United States Department of the Interior

FISH AND WILDLIFE SERVICE
North Dakota Ecological Services

IN REPLY REFER TO:

2018-CPA-0017

3425 Miriam Avenue
Bismarck, North Dakota 58501

October 12, 2018

Ms. Jennifer Bell
Senior Environmental Scientist
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

Dear Ms. Bell:

Thank you for your letter of December 21, 2017, requesting U.S. Fish & Wildlife Service (Service) comment on several aspects of the Aurora Wind Energy Project and Transmission Line (Project) in Williams and Mountrail Counties, North Dakota. The Project consists of 300 megawatts (MW) and approximately 25 miles of 345-kv overhead transmission line. The Project would interconnect to the electrical grid via the existing Basin Electric Power Cooperative Tande 345-kilovolt Substation (Tande Substation, located in the Northeast Quarter of Section 29, Township 157 North, Range 94 West, Mountrail County, North Dakota. Once the location of the infrastructure has been finalized the Service can conduct further review of the Project.

This letter provides information regarding important wildlife habitats and U.S. Fish and Wildlife Service (Service) trust resources including federally listed species, eagles, birds of conservation concern and other migratory birds that may occur within the project area and vicinity. We have included guidelines, recommendations, and methods to be applied to various components of wind energy development including meteorological towers, power lines, and turbines in order to avoid, minimize, and/or compensate for impacts to Service trust resources and to assist you in achieving compliance with Federal laws.

Grasslands

The North Dakota Game and Fish Department (NDGFD) indicated the importance of grasslands in their January 8, 2018, letter regarding this project. We also stress the value of these habitats. Native prairie, and prairie that may have been tilled briefly then left to return to grass ("go-back prairie"), are particularly important habitats. In addition to the intrinsic value of diverse native prairie plant communities, these areas represent a fraction of the prairie acres that once existed and harbored numerous native wildlife species, some of which cannot survive outside the native plant community. Note, that while native prairie is a conservation priority in the state, lesser-

quality areas (e.g. grasslands with a high non-native plant component, overgrazed grasslands) are also valuable habitat for wildlife.

In addition to the existence of native prairie at the proposed Project site and the presence of species at risk that rely on those habitats, other factors indicate risk of direct and indirect impacts to wildlife at this location. The number of prairie pothole wetlands in the project area, and proximity of the site to areas which harbor federally listed species including, whooping cranes and Dakota skippers are indicators of the wildlife value of this area. The information collected to date, obtained via the tiered approach outlined in our wind energy guidelines (see below), is intended to guide developers regarding whether development plans should continue or not at a given site. During telephone calls on the proposed Project between Burns & McDonnell and the Service, we relayed to you concerns with placing wind development in this area.

2012 Land-Based Wind Energy Guidelines

Per ongoing coordination regarding this project, Trade Wind Energy Inc. is aware of our voluntary 2012 *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines* (WEG) which were developed in consultation with wind industry companies. We recommend close adherence to these guidelines, using the information gathered to first determine whether the project should be placed in the area of interest at all. The WEG invokes a tiered approach intended to evaluate and quantify the risk posed to habitats and wildlife at potential wind energy sites. The tiered system involves collecting site information with increasing levels of detail.

Tiers 1-3 each represent a preconstruction decision point to either move forward to development, gather more information (i.e. move to the next tier), or to abandon project plans at a site, thereby avoiding areas where development is precluded or where wildlife impacts are likely to be high and difficult or costly to remedy or mitigate at a later stage. Wind energy facility effects to wildlife may be direct and indirect, including collision mortality, loss of habitat due to the footprint of the turbines/roads/other facilities, habitat fragmentation impacts, wildlife avoidance of turbines on the landscape, encroachment of invasive plants, and more. Currently, the best strategy to avoid impacts to wildlife is to place wind energy facilities within existing cropland wherever possible, precluding direct impacts to valuable wildlife. We request the results of any pre- or post-construction wildlife monitoring for this project.

Eagle Guidance

Golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) may occur throughout North Dakota and both species are protected from a variety of harmful actions via take prohibitions in both the Migratory Bird Treaty Act[1] (MBTA; 16 U.S.C. 703-712) and the

[1] On December 22, 2017, the Department of the Interior's (DOI) Office of the Solicitor Memorandum M-37050 titled The Migratory Bird Treaty Act Does Not Prohibit Incidental Take concludes that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. The MBTA list of protected species includes bald and golden eagles and the law has been an effective tool to pursue incidental take cases involving eagles. However, the primary law protecting eagles is the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S. Code § 668), since the bald eagle was delisted under the Endangered Species Act in 2007.

Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d). The BGEPA, enacted in 1940 and amended several times, prohibits take of bald eagles and golden eagles, including their parts, nests, young or eggs, except where otherwise permitted pursuant to federal regulations. Incidental take of eagles from actions such as electrocutions from power lines or wind turbine strikes are prohibited unless specifically authorized via an eagle incidental take permit from US Fish and Wildlife Service (Service). BGEPA provides penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." BGEPA defines take to include the following actions: "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Service expanded this definition by regulation to include the term "destroy" to ensure that "take" also encompasses destruction of eagle nests. Also the Service defined the term disturb which means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

The Service has developed guidance for the public regarding means to avoid take of bald and golden eagles:

- The 2007 *National Bald Eagle Management Guidelines* serve to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of BGEPA may apply. They provide conservation recommendations to help people avoid and/or minimize such impacts to bald eagles, particularly where they may constitute "disturbance," which is prohibited by the BGEPA.

- The 2013 *Eagle Conservation Plan Guidance, Module 1- Land-based Wind Energy, Version 2* is specific to wind energy development and provides in-depth guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. Development of an Eagle Conservation Plan per these guidelines may serve as the basis for applying for an eagle incidental take permit for wind energy facilities. Applications for such eagle incidental take permits must include an Eagle Conservation Plan.

Finally, the Service has promulgated new permit regulations under BGEPA:

- New eagle permit regulations, as allowed under BGEPA, were promulgated by the Service in 2009 (74 FR 46836; Sept. 11, 2009) and revised in 2016 (81 FR 91494; Dec. 16, 2016). The regulations authorize the limited take of bald and golden eagles where the take to be authorized is associated with otherwise lawful activities. These regulations also establish permit provisions for intentional take of eagle nests where necessary to ensure public health and safety, in addition to other limited circumstances. The revisions in 2016 included changes to permit issuance criteria and duration, definitions,

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Memorandum-37050 does not affect the ability of the Service to refer entities for prosecution that have violated the take prohibitions for eagles established by the BGEPA. www.doi.gov/sites/doi.gov/files/uploads/m-37050.pdf

compensatory mitigation standards, criteria for eagle nest removal permits, permit application requirements, and fees in order to clarify, improve implementation and increase compliance while still protecting eagles.

The Service's Office of Law Enforcement carries out its mission to protect eagles through investigations and enforcement, as well as by fostering relationships with individuals, companies, industries and agencies that have taken effective steps to avoid take, including incidental take of these species, and encouraging others to implement measures to avoid take. The Office of Law Enforcement focuses its resources on investigating individuals and entities that take eagles without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Those individuals and entities are encouraged to work closely with Service biologists to identify available protective measures, and to implement those measures during all activities or situations where their action or inaction may result in the "take" of an eagle(s).

The Service has also developed recommendations for wind developers specific to the Mountain-Prairie Region (Region 6):

- *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities* –The goal of these recommendations is to contribute to maintaining stable or increasing breeding populations of eagles by recommending conservation measures that will maintain breeding territories and minimize impacts to other important eagle use areas (e.g., eagle nests, foraging areas, and communal roosts).

- *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6* – In the event a project proponent intends to develop an ECP, this Region 6 document provides recommendations, in an outline format, for developing and organizing the content of an ECP, and includes additional details on topics that should be addressed in the plan.

Threatened/Endangered Species

We have determined that the following federally listed species may occur in the project area:

Species	Status	Expected Occurrence
Dakota Skipper *Herperia dacotae*	Threatened	Summer flight, June-July

Northern Long-eared bat (*Myotis septentrionalis*)	Threatened	Summer resident, seasonal migrant
Piping Plover (*Charadrius melodus)*	Threatened	Summer resident, seasonal migrant
Whooping Crane (*Grus americana*)	Endangered	Spring and fall migration
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Rare seasonal migrant

Whooping Crane:
The BCWEC is an important area for migrating whooping cranes. Potential whooping crane habitat in North Dakota has been identified by the Service's Habitat and Population Evaluation Team (HAPET) in Bismarck. Per Niemuth et al (2018) and associated model, the proposed Project footprint encompasses areas of high relative probability of landscape-level habitat use by migrating whooping crane. The proposed Project location is within the documented migration corridor of the Aransas/Wood Buffalo population of whooping cranes - the only self-sustaining migratory population of whooping cranes in existence. Whooping cranes migrate through North Dakota twice annually on their way to northern breeding grounds and southern wintering areas, occupying numerous habitats such as cropland and pastures; wet meadows; shallow marshes; shallow portions of rivers, lakes, reservoirs, and stock ponds; and both freshwater and alkaline basins for feeding and loafing. Overnight roosting sites frequently require shallow water in which to stand and rest. Whooping cranes are large birds with low maneuverability. Line strike mortality is the greatest known threat to fledged whooping cranes. Mortality via turbine strikes may also pose a risk if the birds utilize habitat near wind farm sites. Loss of stopover habitat in the migration corridor is a concern that may be realized if whooping cranes tend to avoid wind farms. Additionally, should construction occur during spring or fall migration, the potential for disturbance of whooping cranes exists. Disturbance (flushing the birds) stresses them at critical times of the year and should be avoided. These issues should be addressed prior to wind development. Sightings of whooping cranes at any time should be reported to this office. Please note that use of the proposed project area by sandhill cranes may be indicative of the potential presence of whooping cranes since the two species are often observed utilizing the same habitats and migrating together.

The Dakota skipper (*Hesperia dacotae*), a federally threatened species, is a small to medium-sized hesperiine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needle grasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Dakota skipper are known to occupy suitable habitats within your proposed project area. Because of the

difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat, in particular high quality native prairie. If there is wind infrastructure planned for these areas we encourage further discussion with the natural resource agencies to try and minimize impacts to Dakota skippers.

Wetlands

According to the National Wetlands Inventory numerous wetlands exist within the proposed project area, including several relatively large water bodies which may attract high numbers of migratory birds and perhaps whooping cranes, as mentioned above. If a project may impact wetlands or other important fish and wildlife habitats, the Service, in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347) and other environmental laws and rules, recommends complete avoidance of these areas, if possible; then minimization of any adverse impacts; and finally, replacement of any lost acres; in that order. Alternatives should be examined and the least damaging practical alternative selected. If wetland impacts are unavoidable, a mitigation plan addressing the number and types of wetland acres to be impacted and the methods of replacement should be prepared and submitted to the resource agencies for review.

Birds of Conservation Concern

The Migratory Birds Division of the Service has published *Birds of Conservation Concern 2008*. This information is intended to identify species in need of coordinated and proactive conservation efforts among State, Federal, and private entities, with the goals of precluding future evaluation of these species for ESA protections and promoting/conserving long-term avian diversity. Primary threats impacting grassland species that occur in North Dakota are habitat loss and fragmentation. In accordance with Executive Order 13186 regarding migratory bird protection, we recommend avoidance, minimization, and finally compensation to reduce the impacts to species protected by the MBTA, including BCC species. Compliance with this law may be partially addressed in a Bird and Bat Conservation Strategy (BBCS) (identified within our WEG – and explained further below).

Avian Avoidance of Wind Turbines

As indicated in our WEG, wind turbines are known to impact migratory birds directly, with post-construction mortality surveys typically recommended for 1-2 years (or more) in order to identify mortality levels. Importantly, the WEG also identifies the indirect effects of wind energy facilities such as fragmentation effects and avian avoidance of turbines resulting in displacement to other habitats. While direct impacts can readily be observed and quantified, these indirect impacts are more difficult to quantify and require more time and effort. The Before-After-Control-Impact (BACI) method for avian studies is recommended in our WEG. This study design is particularly useful in determining indirect effects of wind projects on wildlife, but such studies are rarely conducted typically due to those time/effort constraints. In the absence of robust project-specific research at every wind farm, two relatively recent publications are of particular importance to this issue of quantifying avoidance/displacement: Loesch et al. 2013 and Shaffer and Buhl 2016. Loesch et al. 2013 evaluated breeding waterfowl

pairs on wetlands at existing wind farms and reference sites in the Prairie Pothole Region. Displacement within 805 meters (0.5 mile) of wind turbines was detected at an average rate of 21% by five waterfowl species.

