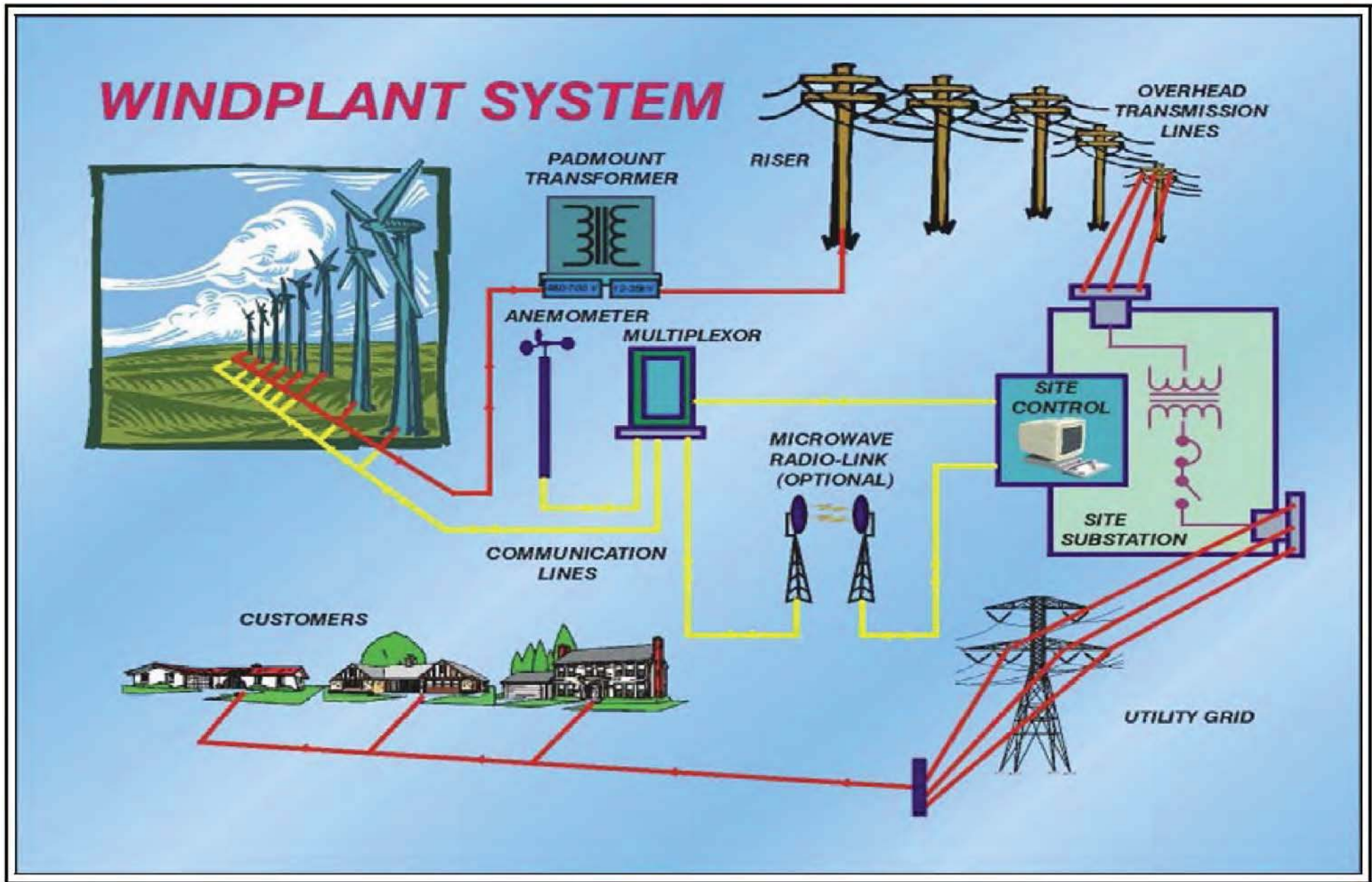


Figure 7
 Path of Energy Diagram
 Brady Wind Energy Center

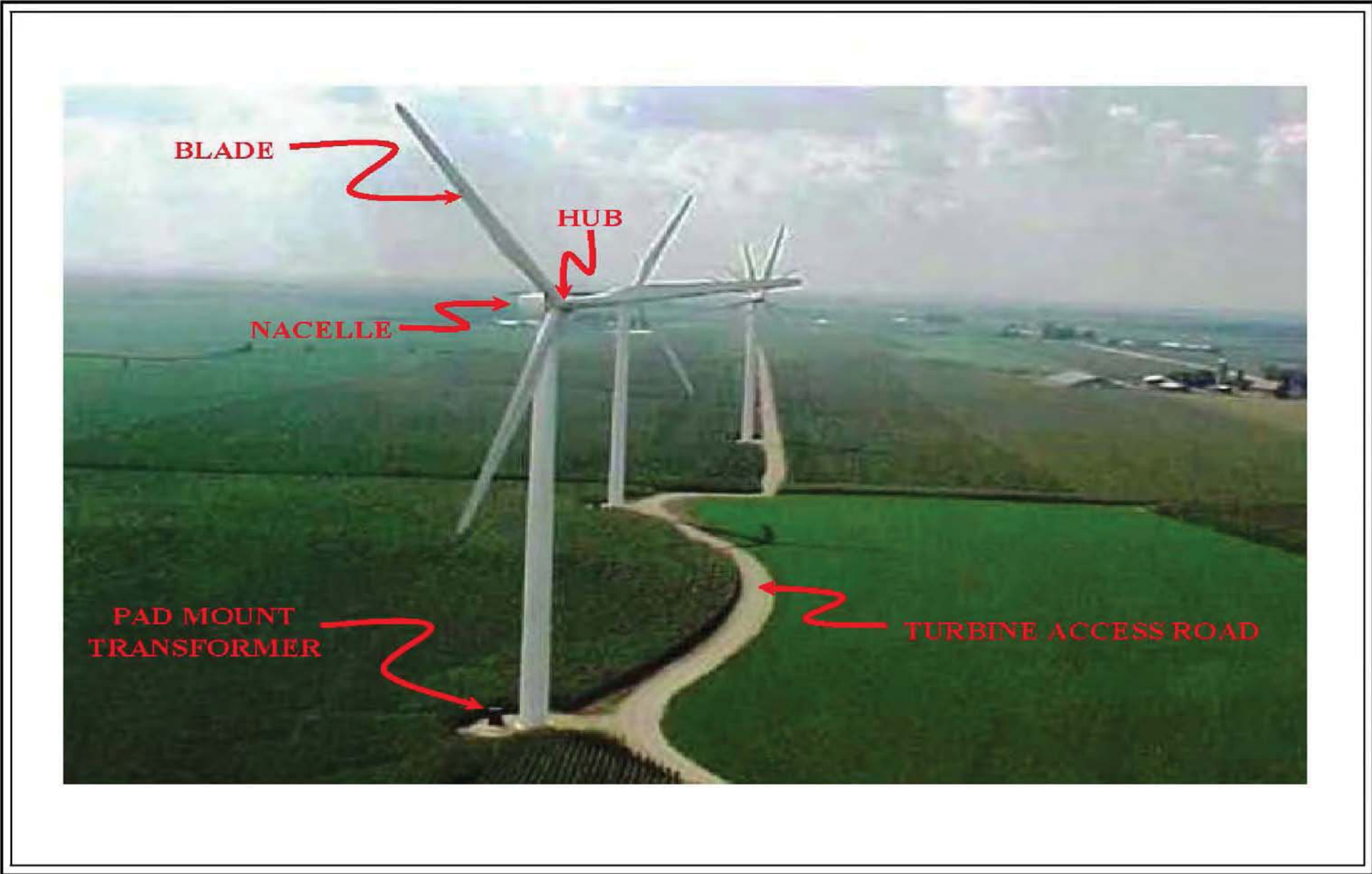


Figure 8
Typical Wind Energy Center Layout
Brady Wind Energy Center

REVISIONS				
REV	DESCRIPTION	DSN	CHK	DATE
A	FOR DEVELOPMENT	MRS	JW	07/13/15
B	FOR DEVELOPMENT	MRS	PF	08/07/15
C	FOR DEVELOPMENT	MRS	JW	08/11/15
D	BORE PLAN	MRS	JW	08/24/15
E	ISSUED FOR REVIEW	MRS	JW	09/14/15
F	ISSUED FOR REVIEW	GLJ	PF	10/16/15
G	ISSUED FOR REVIEW	ADR	JW	10/19/15
		MRS	CCG	

LEGEND

PROPOSED PAD	---
PROPERTY LINE	---
EXISTING 10' CONTOURS	---
EXISTING 1' CONTOURS	---
ROAD EDGE	---
ROAD CENTERLINE	---
EXISTING ROAD SECTION LINE	---
EXISTING ROAD 75' OFFSET EASEMENT	---
PROPOSED FENCE	---
PROPOSED DIMENSIONS	XX'
SURVEY POINT	•
EXISTING UTILITY POLE	•

NOTES

- SURVEY IS BASED OFF OD NORTH DAKOTA STATE PLANE SOUTH ZONE (3302) NAD 83 INTERNATIONAL FEET NAVD 88
- CLIENT, PLEASE PROVIDE A BENCHMARK WITH ELEVATION, COORDINATES AND PHYSICAL DESCRIPTION.

TABLE OF COORDINATE CONTROL

POINT	NORTHING	EASTING
AR1 (ACCESS ROAD)	369800.49	1404369.14
AR2 (ACCESS ROAD)	369942.17	1404373.92
AR3 (ACCESS ROAD)	369613.63	1404252.31
AR4 (ACCESS ROAD)	369615.62	1404177.83
AR5 (ACCESS ROAD)	369254.35	1404275.03
AR6 (ACCESS ROAD)	369257.43	1404169.12
AR7 (ACCESS ROAD)	368989.44	1404267.94
AR8 (ACCESS ROAD)	368992.99	1404159.83
PC1	369824.93	1404237.96
PC2	369815.16	1404527.79
PC3	369535.03	1404230.20
PC4	369525.26	1404520.04
PC5	369319.21	1404170.52
PC6	369302.86	1404686.73
PC7	368934.39	1404157.91
PC8	368917.98	1404676.42
PC9	368932.32	1404221.64
PC10	369317.21	1404231.95
SR (SUBSTATION REFERENCE)	368976.50	1404377.88
CT1 (COMMUNICATION TOWER)	369066.95	1404292.75
FC1 (FEEDER CIRCUIT)	369237.33	1404392.37
FC2 (FEEDER CIRCUIT)	369217.33	1404391.84
FC3 (FEEDER CIRCUIT)	369197.32	1404391.30
FC4 (FEEDER CIRCUIT)	369177.32	1404390.77
FC5 (FEEDER CIRCUIT)	369214.92	1404481.86
FC6 (FEEDER CIRCUIT)	369194.91	1404481.33
FC7 (FEEDER CIRCUIT)	369174.90	1404480.79

SCALE VERIFICATION

THIS BAR IS 1 INCH IN LENGTH ON ORIGINAL DRAWING

IF IT'S NOT 1 INCH ON THIS SHEET ADJUST YOUR SCALES ACCORDINGLY

SITE PLAN

BRADY SUBSTATION

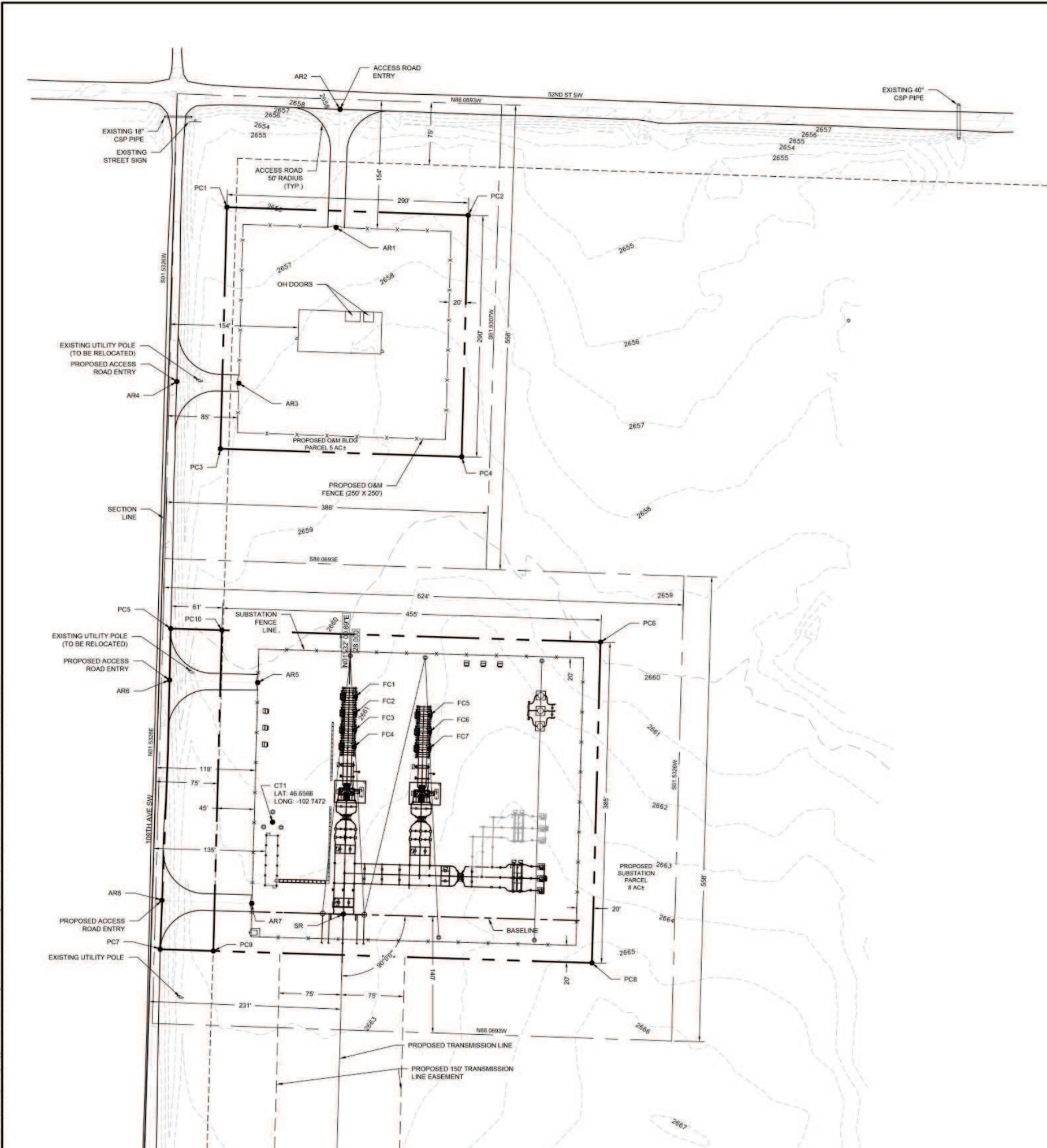
FOR REVIEW

PROJECT NO.	20153420
ISSUE DATE	10/19/15
CURRENT REVISION	G
DESIGNED BY	RICHARDSON
DRAWN BY	M SNYDER
CHECKED BY	J WENDELBURG
APPROVED BY	C CHRISTMAS

C.100

SHEET of ____

C:\FILE\WORKSPACE\Brady_Substation\153420\153420 SITE PLAN.dwg LAYOUT C:\SITE PLAN PLOTTED: 10/19/15 11:19 AM BY: J.WENDELBURG



DRAFT

Figure 9: Substation Site Plan

Brady Wind Energy Center

Stark County, ND

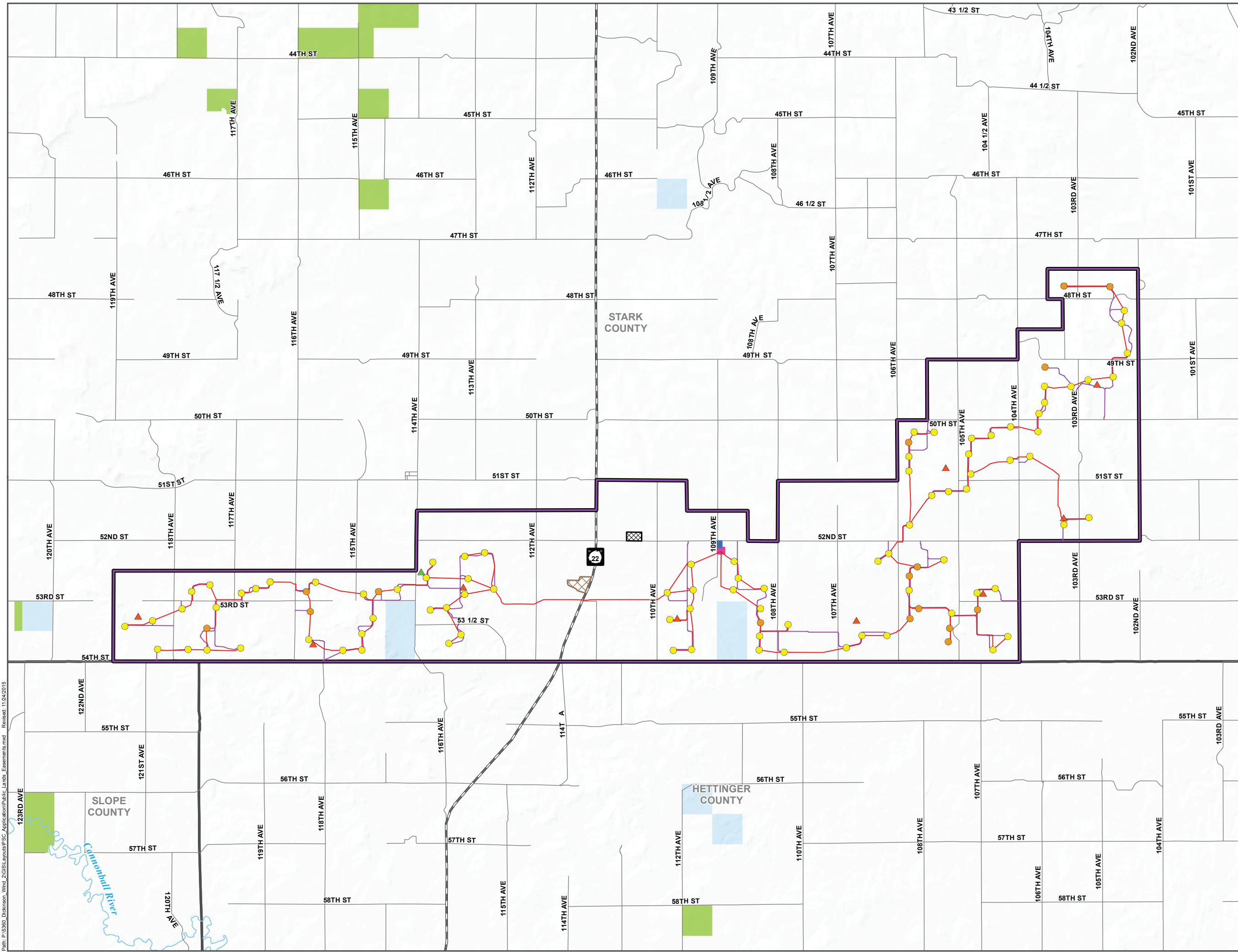
Legend

Proposed Project Features

- ▲ Permanent Met Tower
- ▲ Temporary Met Tower
- Proposed Turbine (10/30/15)
- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

