

2018 Eagle and Raptor Nest Survey Report

Tatanka Wind Project Deuel County, South Dakota



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NOTES ON UNITS

Imperial units are used throughout this document. Conversions to metric units are provided below.

Unit Conversions	
Imperial	Metric
1 foot	0.3048 meter
3.28 feet	1 meter
1 mile	1.61 kilometer
0.621 mile	1 kilometer
1 acre	0.40 hectare
2.47 acre	1 hectare

Common Conversions	
Imperial	Metric
0.12 miles	200 meters
0.5 miles	800 meters
10 miles	16.1 kilometers

INTRODUCTION

Buffalo Ridge III, LLC (Buffalo Ridge III), a subsidiary of Avangrid Renewables, LLC, has proposed development of the Tatanka Wind Project (Project) on privately owned lands in Deuel County, South Dakota (Figure 1). At Buffalo Ridge III's request, Western EcoSystems Technology, Inc. (WEST) conducted aerial raptor nest surveys to record the location and status of bald eagle (*Haliaeetus leucocephalus*) and other raptor nests in and near the Project. The aerial surveys were conducted in accordance with the guidance provided in the US Fish and Wildlife Service (USFWS) *Eagle Conservation Plan Guidance* (ECPG; USFWS 2013) and the USFWS *Interim Golden Eagle Technical Guidance* (Pagel et al. 2010). This report provides results of the eagle and raptor nest surveys conducted in April and May 2018.

SURVEY AREA

The Project boundary encompasses an area of approximately 22,905 acres (36 square miles) located approximately five miles west of the South Dakota/Minnesota border, and directly north of the town of Toronto, South Dakota. The survey area for all raptor stick-nests consisted of a 1-mile buffer of the Project boundary, and the survey area for bald eagle nests consisted of a 10-mile buffer of the Project boundary (Figure 1).

The majority of the survey area consists of cultivated agricultural fields with some pastureland, with limited potential substrates for raptor and bald eagle nests. Wooded habitat within the Project boundary is mainly in the form of small woodlots associated with rural homesteads and shelterbelts. More suitable nesting substrate is located outside of the Project boundary in wooded areas associated with larger lakes within the 10-mile buffer around the Project boundary.

METHODS

Aerial Raptor Nest Survey

The first round of aerial survey was conducted from a helicopter in early April (April 10–12, 2018), a period before leaf out when raptors and eagles would be actively tending to a nest or incubating eggs. Aerial surveys were conducted in accordance with the guidance provided in the ECPG (USFWS 2013) and the USFWS *Interim Golden Eagle Technical Guidance* (Pagel et al. 2010). An experienced raptor ecologist and a skilled helicopter pilot conducted the surveys. Raptors are defined for these surveys as kites, accipiters, buteos, harriers, eagles, falcons, and owls (Buehler 2000). The main focus of the surveys was to identify bald eagle and raptor nests and to determine nest activity. Surveyors focused on locating eyries (large, stick nest structures) in suitable eagle nesting substrate (e.g., trees, transmission lines) within and around the Project. Pre-flight planning included the creation of field maps and mobile Geographic Information System files, and review of relevant background information, such as previously recorded nest locations, topographic maps, and aerial photographs.