Similarly, Shaffer and Buhl 2016 evaluated wind farms and reference sites in the Prairie Pothole Region, but their research was on grassland nesting birds and also included pre-construction data, thus this study applied the BACI method. Their results also detected avoidance of turbines by seven species of which 1 is also listed as grassland birds of conservation concern by the Service and four are also listed as Priority I & II under the NDGFD Wildlife Action Plan. The average rate of displacement out to 300 meters (0.19 mile) from wind turbines was 55% by the 5th year post construction. This research also detected a trend: displacement rates of grassland nesting birds continued to increase over time (2-5 years).

Both of these scientifically rigorous, peer reviewed, published studies were conducted over multiple years, on multiple wind farms, involved large sample sizes, used reference sites for comparison, and were conducted on wind farms in North and South Dakota where many of the same species likely to occur at BCWEC were observed to avoid wind turbines. If the BCWEC project proceeds, we recommend quantification of wetlands within ½ mile of turbines, of grasslands within 300 m of turbines, and then application of the displacement rates from the Loesch et al. 2013 and Shaffer and Buhl 2016 studies to determine and disclose anticipated indirect impacts. This information is needed to adequately develop an appropriate mitigation plan to offset this indirect wildlife impact and we encourage the project sponsors to develop that plan and provide it to the natural resource agencies for review.

Note that the authors (C. Loesch and J. Shaffer) are currently working together to publish a manuscript on methods to quantify these effects to waterfowl and grassland nesting birds using data from their peer-reviewed published studies; thus additional information will be available in the future.

Mitigation

The Service's mitigation policy was established in 1981 to help assure consistent and effective mitigation recommendations that help Federal action agencies and developers plan for mitigation measures early, avoid delays, and assure equal consideration of fish and wildlife resources with other project features and purposes. Our policy adopts the definition of the term "mitigation" as stated in the NEPA regulations which includes: "(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments." As noted above, direct and indirect effects to wildlife are known to occur at wind energy facilities. We encourage the analysis of both types of impact and quantification of those impacts whenever possible. The mitigation methods above can be applied to reduce direct and indirect effects at any point in the process of project development; however, we recommend early planning to help ensure full implementation of any necessary mitigation measures.

Bird and Bat Conservation Strategy

Bird and bat conservation strategies are recommended in our WEG. We have developed a regional document to further assist companies in following our established national guidance on BBCSs, *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*. As stated in the introduction of that document: a BBCS "…is a life-of-a-project framework for identifying and implementing actions to conserve birds and bats during wind energy project planning, construction, operation, maintenance, and decommissioning. It is the responsibility of wind energy project developers and operators to effectively assess project-related impacts to birds, bats and their habitats, and to work to avoid and minimize those impacts." A BBCS explains the actions taken by developers as they progress through the tiers of our Land-Based Wind Energy Guidelines, describing the analyses, studies, and reasoning implemented with the purpose of mitigating for potential avian and bat impacts. It also addresses post-construction monitoring and habitat impacts.

Meteorological Towers

Communication towers are a known mortality hazard to wildlife, particularly birds. To assist developers in establishing communications towers that are more compatible with wildlife, we have developed our "2018 Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning". These recommendations incorporate the state of the science and the 2015 Federal Aviation Administration's *Obstruction Marking and Lighting Advisory Circular AC 70/7460-1L* , online at: www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_with_chg_1.pdf Among the primary concerns addressed within our guidelines are the establishment of new towers on the landscape, the heights of these towers, their lighting scheme, and means of structural support. Collocation of communications tower facilities on an existing structure is strongly recommended to avoid any additional impacts to migratory birds. If a new tower is necessary, placement of the new tower near other existing structures is recommended to concentrate the risk posed by the towers to relatively small areas. Minimization of tower height (below 200 feet to preclude the need for Federal Aviation Administration lighting requirements), use of only strobe or flashing lights (avoid steady-burning lights), and avoidance of guy wires (a great deal of avian mortality is a result of collisions with supporting guy wires) are important components intended to minimize potential impacts to migratory birds. The habitat at a tower location and surrounding area can also affect its level of risk to wildlife. Tower placement should occur in degraded sites avoiding ridgelines, coastal areas, wetlands or other bird concentration areas such as staging areas, rookeries, leks, and state or federal refuges. Please see the website provided above for additional information.

Overhead Power Lines

The construction of additional overhead power lines associated with wind farms creates the threat of avian electrocution, particularly for raptors. Thousands of these birds, including endangered species, are killed annually as they attempt to utilize overhead power lines as nesting, hunting, resting, feeding, and sunning sites. The Service recommends the installation of

underground, rather than overhead, power lines whenever possible/appropriate to minimize environmental disturbances. For all new overhead lines or modernization of old overhead lines, we recommend incorporating measures to prevent avian electrocutions. The publication entitled *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* includes many measures to reduce risk to birds including pole extensions, modified positioning of live phase conductors and ground wires, placement of perch guards and elevated perches, elimination of cross arms, use of wood (not metal) braces, and installation of various insulating covers. You may obtain this publication by contacting the Edison Electric Institute via their website at www.eei.org, or by calling 202-508-5000.

Please note that utilizing just one of the "*Suggested Practices* . . ." methods may not entirely remove the threat of electrocution to raptors. In fact, improper use of some methods may increase electrocution mortality. Perch guards, for example, may be only partially be effective as some birds may still attempt to perch on structures with misplaced or small-sized guards and suffer electrocution as they approach too close to conducting materials. Among the most dangerous structures to raptors are poles that are located at a crossing of two or more lines, exposed above-ground transformers, or dead end poles. Numerous hot and neutral lines at these sites, combined with inadequate spacing between conductors, increase the threat of raptor electrocutions. Perch guards placed on other poles has, in some cases, served to actually shift birds to these more dangerous sites, increasing the number of mortalities. Thus, it may be necessary to utilize other methods or combine methods to achieve the best results. The same principles may be applied to substation structures.

Please also note that the spacing recommendation within the "*Suggested Practices* . . ." publication of at least 60 inches between conductors or features that cause grounding may not be protective of larger raptors such as eagles. This measure was based on the fact that the skin-to-skin contact distance on these birds (i.e., talon to beak, wrist to wrist, etc.) is less than 60 inches. However, an adult eagle's wingspan (distance between feather tips) may vary from 66 to 96 inches depending on the species (golden or bald) and gender of the bird, and unfortunately, wet feathers in contact with conductors and/or grounding connections can result in a lethal electrical surge. Thus, the focus of the above precautionary measures should be to a) provide more than 96 inches of spacing between conductors or grounding features, b) insulate exposed conducting features so that contact will not cause raptor electrocution, and/or c) prevent raptors from perching on the poles in the first place.

Additional information regarding simple, effective ways to prevent raptor electrocutions on power lines is available in video form. *Raptors at Risk* may be obtained by contacting EDM International, Inc. at 4001 Automation Way, Fort Collins, Colorado 80525-3479, Telephone No. (970) 204-4001, or by visiting their website at: www.edmlink.com/component/zoo/item/video-raptors-at-risk

In addition to electrocution, overhead power lines also present the threat of avian line strike mortality. Particularly in situations where these lines are adjacent to wetlands or where waters exist on opposite sides of the lines, we recommend marking them in order to make them more visible to birds. For more information on bird strikes, please see *Reducing Avian Collisions with*

Power Lines: The State of the Art in 2012 which, again, may be obtained by contacting the Edison Electric Institute.

While marking of power lines reduces line strike mortality, it does not preclude it entirely. Thus, marking of additional, existing, overhead lines is recommended to reduce the impacts from avian line strike mortality. As noted above, the whooping crane is particularly susceptible to this type of mortality, and your project occurs within the whooping crane migratory corridor. Marking of additional existing lines elsewhere in the species' corridor is recommended per the *Region 6 Guidance for Minimizing Effects from Power Line Projects within the Whooping Crane Migration Corridor*.

1) Project proponents should avoid construction of overhead power lines within 5. 0 miles of designated critical habitat and documented high use areas (these locations can be obtained from the local ES field office).

2) To the greatest extent possible, project proponents should bury all new power lines, especially those within 1.0 mile of potentially suitable habitat[2].

3) If it is not economically or technically feasible to bury lines, then we recommend the following conservation measures be implemented:

    a) Within the 95-percent sighting corridor (see attached map)

        i) Project proponents should mark[3] new lines within 1.0 mile of potentially suitable habitat and an equal amount of existing line within 1.0 mile of potentially suitable habitat (preferably within the 75-percent corridor, but at a minimum within the 95-percent corridor) according to the U.S. Fish and Wildlife Service (USFWS) recommendations described in APLIC 1994 (or newer version as updated).

        ii) Project proponents should mark replacement or upgraded lines within 1.0 mile of potentially suitable habitat according to the USFWS recommendations described in APLIC 1994 (or newer version as updated).

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[2] Potentially suitable migratory stop over habitat for whooping cranes includes wetlands with areas of shallow water without visual obstructions (i.e., high or dense vegetation) (Austin & Richert 2001; Johns et al. 1997; Lingle et aL

1991; Howe 1987) and submerged sandbars in wide, unobstructed river channels that are isolated from human disturbance (Armbruster 1990). Roosting wetlands are often located within 1 mile of grain fields. As this is a broad definition, ES field office biologists should assist action agencies/applicants/companies in determining what constitutes potentially suitable habitat at the local level.

[3] Power lines are cited as the single greatest threat of mortality to fledged whooping cranes. Studies have shown that marking power lines reduces the risk of a line strike by 50 to 80 percent (Yee 2008; Brown & Drewien 1995; Morkill & Anderson 1991). Marking new lines and an equal length of existing line in the migration corridor maintains the baseline condition from this threat.

b) Outside the 95-percent sighting corridor within a State's borders

Project proponents should mark new lines within 1.0 mile of potentially suitable habitat at the discretion of the local ES field office, based on the biological needs of the whooping crane.

c) Develop compliance monitoring plans

Field offices should request written confirmation from the project proponent that power lines have been or will be marked and maintained (i.e., did the lines recommended for marking actually get marked? Are the markers being maintained in working condition?)

U.S. Fish and Wildlife Service Easements

Per ongoing coordination with the Service, you are aware that the location of the proposed wind facility is within the jurisdictional area of the Service's Crosby and Lostwood Wetland Management Districts (WMD). Note that Service easement concentration in a given area typically indicates a corresponding high wildlife value and relatively significant environmental impacts that may be anticipated if the proposed project is constructed there. We recommend continued coordination with the Crosby WMD and Lostwood WMD regarding easement concerns.

Summary

Below we reiterate items above that are pertinent to the proposed project and links to further resources:

- Consider alternate project sites to avoid impacts to high value habitat and wildlife or develop plans to compensate for impacts

- Wind energy guidelines
  - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines*

www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf

- Eagle guidance:
  - Bald and Golden Eagle Protection Act (BGEPA)

www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf
  - *National Bald Eagle Management Guidelines*

www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf
  - Eagle take permit
  - *Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Version 2*

www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf
  - *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities*

www.fws.gov/coloradoes/documents/Final_GOEA_Buffer_Recommendations_AvoidanceMinimization_WindFacilities_April_10_2013.pdf

- *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6*

www.fws.gov/coloradoes/documents/Final_USFWS_R6_ECP_guidance.pdf

- Threatened/endangered species - Endangered Species Act (ESA) – species list available at:

ecos.fws.gov/ipac/

- Wetlands – avoid, minimize, mitigate – wetland data is available at:

ecos.fws.gov/ipac/

- Birds of Conservation Concern - *Birds of Conservation Concern 2008* – available at:

ecos.fws.gov/ipac/

- Avian Avoidance of Wind Turbines - Indirect effects:
  - Loesch et al. 2013 – waterfowl avoidance
  - Shaffer and Buhl 2016 – grassland nesting bird avoidance

- Mitigation - 1981 Service Mitigation Policy

www.fws.gov/policy/a1npi89_02.pdf

- Bird and Bat Conservation Strategy – WEG and *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*

www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20annotation.pdf

- Meteorological Towers - 2*018 Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*

www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php

- Overhead Power Lines:
  - *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006;* www.eei.org
  - *Raptors at Risk* video; www.edmlink.com/component/zoo/item/video-raptors-at-risk
  - *Reducing Avian Collisions with Power Lines: The State of the Art in 2012;* www.eei.org
  - *Minimizing Effects From Power Line Projects within the Whooping Crane Migration Corridor*
  - *Region 6 Guidance for Minimizing Effects from Power Line Projects within the Whooping Crane Migration Corridor*

- Service easements: Contact: U.S. Fish and Wildlife Service, Crosby Wetland Management District, 10100 HWY 42 NW, Crosby, ND 58730; telephone: (701) 965-6488 (Williams County), USFWS, Lostwood Wetland Management District,

42000 520th St. NW, Kenmare, ND 58746: telephone: (701) 385-4046 ext. 225 (Mountrail County)

If changes are made in the project plans or operating criteria, or if additional information becomes available, the Service should be informed so that the above determinations can be reconsidered.