Jurisdiction (ND GIS Hub 2014)

- State Trust Land
- Other
North Dakota Game & Fish
Conservation PLOTS Recreational
Easement (Private Land Open to Sportsmen)



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Figure 10: Public Lands and Easements

Brady Wind Energy Center

Stark County, ND

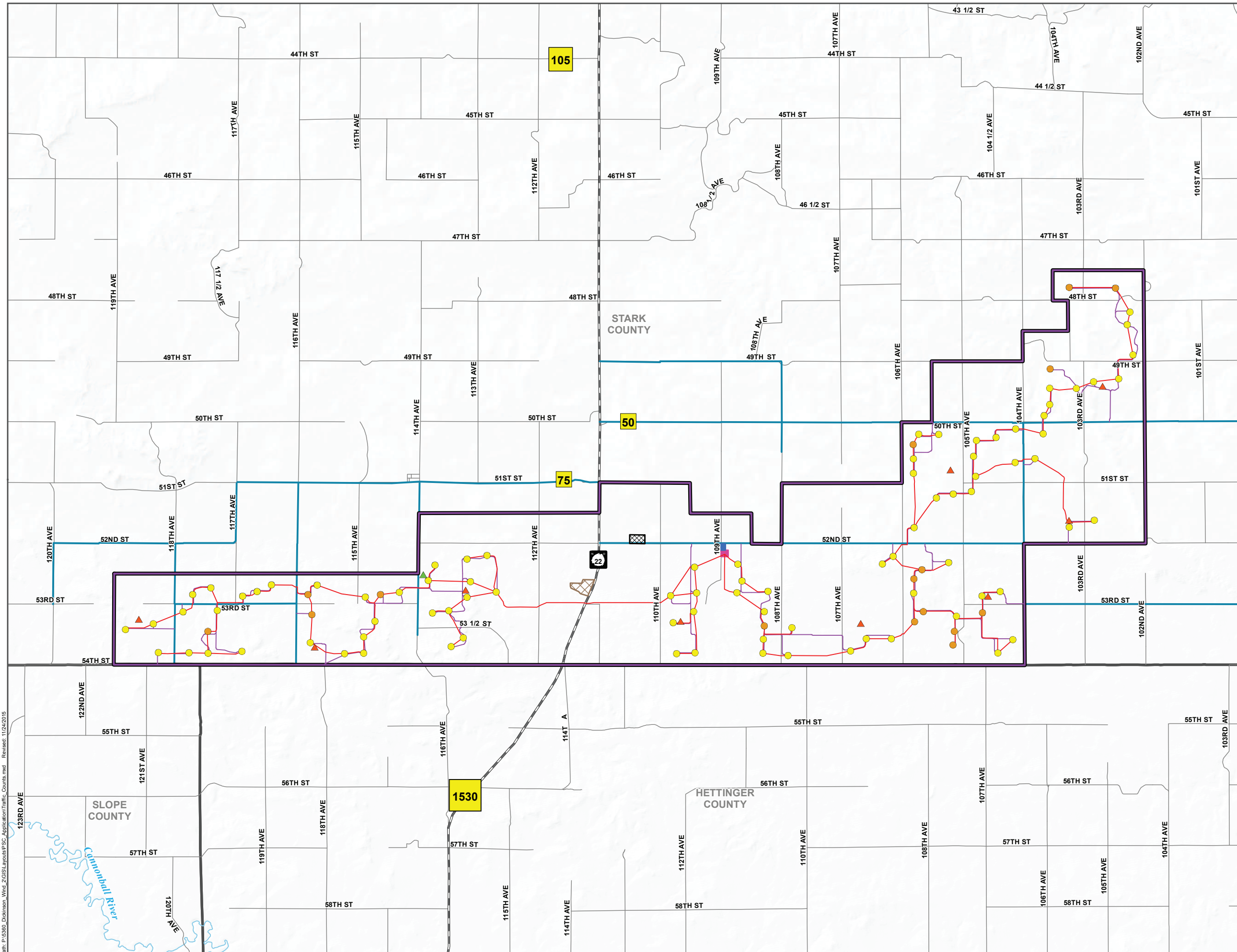
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Proposed Project Features

- ▲ Permanent Met Tower
- ▲ Temporary Met Tower
- Proposed Turbine (10/30/15)
- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Haul Route (10/20/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

Transportation (NDOT 2014, BTS 2013)

- State Highway
- County Road
- 55 Average Daily Traffic Count



Scale is 1:48,000 when printed at 22 x 34



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Figure 11: Average Daily Traffic Map



Figure 12: Photo of Typical Landscape

Brady Wind Energy Center

Stark County, ND

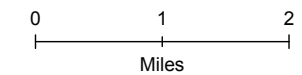
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Proposed Project Features

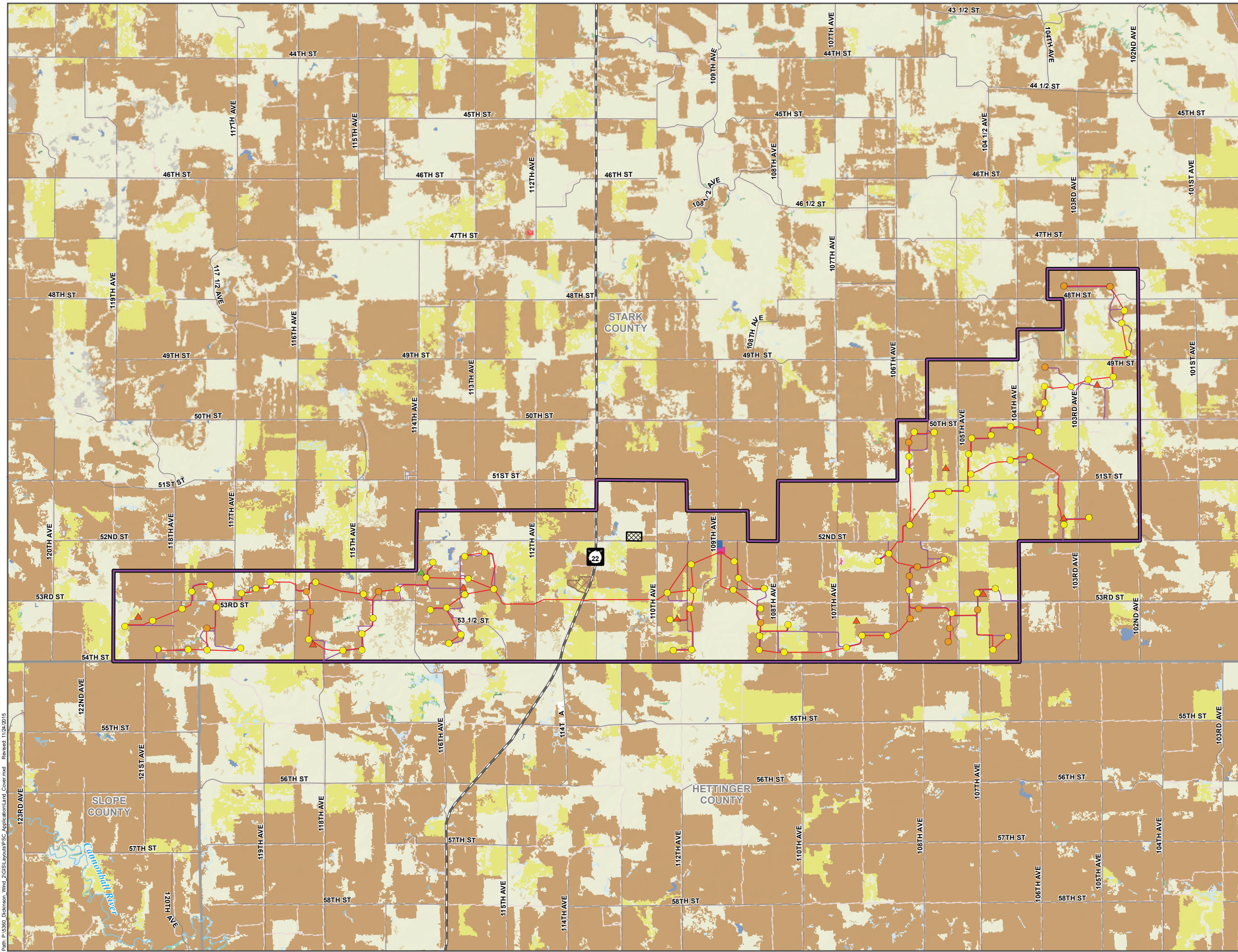
- ▲ Permanent Met Tower
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- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

NLCD Land Cover (NLCD 2011)

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands



Scale is 1:48,000 when printed at 22 x 34



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Figure 13: Land Cover Map

Brady Wind Energy Center

Stark County, ND

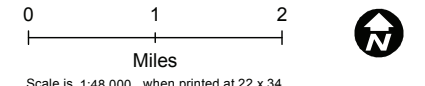
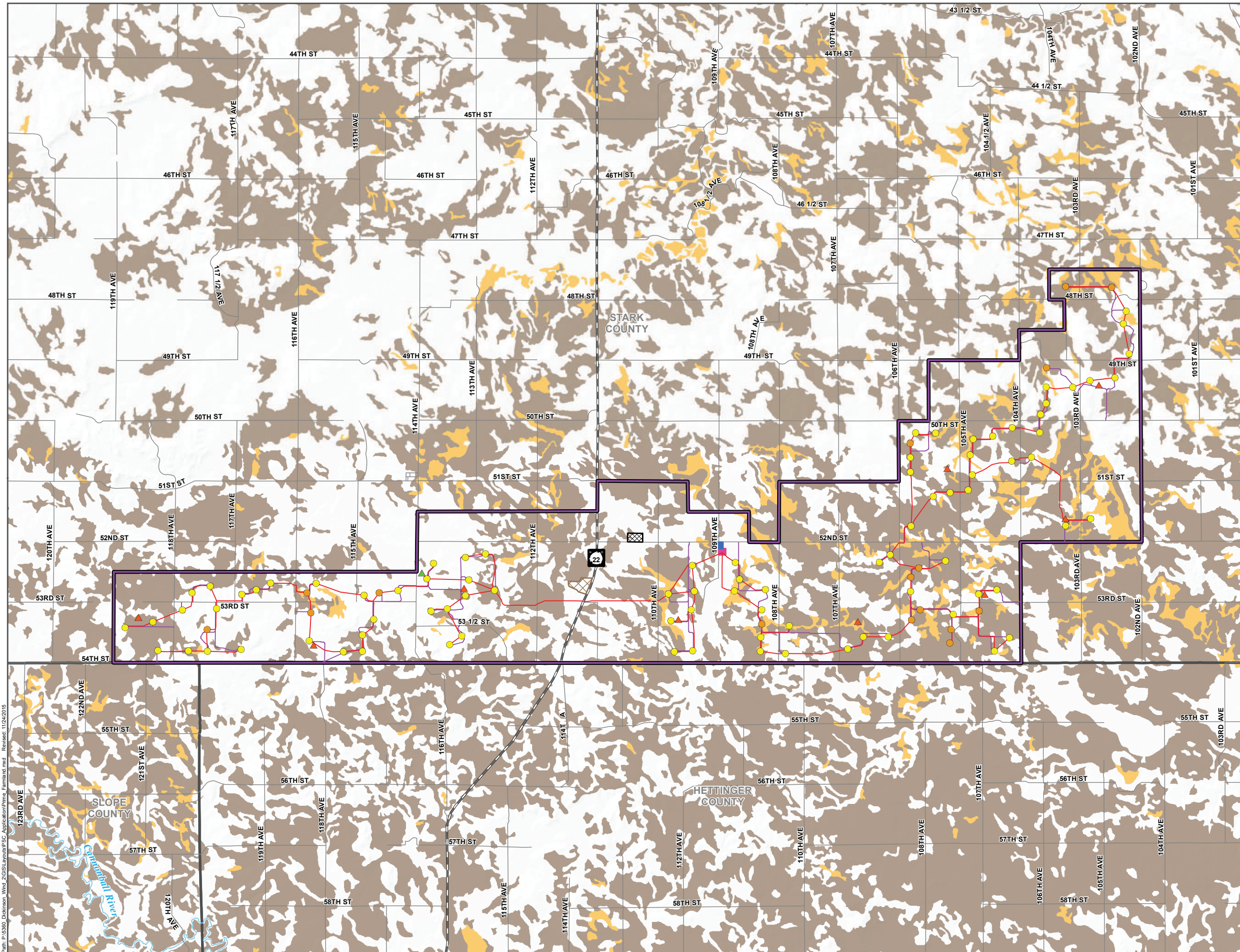
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Proposed Project Features

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- Collection System (10/30/15)
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- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

Prime Farmland (NRCS SSURGO 2013)

- Prime Farmland
- Farmland of Statewide Importance



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Figure 14: Prime Farmland Soil Distribution Map

Brady Wind Energy Center

Stark County, ND

Legend

Proposed Project Features

- ▲ Permanent Met Tower
- ▲ Temporary Met Tower
- Proposed Turbine (10/30/15)
- Alternative Turbine (10/30/15)
- Collection System (10/30/15)
- Service Roads (10/30/15)
- Project Boundary (10/21/15)
- Laydown
- Temporary Turbine Storage Area
- O&M Building
- Substation

Hydrology (NHD 2014)

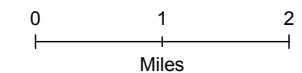
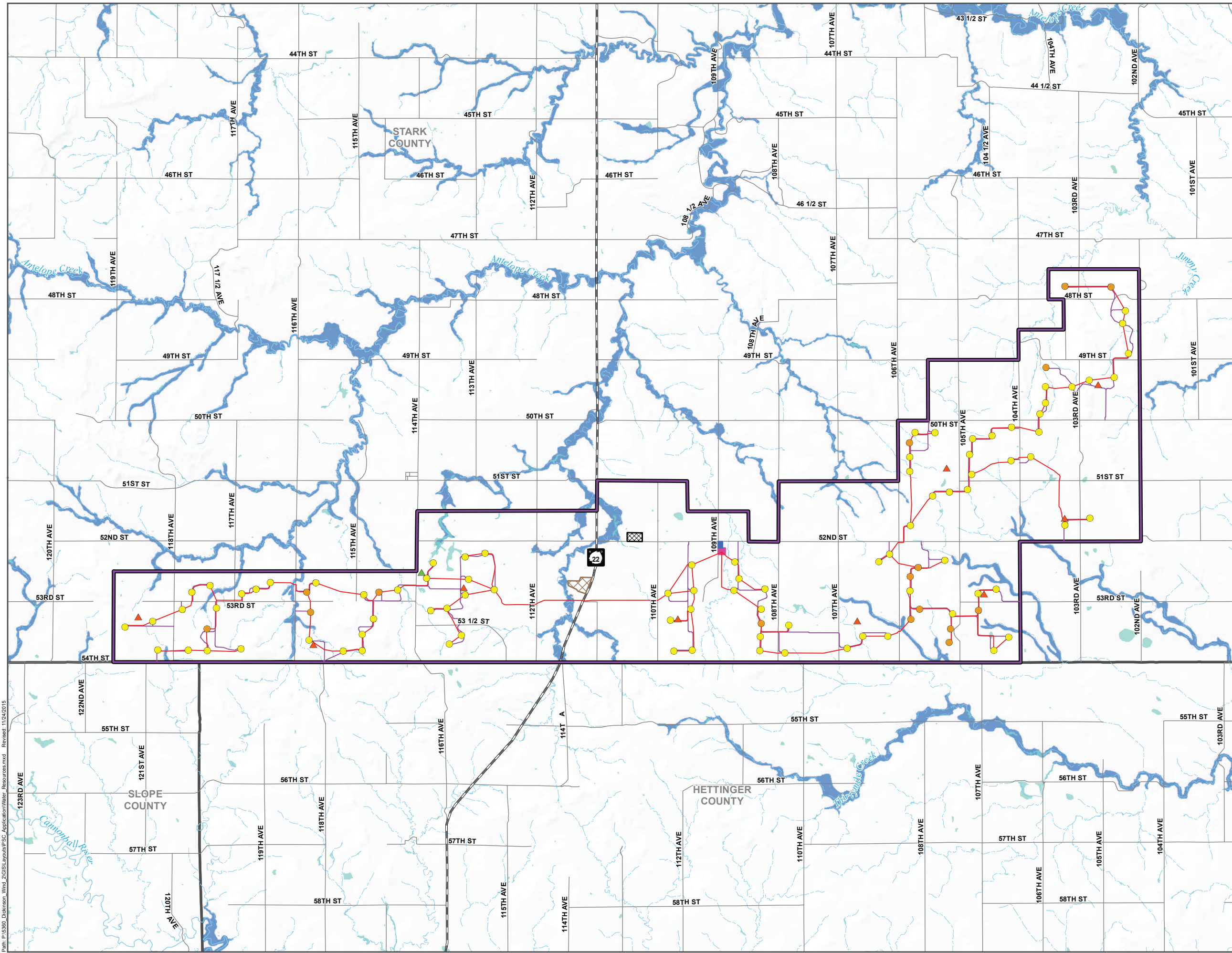
- Perennial Stream
- Intermittent Stream

Wetlands (NWI 2014)

- NWI Wetlands

FEMA Floodplains (FEMA 2014)

- 100-year Floodplain



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Figure 15: National Wetlands Inventory and Surface Waters Map

Appendix A
Excerpt of NextEra Energy, Inc.'s 2015 Corporate
Responsibility Report

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2015 | CORPORATE RESPONSIBILITY
SUSTAINABILITY REPORT

**SOLVING AMERICA'S ENERGY CHALLENGES:
SUSTAINABLY AND RESPONSIBLY**



Our Story

At NextEra Energy, we're proud of the role we're playing in helping solve America's energy challenges and in creating a more affordable clean energy future ... sustainably and responsibly.

To us, being sustainable and responsible means respecting our environment, investing in customer value, sustaining and growing our communities, investing in our team, and growing shareholder value.

As we continue to pursue our vision of becoming America's clean energy leader, we do so with a commitment to ensuring we are providing benefits daily for our environment, our customers, our communities, our employees and our shareholders.

We're pleased you've taken the time to learn about the NextEra Energy story, and we invite you to join us in our journey to create a more affordable clean energy future we can all be proud of.