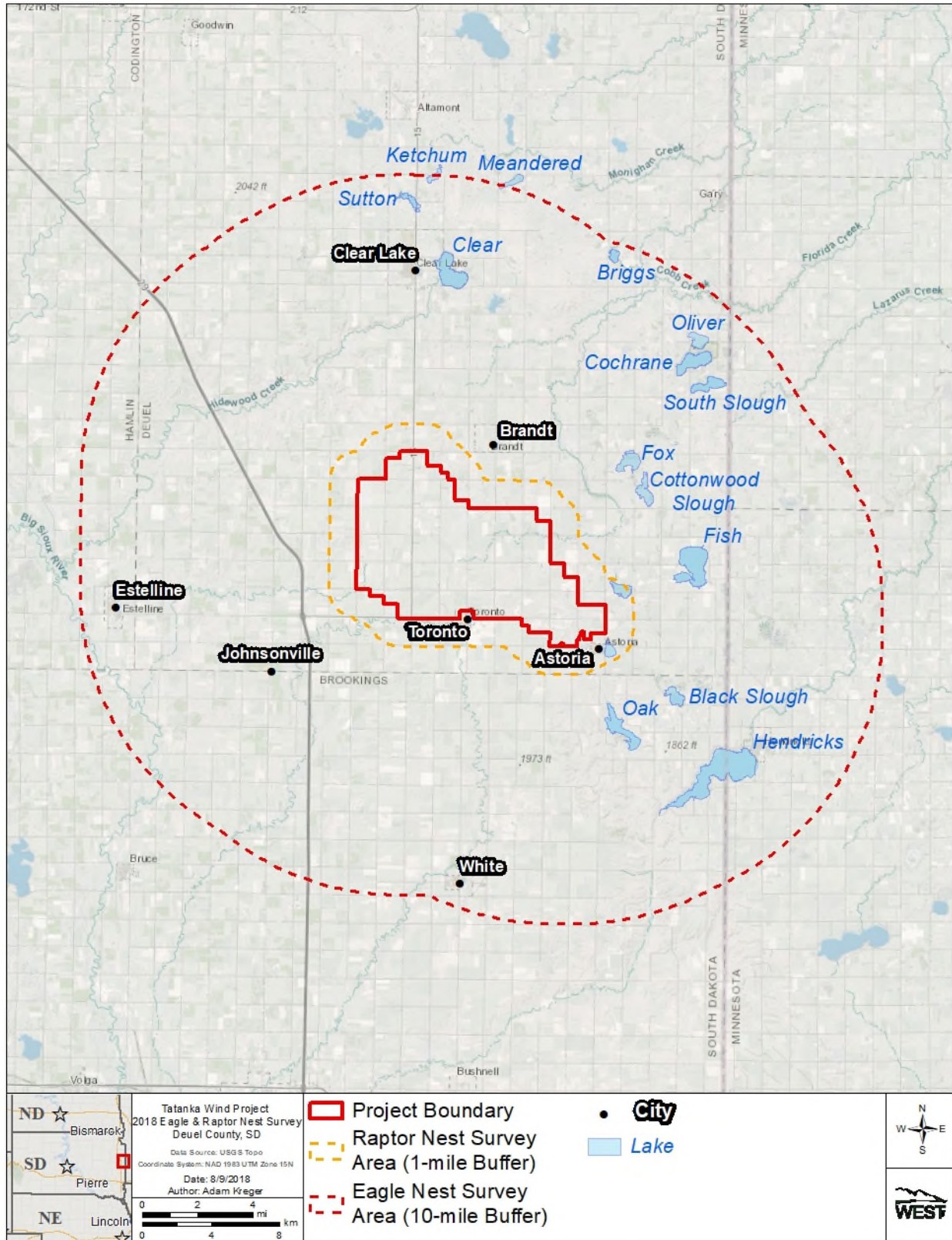


Figure 1. Nest survey area near the Tatanka Wind Project, Deuel County, South Dakota.

Surveys within the Project boundary and 1-mile buffer documented potential raptor nests, including bald eagle nests, while the surveys out to the 10-mile buffer focused only on identifying potential bald eagle nests. Surveys were conducted at the greatest possible distance at which the species could be identified, to minimize disturbances, with distances varying depending upon nest location and wind conditions.

In general, potential bald eagle nest habitat was surveyed by flying meandering transects between 0.25–1.0 mile apart, flying at speeds of approximately 46 miles per hour when actively scanning for nests. Surveys were typically conducted between 07:00 hours and 18:00 hours.

The survey track was recorded using a handheld Global Positioning System (GPS) unit to ensure that areas were adequately covered. The helicopter was positioned to allow a thorough visual inspection of the habitat, and in particular, to provide a view of the tops of the tallest dominant trees, where bald eagles generally prefer to nest (Buehler 2000). The locations of potential raptor and eagle nests were recorded using a handheld GPS. This included all confirmed and potential nests regardless of their activity status.

To determine the status of a nest, the biologist evaluated behavior of adults on or near the nest, and presence of eggs, young, whitewash, or fresh building materials. Attempts were made to identify the species of raptor associated with each active nest. Raptor species, nest type, nest status, nest condition, and nest substrate were recorded at each nest location to the extent possible.

On May 15, 2018, WEST conducted a follow-up aerial survey of bald eagle nests and potential bald eagle nests that were documented in the April survey to confirm species, occupancy and activity status. The follow-up nest checks occurred 33 to 35 days after the initial survey, following ECPG recommendations that eagle nest status be checked at least 30 days after the initial observation.

Terminology

Included below are descriptions of terms used during the documentation of nests (see Results section).

Nest ID – A unique nest identification number was assigned for each nest documented.

Species – A species was assigned to each nest when possible. When a nest could not be identified to species it was classified as an unknown raptor nest. Nests documented as unknown raptor species were defined as any stick nest not having an occupant associated with it at the time of the survey. Unknown raptor species nests, including old/abandoned nests or nests that could be suitable for raptors, were documented in order to populate a nest database to ensure future surveys include all potentially suitable nest sites. Nests documented as belonging to an unknown raptor species that appeared consistent in size and shape with bald eagle nests were further classified as potential alternate nest sites for bald eagles.