We appreciate the opportunity to provide comments. If you have any questions on these comments, please contact Jerry Reinisch of my Staff at (701) 333-0267 or myself at (605) 224-8693 ext. 224.

Sincerely,

Scott Larson
Field Supervisor
North Dakota Field Office

Enclosure(s)

cc: FWSR6/ES, Maria Boroja
Terry Steinwand, North Dakota State Game and Fish
Greg Link, North Dakota Game and Fish
North Dakota Public Service Commission
FWS Crosby WMD
FWS Lostwood WMD

Literature Cited:

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Shaffer, J. A. and D. A. Buhl. 2016. Effects of wind-energy facilities on breeding grassland bird distributions. Conservation Biology 30(1):59-71.

AURORA WIND PROJECT, LLC
a wholly-owned subsidiary of
Tradewind Energy, Inc.
16105 West 113th Street, Suite 105
Lenexa, Kansas 66219

November 9, 2018

Mr. Scott Larson
North Dakota Field Office, United States Fish & Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501

RE: Aurora Wind Project, LLC (2018-CPA-0017)

Dear Mr. Larson:

Aurora Wind Project, LLC (Aurora) is developing the Aurora Wind Energy Project (Project) in Williams County, North Dakota. Aurora submitted an Application for a Certificate of Site Compatibility to the North Dakota Public Service Commission on September 28, 2018 (Application). Prior to submitting the Application, Aurora's consultant, Burns & McDonnell (B&McD), sent consultation letters to various agencies and other stakeholders, including the North Dakota Field Office, United States Fish & Wildlife Service (USFWS). In response, we received your letter dated October 12, 2018. I am writing this letter to provide specific responses to the matters discussed in your letter. For clarity, "Project" in this letter only references the approximately 44,000-acre wind energy conversion facility in Williams County. The associated transmission facility will be addressed in separate correspondence.

As an initial matter, I spoke to Mr. Jerry Reinisch on October 24, 2018 regarding your letter. Per my discussion with Mr. Reinisch, I understand that the reference to the "BCWEC" project in the October 12 letter was a typographical error and therefore we will consider the USFWS intended to reference "Aurora".

Since you have been recently assigned to the Project, you may be unfamiliar with the history of Aurora's Project development and consultation with USFWS and the North Dakota Game and Fish Department (NDGFD). Aurora has been developing the Project in Williams County, North Dakota since 2016. Throughout development, Aurora has been committed to siting, constructing, operating, and decommissioning the Project in an environmentally responsible and sustainable manner. The Project followed the tiered decision framework outlined in the USFWS's Land Based Wind Energy Guidelines ("WEG"; USFWS 2012) and the Eagle Conservation Plan Guidance ("ECPG"; USFWS 2013) and coordinated this with USFWS and NDGFD. The Project has contracted with Western Ecosystems Technology, Inc. (WEST), Stantec Consulting Services (Stantec) and B&McD to conduct desktop and field surveys to evaluate the wildlife and potential habitat of sensitive species in the Project and surrounding areas. Below is a partial list of the field and desktop surveys completed within the Project and surrounding areas:

- Site Characterization Study (2017)
- Stage 1 Site Assessment of Eagle Use/Risk (2018)
- Eagle and Avian Use point count surveys (2016 – 2018)

- Aerial raptor and eagle nest surveys (2017 and 2018)
- Acoustic bat activity surveys (2017 and 2018)
- Sharp tailed-grouse lek surveys (2018)
- Whooping crane habitat assessment (2018)
- Wetland delineations (2018)

Aurora understands that early and often consultation with state and federal wildlife agencies is an important part of developing and operating wind energy projects for Aurora as well as being an integral part of the ECPG and WEGs, and has engaged with the North Dakota Field Office throughout development. Below is an outline of meetings and correspondences (where written correspondence is available) with your agency prior to your October 12, 2018 letter and my discussion with Mr. Reinisch on October 24, 2018:

- In person meeting with USFWS and NDGFD - February 8, 2017
- Letters to USFWS and NDGFD – December 21, 2017
- Email to USFWS – August 7, 2018
- Email to USFWS and NDGFD – August 13, 2018
- In person meeting with USFWS and NDGFD – August 16, 2018
- Email from USFWS – August 23, 2018
- Email transmittal of August 16, 2018 meeting notes to USFWS and NDGFD – September 12, 2018
- Email transmittal of updated August 16, 2018 meeting notes to USFWS and NDGFD – September 21, 2018

Copies of these meeting notes and correspondences are attached to this letter for your convenience and reference.

In addition to the consultation with USFWS, Aurora has also had regular contact, both written and in person, with the NDGFD since early 2017 on state wildlife laws, including species on the State of North Dakota Species of Conservation Priority list.

Several habitat types and specific species were addressed at length in your October 12, 2018 letter. For your information, below is a summary of the analysis and consultation that has occurred with respect to each.

Avian/Eagle Surveys

As indicated above and during our discussions with USFWS in February 2017 and August 2018 with Kevin Shelley, we noted to USFWS that the Project has been conducting monthly avian point count surveys, focusing on eagles, since May 2016. The Project has conducted 700 hours of surveys since that time. The Project also communicated with NDGFD in December 2017 and received a response in January 2018 that there were no known eagle nests within 10 miles of the Project boundary. That information was corroborated during aerial raptor and eagle nest surveys out to 10 miles from the Project boundary conducted in 2017 and 2018 when no eagle nests were

recorded. As we communicated to both the USFWS and the NDGFD in August 2018, the Project has elected to not seek coverage for eagle take under the Bald and Golden Eagle Protection Act through an Incidental Take Permit because Aurora feels the risk to eagles is very low.

USFWS Grassland and Wetland Easements

Aurora understands the importance of native grasslands and the value of the habitat they provide to a number of species that utilize the prairie pot-hole region. Aurora incorporated wetland and grassland easements held by USFWS into the siting and the design of the Project. Aurora communicated with the USFWS's Refuge Manager at the Lostwood Waterfowl Management District Complex in April 2018 for a review of the proposed Project area and again in August 2018 once a more refined Project area and design were known. Per written communication from the Refuge Manager in August 2018, *"I see no obvious issues or impacts to USFWS wetland and grassland easements; or Waterfowl Production Areas. A tremendous effort was obviously put forth to avoid direct impacts to USFWS property interests. I greatly appreciate your work." (emphasis added).*

Dakota Skipper

Avoidance of potential impacts to the federally threatened Dakota skipper was also considered during Project siting and avoidance of USFWS grassland easements. Per communications with Kevin Shelley, as the wind Project is wholly located within Williams County, the Project is outside the known range of the Dakota skipper and no impacts to this species are expected. Your letter of October 12 indicates *"Dakota skipper are known to occupy suitable habitats within your proposed project area (emphasis added)"*. However, Aurora is unaware of any known occurrences of Dakota skipper within the Project area, and the statement is contrary to the information provided in the many discussions and communications with USFWS regarding the Project that have occurred since February 2017 as well as information found on the USFWS webpage and IPaC webpage..

Sharp-Tailed Grouse

Though the Sharp-Tailed Grouse was not specifically addressed in your October 12, 2018 letter, the NDGFD raised concerns about the species and recommended lek surveys in their January 8, 2018 letter to the Project. Aurora conducted surveys in April and May of 2018 in accordance with NDGFD recommendations. Three leks (two confirmed and one potential) were identified during the spring 2018 surveys. As communicated to both USFWS and NDGFD on August 13 and August 16, 2018, the Project adjusted design to remove or shift all turbines to be at least one mile from these leks.

Whooping Crane

Aurora is within the migratory corridor of the Aransas/Wood Buffalo population of whooping cranes, which pass through the area twice per year during their spring and fall migrations. Mortality due to collision with transmission lines is a known threat to fledged whooping cranes (Stehn and Wassenich 2008); however, no turbine caused mortalities are known (Derby et al.

2012). During the siting and development of the Project, Aurora identified the Big Meadow Waterfowl Production Area (Big Meadow) as high quality stopover habitat near the Project. Aurora has set back all facilities a minimum of two miles from Big Meadow. Additional whooping crane-specific monitoring and avoidance measures will be outlined in the Project's Bird and Bat Conservation Strategy (BBCS) as communicated to both USFWS and NDGFD on August 13 and August 16, 2018. Per the WEGs, the BBCS is a living document and as the Project continues through construction and operations, potential risk to all species will continue to be evaluated and appropriate measures will be taken to address changes in the Project and surrounding area, if necessary.

In addition, during the wetland delineations completed by B&McD in 2018, Aurora took steps to minimize potential risk to existing avian stopover resources in the Project. During field surveys, the Project directed B&McD to analyze 1) all wetlands greater than 0.5 acres in size, 2) all wetlands considered to be high quality (smaller than 0.5 acres but located in non-agricultural fields and dominated by higher quality, non-invasive wetland species), and 3) all other wetlands. Aurora has taken this survey information into account with the design and micro siting of infrastructure.

Meteorological Towers

The Project installed six temporary and guyed meteorological towers (METs) at Aurora in January 2017. In accordance with Williams County Zoning Ordinance, Aurora sought and received Conditional Use Permits and building permits for each of these structures in 2016. All six METs are less than 200 feet in height, painted alternating orange and white, have aviation marker balls near the top of the tower and midway down on the outer most guy wires, and all guy wires are marked with bird diverters. Additionally, all six METs were installed in previously disturbed and tilled agricultural fields. Placement of these towers avoided ridgelines, wetlands and other bird concentration areas, such as known leks, staging areas, rookeries, and state or federal refuges. Aurora expects that permanent METs will be installed as part of the Project, which will be unguyed.

Survey Results and On-going Consultation

The results of the desktop and field surveys as well as consultation with USFWS and NDGFD will be outlined in the BBCS currently being drafted. As discussed in the meeting with Kevin Shelley with USFWS on August 16, 2018, and in meeting notes provided on September 21, 2018, the Project committed to sharing the draft BBCS with both USFWS and NDGFD for review and comment. In addition, Aurora noted that another meeting with both USFWS and NDGFD could potentially occur before the yet to be scheduled Public Service Commission public hearing to discuss any additional topics, including post-construction monitoring and habitat restoration. We would like to schedule this meeting in early December or early January.

Throughout development, Aurora has been committed to siting, constructing, operating, and decommissioning the Project in an environmentally responsible and sustainable manner. The Project followed the tiered decision framework outlined in the USFWS's Land Based Wind Energy Guidelines ("WEG"; USFWS 2012) and the Eagle Conservation Plan Guidance ("ECPG"; USFWS

2013) and coordinated this with USFWS and NDGFD. Aurora has taken steps to incorporate sensitive resources and USFWS and NDGFD input into the Project design and to minimize the potential to impact these resources.

Please feel free to contact me with any questions.

Sincerely,

Jennifer A. Dean

Jennifer A. Dean
VP – Environmental Studies & Permitting
Tradewind Energy, Inc.
16105 West 113th Street, Suite 105
Lenexa, KS 66219
913-322-7428 – office
913-219-5004 – mobile
jdean@tradewindenergy.com

Attachments

cc: Dave Iadarola, Aurora
Brice Barton, Aurora
Clayton Derby, WEST
Justin Bailey, B&McD
Terry Steinwald, North Dakota Game and Fish Department
Greg Link, North Dakota Game and Fish Department
Steve Dyke, North Dakota Game and Fish Department
John Schumacher, North Dakota Game and Fish Department
Jerry Reinisch, United States Fish & Wildlife Service
North Dakota Public Service Commission (PU-18-352)

ENVIRONMENTAL & STATISTICAL CONSULTANTS
4007 State Street, Suite 109, Bismarck, ND 58503
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

TO: USFWS and NDGFD
RE: Aurora Wind Farm Survey Update and Planning for Future Efforts
DATE: February 8, 2017

Western EcoSystems Technology, Inc. (WEST) has been assisting Aurora Wind Project, LLC (Aurora), a subsidiary of Tradewind Energy, Inc., in implementing Tier 2 and 3 actions as described in the USFWS Wind Energy Guidelines (WEG) and USFWS Eagle Conservation Planning Guidance (ECPG) for the proposed Aurora Wind Farm (Project). The Project encompasses approximately 54,316 acres and is located in Williams County, North Dakota (see attached figures). The purpose of this memo is to facilitate a discussion related to ongoing activities as well as future efforts that may be appropriate for the Project. Aurora understands that there are ongoing activities in North Dakota between wind project developers, agencies, and NGOs and that these concurrent discussions may help shape future survey needs.