Delivering for OUR ENVIRONMENT



Highlights

1. NextEra Energy achieved its lowest-ever emissions rates of SO₂, NO_x and CO₂ in 2014 – rates that were 97-, 79- and 55-percent lower, respectively, than our industry's averages
2. We installed more than 1,600 MW of wind and solar power in 2014
3. We committed to interacting with nature in a positive manner and have developed wildlife protection programs to protect a number of species and their habitats, including eagles, kestrels, sea turtles, crocodiles, and ospreys

Environmental Stewardship

At NextEra Energy, we're committed to being an industry leader in environmental protection and stewardship. As citizens, we're all stakeholders of our earth's environment. As an energy company, we recognize that environmental protection and stewardship are essential to the way we do business and critical to the value we deliver for our stakeholders.

Our Environmental Policy establishes our core environmental expectations and provides actionable guidance for all employees as we strive to foster a culture of environmental excellence and challenge ourselves to continuously improve. The policy is incorporated in our Code of Business Conduct & Ethics and Supplier Code of Conduct, which apply to our employees and suppliers, respectively. Everyone at NextEra Energy understands that protecting the environment is a collective responsibility. It's why our senior executives are actively involved in our environmental accountability, management and stewardship programs that are intended to:

- Design, construct, operate and maintain our 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.

We want to be the first and best source of information for our stakeholders to learn about our environmental performance and programs. That's what it means to be the clean energy leader. And that's how we deliver for the environment.



The protection of our natural environment is a fundamental part of our goal to be America's clean energy leader. We are committed to meeting our energy needs, while protecting the air, water, land and wildlife, and our exceptional environmental performance record and clean energy portfolio demonstrate just how well we are doing. These commitments are important to our employees, customers and communities and are what further enable us to deliver outstanding value to our customers and shareholders.

-Randy LaBauve, vice president of environmental services

Toward Cleaner Air

At NextEra Energy, we're committed to being an industry leader in environmental protection and stewardship, and one of the key ways in which we've demonstrated this commitment is by making business decisions to invest in emissions-free and clean generation. This enables us to reduce our impact on the air we all breathe. In fact, NextEra Energy's generation fleet has significantly lower rates of emissions of CO₂, SO₂ and NO_x compared to the U.S. electric power industry as a whole.

At year-end 2014, NextEra Energy Resources was the world's largest generator of renewable energy from the wind and the sun. We ended 2014 with more than 11,400 megawatts of wind generation capacity and nearly 1,000 megawatts of solar generation capacity.

At FPL, we are continuing to modernize our fossil generation fleet by replacing older, inefficient oil-fired generation with state-of-the-art combined-cycle, natural gas generation. Since 2001, FPL's investments in clean, fuel-efficient power plants have saved customers more than \$7.5 billion in fuel costs and helped reduce the company's use of foreign oil by 99 percent. Because of these modernization efforts, FPL has been able to avoid more than 40 million barrels of oil, using less than 1 million barrels of oil for generation in 2014. These investments have also enabled FPL to significantly reduce power plant emissions rates and have prevented more than 85 million tons of carbon emissions to date. FPL now operates one of the most modern, clean, fuel-efficient and low-carbon generation fleets in the nation.

At NextEra Energy, we have positioned our business well to meet the challenges of new federal environmental regulations. We anticipate these new rules will significantly advance the need for low-emitting and zero-emitting electric generation. At NextEra Energy, we've positioned our business to manage the opportunities and risks presented by these new regulations while simultaneously lowering emissions.

Reducing Our Emissions

SO₂ Emissions Rate

NEXTERA ENERGY VS. INDUSTRY:

97% lower
SO₂ emissions rate*



*Source for Electric Sector: U.S. Department of Energy

*The environmental attributes of NextEra Energy's electric generating 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.

NO_x Emissions Rate

NEXTERA ENERGY VS. INDUSTRY:

79% lower
NO_x emissions rate*



*Source for Electric Sector: U.S. Department of Energy

*The environmental attributes of NextEra Energy's electric generating 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.

CO₂ Emissions Rate

NEXTERA ENERGY VS. INDUSTRY AVERAGE:

55% lower CO₂ emissions rate*

NextEra Energy:	vs	U.S. electric sector rate
538		1,186
LBS / MWh		LBS / MWh

*Source for Electric Sector: U.S. Department of Energy

*The environmental attributes of NextEra Energy's electric generating 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.



- In 2014, FPL brought into service its Riviera Beach Next Generation Clean Energy Center – one of the cleanest, most energy-efficient plants in the nation. Over its operational lifetime, the new, fuel-efficient plant is expected to provide FPL customers with hundreds of millions of dollars in fuel and other savings. This is part of FPL's focus on modernizing its power plant fleet by replacing oil-fired plants with clean, highly efficient, combined-cycle natural gas plants such as this one. It's also a big reason parent company NextEra Energy in 2014 recorded its lowest-ever air emissions rates.

In 2014, 97 percent of the power produced by NextEra Energy facilities was generated from a diverse mix of clean or renewable sources, including wind, solar, combined-cycle natural gas and nuclear. By implementing our strategy to become America's clean energy leader, we have been able to reduce our emissions rates of SO₂, NO_x and CO₂ by 98 percent, 93 percent and 33 percent, respectively, since 1990, while at the same time growing our generation fleet by approximately 274 percent.

FPL Powers Formula E Electric Race with Clean Solar Energy; Student Focus Garners Statewide Honors

FPL powered the vehicles racing in the country's first-ever electric car race, held in downtown Miami in March 2015. Part of the FIA Formula E Championship, the Miami ePrix featured the highest class of competition for electrically powered racing cars.

"Our partnership with Formula E and the Miami ePrix is another example of our commitment to advancing zero-emissions solar energy and the use of electric vehicles in Florida," said Eric Silagy, president and CEO of FPL. "By the end of 2016, we will triple the energy we are able to produce from the sun, furthering our mission to provide low-cost, reliable and clean energy to our 4.8 million customers."

FPL announced its partnership with Formula E at its Martin Next Generation Solar Energy Center, along with famed race car driver Michael Andretti and drivers in the Miami ePrix. During the announcement event, electric race cars were charged with power generated from the Martin Next Generation Solar Energy Center, one of three solar power plants operated by FPL. Earlier in the year, FPL announced plans to install more than 1 million solar panels at three additional solar power plants by the end of 2016. These new plants, combined with community-based solar installations and other small-scale arrays that FPL is installing, would total more than 225 megawatts of new solar capacity. This would effectively triple FPL's solar capacity, which currently totals approximately 110 megawatts.

"The Formula E Miami ePrix is all about sharing our passion for electric vehicles," said Alejandro Agag, CEO of Formula E Holdings. "The race series is exciting, it's entertaining, and we hope it will turn the world's attention to the potential electric vehicles have to change the way we power transportation. We are pleased to partner with FPL – a company that shares our vision for powering the future with affordable, clean energy."

"It's an honor for us to have been selected as one of the 10 founding Formula E teams for the inaugural season," said Michael Andretti, chairman and CEO of Andretti Sports Marketing.

Formula E hosts races in 10 cities around the world, including London, Beijing, Monaco and Buenos Aires. The Miami ePrix was the first Formula E race in the United States.

Education tie is applauded

As part of its Formula E partnership, FPL also sponsored a student electric vehicle race. Students from schools throughout FPL's service area who are involved in science, technology, engineering and

math (STEM) programs assembled 10 electric kit cars. The student teams competed in the Formula E School Series, racing on the same track as the Miami ePrix. The grand prize was \$5,000, second-place \$2,500 and third-place \$1,500. All prizes support STEM or robotics initiatives of the winning school teams.

The effort was hailed by Miami-Dade County Public Schools Superintendent Alberto M. Carvalho, who chose FPL for the Florida Commissioner of Education's Corporate Business Recognition Award. "Miami-Dade County Public Schools and its students have benefitted tremendously from FPL's support of STEM initiatives," said Superintendent Carvalho. "Their commitment has enriched the learning environment by providing additional resources in our classrooms and giving students invaluable real-life learning experiences."

"We are proud of our long-time partnership with Miami-Dade County Public Schools and of the difference we are making in our classrooms," said Eric Silagy, president and CEO of FPL. "FPL is honored to be recognized for our involvement inside and outside the classroom. Together with the school district, we are making Miami an even better place to work and raise a family."

Wildlife and Habitat Preservation

At NextEra Energy, we're committed to being an industry leader in environmental protection and stewardship, and that includes wildlife and habitat protection. We have operations across the U.S. and Canada, so we are keenly aware of the potential impacts that existing and future operations may have to wildlife and their habitat. This is why we have environmental policies and programs in place at both the corporate and local levels to avoid and minimize these impacts and to address any remaining impacts through appropriate mitigation measures. Here's what we do:

- Before we build a power plant or other electric facilities, we work hard to make sure we understand the local ecosystem and what it takes to be a partner in its preservation and to be a good neighbor to all the species that live there.
- As part of that work, we consider the presence of any threatened or endangered species and the proximity to valuable wildlife corridors, wetlands or other ecologically important areas. We make efforts to avoid these areas entirely. If we can't do that, we seek to minimize and mitigate the impact of our developments to affected areas.
- Once a project is operating, we continue to monitor potential impacts to biodiversity that may occur. For example, at wind sites, we implement a voluntary Wildlife Response and Reporting System (WRRS) to monitor long-term avian and bat interactions. We also voluntarily adhere to the FWS Wind Energy Guidelines that were issued in 2012, and conduct a minimum of one year of formal post-construction mortality monitoring at all U.S. wind sites constructed after March 2012.
- In Ontario, our company complies with Ministry of Natural Resources guidance, which requires that we perform a minimum of three years of post-construction mortality monitoring for birds and bats, in addition to other project-specific monitoring conditions.

We have long adhered to numerous policies and programs to protect threatened and endangered species. We follow all federal and state regulations including the Endangered Species Act (ESA), which is administered by the U.S. Fish and Wildlife Service (FWS) and the U.S. National Marine Fisheries Service (NMFS). We also go above and beyond those regulations by making important contributions to protect a number of vulnerable species and habitat areas. Some examples of our wildlife-related programs are featured below.



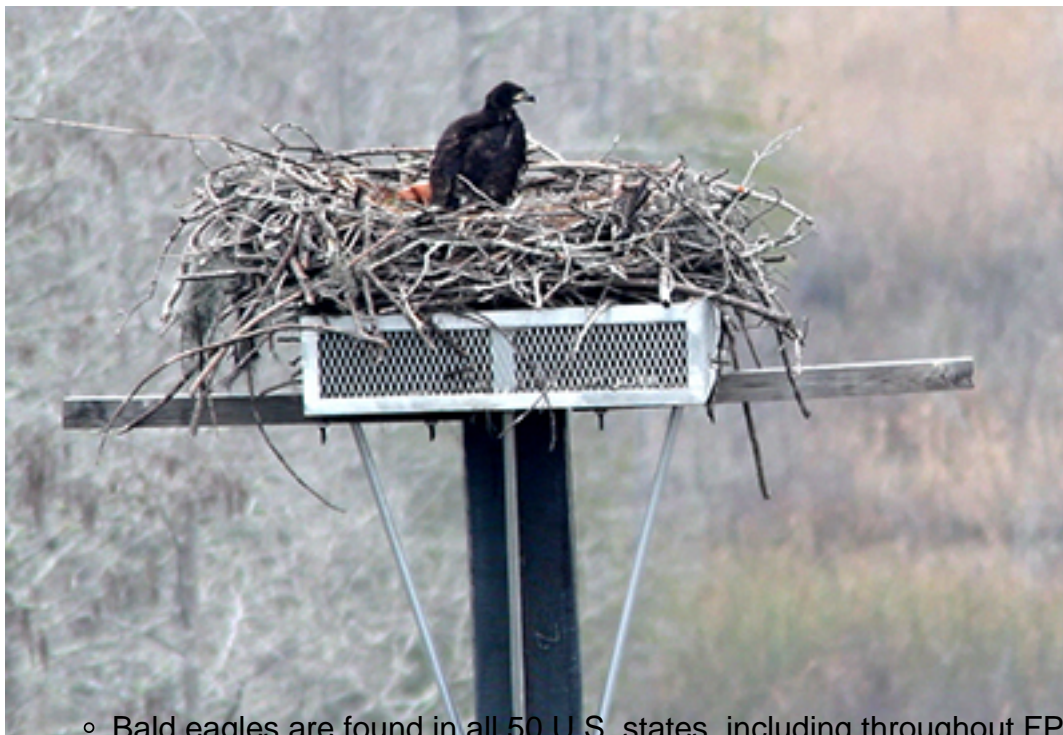
- FPL has donated 130 concrete power poles to an artificial reef program managed by St. Lucie County, Florida. The poles provide additional habitat for marine life. Area fishing and diving businesses also benefit.

Eagle Nest Platforms



- For many centuries, eagles have represented strength, courage and power. That's been true not only in the U.S. ? where the bald eagle has been our national symbol since the late 1700s ? but in countries the world over.
- During early construction of NextEra Energy's Summerhaven Wind Energy Centre in Ontario in late 2012, Canada, a pair of eagles began building a new nest within the project area. For three years prior, the area had been monitored and no nest had been found.
- After consulting with the Ontario Ministry of Natural Resources and receiving their approval, we removed the tree and nest in January 2013 to eliminate a potential hazard to the eagles and to give the birds time to build a new nest or find another one prior to their breeding season.
- From early January through late February 2013, a team of experts installed five eagle platforms near the Lake Erie shoreline in the general vicinity of the original nest, but at a safe distance from the turbines, to provide alternative nesting sites for this pair of eagles and other pairs in the local eagle population.
- To our delight, a pair of eagles was documented to have successfully raised young in one of these nests in the summer of 2013. The eagles returned in 2014 and successfully raised two chicks.
- See the following website for more information, including photographs and a video of the eagles.

Nesting platform success in Florida



- Bald eagles are found in all 50 U.S. states, including throughout FPL's service territory in Florida.
- In the fall of 2013, a bald eagle built its nest on a 230-kV transmission line in Volusia County, Fla. To protect the nest and the eagles that would be raising their family in it, and because the surrounding area lacked viable nest trees, FPL for the first time ever constructed an independent pole and platform to provide the birds with a nearby nest location. With input from the Florida Fish and Wildlife Conservation Commission and

the U.S. Fish and Wildlife Service, the platform was designed to provide long-term support of the nest. Within 45 days of the nest transfer, a pair of eagles began to add onto and occupy the nest, and in 2014, a baby eaglet hatched in the nest!

Duette Preserve – Kestrel Boxes



- The colorful Southeastern American Kestrel is the smallest falcon in North America. Unfortunately, its numbers have dwindled so much that researchers cannot say how many of the threatened species still exist in Florida.
- In March 2013, while installing new, more storm-resilient power line poles and replacing old wooden poles in an area of its service territory, FPL identified an opportunity to assist the kestrel. Line workers attached kestrel boxes to four of the new poles - a first for the company - and also preserved the old wooden poles that contained inactive nests.
- In 2015, as FPL continues to upgrade the poles in this area of Kestrel habitat, we've included nest boxes on an additional 20 poles. We're also working with the Audubon Society toward a program to monitor the boxes for nesting success.

We're No. 1 in Wind

At NextEra Energy, we're the No. 1 owner of wind energy in North America. We operate approximately 11,400 MW of emissions-free wind energy, enough to power a city the size of Chicago - the "Windy City." Our wind program helps us deliver reliable and affordable energy to customers with a focus on environmental stewardship. Wind energy is an especially attractive source of electric power because:

- wind farms can be constructed quickly,
- they use no water and produce no solid waste or air emissions,
- there are no fuel costs because wind is free,
- many customers are requesting electricity produced only from renewables such as wind, and
- the price of wind energy is low and competitive with other forms of power generation.

NORTH AMERICA'S LARGEST GENERATOR OF WIND POWER

107 wind facilities

**9,899 individual
wind turbines**

**19 U.S. states and
4 Canadian provinces**

Avoided CO₂ emissions of
30 million tons
due to wind generation

In 2012, we set an aggressive goal for additions to our U.S. wind portfolio, and through diligence and hard work, we exceeded it. We commissioned roughly 1,500 MW of wind in the United States, a milestone no other company has ever achieved. In fact, we celebrated the commissioning of our 10,000th MW of wind at our 400-MW Limon Wind Project in Colorado in December 2012. Not only did this record building program result in 1,500 MW of zero-emissions generation, it also helped us

deliver for our communities by creating more than 3,000 construction jobs, 90 full-time jobs, and new tax revenue that state and local governments use to meet pressing community needs.

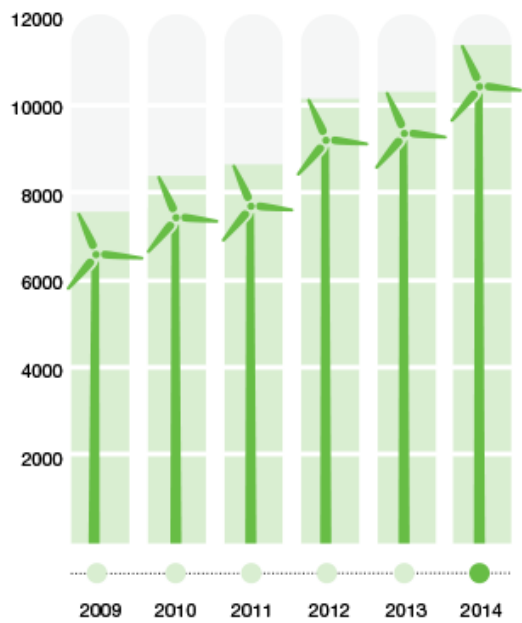
Roughly
1,500 MW
of wind
commissioned in 2012
— a milestone
no other company
has ever achieved

At NextEra Energy Resources, our wind portfolio grew in 2014 by approximately 1,300 MW, including facilities in Oklahoma, Colorado and Texas, as well as four wind sites in Ontario, Canada.

We now have wind projects in 19 states and four Canadian provinces, representing a total capital investment of more than \$20.1 billion and a fleet size that is comparable to the generation capacity of a top-15 utility.