Nest Condition – Nest condition was categorized as good, fair, or poor. Although the determination of nest condition can be subjective and may vary between observers, it gives a general sense of when a nest or nest site was last used. Nests in good condition were excellently maintained with very well-defined bowls, no sagging, and are either suitable for immediate use or currently in use. Nests in fair condition had fairly well-defined bowls, minor sagging, and appeared to require some repair or maintenance before being suitable for use. Nests in poor condition were sloughing or sagging heavily, and would require effort to restore for successful nesting.

Substrate – Nest substrate was recorded to provide observers with a visual reference to facilitate locating the nest in the future. Substrates may include man-made structures (e.g., power lines, nest platforms, dock hoists), and biological and physical structures (e.g., conifer and deciduous tree species, cliff faces).

Nest Status – Nest status was categorized using definitions consistent with the ECPG. Nests were classified as occupied if any of the following were observed at the nest structure: (1) an adult in an incubating position; (2) eggs; (3) nestlings or fledglings; (4) a pair of adults (sometimes sub-adults); (5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed earlier in the breeding season; or (6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath. Occupied nests were further classified as active if: (1) an adult was present on the nest in incubating position; (2) an egg or eggs were present; or (3) nestlings were observed. Nests were classified as inactive if no eggs or chicks were present. Nests not meeting the above criteria for “occupied” were classified as “unoccupied.” Bald eagle nests and potential bald eagle nests were further classified as “in-use” or “alternate” based on updated definitions of these terms in the final Eagle Rule, which became effective on January 17, 2017 (Title 50 Code of Federal Regulations Parts 13 and 22, 81 Federal Register 91494).

RESULTS

A total of 31 raptor nests were observed during the aerial surveys in April and May 2018 (Table 1). A total of 16 nests were occupied at the time of the surveys, representing three raptor species; the other 15 nests observed during the survey included one inactive bald eagle nest and 14 nests associated with unidentified raptor species.

Bald Eagles

Four occupied and active bald eagle nests, two occupied inactive bald eagle nests, and one inactive historic bald eagle nest were documented within 10 miles of the Project boundary (Figure 2). The closest bald eagle nest to the Project was Nest 2207, which was documented approximately 3.5 miles southeast of the Project boundary. The other six nests were located between 3.7 and 9.7 miles from the Project boundary. The following discussion provides additional information on the bald eagle nests observed during the surveys.