Current Efforts

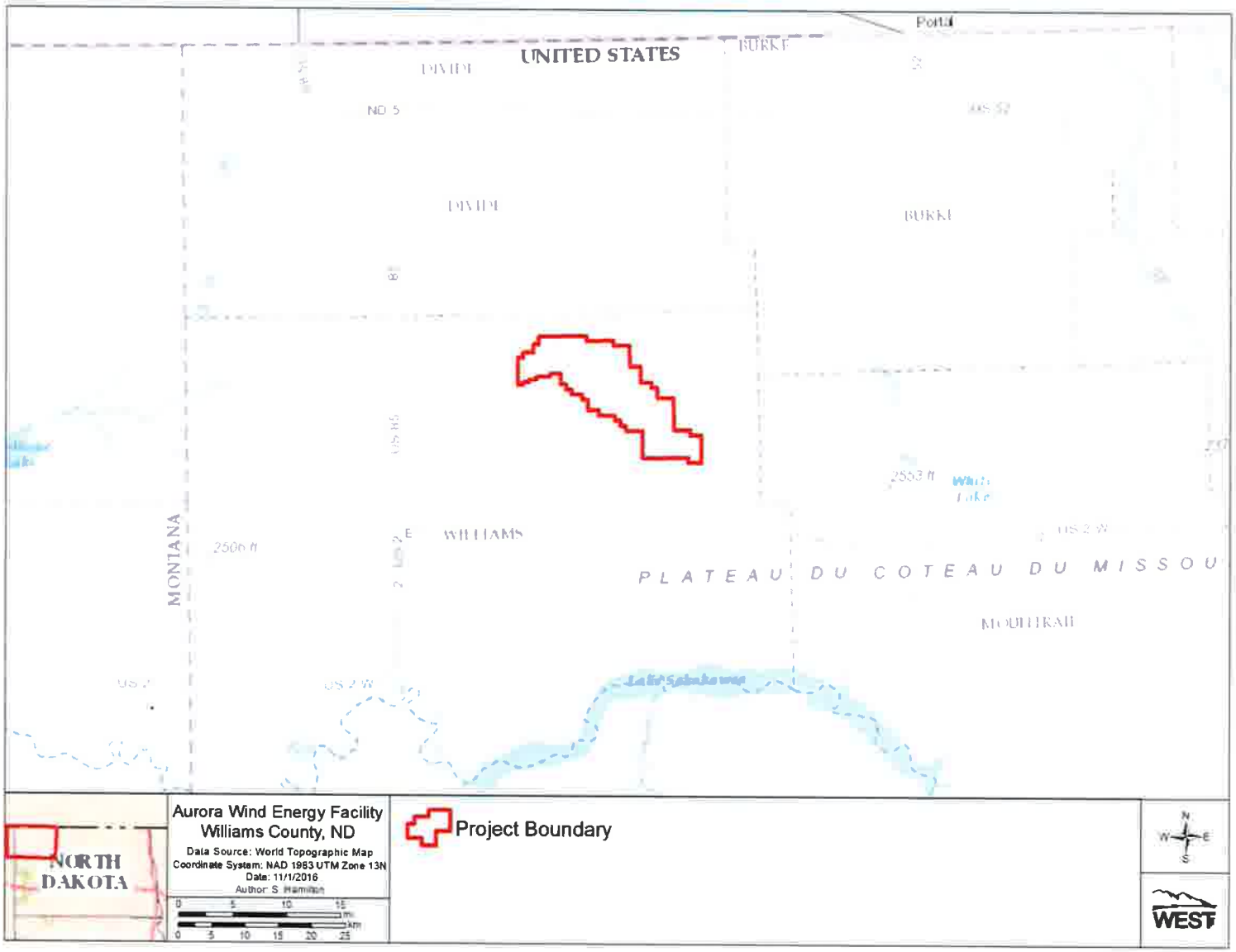
- Site Characterization Study (SCS)
- ECPG Stage 2 Eagle Evaluation
- Whooping Crane Habitat Evaluation
- Eagle/Avian Use Surveys

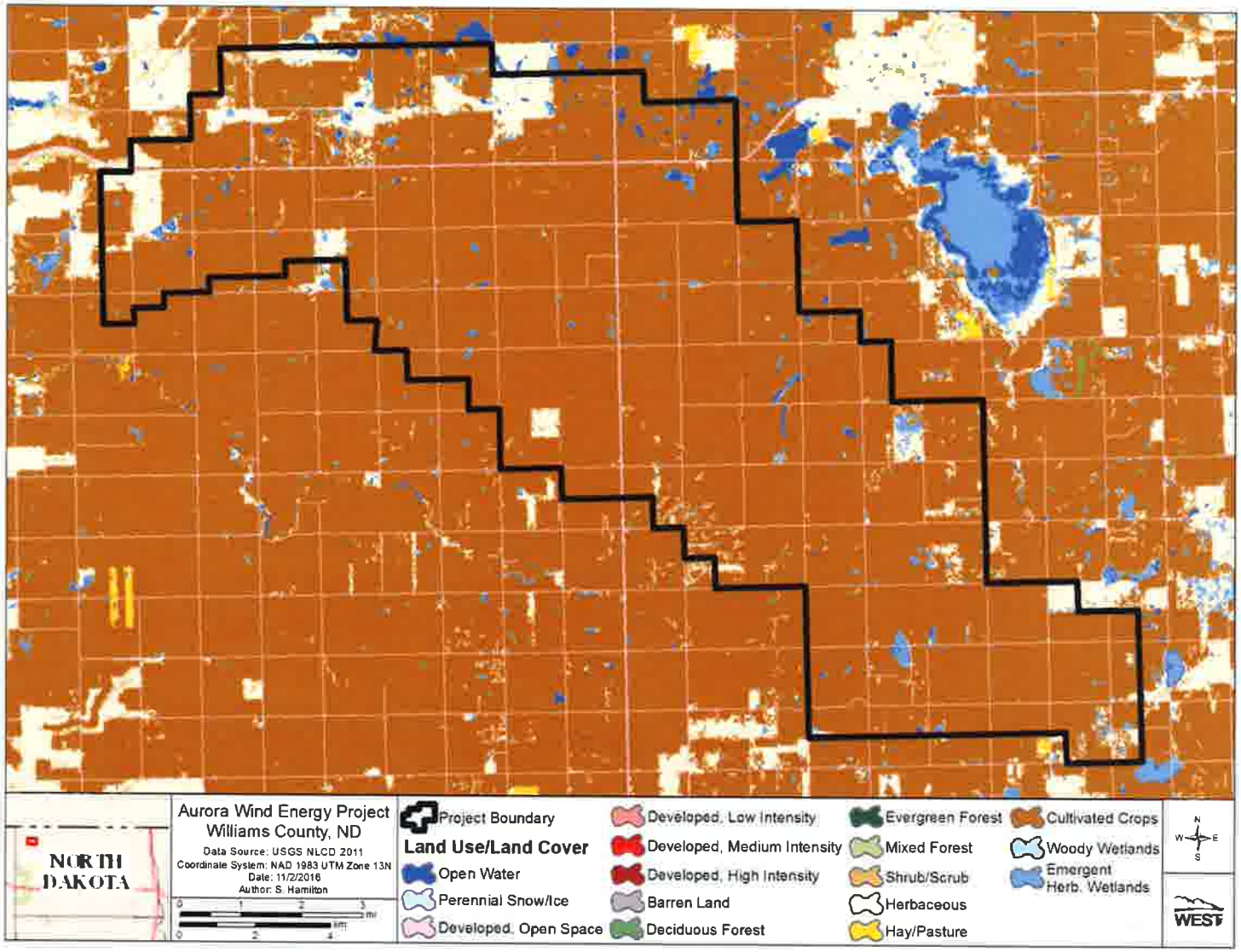
Future Efforts

In addition to the efforts described above that are completed or ongoing, Aurora is contemplating the need for any future survey needs to help inform risk and Project layout. There may be opportunities to inform and/or offset potential Project impacts without the need for extensive field surveys. Future efforts could include:

- Raptor and Eagle Nest Surveys
- Year 2 Eagle Use
- Grouse Lek Surveys
- Dakota Skipper Surveys

While Aurora has been actively evaluating the proposed Project location following the WEG and ECPG, there do remain some questions that could be better informed through surveys, some fairly costly, or there may be opportunities to collaboratively evaluate potential risks with the information collected to date. This ultimate evaluation could be followed with reasonable post-construction fatality monitoring to confirm low risk. In addition, there may be opportunities to conduct more directed research efforts (potentially off the Project) to answer some of the larger questions being posed by the wildlife community regarding wind development in North Dakota (e.g., impacts to Sprague's pipit, impacts on sharp-tailed grouse). In addition, there may be help fund habitat restoration or conservation programs that would benefit wildlife in general in North Dakota.


UNITED STATES
DIVIDE
BURKE
Portal
ND 5
MONTANA
WILLIAMS
PLATEAU DU COTEAU DU MISSOU
MOUNTRAIL
2506 ft
2553 ft
White Lake
Aurora Wind Energy Facility
Williams County, ND
Data Source: World Topographic Map
Coordinate System: NAD 1983 UTM Zone 13N
Date: 11/1/2016
Author: S. Hamilton
NORTH DAKOTA
Project Boundary
WEST


NORTH DAKOTA
Aurora Wind Energy Project
Williams County, ND
Data Source: USGS NLCD 2011
Coordinate System: NAD 1983 UTM Zone 13N
Date: 11/2/2016
Author: S. Hamilton
0 1 2 3 mi
0 2 4 km
Project Boundary
Land Use/Land Cover
Open Water
Perennial Snow/Ice
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Barren Land
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Scrub
Herbaceous
Hay/Pasture
Cultivated Crops
Woody Wetlands
Emergent Herb. Wetlands
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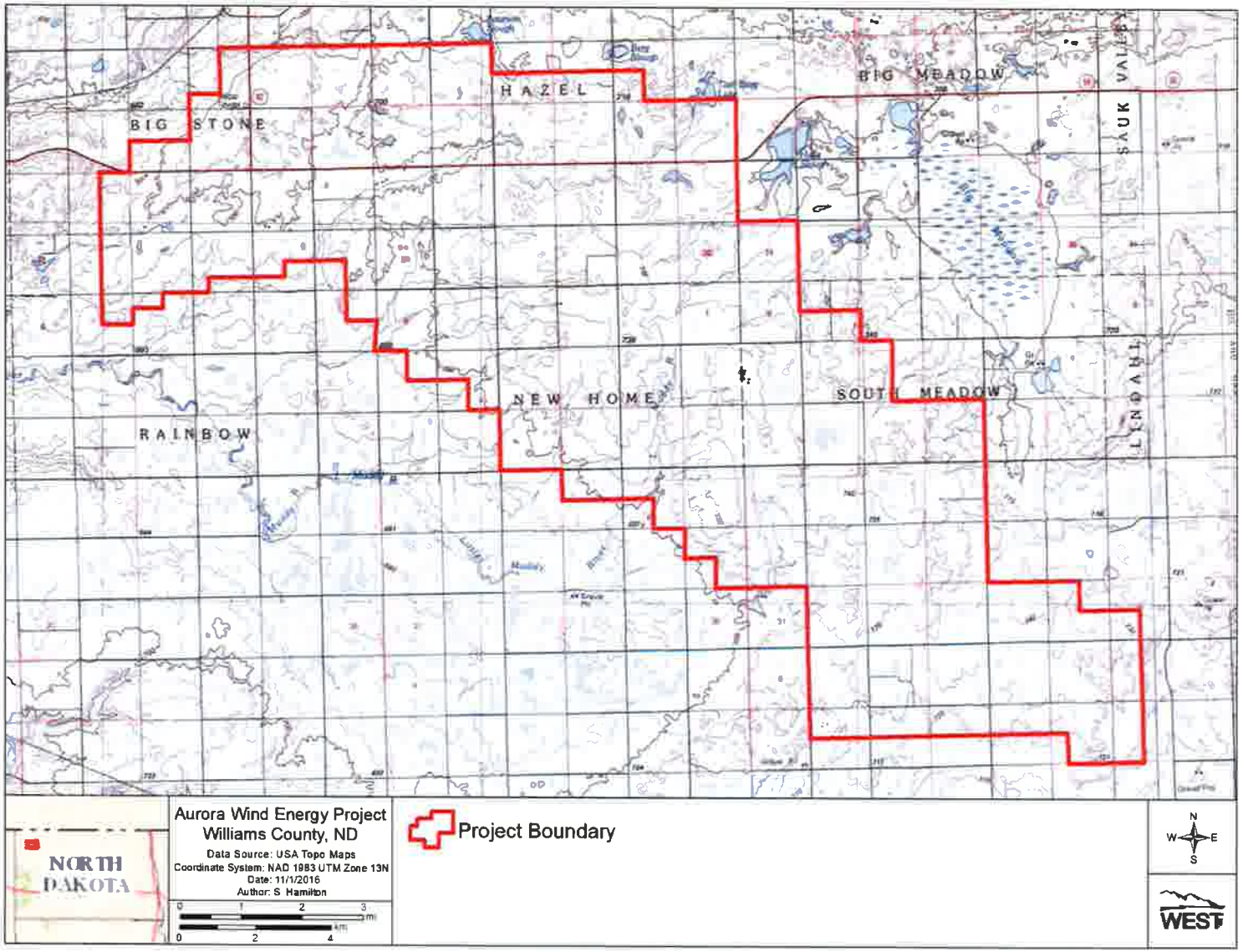
HAZEL
BIG MEADOW
BIG STONE
SAUK VALLEY
NEW HOME
SOUTH MEADOW
RAINBOW
TENONAH
NORTH DAKOTA
Aurora Wind Energy Project
Williams County, ND
Data Source: USA Topo Maps
Coordinate System: NAD 1983 UTM Zone 13N
Date: 11/1/2016
Author: S Hamilton
0 1 2 3 mi
0 2 4
Project Boundary
N
W
E
S
WEST