WIND ENERGY PORTFOLIO

CUMULATIVE MW

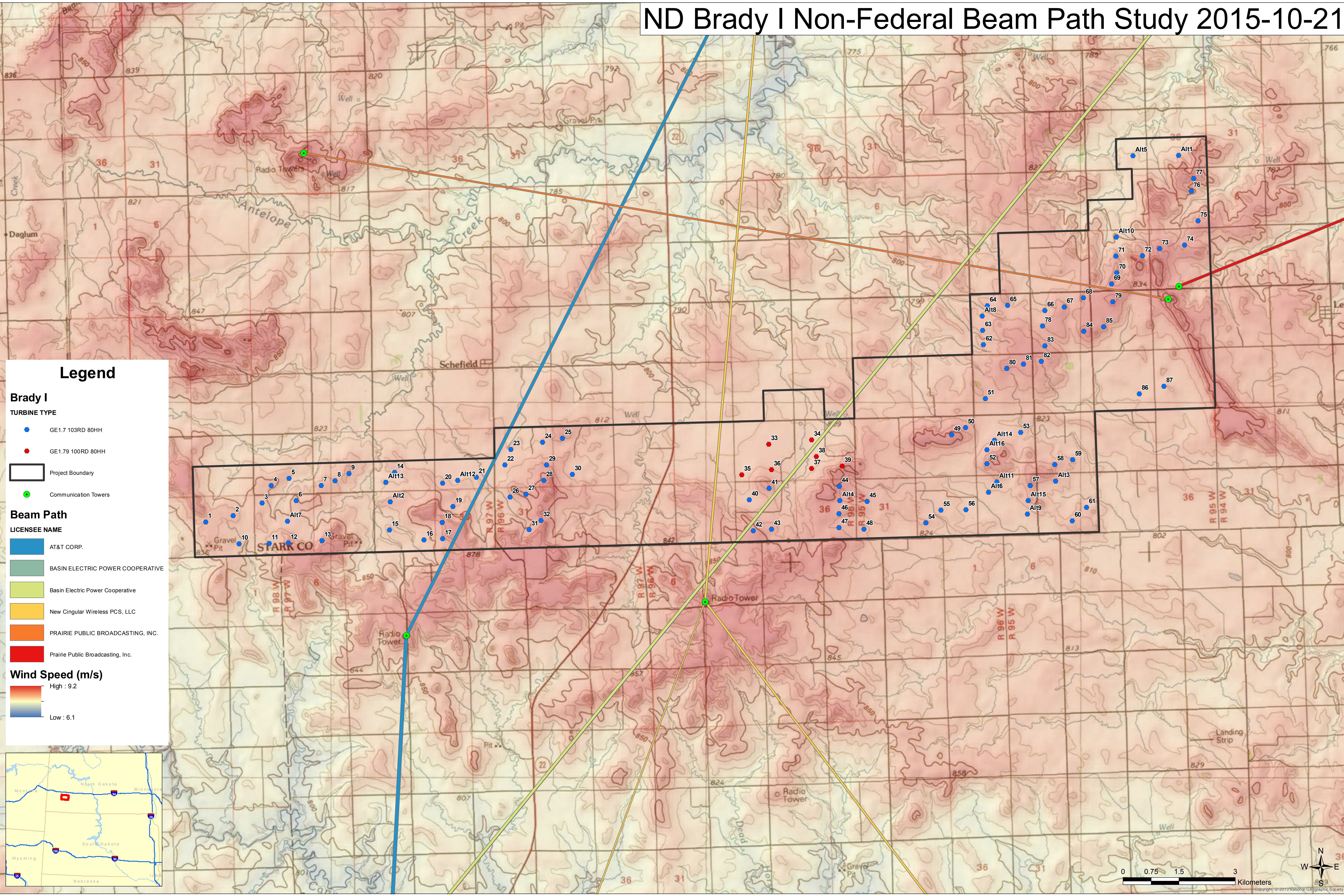


- Enough emissions-free wind energy can be generated at our Vasco Wind Energy Center in California to power more than 19,500 homes.

Appendix B
Studies and Assessments

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ND Brady I Non-Federal Beam Path Study 2015-10-21



Legend

Brady I

TURBINE TYPE

- GE1.7 103RD 80HH
- GE1.79 100RD 80HH

▭ Project Boundary

● Communication Towers

Beam Path

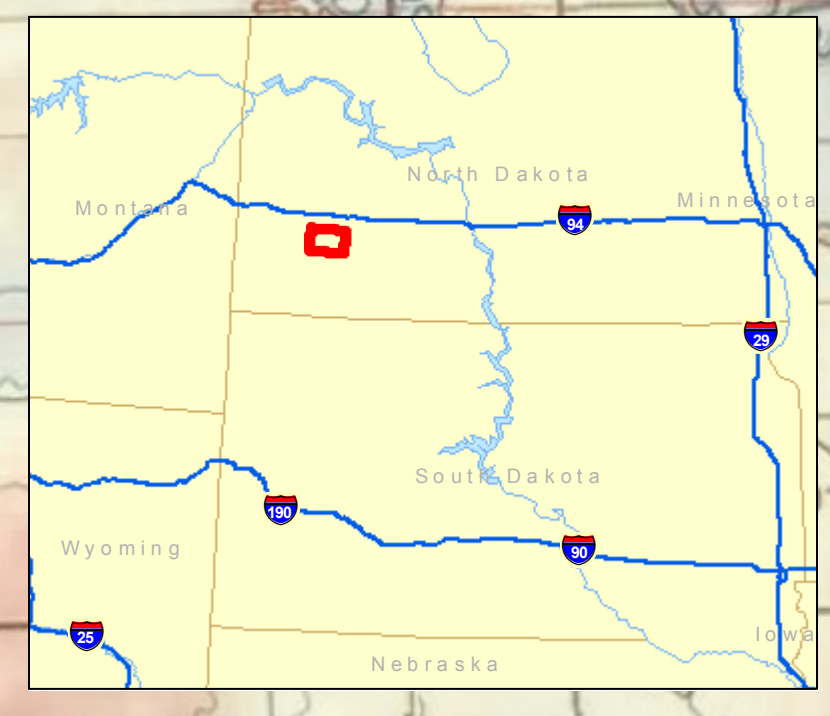
LICENSEE NAME

- AT&T CORP.
- BASIN ELECTRIC POWER COOPERATIVE
- Basin Electric Power Cooperative
- New Cingular Wireless PCS, LLC
- PRAIRIE PUBLIC BROADCASTING, INC.
- Prairie Public Broadcasting, Inc.

Wind Speed (m/s)

High : 9.2

Low : 6.1





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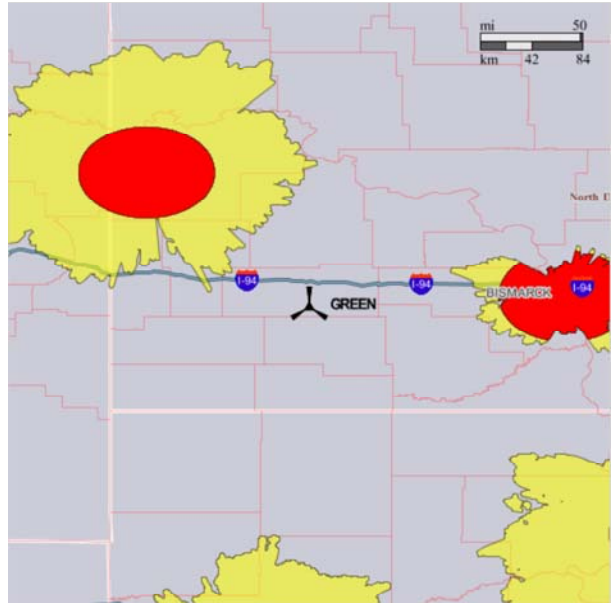
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Horizontal Datum:

Map Legend:

- Green:** No anticipated impact to Air Defense and Homeland Security radars. Aeronautical study required.
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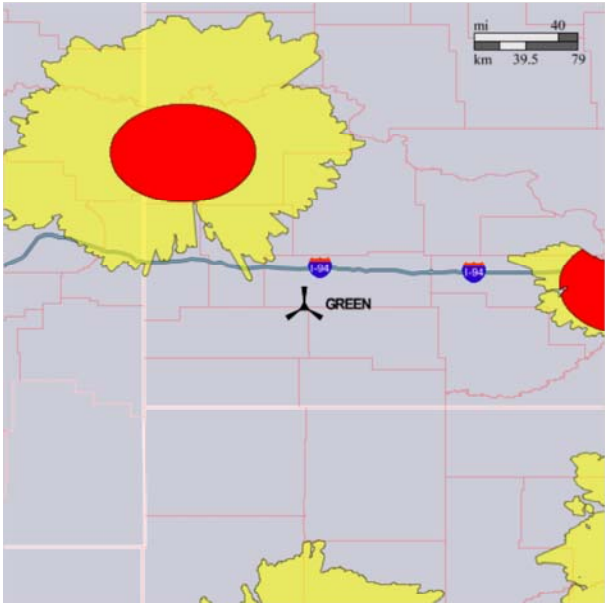
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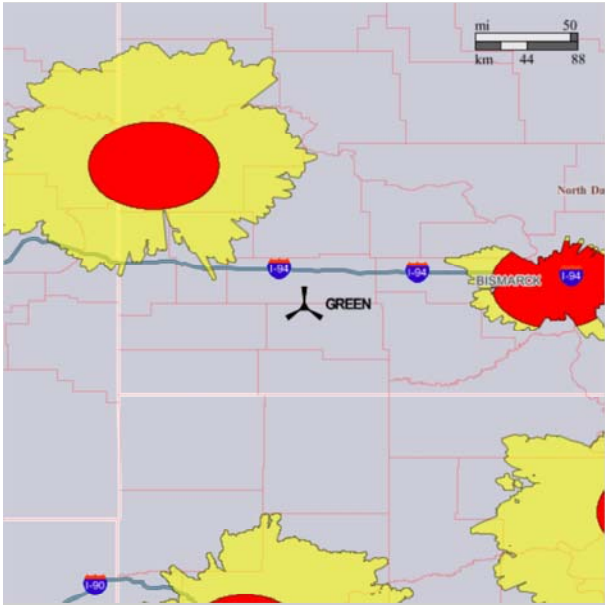
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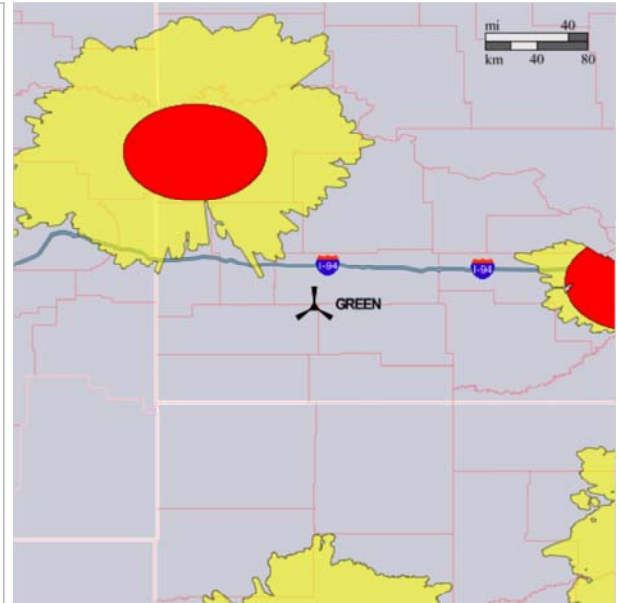
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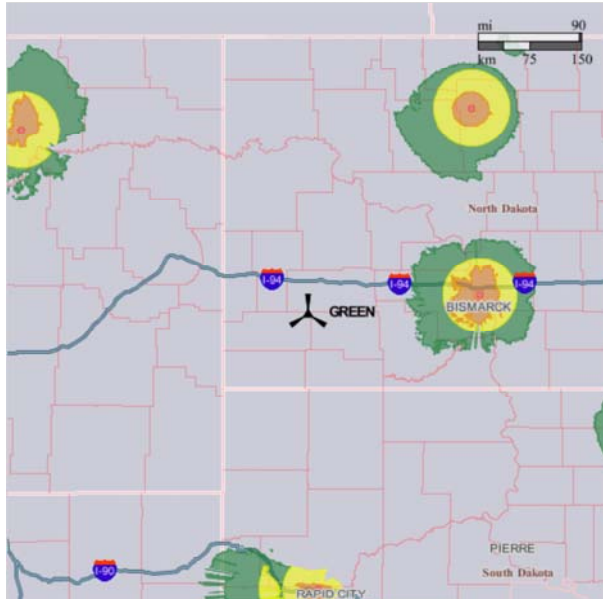
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- Yellow: Consultation Zone.** Significant impacts possible. NOAA requests consultation to discuss project details and to perform a detailed impact analysis. NOAA may request mitigation of significant impacts.
- Orange: Mitigation Zone.** Significant 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.



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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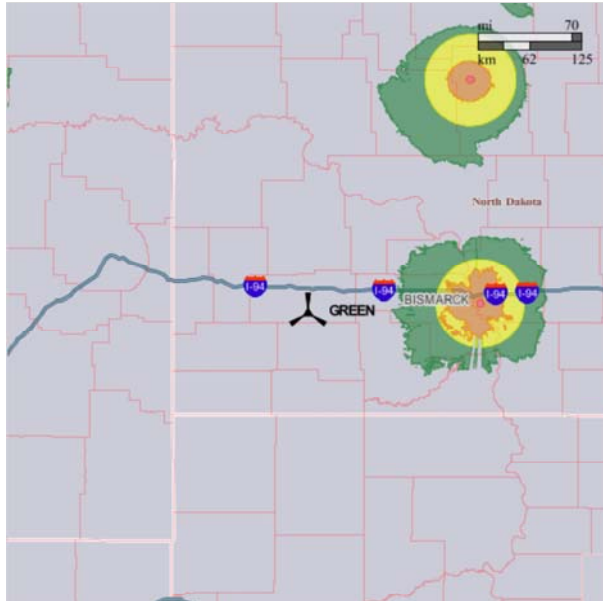
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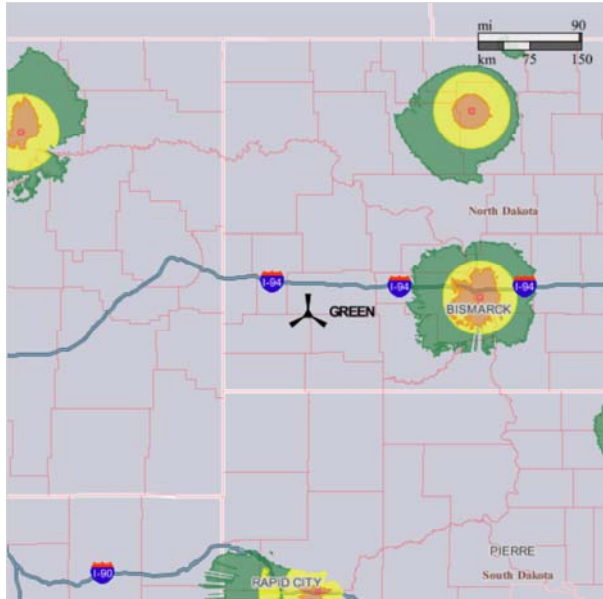
Screening Type: Geometry Type:

Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	<input type="text" value="46"/>	<input type="text" value="39"/>	<input type="text" value="06.21"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="57"/>	<input type="text" value="27.59"/>	<input type="text" value="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.



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.



<< OE/AAA

DoD Preliminary Screening Tool

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:

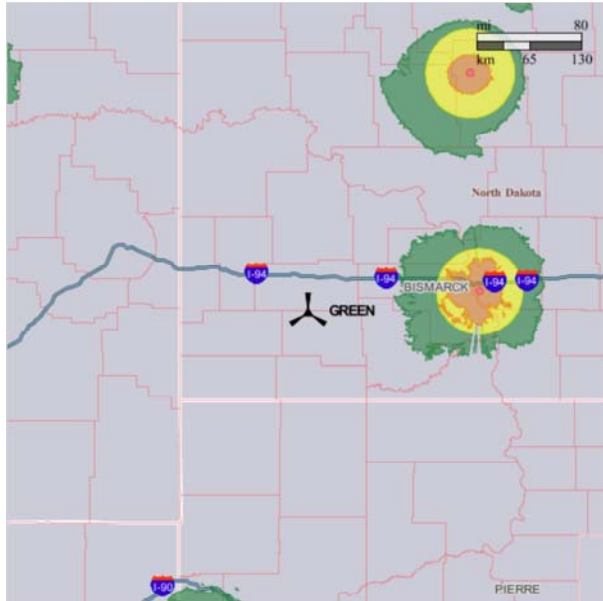
- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
 - Air Defense and Homeland Security radars(Long Range Radar)
 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
- Enter either a single point or a polygon and click submit 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="46"/>	<input type="text" value="37"/>	<input type="text" value="46.63"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="38"/>	<input type="text" value="31.73"/>	<input type="text" value="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.



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.



« OE/AAA

DoD Preliminary Screening Tool

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

Disclaimer:

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Instructions:

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 - Air Defense and Homeland Security radars(Long Range Radar)
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 - 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="46"/>	<input type="text" value="43"/>	<input type="text" value="25.96"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="36"/>	<input type="text" value="04.38"/>	<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.

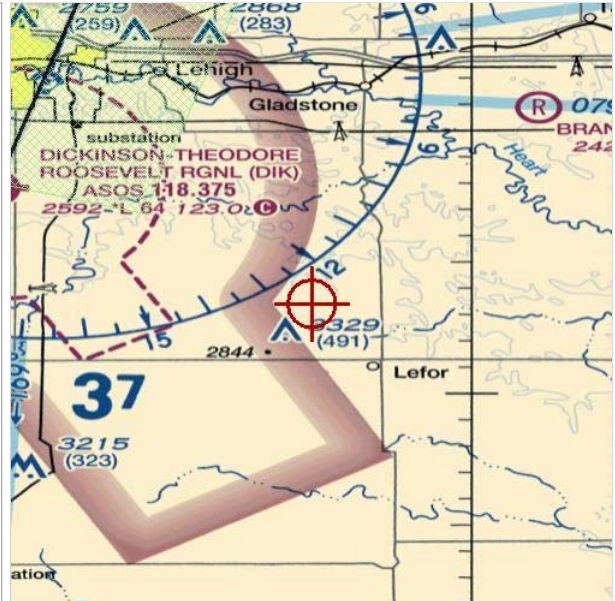
The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact 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.

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



« OE/AAA

DoD Preliminary Screening Tool

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

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Screening Type: Geometry Type:

Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	<input type="text" value="46"/>	<input type="text" value="39"/>	<input type="text" value="06.21"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="57"/>	<input type="text" value="27.59"/>	<input type="text" value="W"/>

Horizontal Datum:

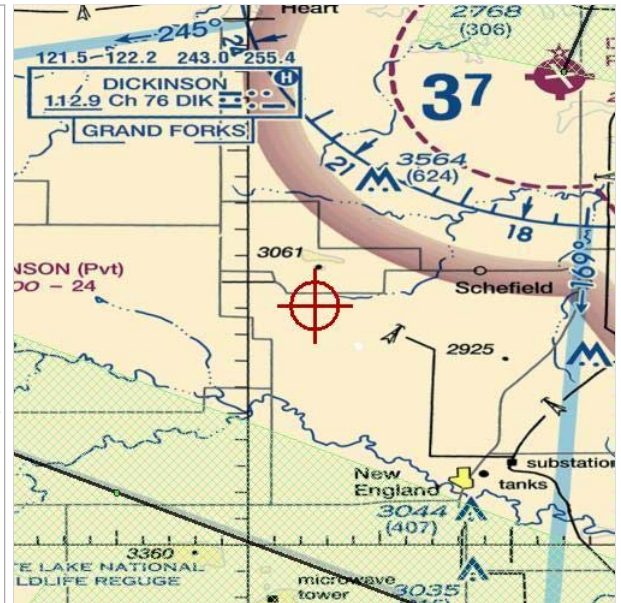
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- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Geometry Type:

Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	46	37	46.63	N	102	38	31.73	W

Horizontal Datum:

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DoD Preliminary Screening Tool

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- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
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- 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="46"/>	<input type="text" value="37"/>	<input type="text" value="48.01"/>	<input type="text" value="N"/>	<input type="text" value="102"/>	<input type="text" value="57"/>	<input type="text" value="27.42"/>	<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.

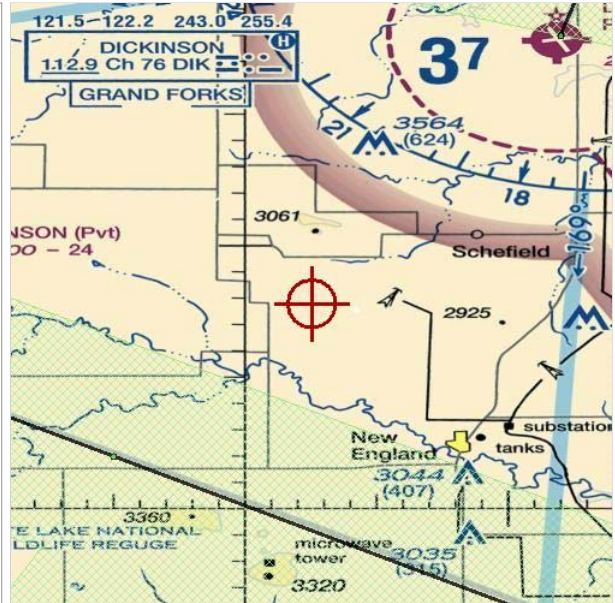
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Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil

Appendix C
Agency Correspondence

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August 14, 2015

Mr. Daniel Cimarosti
Regulatory Program Manager
U.S. Army Corps of Engineers Omaha District, North Dakota Regulatory Office
1513 South 12th Street
Bismarck, ND 58504

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Mr. Cimarosti:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Cimarosti
U.S. Army Corps of Engineers Omaha District
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Scott Davis
Executive Director
North Dakota Indian Affairs Commission
600 East Boulevard Avenue
1st Floor – Judicial Wing, Room #117
Bismarck, ND 58505

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Mr. Davis:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Davis
North Dakota Indian Affairs Commission
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Dr. Terry Dwelle, M.D., M.P.H.T.M.
State Health Officer
North Dakota Department of Health
600 East Boulevard Avenue
Bismarck, ND 58505-0200

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Dr. Dwelle:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Dr. Dwelle
North Dakota Department of Health
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Lance D. Gaebe
Commissioner
North Dakota Department of Trust Lands
P. O. Box 5523
Bismarck, ND 58506-5523

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Mr. Gaebe:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Gaebe
North Dakota Department of Trust Lands
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Larry Gangl
District Engineer
North Dakota Department of Transportation, Dickinson District
1700 Third Avenue West, Suite 101
Dickinson, ND 58601-3009

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Mr. Gangl:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Gangl
North Dakota Department of Transportation, Dickinson District
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
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Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Doug Goehring
Agriculture Commissioner
North Dakota Department of Agriculture
600 East Boulevard Avenue, Department 602
Bismarck, ND 58505-0020

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Mr. Goehring:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Goehring
North Dakota Department of Agriculture
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Ms. Julie Hoff
Central Stark & Western Soil Conservation District
2948 4th Ave. West, Room "C"
Dickinson, ND 58601

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Ms. Hoff:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Ms. Hoff
Central Stark & Western Soil Conservation District
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Edward C. Murphy
State Geologist
North Dakota Geological Survey
600 East Boulevard Avenue
Bismarck ND 58505-0840

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Mr. Murphy:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Murphy
North Dakota Geological Survey
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Merlan E. Paaverud, Jr.
Director
State Historical Society of North Dakota
612 East Boulevard Avenue
Bismarck, ND 58505

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Mr. Paaverud:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Paaverud
State Historical Society of North Dakota
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Todd Sando
State Engineer
North Dakota State Water Commission
900 East Boulevard, Dept. 770
Bismarck, ND 58505-0850

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Mr. Sando:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Sando
North Dakota State Water Commission
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Kevin Shelley
Acting ND Field Supervisor
USFWS North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Mr. Shelley:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Shelley
USFWS North Dakota Field Office
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
Stark	137 N	95 W	18-20, 29-32
Stark	137 N	96 W	11-36
Stark	137 N	97 W	13-36
Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Army Corps of Engineers, State Historical Society of North Dakota, and North Dakota Game and Fish Department (NDGF).

NextEra Energy is developing the Project following the voluntary Final Land-Based Wind Energy Guidelines. Desktop habitat analyses for bats and whooping crane are underway as part of Tier 1 and Tier 2 assessments for the Project. Tier 3 assessments that are currently planned or underway for the Project include fall and spring avian migration surveys, biweekly eagle use surveys, raptor nest and grouse lek surveys, and bat acoustic monitoring.

We requested documented eagle nest locations in the vicinity of the Project Area from the NDGF in May 2015 and conducted a ground-based summer nest inventory in June 2015. There are no documented eagle nests within 3 miles of the Project Area. There is one occupied bald eagle nest approximately 3 miles east of the Project Area; one active and three inactive golden eagle nests are located approximately 7 miles from the Project Area.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Terry Steinwand
Director
North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Mr. Steinwand:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	3-9, 15-18
Hettinger	136 N	97 W	1-6, 8-13
Stark	137 N	95 W	1, 2, 9-16, 19-24, 27-34
Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Steinwand
North Dakota Game and Fish Department
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
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Per Section 69-06-01-05 of the North Dakota Public Service Commission (PSC)'s administrative rules, we are consulting your agency for assistance in identifying concerns or issues within the boundaries of the tracts listed below that would influence a decision regarding the use of the land, as well as applicable permits that may be required from your office.

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Army Corps of Engineers, State Historical Society of North Dakota, and North Dakota Game and Fish Department (NDGF).

NextEra Energy is developing the Project following the voluntary Final Land-Based Wind Energy Guidelines. Desktop habitat analyses for bats and whooping crane are underway as part of Tier 1 and Tier 2 assessments for the Project. Tier 3 assessments that are currently planned or underway for the Project include fall and spring avian migration surveys, biweekly eagle use surveys, raptor nest and grouse lek surveys, and bat acoustic monitoring.

We requested documented eagle nest locations in the vicinity of the Project Area from the NDGF in May 2015 and conducted a ground-based summer nest inventory in June 2015. There are no documented eagle nests within 3 miles of the Project Area. There is one occupied bald eagle nest approximately 3 miles east of the Project Area; one active and three inactive golden eagle nests are located approximately 7 miles from the Project Area.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Larry Taborsky
Director
North Dakota Aeronautics Commission
P. O. Box 5020
Bismarck, North Dakota 58502-5020

Subject: Information Request for the Proposed Brady Wind Energy Center in Hettinger and Stark Counties, ND

Dear Mr. Taborsky:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

The Project would interconnect to the electrical grid via a 230-kV transmission line approximately 17 miles in length from the Project substation to the Belfield to Rhame 230-kV line approximately 20 miles southwest of the city of Dickinson. We will also prepare a separate application for a Certificate of Corridor Compatibility and Route Permit for the proposed transmission line.

The wind energy center would include portions of the following tracts:

County	Township	Range	Sections
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Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Larry Taborsky
North Dakota Aeronautics Commission
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
Hettinger	136 N	97 W	1-6
Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
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Stark	137 N	98 W	13-36

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

This information will be used to help guide Project development in a manner that identifies and avoids impacts to sensitive resources where practicable. We have sent similar query letters to other agencies including, but not limited to, the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and North Dakota Game and Fish Department.

We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,



Anne-Marie Griger, AICP



August 14, 2015

Mr. Mark Zimmerman
Director
North Dakota Parks and Recreation Department
1600 E. Century Ave, Suite 3
Bismarck, ND 58503

**Subject: Information Request for the Proposed Brady Wind Energy Center in
Hettinger and Stark Counties, ND**

Dear Mr. Zimmerman:

Tetra Tech has been contracted by NextEra Energy Resources, LLC to prepare an application for a Certificate of Site Compatibility for the proposed Brady Wind Energy Center (the Project), in accordance with North Dakota Century Code (NDCC) Section 49-22-07. As part of that application, we are conducting an investigation of property in Hettinger and Stark counties south of the city of Dickinson. This proposed Project would consist of approximately 150 megawatts (MW). The Project area shown in the attached figure is the primary focus of our investigation.

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Stark	137 N	96 W	23-36
Stark	137 N	97 W	25-29, 32-36

Mr. Zimmerman
North Dakota Parks and Recreation Department
August 14, 2015

The associated transmission line corridor includes the following tracts:

County	Township	Range	Sections
Hettinger	136 N	96 W	2-6
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Slope	136 N	98 W	1-6
Slope	136 N	99 W	1-3
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Per Section 69-06-01-05 of the North Dakota Public Service Commission (PSC)'s administrative rules, we are consulting your agency for assistance in identifying concerns or issues within the boundaries of the tracts listed below that would influence a decision regarding the use of the land, as well as applicable permits that may be required from your office.

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We would appreciate a response by September 30, 2015. Please contact me at (512) 213-8501 if you have any questions. Thank you for your assistance.

Respectfully submitted,










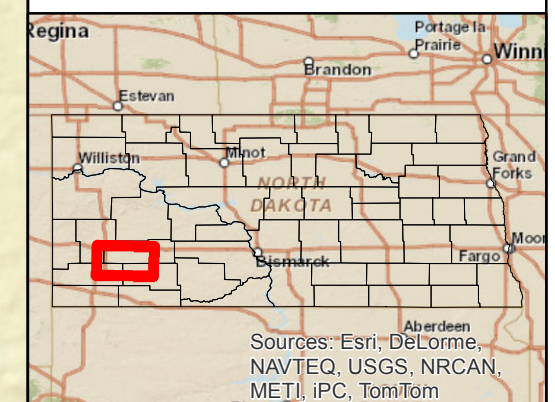
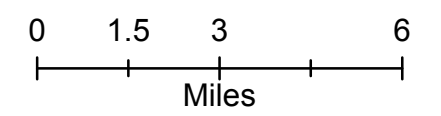
Anne-Marie Griger, AICP

Brady Wind Energy Center North Dakota

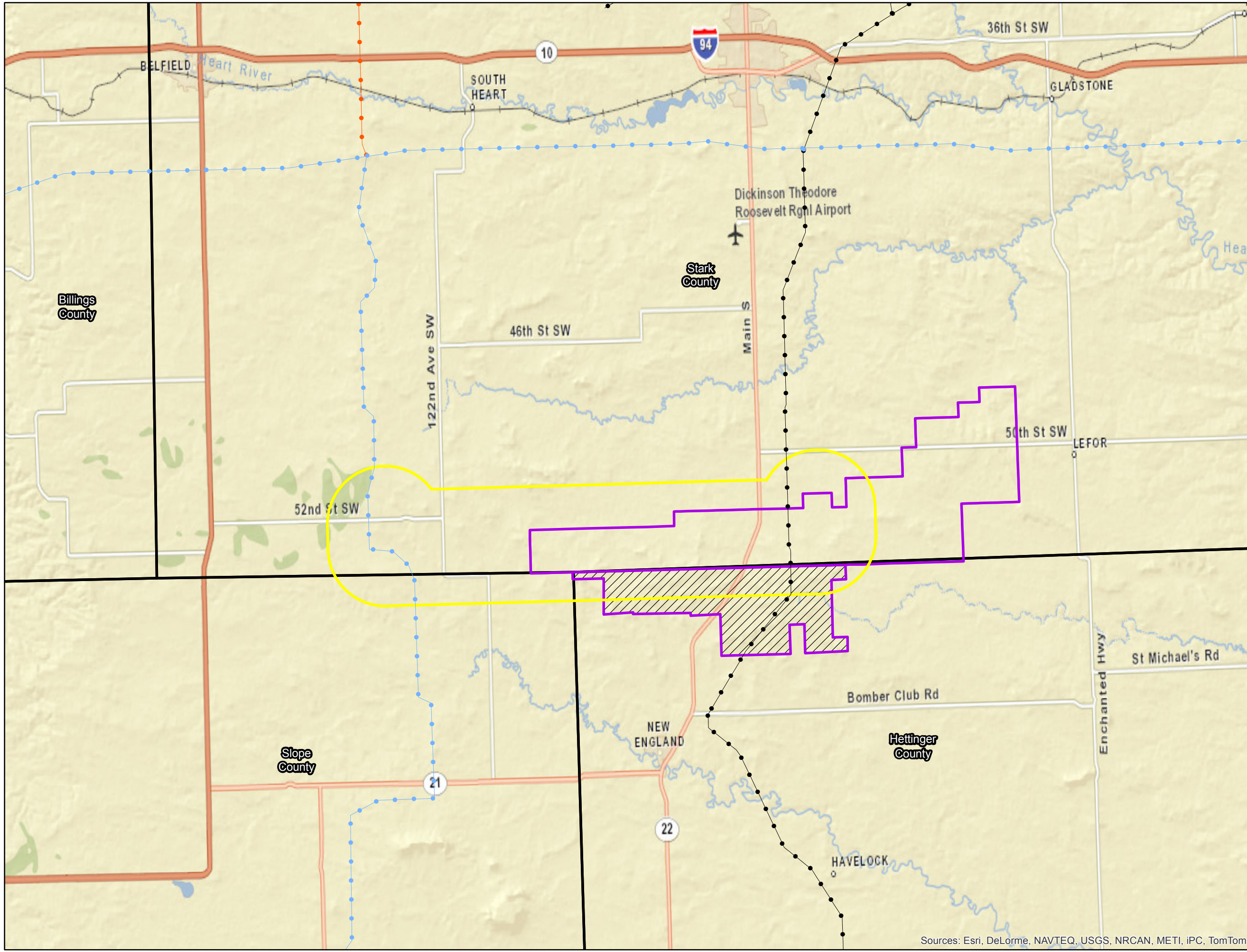
Project Location

Legend

-  Transmission Line Corridor
 -  Project Boundary
 -  Additional Area Under Consideration
 -  County Boundary
- Existing Electrical Transmission**
-  115kV Transmission Line
 -  230kV Transmission Line
 -  345kV Transmission Line



Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom



Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom

Griger, Anne Marie

From: Estabrook, Richard <Richard.Estabrook@nexteraenergy.com>
Sent: Thursday, September 17, 2015 11:36 AM
To: Quinnell, Susan L.
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: RE: Ethic farmsteads in southern Stark County, North Dakota

Susan,

Just following up on our 13 August call concerning the Ethnic Farmsteads in southern Stark County. The project now has a name (Brady) and a preliminary boundary and turbine layout, which I'm providing on the attached map. This map is based on a desktop evaluation that Tetra Tech conducted for the project area. Per our last conversation, we've now categorized the locations containing recorded Ethnic Farmsteads as "Extant" for those we know still contain standing structures; "Ruins" for those we have determined are no longer standing and should be considered archaeological resources; and "Further Research Required" for those locations where there could be some standing remains, but the exact condition of these locations could not be determined.

On our 13 August call, we discussed possible visual effects "APEs" (this project has no federal nexus) for a project site in the south Stark County area, and a 3-mile buffer was recommended. However, per your August 20 email regarding visual effects evaluation of industrial wind farms which generally have turbines in excess of 400 feet, a 2-mile radius around the individual turbines was suggested. Also suggested in your memo was creating a map, which I've attached, showing the preliminary turbine locations and project boundaries, and the locations of the recorded Ethnic Farmsteads. As there is a historic cemetery in the vicinity that may contain Iron Folk-Art monuments, we've included that location as well.

We would like to speak with you again on a conference call to discuss any modifications to the proposed Study Area ("APE") or other approaches we might undertake to evaluate potential visual effects to these (and any other) historic properties that could be in the project vicinity.

Would a follow-up call early next week be possible?

Cheers, Rich

Richard W. Estabrook, Ph.D. RPA
Environmental Services Project Manager - Archaeologist
NEXTera Energy Resources, LLC
561.691.3054 (office)
561.427.5483 (cell)
Richard.Estabrook@nexteraenergy.com



From: Quinnell, Susan L. [mailto:squinnell@nd.gov]
Sent: Tuesday, August 11, 2015 11:34 AM
To: Estabrook, Richard
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: RE: Ethic farmsteads in southern Stark County, North Dakota

This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email.

Any of those times are OK.

Susan Quinnell
Review and Compliance Coordinator
ND State Historic Preservation Office
State Historical Society of North Dakota
North Dakota Heritage Center
612 East Boulevard Avenue
Bismarck ND 58505-0830

701-328-3576
701-328-3710 FAX

From: Estabrook, Richard [<mailto:Richard.Estabrook@nexteraenergy.com>]
Sent: Tuesday, August 11, 2015 10:32 AM
To: Quinnell, Susan L.
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: RE: Ethic farmsteads in southern Stark County, North Dakota

Susan,

That's sounds good, although I'll be traveling out West those days. I'll be somewhere that I can jump on a call between 2-5 PM Central on Thursday and 11-3 Central on Friday. What time works best for you? If not, perhaps something first thing next week?

Cheers, Rich

Richard W. Estabrook, Ph.D. RPA
Environmental Services Project Manager - Archaeologist
NEXTera Energy Resources, LLC
561.691.3054 (office)
561.427.5483 (cell)
Richard.Estabrook@nexteraenergy.com



From: Quinnell, Susan L. [<mailto:squinnell@nd.gov>]
Sent: Tuesday, August 11, 2015 10:19 AM
To: Estabrook, Richard
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: RE: Ethic farmsteads in southern Stark County, North Dakota

This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email.

Sure, Thursday or Friday this week would work.

Susan Quinnell
Review and Compliance Coordinator

ND State Historic Preservation Office
State Historical Society of North Dakota
North Dakota Heritage Center
612 East Boulevard Avenue
Bismarck ND 58505-0830

701-328-3576
701-328-3710 FAX

From: Estabrook, Richard [<mailto:Richard.Estabrook@nexteraenergy.com>]
Sent: Monday, August 10, 2015 10:27 AM
To: Quinnell, Susan L.
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: Ethic farmsteads in southern Stark County, North Dakota

Susan,

NextEra Energy is looking at alternative locations in North Dakota in which to site a potential wind energy project. One of the locations being considered in is southern Stark and northern Hettinger counties. A preliminary records search conducted by Tetra Tech identified a number of late 19th – early 20th century ethic farmsteads in southern Stark County that were identified during a study entitled: *Ethnic Architecture in Stark County, North Dakota: A Historic Context* by Lon Johnson, Mark Hostetler and Alice Emerson circa 1991. Next Era is very much interested in avoiding historic properties whenever possible.

Would it be possible to speak with you about these resources via a conference call sometime soon? While it is entirely possible to avoid the physical footprint of these resources, we were concerned about potential secondary effects/visual concerns for these farmsteads.

If so, I can set something up with the folks at Tetra Tech and provide a call-in number.

Thanks in advance for your consideration.