BURNS McDONNELL

December 21, 2017

Addressee Name
Addressee Title
Organization
Address Line 1
City, State Zip Code

Re: Information Request for the Proposed Aurora Wind Project and Associated Transmission Line in Williams and Mountrail Counties, ND

Dear Recipient:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has been contracted by Aurora Wind Project, LLC (Aurora), a subsidiary of Tradewind Energy, Inc. (Tradewind), to assist with obtaining permits from the North Dakota Public Service Commission (NDPSC) for the proposed Aurora Wind Project (Wind Project) in Williams County, North Dakota, and an associated transmission line (Transmission Line Project) in Williams and Mountrail Counties, North Dakota. Two separate NDPSC applications will be prepared: (1) an Application for a Certificate of Site Compatibility for the proposed Wind Project; and (2) a Consolidated Application for a Certificate of Corridor Compatibility and Route Permit for the proposed Transmission Line Project.

The proposed Wind Project would be approximately 300 megawatts (MW); the proposed location of specific infrastructure has not yet been determined. The Wind Project would interconnect to the electrical grid via the existing Basin Electric Power Cooperative Tande 345-kilovolt (kV) Substation (Tande Substation), located in the Northeast Quarter of Section 29, Township 157 North, Range 94 West, Mountrail County, North Dakota. The current potential development area for the Wind Project is shown in the attached Figure 1.

The Wind Project area includes portions of the following tracts:

County	Township	Range	Sections
Williams	157 N	95 W	6, 7
Williams	157 N	96 W	1-18
Williams	157 N	97 W	1, 11-14
Williams	158 N	95 W	31
Williams	158 N	96 W	5-9, 15-22, 27-36
Williams	158 N	97 W	1-16, 22-28, 33-36
Williams	158 N	98 W	1, 4, 5

9400 Ward Parkway \ Kansas City, MO 64114
O 816-333-9400 \ F 816-333-3690 \ burnsmcd.com

County	Township	Range	Sections
Williams	159 N	96 W	31
Williams	159 N	97 W	14-36
Williams	159 N	98 W	13-15, 21-29, 32-36

The proposed Transmission Line Project would extend from the Wind Project substation in Williams County to the point of interconnection at the Tande Substation in Mountrail County. The Transmission Line would consist of approximately 25 miles of 345-kV overhead transmission line. The current potential development area and potential route for the Transmission Line Project are shown in the attached Figure 2.

The Transmission Line area includes the following tracts:

County	Township	Range	Sections
Mountrail	157 N	94 W	7, 8, 17-20, 29
Williams	157 N	95 W	7-18
Williams	157 N	96 W	3-16
Williams	158 N	96 W	19, 29-32
Williams	158 N	97 W	1, 2, 11-14, 23-26, 36

In conjunction with preparing the referenced applications, we are seeking input from your agency or entity regarding any sensitive resources, current or planned development, or property interests your agency or entity may have in or around the Project Areas that Aurora should consider as it moves forward with development. In addition, we ask that you provide information regarding any applicable permits that may be required from your office. At this point, the Project is not anticipated to require federal funding or to otherwise have a federal nexus. For your information, we have sent similar query letters to other agencies and entities, 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 January 21, 2018. Please contact me at (303) 474-2229 or jbell@burnsmcd.com if you have any questions. Thank you for your assistance.

Sincerely,

Jennifer Bell
Senior Environmental Scientist
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

Attachment
cc: Jennifer Dean, Vice President, Environmental Studies & Permitting, Tradewind

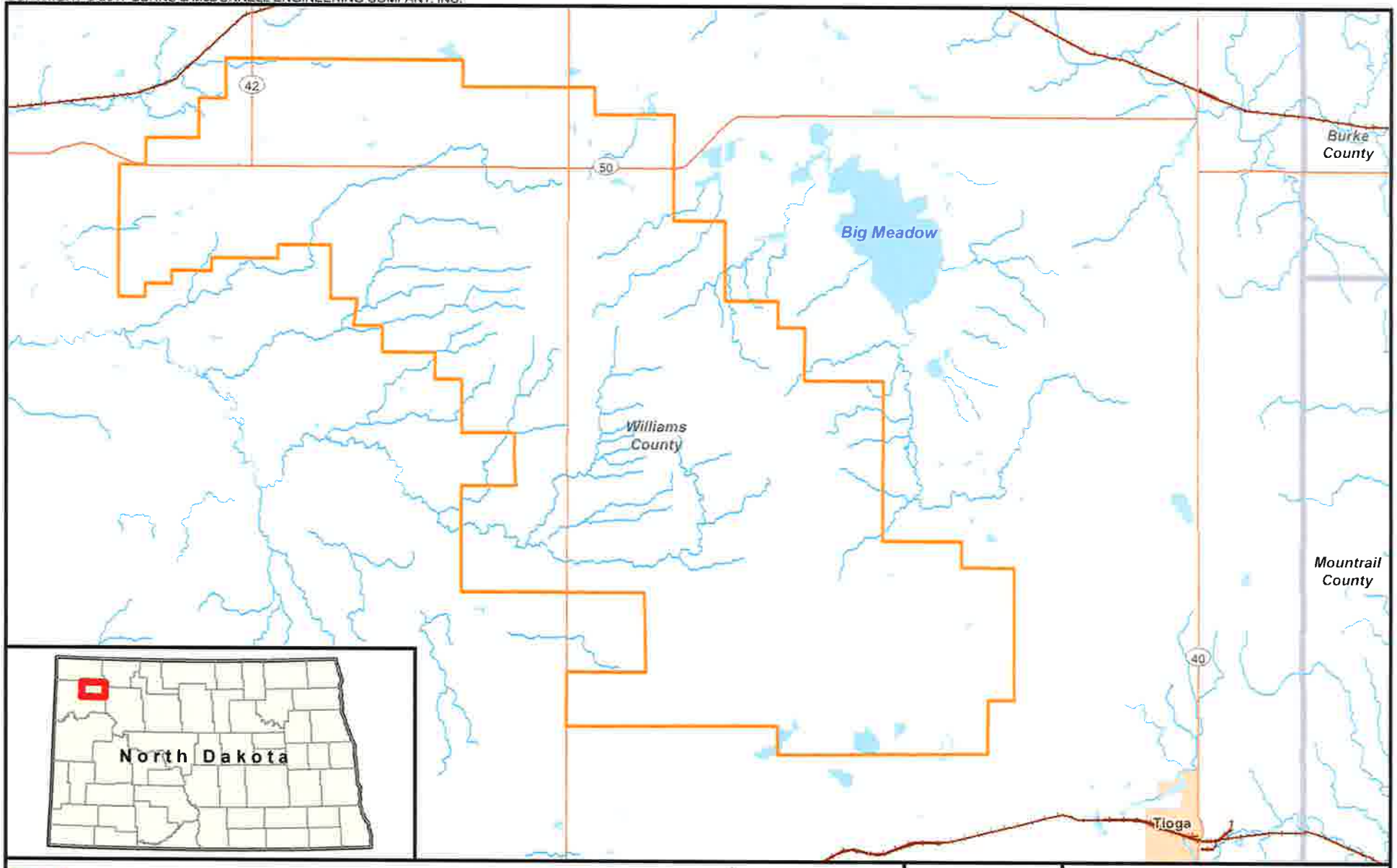

Figure 1
Project Location Map
Aurora Wind Project
Aurora Wind Project, LLC
Williams Co., ND

Source: Esri, Burns & McDonnell Engineering Company, Inc.

Issued: 12/21/2017

Jennifer Dean

From: Clayton Derby <cderby@west-inc.com>
Sent: Thursday, August 23, 2018 3:55 PM
To: Jennifer Dean; Katherine Moratz
Subject: Fwd: [EXTERNAL] Fwd: Updated Aurora design

Jenni - see review of easement information from USFWS refuge office.

Clayton Derby
CSO / Wildlife Biologist

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---------- Forwarded message ----------
From: **Kory Richardson** <kory_richardson@fws.gov>
Date: Thu, Aug 23, 2018 at 3:47 PM
Subject: Re: [EXTERNAL] Fwd: Updated Aurora design
To: Clayton Derby <cderby@west-inc.com>

Clayton - I have reviewed the proposed wind tower locations, access roads, crane paths, collection lines, intersections, fiber optic sections, lay down yards, substation, transmission lines and structures associated with the proposed Aurora Wind Project. I see no obvious issues or impacts to USFWS wetland and grassland easements; or Waterfowl Production Areas. A tremendous effort was obviously put forth to avoid direct impacts to USFWS property interests. I greatly appreciate your work.

I see two areas on wetland easement that may or may not be actual wetlands (I can't tell for sure from the aerial imagery etc.) that could potentially be impacted by an access road, collection line or crane path. Once staking

of access roads etc. is complete I would like to take a closer look at those "questionable" sites in the field. On area is 159-97-20, S1/2N1/2 (Williams 210X); and 159-97-21, N1/2N1/2 (Williams 142X,1).

Thank you for the opportunity to review the various components of the Aurora Wind Farm. If you have any questions or concerns please don't hesitate to contact me.

Kory

On Tue, Aug 7, 2018 at 8:05 AM Clayton Derby <cderby@west-inc.com> wrote:
Hi Kory

Thanks for the past reviews for the Aurora wind project regarding wetland and grassland easements. The project has developed a more refined layout with all the various constraints - road/house setbacks, avoidance of easements, etc. Can you please take another look at this more refined layout to confirm that it avoids all the basins within the wetland easements as well as all the grassland easements? I know that easements are always a bit in motion with new ones coming in and want to make sure a current review has been completed.

Thank you,

Clayton Derby
CSO / Wildlife Biologist

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--
Kory Richardson
Refuge Manager
Lostwood WMD Complex
8315 Hwy 8
Kenmare, ND 58746

Office: 701-848-2722 x13
Fax: 701-848-2702
Cell: 701-339-1451

Jennifer Dean

From:	Clayton Derby <cderby@west-inc.com>
Sent:	Monday, August 13, 2018 12:02 PM
To:	Kevin Shelley; JOHN SCHUMACHER
Cc:	Jennifer Dean; Katherine Moratz
Subject:	Re: Aurora Meeting Materials
Attachments:	Aurora_Aug 16 2018_Agency Memo Final.pdf

With attachment this time.

Clayton Derby
CSO / Wildlife Biologist

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Environmental & Statistical Consultants
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(701) 426-5072 Cell
(701) 250-1761 Fax
cderby@west-inc.com
www.west-inc.com

On Mon, Aug 13, 2018 at 11:21 AM, Clayton Derby <cderby@west-inc.com> wrote:
Hello Kevin and John

Attached please find a summary memo and a few figures to help lead the Aurora Wind Project meeting at 1 pm this Thursday, August 16. Please note that the meeting will be at the NDGFD office.

See you on Thursday.