Cheers, Rich

Richard W. Estabrook, Ph.D. RPA
Environmental Services Project Manager - Archaeologist
NEXTera Energy Resources, LLC
561.691.3054 (office)
561.427.5483 (cell)
Richard.Estabrook@nexteraenergy.com



Brady Wind Energy Center

Stark County, ND

Historic Structures

Legend

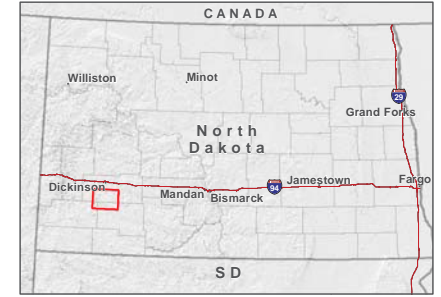
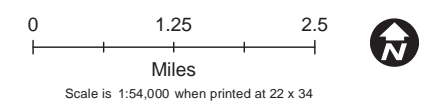
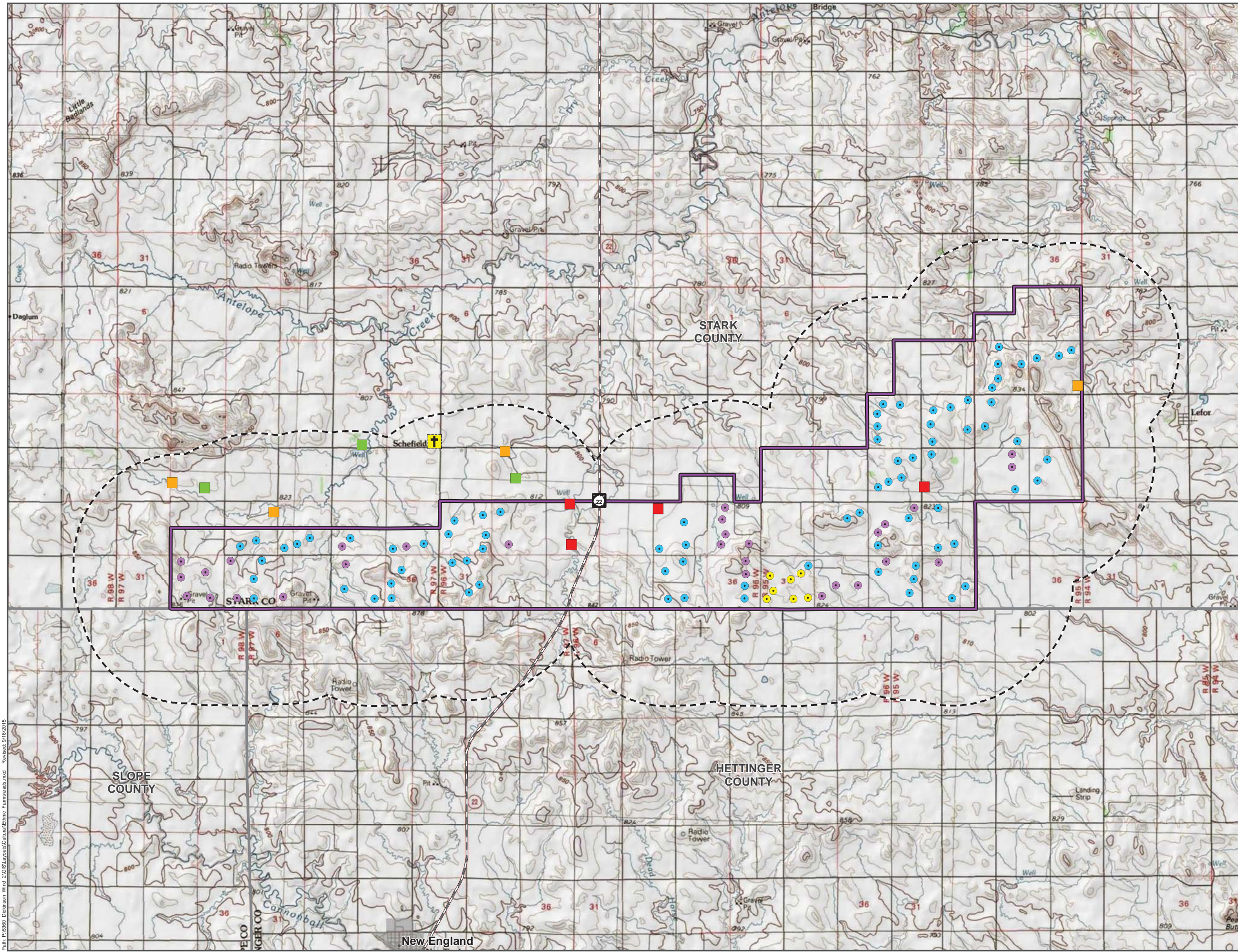
- Project Boundary (07/22/15)
- 2-mile Turbine Buffer
- Historic Cemetery

Turbine Layout (09/16/15)

- GE Xle 1.7515-103 Turbine
- GE Xle 1.7515-103 Turbine (Alt)
- GE Xle 1.79-100 Turbine

Ethnic Farmsteads Recommended as Eligible

- Still Extant
- Further Research Required
- In Ruins



Path: P:\580_Dickinson_Wind_2\GIS\Layouts\CulturalEthnic_Farmsteads.mxd Revised: 9/16/2015

Griger, Anne Marie

From: Quinnell, Susan L. <squinnell@nd.gov>
Sent: Thursday, September 17, 2015 11:55 AM
To: Estabrook, Richard
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: RE: Ethic farmsteads in southern Stark County, North Dakota

Hi Rich,

Thank you for the map. Regarding the visual APE two miles is good for this location, although we reserve the ability to set custom APE's depending on a project's proximity to very sensitive and outstanding cultural resources. A call next week would be welcome, except Monday Sept. 21st.

Best,

Susan Quinnell
Review and Compliance Coordinator
ND State Historic Preservation Office
State Historical Society of North Dakota
North Dakota Heritage Center
612 East Boulevard Avenue
Bismarck ND 58505-0830

701-328-3576
701-328-3710 FAX

From: Estabrook, Richard [mailto:Richard.Estabrook@nexteraenergy.com]
Sent: Thursday, September 17, 2015 11:36 AM
To: Quinnell, Susan L.
Cc: Wells, Kimberly; Griger, Anne Marie; Sexton, James
Subject: RE: Ethic farmsteads in southern Stark County, North Dakota

Susan,

Just following up on our 13 August call concerning the Ethnic Farmsteads in southern Stark County. The project now has a name (Brady) and a preliminary boundary and turbine layout, which I'm providing on the attached map. This map is based on a desktop evaluation that Tetra Tech conducted for the project area. Per our last conversation, we've now categorized the locations containing recorded Ethnic Farmsteads as "Extant" for those we know still contain standings structures; "Ruins" for those we have determined are no longer standing and should be considered archaeological resources; and "Further Research Required" for those locations where there could be some standing remains, but the exact condition of these locations could not be determined.

On our 13 August call, we discussed possible visual effects "APEs" (this project has no federal nexus) for a project site in the south Stark County area, and a 3-mile buffer was recommended. However, per your August 20 email regarding visual effects evaluation of industrial wind farms which generally have turbines in excess of 400 feet, a 2-mile radius around the individual turbines was suggested. Also suggested in your memo was creating a map, which I've attached, showing the preliminary turbine locations and project boundaries, and the locations of the recorded Ethnic Farmsteads. As there is a historic cemetery in the vicinity that may contain Iron Folk-Art monuments, we've included that location as well.



August 26, 2015

Anne-Marie Griger, AICP
Tetra Tech, Inc.
8911 N. Capital of Texas Hwy, Bldg 2, Suite 2310
Austin, TX 78759

Re: Proposed Brady Wind Energy Center
Hettinger and Stark Counties, North Dakota

Dear Ms. Griger:

This department has reviewed the information concerning the above-referenced project submitted under date of August 14, 2015, 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. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.
2. 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.
3. 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 or counties 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.
4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is

Anne-Marie Griger

2.

August 26, 2015

equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

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,

A handwritten signature in black ink, appearing to read "L. David Glatt". The signature is fluid and cursive, with a large loop at the end.

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

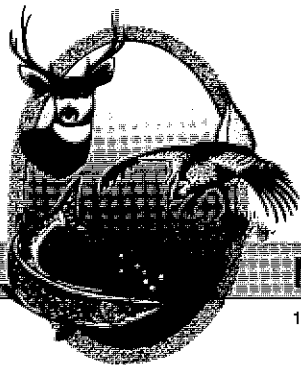
Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative 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.



"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

September 25, 2015

Anne-Marie Griger, AICP
Tetra Tech, Inc.
8911 N. Capital of Texas Hwy
Bldg. 2, Suite #2310
Austin, TX 78759

Dear Ms. Griger:

RE: Proposed Brady Wind Energy Center
Hettinger & Stark Counties, North Dakota

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.

A primary concern with wind power development is the disturbance of native prairie associated with construction of turbines, access roads, and other associated facilities. We ask that work within native prairie be avoided to the extent possible. This could include micro-siting turbines onto adjacent previously disturbed land, locating access roads on existing section line trails rather than across undisturbed native prairie, etc. We also suggest the US Fish and Wildlife Service Land-Based Wind Energy Guidelines be implemented as appropriate during the development of this project.

The National Wetland Inventory indicates various wetlands located within the proposed project area. We recommend that any unavoidable wetland impacts be replaced in kind, above-ground appurtenances not be placed in wetland areas, and no alterations be made to existing drainage patterns.

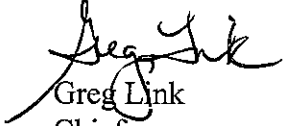
We ask that collection lines be buried whenever possible, and any necessary overhead lines be marked when placed over perennial streams or sited in close proximity to wetland complexes to minimize possible avian impacts. The publication "Reducing Avian Collisions with Power Lines: the State of the Art in 2012" provides a range of management options which can be used to reduce avian losses.

Aerial surveys should be conducted for raptor nests before construction begins. A ½-mile construction buffer should be implemented around active eagle nest sites (known occupied

within the past 5 years). Ms. Sandra Johnson, Conservation Biologist, can be contacted at 701-328-6327 for additional information on eagle nest sites in the state.

We also recommend that routine monitoring for avian and bat mortality be included as part of the facility maintenance plan for the life of the project. We would appreciate being kept informed as this project progresses, and if possible, we would like the GPS coordinates for each turbine after the site has been established.

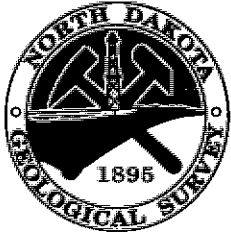
Sincerely,

A handwritten signature in black ink, appearing to read "Greg Link". The signature is fluid and cursive, with the first name "Greg" and last name "Link" clearly distinguishable.

Greg Link
Chief

Conservation & Communication Division

js



North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

<https://www.dmr.nd.gov/ndgs/>

August 24, 2015

Anne-Marie Griger
Tetra Tech, Inc
8911 N. Capital of Texas Highway, Bldg 2 Suite #2310
Austin, Texas 78759

RE: Brady Wind Energy Center, Hettinger and Stark Counties, ND

Dear Ms. Griger:

There are economic coal deposits within or adjacent to the area that you have outlined. Please see <https://www.dmr.nd.gov/ndgs/Coalmaps/dickinson/24Dickinson.asp> for coal maps of this area. The New England North Deposit covers portions of sections 5-11, 13-17, 22 and 23 in T136N, R97W and contains approximately 58 million tons of mineable coal. We have not initiated a landslide mapping project within this area.

Please contact me if you have any questions.

Sincerely,

Edward C. Murphy
State Geologist

**ND Parks and
Recreation Department**

ND Natural Heritage Inventory
1600 East Century Ave., Suite 3
Bismarck, ND 58503-0649
(701) 328-5370 FAX: (701) 328-5363

INVOICE

**INVOICE NO: 0507
DATE: 8/31/2015**

Anne-Marie Griger
Tetra-Tech, Inc
8911 N Capital of Texas Hwy
Bldg. 2 Suite #2310
Austin, TX 78759

CONTACT	REFERENCE NO.	DATE SHIPPED	SHIPPED VIA	F.O.B. POINT	TERMS
K.Duttenhefner	NHI_2015_079	8/31/2015	USPS		

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
1	Data retrieval, data analysis, manual and computer searches, packaging and collection of data. Project: Brady Wind Energy Center in Hettinger and Stark Counties	\$ 60.00	\$ 60.00

SUBTOTAL	\$ 60.00
SALES TAX	
SHIPPING & HANDLING	
TOTAL DUE	\$ 60.00

Make all checks payable to: ND Parks and Recreation Department
If you have any questions concerning this invoice, call: Kathy Duttenhefner, (701) 328-5370

THANK YOU FOR YOUR INTEREST IN RARE SPECIES CONSERVATION.

Entry Event	Fund	Dept.	Project	Activity
463021	398	1508	OR15082	15082



Jack Dalrymple, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

August 31, 2015

Ms. Anne-Marie Griger
Tetra Tech, Inc
Bldg 2 Suite #2310
8911 N. Capital of Texas Hwy.
Austin, TX 78759

Re: Proposed Brady Wind Energy Center in Hettinger and Stark Counties

Dear Ms. Griger,

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced proposed Brady Wind Energy Center in Hettinger and Stark Counties.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage or affect state Land and Water Conservation Fund (LWCF) project sites that we manage.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, we several plant, and animal species of concern and significant ecological communities documented within sections and in adjacent sections to project area. Please see the attached spreadsheet and map for more information on these occurrences.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

It is our policy to charge requests for data services including data retrieval, data analysis, manual and computer searches, packaging and collection of data. An invoice for services provided has been enclosed.

We appreciate your commitment to rare plant, animal and ecological community conservation, management and inter-agency cooperation to date. For additional information please contact Kathy Duttonhefner (701-328-5370 or kgduttonhefner@nd.gov) of our staff. Thank you for the opportunity to comment on this proposed project.

Sincerely,

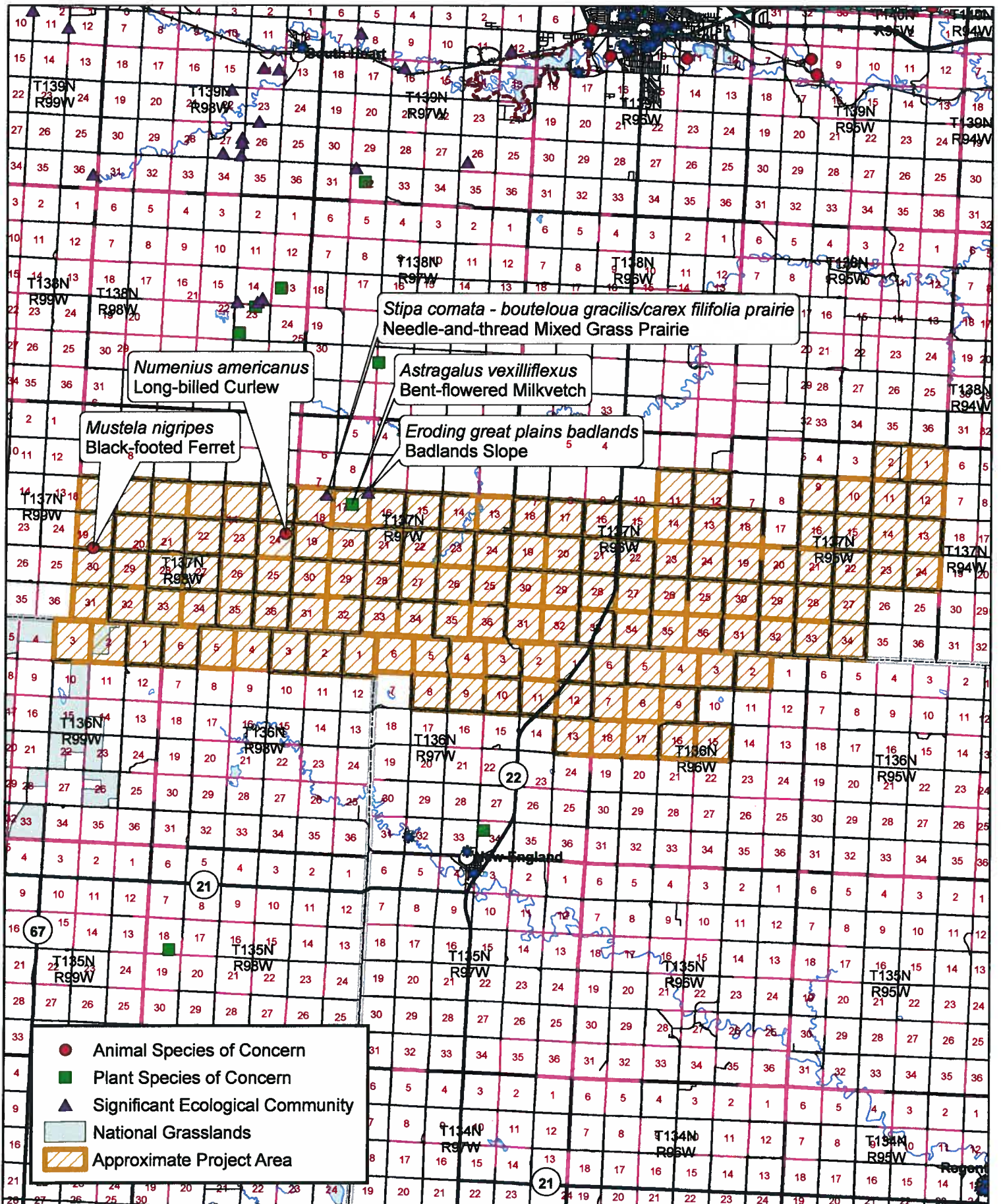


Kathy Duttonhefner, Coordinator
Natural Resources Division

R.USNDNHI*2015_079KD18.31.2015DL8.31.2015

.....
Play in our backyard!

North Dakota Parks and Recreation Department North Dakota Natural Heritage Inventory



North Dakota Natural Heritage Inventory
Rare Animal and Plant Species and Significant Ecological Communities

State Scientific Name	State Common Name	State Rank	Global Rank	Federal Status	Township Range Section	County	Last Observation	Estimated Representation Accuracy	Precision
<i>Astragalus vexilliflexus</i>	Bent-flowered Milkvetch	S3	G4		137N097W - 17	Stark	1985-09-18		S
<i>Erodium cicutarium</i>	Red-stemmed Filago	S4	GNR		137N097W - 08; 137N097W - 16; 137N097W - 17	Stark	1985-09-18		S
<i>Mustela nigripes</i>	Black-footed Ferret	S1	G1	LE, XN	137N099W - 36; 137N098W - 29; 137N098W - 17; 137N098W - 31; 137N098W - 32; 137N098W - 30; 137N099W - 13; 137N099W - 25; 137N098W - 18; 137N099W - 24; 137N098W - 19; 137N098W - 20	Stark	1976	Low	M
<i>Numenius americanus</i>	Long-billed Curlew	S2	G5		137N099W - 24	Stark	1976-05		S
<i>Stipa comata</i> - <i>bouteloua gracilis</i> / <i>carex filifolia</i> prairie	Needle-and-thread Mixed Grass Prairie	S2	GNR		137N097W - 18	Stark	1985-09-18		S

North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the species or community (versus buffer area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Very high (>95%)

High (>80%, <= 95%)

Medium (>20%, <= 80%)

Low (>0%, <= 20%)

Unknown

(null) - Not assessed

Precision

A single-letter code for the precision used to map the Element Occurrence (EO) on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map, based on the previous Heritage methodology in which EOs were located on paper maps using dots.