Clayton Derby
CSO / Wildlife Biologist

Western EcoSystems Technology, Inc.
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4007 State Street, Suite 109, Bismarck, ND 58503
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

TO: USFWS and NDGFD
RE: Aurora Wind Energy Project Survey Update
DATE: August 16, 2018

Western EcoSystems Technology, Inc. (WEST) has been assisting Aurora Wind Project, LLC (Aurora), a subsidiary of Tradewind Energy, Inc., in implementing Tier 2 and 3 actions as described in the USFWS Wind Energy Guidelines (WEG) and USFWS Eagle Conservation Planning Guidance (ECPG) for the proposed Aurora Wind Energy Project (Project). The Project as currently planned encompasses approximately 44,000 acres and is located in Williams and Mountrail counties, North Dakota (Figure 1). The purpose of this memo is to facilitate a discussion related to the completed Tier 2 and Tier 3 wildlife surveys and future survey work at the Project.

Tier 2 Efforts:

1. Site Characterization Study
    - Review of biological resources with respect to potential Project development
    - Anticipated low adverse impacts to bird and bat species
2. Whooping Crane Habitat Analysis
    - Assess potential suitability of wetlands within the Project
    - Project had smallest average sized wetlands and the second smallest total wetland acreage and number of basins compared to four adjacent reference areas
    - Project located with the defined whooping crane corridor but all facilities are outside the non-covered lands from WEWAG effort
    - Project falls within unoccupied stopover site use intensity cells
    - No whooping cranes documented in Project area from the USFWS sighting database. Whooping cranes observed during point counts, see Tier 3.
    - Potential to migrate over or through the Project
3. Stage 1 Site Assessment of Eagle Use/Risk
    - Assess if Project is known or likely to be used by eagles
    - Golden eagles uncommon
    - Bald eagles possible since some potential habitat exists (wetland complexes, grasslands) but overall the area lacks nesting habitat
    - NDGFD reports no known bald or golden eagle nests within 10 miles
    - No significant adverse impacts expected

Tier 3 Efforts:

1. Eagle/Avian Use Surveys
    - 2 years of surveys
    - 1 hour fixed-point surveys at 33 points
    - 700 60-minute fixed point surveys
    - 4 bald and 2 golden eagles observed during fixed-point surveys
    - Anticipated low risk
    - Do not plan to seek an eagle permit
    - Total of 12 whooping cranes observed flying above rotor swept height with flocks of sandhill cranes on April 24, 2018.
    -
2. Eagle/Raptor Nest Surveys
    - 2 years of aerial surveys
    - Meandering aerial transects of potential suitable habitat
    - Eagle nests within 10 miles and non-eagle raptors within 1 mile of boundary
    - No eagle nests observed
3. Sharp-tailed Grouse Lek Surveys
    - Road-based surveys in 2018
    - 3 surveys from early April to early May
    - Limited overall grassland blocks within and adjacent to Project (Figure 3) for lekking, brood rearing, etc.
    - 52 points along public roads/trails around grasslands >80 acres
    - 5 minutes of observations at each point
    - 3 leks observed (2 confirmed and 1 potential; Figure 3)
    - Turbines adjusted such that no leks within 1 mile of proposed turbine locations

Future Efforts:

1. Construction and Operations
    - Operations personnel training for whooping crane identification and shutdown procedures if within 2 miles of turbines.
    - Transmission line to be marked with bird diverters
    - Post-construction fatality monitoring (Tier 4 surveys)
    - Development of Bird and Bat Conservation Strategy (BBCS)

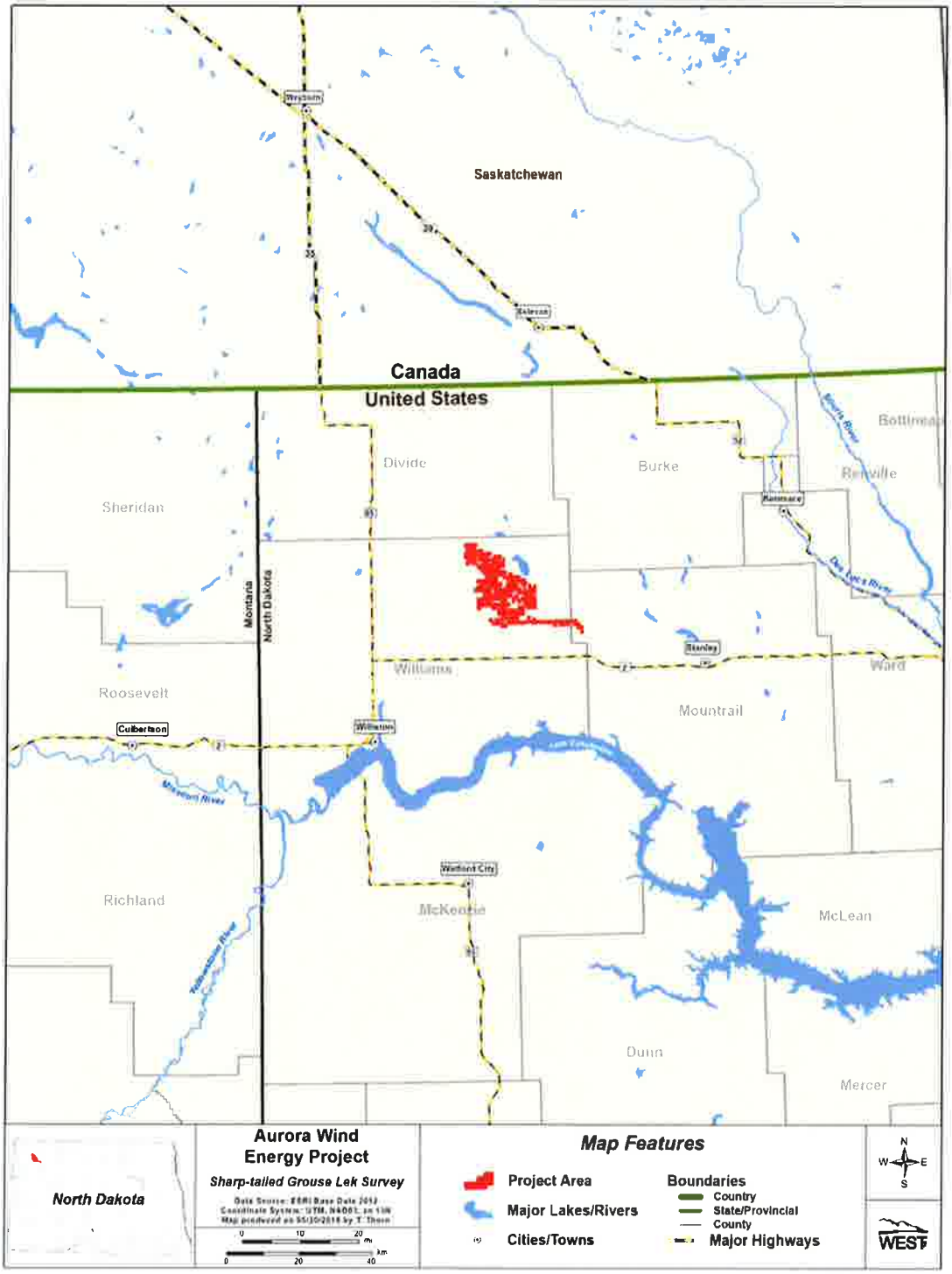

Figure 1. Location and current boundary of the Aurora Wind Energy Project in Williams and Mountrail counties, North Dakota.

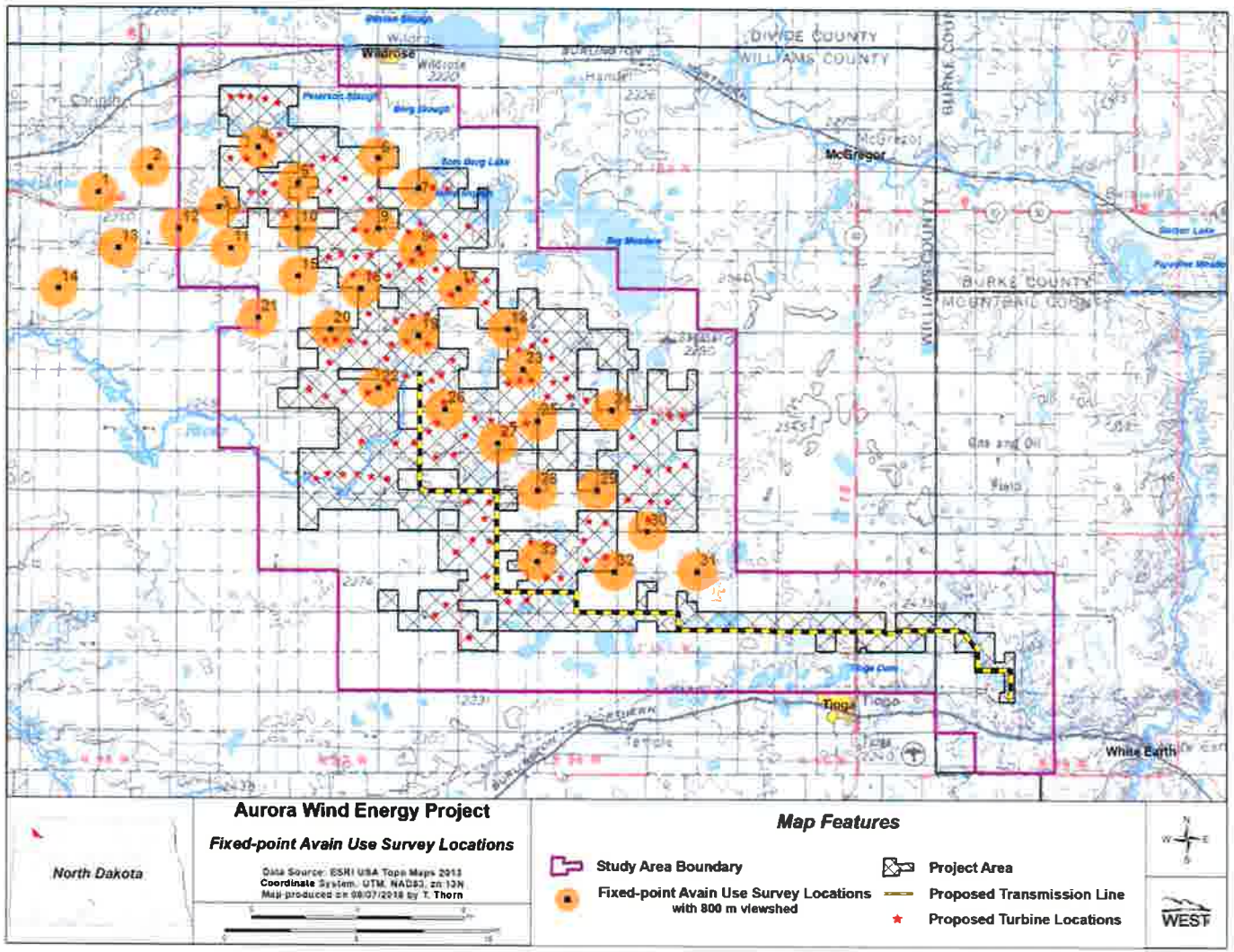

Figure 2. Fixed-point survey locations, proposed turbine locations, and proposed transmission line within the Aurora Wind Energy Project in Williams and Mountrail counties, North Dakota.