S - Seconds: accuracy of locality mappable within a three-second radius; 100 meters from the centerpoint

M - Minute: accuracy of locality mappable within a one-minute radius; 2 km from the centerpoint

G - General: accuracy of locality mappable to map or place name precision only; 8 km from centerpoint

U - Unmappable



North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://swc.nd.gov>

September 4, 2015

Anne-Marie Griger
Tetra Tech, Inc.
8911 N. Capital of Texas Hwy
BLDG 2 STE 2310
Austin, TX 78759

Dear Ms. Griger:

This is in response to your request for review of environmental impacts associated with the Brady Wind Energy Center project located in Hettinger and Stark Counties south of the city of Dickinson, ND. The project will include portions of the following tracts: in Hettinger County - Sections 3-9 and 15-18, Township 136 N, Range 96 W and Sections 1-6 and 8-13, Township 136 N, Range 97 W. In Stark County - Sections 1, 2, 9-16, 19-24, and 27-34, Township 137 N, Range 95 W; Sections 23-36, Township 137 N, Range 96 W; and Sections 25-29 and 32-36, Township 137 N, Range 97 W.

The proposed project has been reviewed by State Water Commission staff and the following comments are provided:

- There are floodplains identified and mapped where this proposed project is to take place. The areas are designated to be Zone A. North Dakota has no formal "permitting" authority as state entity in National Flood Insurance Program (NFIP) identified floodplain areas. The permitting is always done by the local entity, which has jurisdiction in the area in question. Please work closely with the two County Floodplain Administrator. The Floodplain Administrator for Hettinger County is: Ilene Hardmeyer; 336 Pacific Ave; Mott, ND 58646; 701-260-2452. The NFIP maps used to make this determination are: Panels #38041C0250D and 38041C0275D, Date 3/2/2012. The Floodplain Administrator for Stark County is: Bill Fahlsing; 66 Museum Drive W; Dickinson, ND 58601; 701-456-7605. The NFIP maps used to make this determination are: Panels #38089C0675E, 38089C0700E and 38089C0725E, Date 11/4/2010.
- The ND State Water Commission (Commission) maintains a network of observation/monitor water wells and the location of gaging stations throughout the state, and many are located close to public right-of-ways. The location information can be obtained from the Commission's website at: <http://swc.nd.gov>; then click on "Map and Data Resources"; and then click on "Map Services". Please inform the Water Appropriations Division of the Commission at 701-328-2754, if gaging stations or water wells may be affected by the project or accidentally damaged. A copy of the map is enclosed.
- There is Southwest Pipeline Project (SWPP) infrastructure in the area. Please contact the Southwest Water Authority at 701-225-0241 regarding SWPP infrastructure location.
- It is the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements.
- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.
- No sole-source aquifers have been designated in ND.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 701-328-4967.

Sincerely,


Linda Weispenning
Water Resource Planner

LW:dm/1570
Encl.

JACK DALRYMPLE, GOVERNOR
CHAIRMAN

TODD SANDO, P.E.
SECRETARY AND STATE ENGINEER



MAP SCALE 1" = 2000'



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
HETTINGER COUNTY,
NORTH DAKOTA
AND INCORPORATED AREAS

PANEL 0250D

PANEL 250 OF 950
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

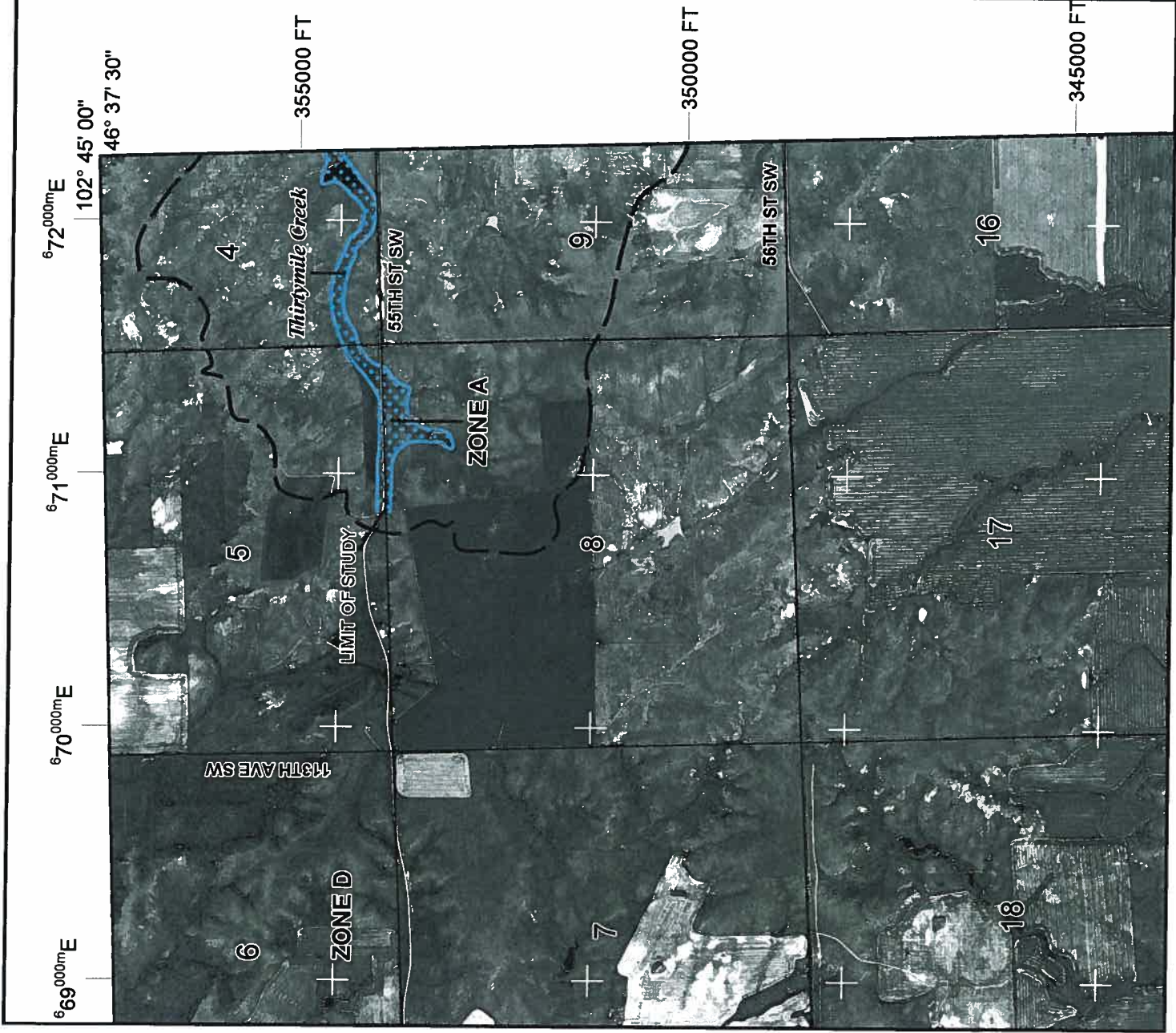
COMMUNITY	NUMBER	PANEL	SUFFIX
HETTINGER COUNTY, Unincorporated Areas	380283	0250	D
NEW ENGLAND, CITY OF	380242	0250	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



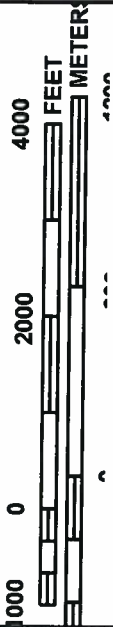
MAP NUMBER
38041C0250D
EFFECTIVE DATE
MARCH 2, 2012
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov





MAP SCALE 1" = 2000'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0275D

FIRM FLOOD INSURANCE RATE MAP HETTINGER COUNTY, NORTH DAKOTA AND INCORPORATED AREAS

PANEL 275 OF 950
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HETTINGER COUNTY, Unincorporated Areas	380293	0275	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
38041C0275D
EFFECTIVE DATE
MARCH 2, 2012
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov





MAP SCALE 1" = 2000'



METE

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0675E

FIRM
FLOOD INSURANCE RATE MAP

STARK COUNTY,
NORTH DAKOTA
AND INCORPORATED AREAS

PANEL 675 OF 850
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
NUMBER 386369
COMMUNITY STARK COUNTY
PANEL 0675
SUFFIX E

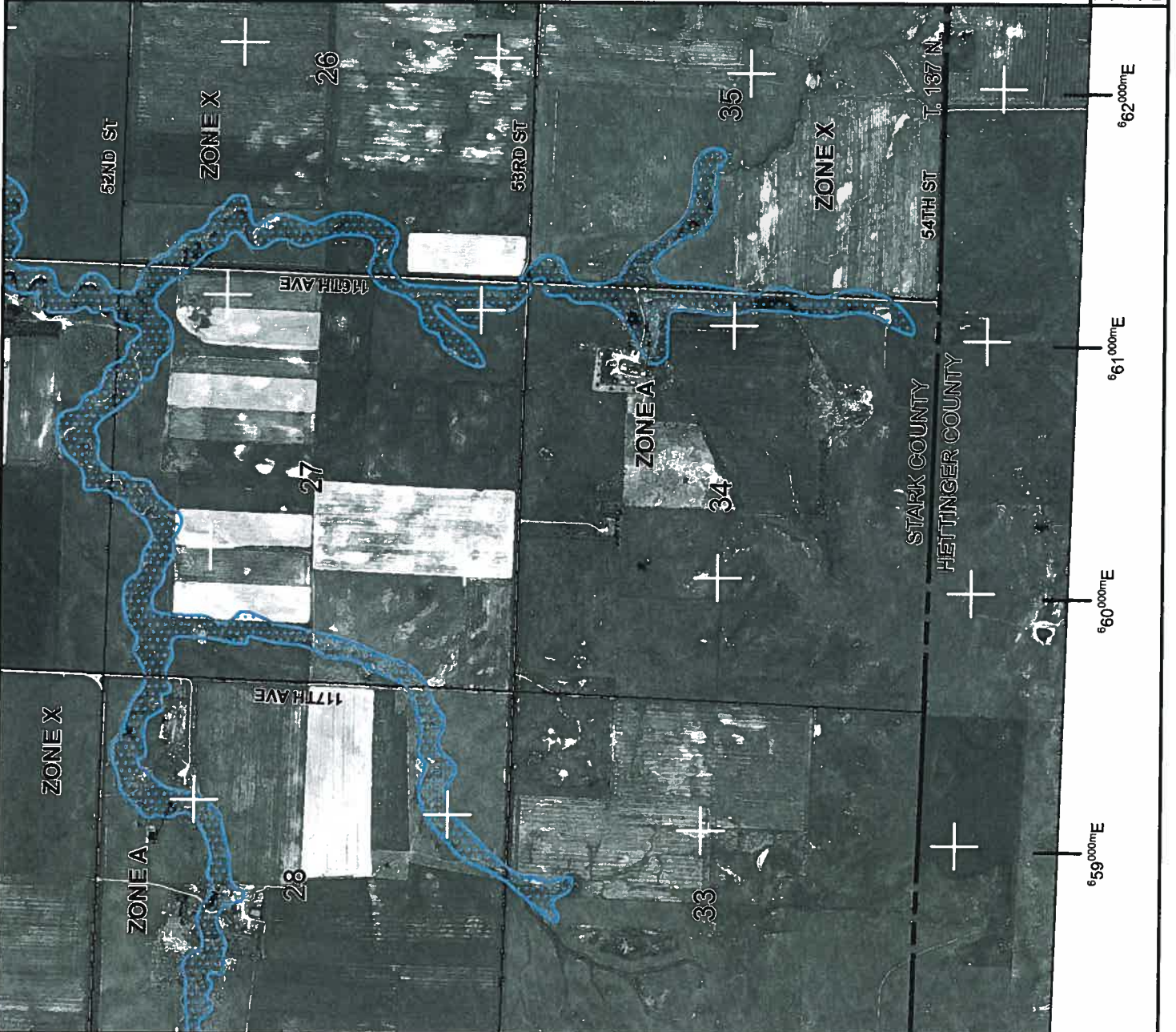
Notice to User: The Map Number shown below should be used when ordering maps for the subject community. The information shown above should be used on insurance applications for the subject community.



MAP NUMBER
38089C0675E
EFFECTIVE DATE
NOVEMBER 4, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov





MAP SCALE 1" = 2000'



METE

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0700E

FIRM
FLOOD INSURANCE RATE MAP
STARK COUNTY,
NORTH DAKOTA
AND INCORPORATED AREAS

PANEL 700 OF 850
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY NUMBER 385369
STARK COUNTY
PANEL SUFFIX 0700
E

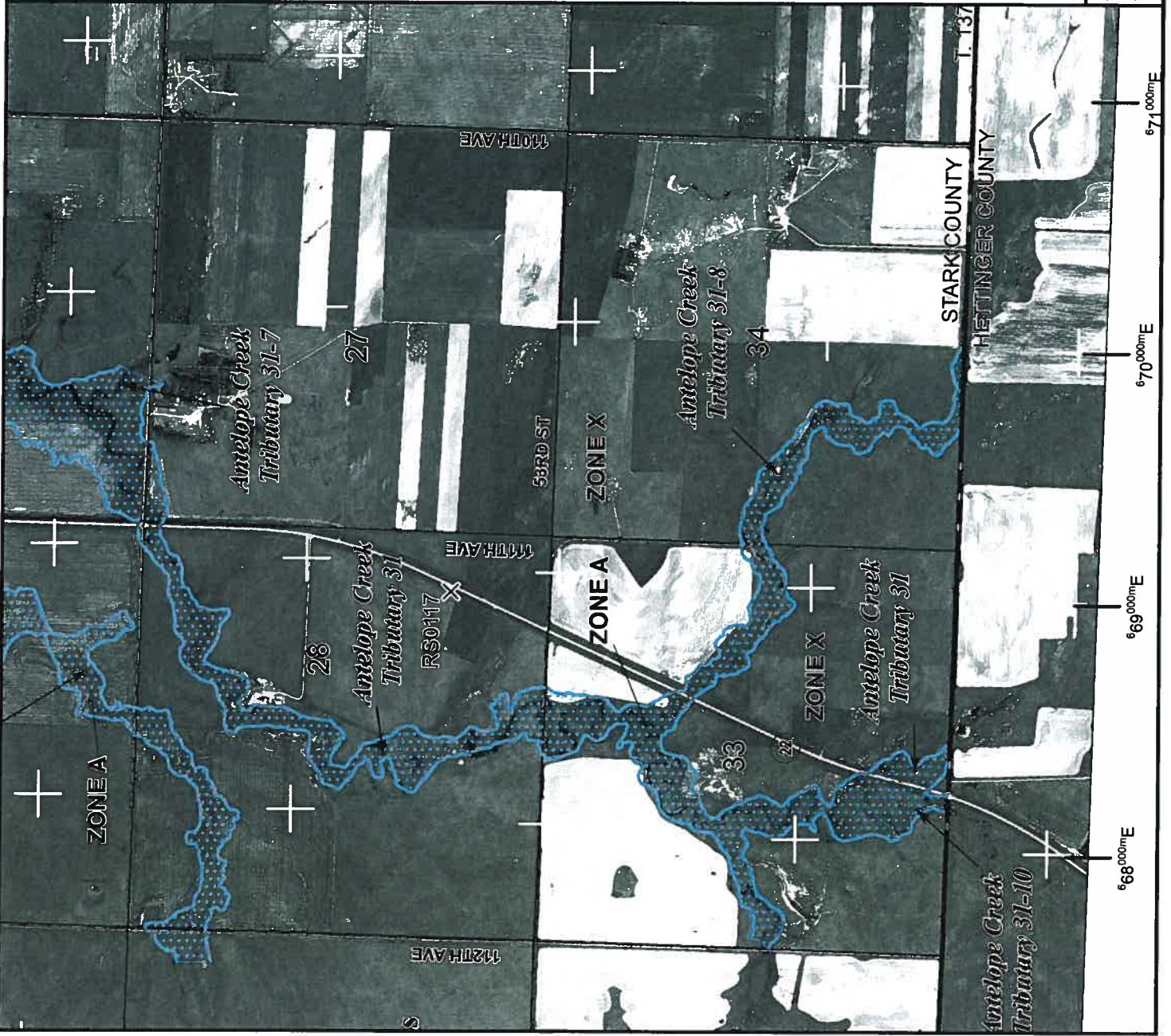
Notice to User: The Map Number shown below should be used when requesting a map for insurance applications for the subject community.



MAP NUMBER 38089C0700E
EFFECTIVE DATE NOVEMBER 4, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov





MAP SCALE 1" = 2000'



METE

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0725E

FIRM FLOOD INSURANCE RATE MAP

STARK COUNTY,
NORTH DAKOTA
AND INCORPORATED AREAS

PANEL 725 OF 850
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY: STARK COUNTY
NUMBER: 385368
PANEL: 0725
SUFFIX: E

Notice to User: The Map Number shown below should be used when placing maps on insurance applications for the subject community.