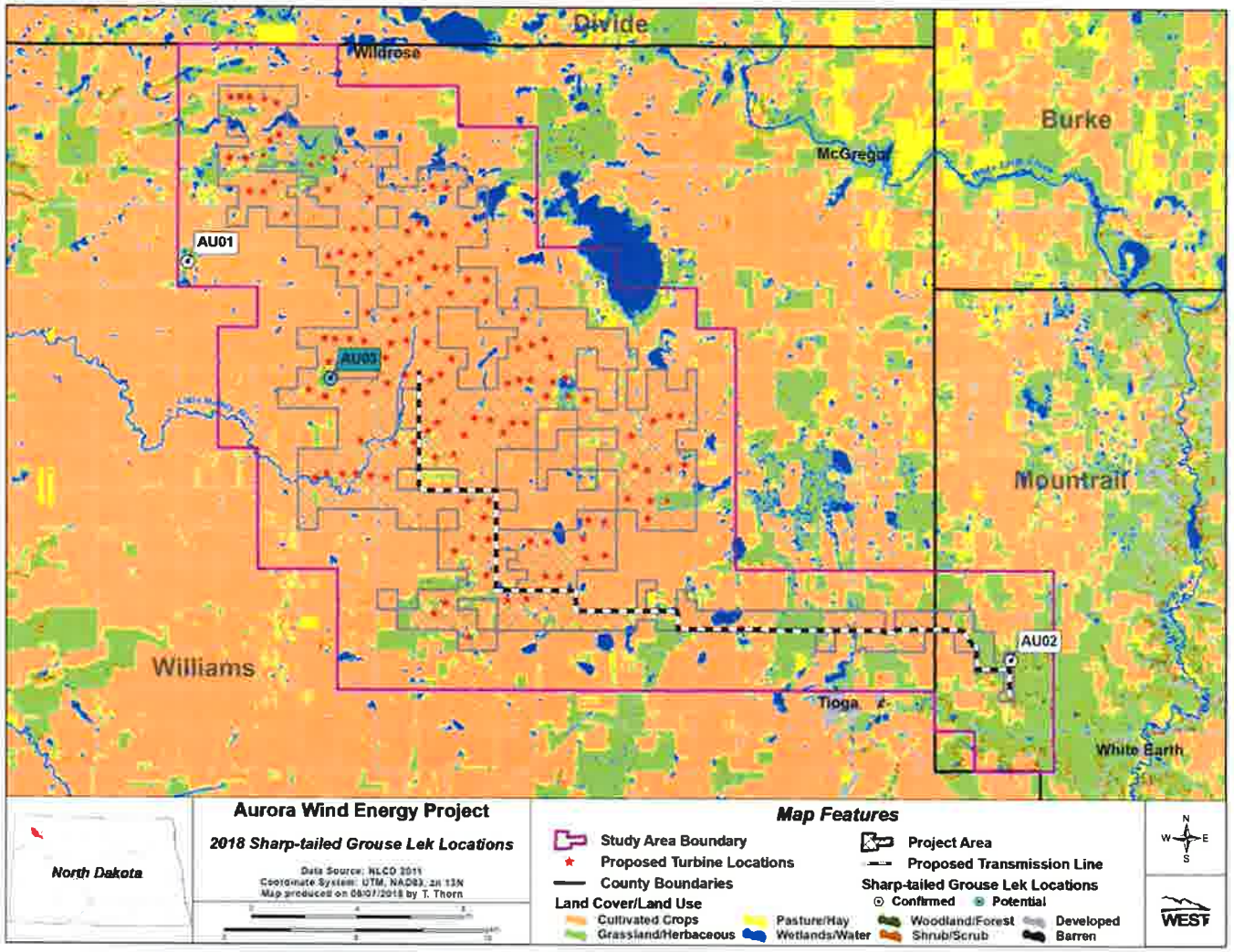

Figure 3. Sharp-tailed grouse lek locations, proposed turbine locations, and proposed transmission line within the Aurora Wind Energy Project, Williams and Mountrail counties, North Dakota.

Jennifer Dean

From: Clayton Derby <cderby@west-inc.com>
Sent: Wednesday, September 12, 2018 3:10 PM
To: Kevin Shelley; Dyke, Steve (NDGF); JOHN SCHUMACHER
Cc: Jennifer Dean; Katherine Moratz
Subject: Aurora Wind Meeting
Attachments: Aurora_USFWS-NDGFD Meeting Notes_081618 Final.pdf; Aurora_Aug 16 2018_Agency Memo Final.pdf

Hello

Attached please find meeting notes and referenced material from the Aurora Wind Project meeting held on August 16, 2018.

Thank you,

Clayton Derby
CSO / Wildlife Biologist

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MEETING NOTES

SUBJECT: Wildlife survey result update for agencies	
PROJECT: Aurora Wind Project	**MEETING LOCATION:** NDGFD Office
MEETING DATE: August 16, 2018	**NOTES BY:** K. Moratz and C. Derby

ATTENDEES

Steve Dyke, NDGFD
John Schumacher, NDGFD
Elisha Mueller, NDGFD
Kevin Shelley, USFWS
Jennifer Dean, Aurora
Dave Iadarola, Aurora
Haileigh Shull, Aurora
Katherine Moratz, WEST
Clayton Derby, USFWS

TOPICS DISCUSSED

Project Overview

Dave Iadarola, Aurora Wind Project, LLC (Aurora), provided a brief review of the Aurora Wind Project (Project) location in northwestern North Dakota. The Project is mainly in eastern Williams County with approximately 3 miles of overhead transmission line that will connect to the existing Tande Substation in Mountrail County. The Project is anticipated to be up to 300MW and has obtained Conditional Use Permits in both Williams and Mountrail counties. The Project permitted up to 131 turbine locations which includes alternates. The 345 kV overhead transmission line is anticipated to be approximately 25 miles in total length. Jenni Dean, Aurora, briefly discussed a tentative timeline of the Public Service Commission (PSC) application for a Certificate of Site Compatibility (CSC) and Route Permit and hearings. At this time, the Project is targeting a mid to late September 2018 application submittal to the PSC for a CSC and anticipates public hearings to occur in January 2019. The Project noted it had received a letter from the North Dakota Game and Fish Department (NDGFD) in May 2018. To date, no correspondence has been received from the United States Fish & Wildlife Service (USFWS).

Tier 2 and Tier 3 Review

Clayton Derby reviewed efforts completed to date at the Project (see attached "Aurora Wind Energy Project Survey Update" memo attached and previously provided electronically to USFWS and NDGFD on August 13, 2018). This synopsis included a brief review of efforts previously discussed at the February 8, 2017, agency meeting, including the Tier 2 site characterization study, Stage 1 site assessment of eagle use and risk, and year one eagle/avian use and raptor nest surveys. Additionally, Clayton provided an update on results of the year two avian use and raptor nest surveys. Clayton also provided results of the sharp-tailed grouse lek

surveys, a survey that was conducted in response to the May 22, 2018, NDGFD letter. In response to the 2018 lek survey, the Project has moved wind turbines to be more than one mile from these lek locations. In addition, wetland and cultural work is ongoing at the Project and is largely complete based in the current design. In an effort to minimize potential risk to existing avian stopover resources, the Project has analyzed the quality of wetlands into three categories: 1) all wetlands greater than 0.5 acres in size, 2) all wetlands considered to be high quality (smaller than 0.5 acres but located in non-agricultural fields and dominated by higher quality, non-invasive wetland species, and 3) all other wetlands. The Project is currently evaluating Project infrastructure as it relates to these categories of wetlands for siting. The Project has also coordinated with USFWS's easement office three times regarding information on wetland and grassland easements in the area as the Project design has evolved.

Clayton then outlined future efforts to be conducted at the Project that will be outlined in the Project's Bird and Bat Conservation Strategy (BBCS). As additional micrositing and design changes are finalized, the Project will continue to coordinate with USFWS's easement office to note protected basins and grasslands in relation to Project infrastructure. In addition to the above siting efforts, the Project and agencies noted the location of the area in regards to the migration corridor of the Whooping crane. The Project committed to marking 100% of the overhead transmission line with bird diverters. Additional monitoring efforts to minimize potential risk to migrating Whooping cranes will be noted in the BBCS. The Project committed to sharing a draft version of the BBCS with both agencies for review and comment.

Discussion

Both USFWS and NDGFD asked questions regarding the efforts completed; however questions were minimal. Questions and discussion included the future development steps for the Project and the PSC process. Both agencies provided positive remarks on the siting of the Project within a fragmented landscape. All parties voiced a willingness to continue to work together as the Project continues to develop. Another agency meeting could potentially occur before the PSC hearing to discuss any additional topics regarding infrastructure placement if all parties are interested.

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TO: USFWS and NDGFD
RE: Aurora Wind Energy Project Survey Update
DATE: August 16, 2018

Western EcoSystems Technology, Inc. (WEST) has been assisting Aurora Wind Project, LLC (Aurora), a subsidiary of Tradewind Energy, Inc., in implementing Tier 2 and 3 actions as described in the USFWS Wind Energy Guidelines (WEG) and USFWS Eagle Conservation Planning Guidance (ECPG) for the proposed Aurora Wind Energy Project (Project). The Project as currently planned encompasses approximately 44,000 acres and is located in Williams and Mountrail counties, North Dakota (Figure 1). The purpose of this memo is to facilitate a discussion related to the completed Tier 2 and Tier 3 wildlife surveys and future survey work at the Project.

Tier 2 Efforts:

1. Site Characterization Study
    - Review of biological resources with respect to potential Project development
    - Anticipated low adverse impacts to bird and bat species
2. Whooping Crane Habitat Analysis
    - Assess potential suitability of wetlands within the Project
    - Project had smallest average sized wetlands and the second smallest total wetland acreage and number of basins compared to four adjacent reference areas
    - Project located with the defined whooping crane corridor but all facilities are outside the non-covered lands from WEWAG effort
    - Project falls within unoccupied stopover site use intensity cells
    - No whooping cranes documented in Project area from the USFWS sighting database. Whooping cranes observed during point counts, see Tier 3.
    - Potential to migrate over or through the Project
3. Stage 1 Site Assessment of Eagle Use/Risk
    - Assess if Project is known or likely to be used by eagles
    - Golden eagles uncommon
    - Bald eagles possible since some potential habitat exists (wetland complexes, grasslands) but overall the area lacks nesting habitat
    - NDGFD reports no known bald or golden eagle nests within 10 miles
    - No significant adverse impacts expected

Tier 3 Efforts:

1. Eagle/Avian Use Surveys
    - 2 years of surveys
    - 1 hour fixed-point surveys at 33 points
    - 700 60-minute fixed point surveys
    - 4 bald and 2 golden eagles observed during fixed-point surveys
    - Anticipated low risk
    - Do not plan to seek an eagle permit
    - Total of 12 whooping cranes observed flying above rotor swept height with flocks of sandhill cranes on April 24, 2018.
    -
2. Eagle/Raptor Nest Surveys
    - 2 years of aerial surveys
    - Meandering aerial transects of potential suitable habitat
    - Eagle nests within 10 miles and non-eagle raptors within 1 mile of boundary
    - No eagle nests observed
3. Sharp-tailed Grouse Lek Surveys
    - Road-based surveys in 2018
    - 3 surveys from early April to early May
    - Limited overall grassland blocks within and adjacent to Project (Figure 3) for lekking, brood rearing, etc.
    - 52 points along public roads/trails around grasslands >80 acres
    - 5 minutes of observations at each point
    - 3 leks observed (2 confirmed and 1 potential; Figure 3)
    - Turbines adjusted such that no leks within 1 mile of proposed turbine locations

Future Efforts:

1. Construction and Operations
    - Operations personnel training for whooping crane identification and shutdown procedures if within 2 miles of turbines.
    - Transmission line to be marked with bird diverters
    - Post-construction fatality monitoring (Tier 4 surveys)
    - Development of Bird and Bat Conservation Strategy (BBCS)

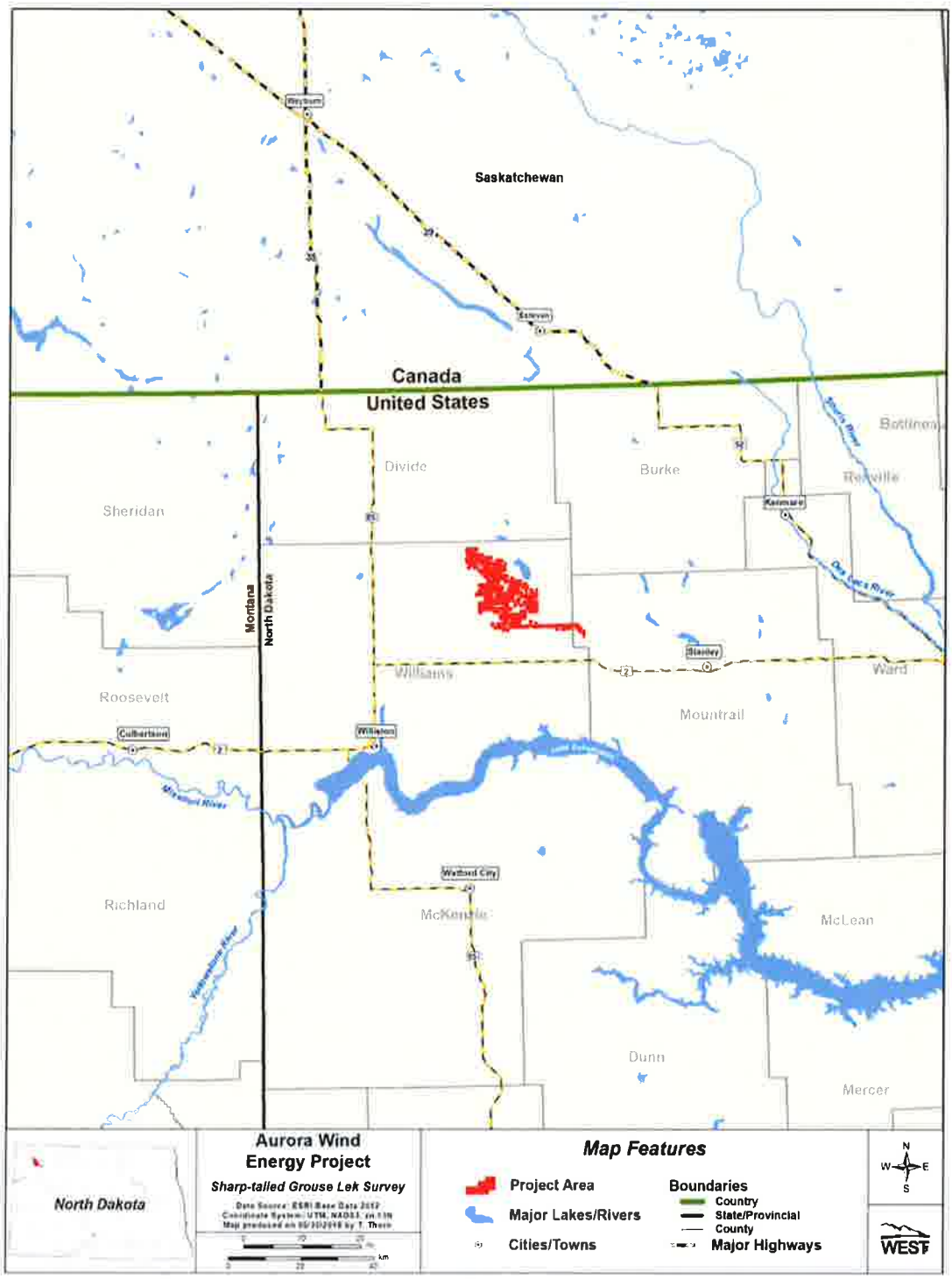

Figure 1. Location and current boundary of the Aurora Wind Energy Project in Williams and Mountrail counties, North Dakota.

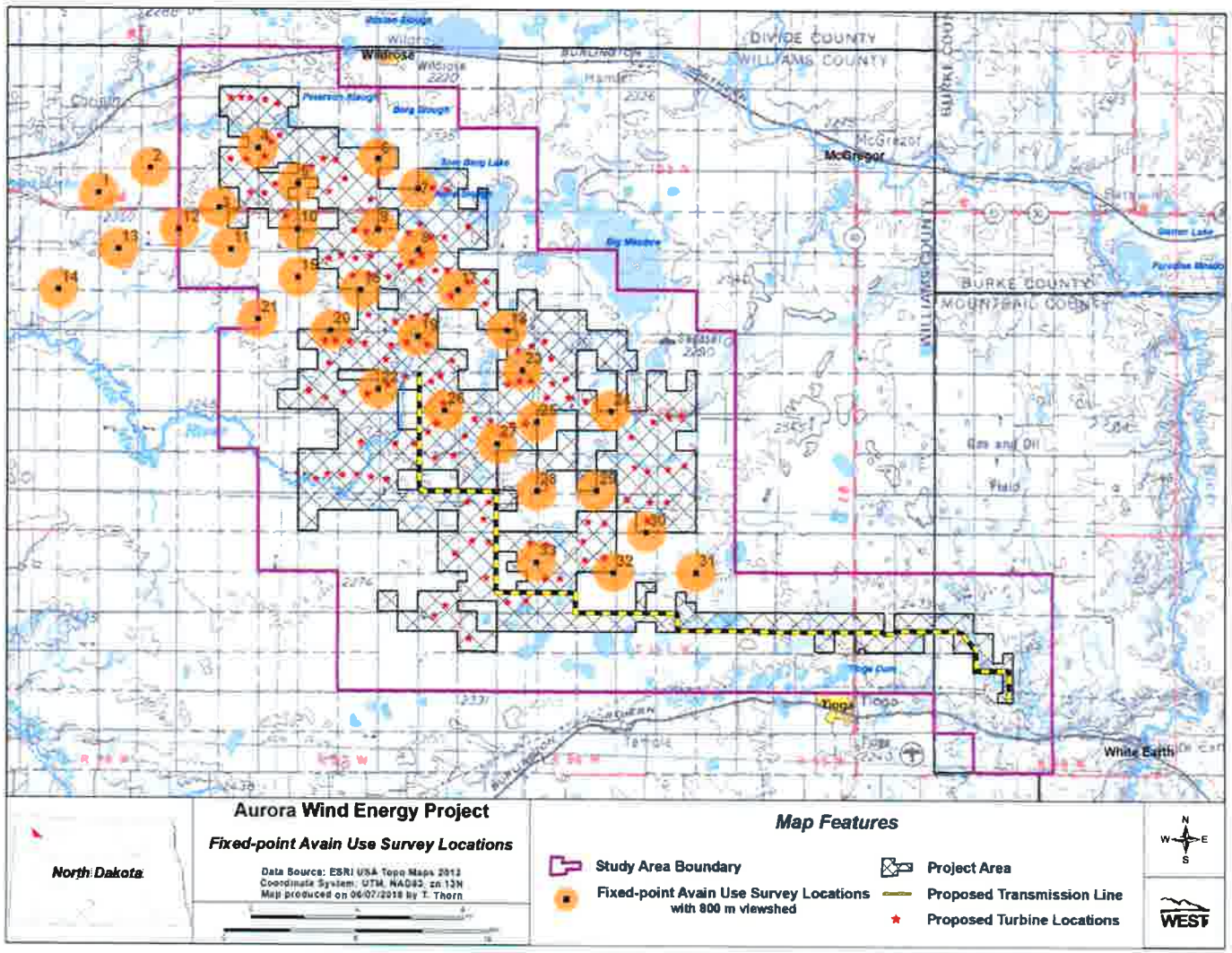

Figure 2. Fixed-point survey locations, proposed turbine locations, and proposed transmission line within the Aurora Wind Energy Project in Williams and Mountrail counties, North Dakota.

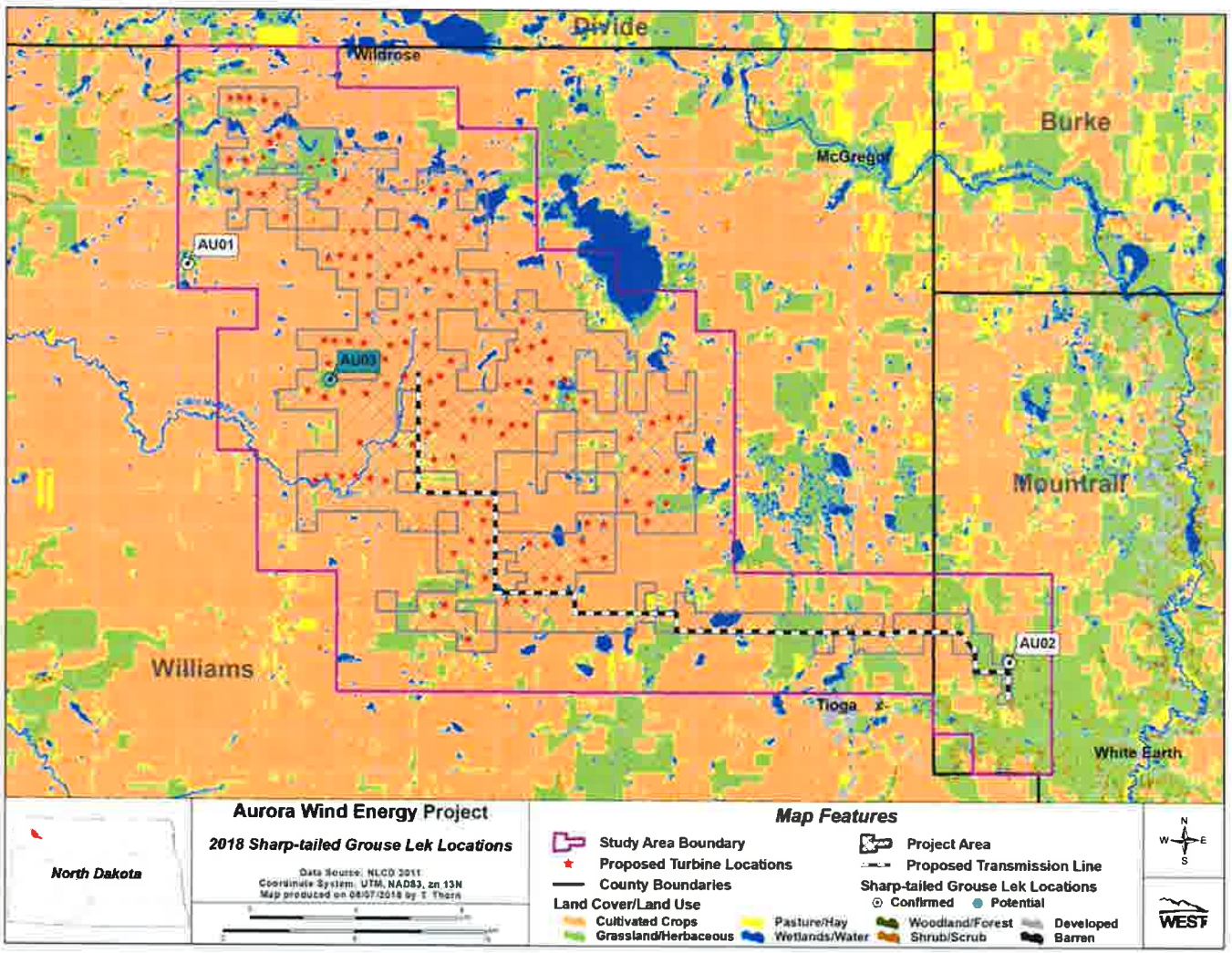

Figure 3. Sharp-tailed grouse lek locations, proposed turbine locations, and proposed transmission line within the Aurora Wind Energy Project, Williams and Mountrail counties, North Dakota.

Jennifer Dean

From:	Clayton Derby <cderby@west-inc.com>
Sent:	Friday, September 21, 2018 2:54 PM
To:	Dyke, Steve (NDGF)
Cc:	Kevin Shelley; JOHN SCHUMACHER; Jennifer Dean; Katherine Moratz; Scott_Larson@fws.gov
Subject:	Re: Aurora Wind Meeting
Attachments:	Aurora_USFWS-NDGFD Meeting Notes_081618 Final Update.pdf; Aurora_A031_299.9MW--GE2.5x108_GE2.3x13_2018-07-26.zip

Hello Group

Steve, thank you for the suggested additions, I have put those ideas into the discussion section. The updated notes are attached for your files.

Also attached is the final layout shapefile for your review. We would be available and open to have further discussions with the group on any letter responses developed to have a "no surprises" understanding before public hearings on the PSC applications (I believe that was the term used by Steve during the meeting?).

Have a great weekend.

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On Thu, Sep 13, 2018 at 2:40 PM Dyke, Steve R. <sdyke@nd.gov> wrote:

Clayton, thanks for sharing the meeting notes. I suggest for your consideration the following items for inclusion into the meeting notes.

1. Could post construction collision survey $ be better spent on offsets for habitat restoration efforts.

2. How there is a lack of 'vendors' in the state for habitat creation/restoration. The ND Natural Resource Trust might be positioned to help in that effort.

Additionally, while it may or may not have been discussed at the meeting, our agency strongly encourages the project sponsors provide us with the turbine locations and road alignments well before notice of a PSC public hearing on the project.

Steve

From: Clayton Derby <cderby@west-inc.com>
Sent: Wednesday, September 12, 2018 3:10 PM
To: Kevin Shelley <Kevin_Shelley@fws.gov>; Dyke, Steve R. <sdyke@nd.gov>; Schumacher, John D. <jdschumacher@nd.gov>
Cc: Jennifer Dean <jdean@tradewindenergy.com>; Katherine Moratz <kmoratz@west-inc.com>
Subject: Aurora Wind Meeting

Hello

Attached please find meeting notes and referenced material from the Aurora Wind Project meeting held on August 16, 2018.

Thank you,

Clayton Derby

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Discussion

Both USFWS and NDGFD asked questions regarding the efforts completed; however questions were minimal. Questions and discussion included the future development steps for the Project and the PSC process. The group also discussed options for providing funds for habitat offsets instead of conducting expensive post-construction fatality monitoring studies, but agreement that currently there is a general lack of "vendors" in the state that can receive these funds and effectively implement habitat restoration or enhancement efforts. The North Dakota Natural Resource Trust may be one vendor that could be investigated to serve this purpose. Both agencies provided positive remarks on the siting of the Project within a fragmented landscape. All parties voiced a willingness to continue to work together as the Project continues to develop. Another agency meeting could potentially occur before the PSC hearing to discuss any additional topics regarding infrastructure placement if all parties are interested.