MAP NUMBER
38089C0725E

EFFECTIVE DATE
NOVEMBER 4, 2010

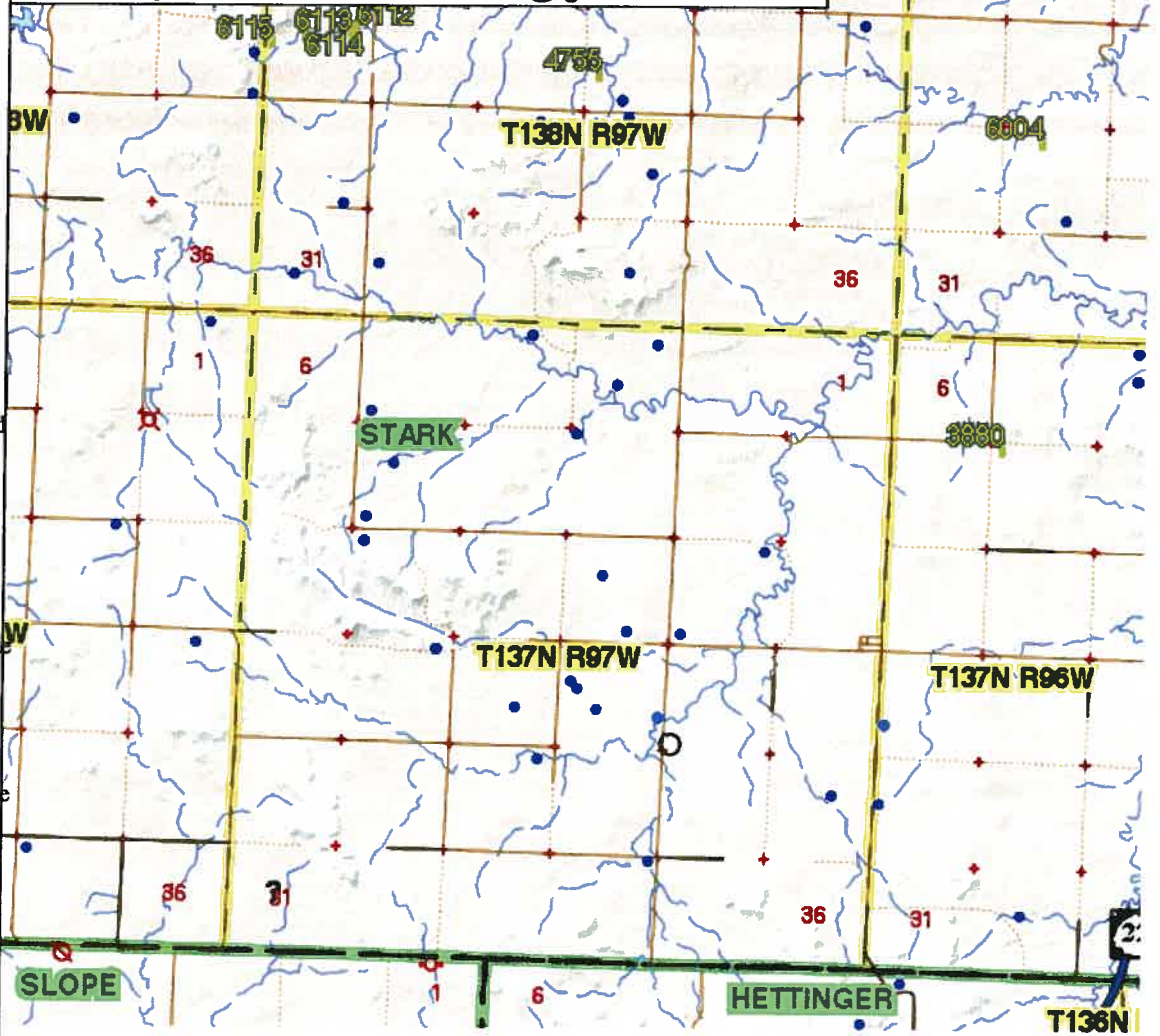
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



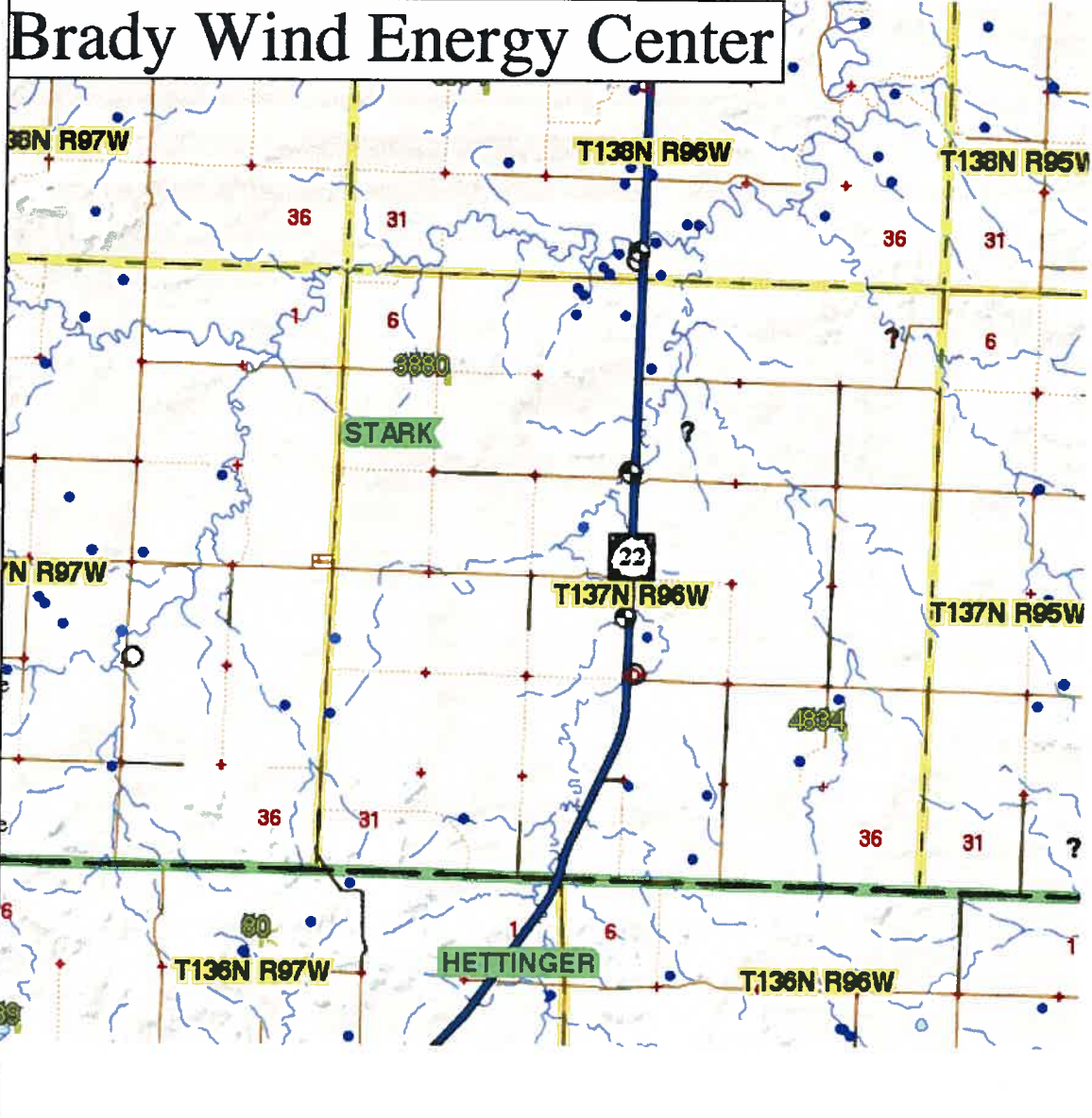
Brady Wind Energy Center

- ND Corporate Limits
- Tribal Lands
- Section Corners
- Townships_2
- County Boundaries1
- Driller Logs
- usgs_gages
- Domestic Well
- Industrial Well
- Irrigation Well
- Multi-Well Sample
- Municipal Well
- Observation Well
- Observation Well - Destroyed
- Observation Well - Plugged
- Observation Well - Recorder
- Production Well
- Rural Water Well
- Stock Well
- Surface Water Monitoring Site
- Test Hole
- Test Well
- Unknown
- Surface Water Monitoring Site
- Dams
- Approved
- Denied
- Hold
- Pending
- Withdrawn
- Permit Not Required
- dikes



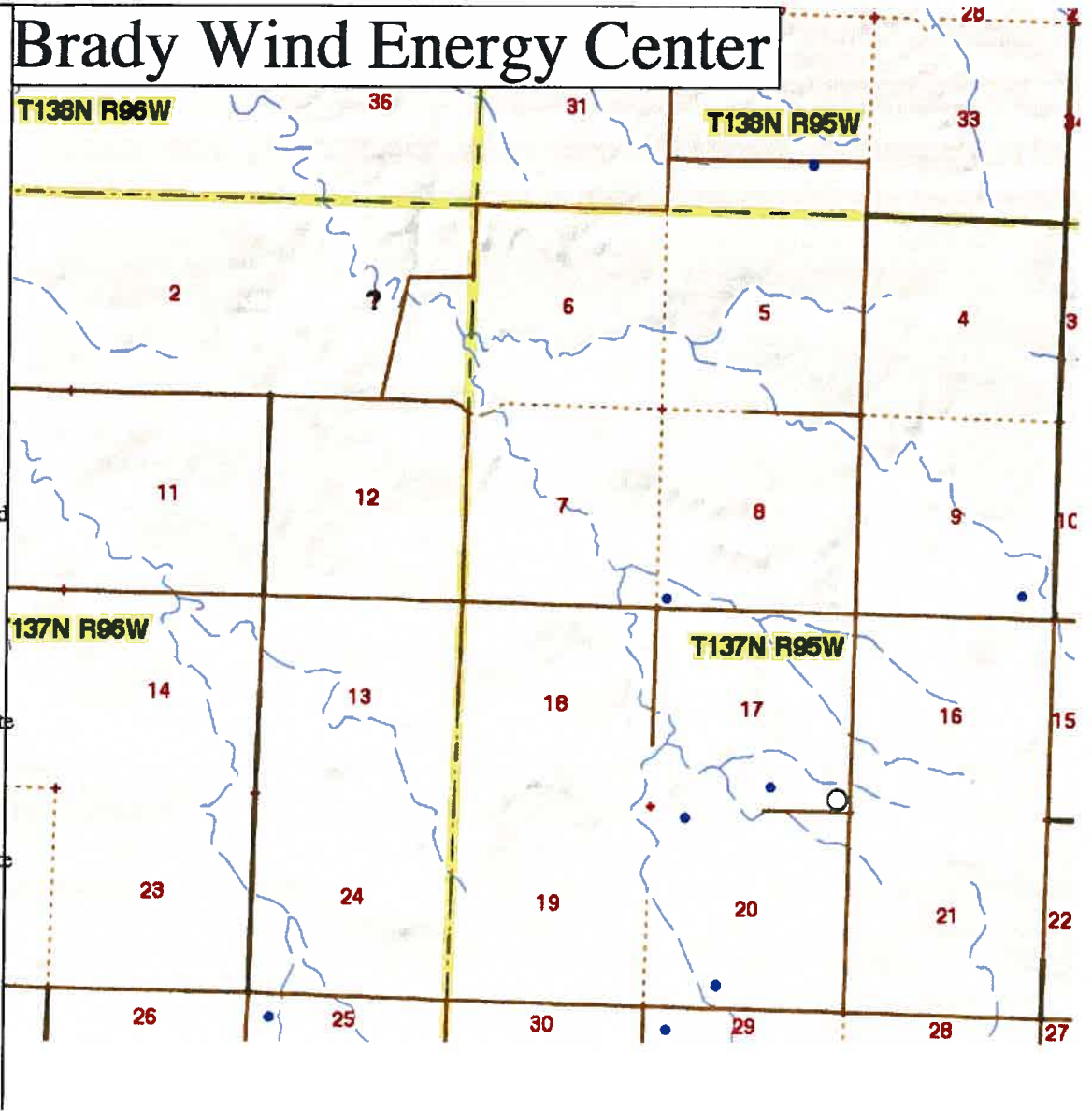
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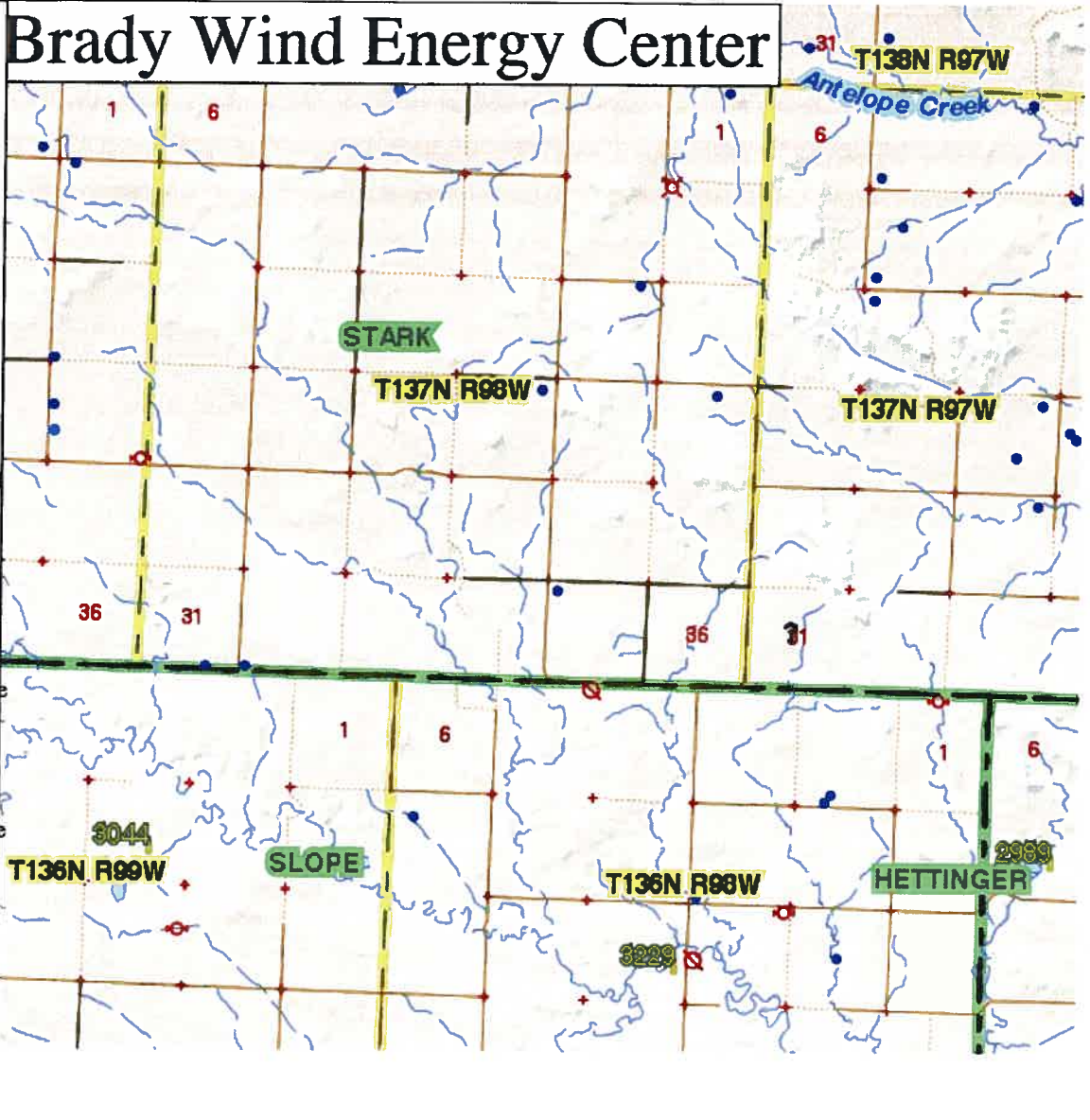
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**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

Jack Dalrymple
Governor of North Dakota

North Dakota
State Historical Board

Margaret Puetz
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

Albert I. Berger
Grand Forks - Secretary

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

Chester E. Nelson, Jr.
Bismarck

A. Ruric Todd III
Jamestown

Sara Otte Coleman
*Director
Tourism Division*

Kelly Schmidt
State Treasurer

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Secretary of State

Mark Zimmerman
*Director
Parks and Recreation
Department*

Grant Levi
*Director
Department of Transportation*

Claudia J. Berg
Director

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of Museums since 1986

August 21, 2015

Ms. Anne-Marie Griger, AICP
Tetra Tech Inc
8911 N Capital of Texas Hwy, Building 2, Suite 2310
Austin, TX 78759

ND SHPO REF: 15-1414 ND PSC - NextEra Energy Resources, LLC Proposed Brady Wind Energy Center 230 kV transmission line in Stark, Hettinger and Slope Counties, North Dakota

Dear Ms. Griger,

Thank you for your preliminary information on ND SHPO Ref: 15-1414, the Brady Wind Energy Center and transmission line. As you know, there is potential for unrecorded and recorded cultural resource properties in a variety of physiographic settings in the overall project area. As a potential federal/state undertaking, we encourage early agency consultation as part of the review process. Early consultation should also include tribal nations, and North Dakota Indian Affairs.

We recommend a Class I (file search), a Class III survey by a permitted architectural historian for standing structures over 50 years old in the visual Area of Potential Effect (APE). That is within a 2 mile radius of individual turbine locations, but that APE may be modified larger or smaller, depending on those turbine locations. When the wind farm project develops to the point that turbine locations are defined, we would like to see a map of the turbine locations to see if there need to be any modifications to the APE. Susan Quinnell Review and Compliance Coordinator with ND SHPO will assist the permitted architectural historian with development of the visual APE, as each visual APE for large wind projects warrants individual review. Class III archeological (pedestrian) surveys will be warranted for all areas directly impacted by the project, including crane paths, access roads, staging areas, transmissions lines and turbine pads. As part of the Class III Inventory, NDCRS site updates should be submitted on all sites resurveyed. If the project APE changes, we will request additional inventories, surveys and consultation.

Thank you for the opportunity to review this project to date. We look forward to further review of cultural resource surveys and site forms, and updates as the project siting occurs. If you have any questions please contact Paul Picha, Chief Archaeologist (701) 328-3574 or Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail squinnell@nd.gov

Sincerely,

Claudia J. Berg, State Historic Preservation Officer (North Dakota) and Director State Historical Society of North Dakota



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

August 19, 2015

North Dakota Regulatory Office

Ms. Anne-Marie Griger
Tetra Tech, Inc.
8911 ~~811~~ N. Capital of Texas Hwy, Bldg 2 Suite 2310
Austin, Texas 78759

Dear Ms. Griger:

This is in response to your letter dated August 14, 2015, requesting comments on NextEra Energy Resources' proposed Brady Wind Energy Center located in Hettinger and Stark Counties, North Dakota.

U. S. Army Corps of Engineers Regulatory Offices administer Section 10 of the Rivers and Harbors Act (Section 10) and Section 404 of the Clean Water Act (Section 404). A Section 10 permit would be required for work impacting navigable waters, this includes work over, through, or under Section 10 waters. Section 10 waters in North Dakota are the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River (south of the railroad tracks in Jamestown, North Dakota), Bois de Sioux River, Red River of the North, and Upper Des Lacs Lake. A Section 404 permit would be required for the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Complete the enclosed application and mail it to the letterhead address if the project requires a Section 10/404 permit.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter or phone at (701) 255-0015.

Sincerely,

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosure

**Instructions for Preparing a
Department of the Army Permit Application**

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identify the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

**U.S. ARMY CORPS OF ENGINEERS
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT**
33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
OMB No. 0710-0003
Expires: 31-AUGUST-2013*

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please **DO NOT RETURN** your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - E-mail Address -			8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -		
6. APPLICANT'S ADDRESS: Address- City - State - Zip - Country -			9. AGENT'S ADDRESS: Address- City - State - Zip - Country -		
7. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax			10. AGENTS PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax		

STATEMENT OF AUTHORIZATION

11. I hereby authorize _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)			
13. NAME OF WATERBODY, IF KNOWN (if applicable)		14. PROJECT STREET ADDRESS (if applicable) Address	
15. LOCATION OF PROJECT Latitude: °N Longitude: °W		City -	State- Zip-
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID Municipality Section - Township - Range -			

17. DIRECTIONS TO THE SITE

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
-------------------------------	-------------------------------	-------------------------------

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres
or
Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