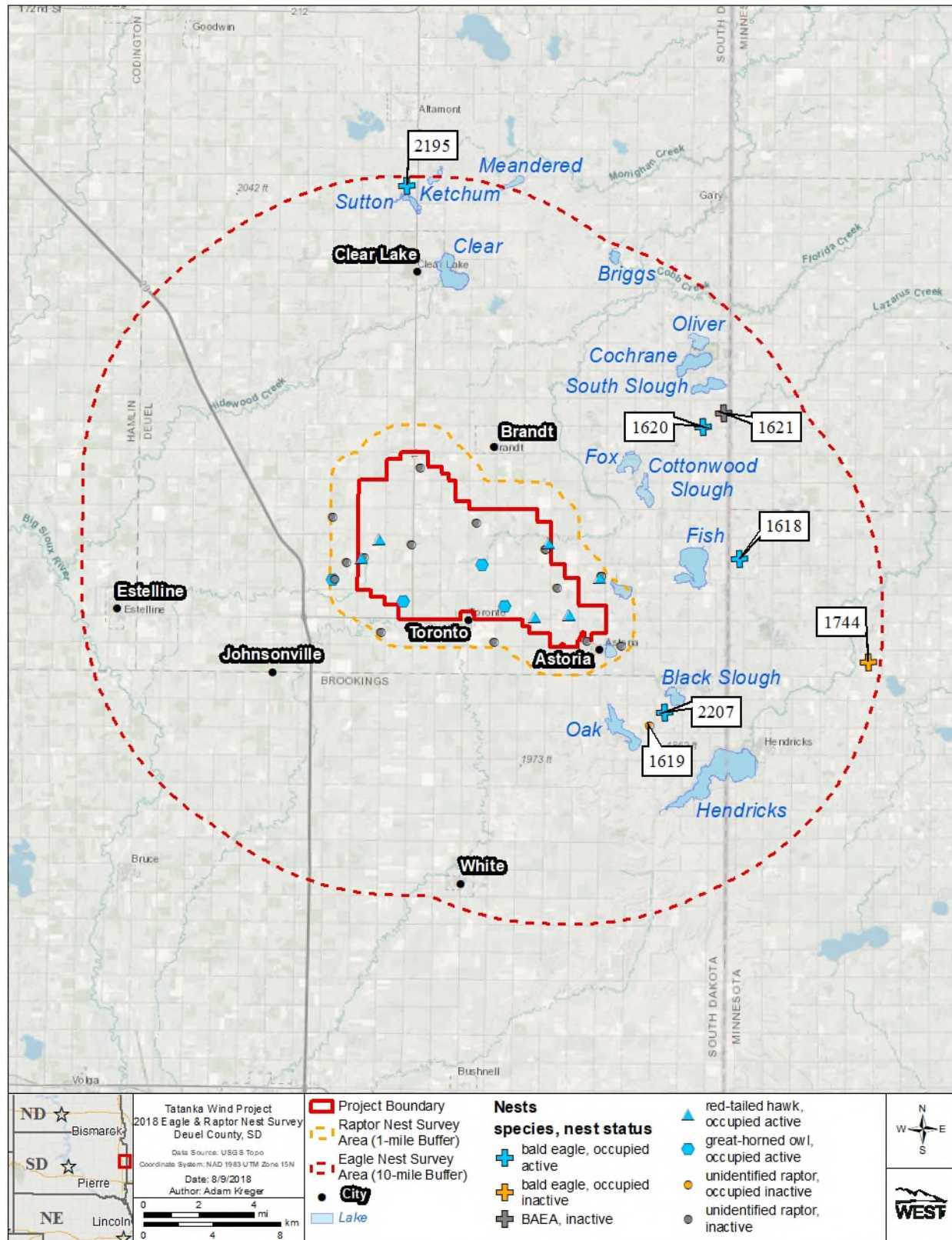


Figure 2. Locations of raptor and eagle nests observed within 10 miles of the Tatanka Wind Project, Deuel County, South Dakota.

Table 1. Raptor nest ID, location, species, status, substrate, and condition during the April and May 2018 surveys for the Tatanka Wind Project, Deuel County, South Dakota.

Species ¹	Distance from Project (miles) ²	Status at Time of Survey	Nest ID	Condition	Latitude	Longitude	Substrate ³
BAEA	3.5	in-use, occupied active	2207	good	44.5248	-96.4981	DT
		in-use, occupied inactive					
BAEA	3.7	inactive	1619	good	44.5177	-96.5090	DT
BAEA	5.1	in-use, occupied active	1618	good	44.6048	-96.4439	DT
BAEA	6.5	in-use, occupied active	1620	good	44.6743	-96.4716	DT
BAEA	7.4	alternate, inactive	1621	good	44.6819	-96.4560	DT
		in-use, occupied inactive					
BAEA	9.5	inactive	1744	good	44.5516	-96.3486	DT
BAEA	9.7	in-use, occupied active	2195	good	44.7993	-96.6911	DT
GHOW	0.9	occupied active	2184	good	44.5928	-96.7421	DT
GHOW	0.0	occupied active	2189	good	44.5798	-96.6151	DT
GHOW	0.0	occupied active	2191	good	44.6012	-96.6324	DT
GHOW	0.0	occupied active	2204	good	44.5819	-96.6901	DT
RTHA	0.0	occupied active	2188	good	44.5740	-96.5939	DT
RTHA	0.0	occupied active	2198	good	44.6144	-96.7086	DT
RTHA	0.0	occupied active	2200	good	44.6044	-96.7211	DT
RTHA	0.0	occupied active	3043	good	44.6128	-96.5844	DT
RTHA	0.0	occupied active	3046	good	44.5758	-96.5678	DT
RTHA	0.8	occupied active	3042	good	44.5951	-96.5460	DT
UNRA	0.0	inactive	2187	good	44.6099	-96.5867	DT
UNRA	0.0	inactive	2192	good	44.6521	-96.6793	DT
UNRA	0.0	inactive	2193	good	44.6116	-96.6854	DT
UNRA	0.0	inactive	2194	good	44.6235	-96.6379	DT
UNRA	0.0	inactive	2199	good	44.6046	-96.7199	DT
UNRA	0.0	inactive	3045	fair	44.5897	-96.5784	DT
UNRA	0.0	inactive	3051	fair	44.5618	-96.5560	DT
UNRA	0.5	inactive	2201	good	44.6021	-96.7329	DT
UNRA	0.7	inactive	2206	good	44.5597	-96.5304	DT
UNRA	0.8	inactive	2185	fair	44.5959	-96.5458	DT
UNRA	0.8	inactive	2190	good	44.5611	-96.6240	DT
UNRA	0.8	inactive	2196	good	44.5654	-96.7069	DT
UNRA	0.9	inactive	2203	good	44.5931	-96.7415	DT
UNRA	1.0	inactive	2202	good	44.6260	-96.7430	DT

¹ BAEA = bald eagle (*Haliaeetus leucocephalus*), RTHA = red-tailed hawk (*Buteo jamaicensis*), GHOW = great-horned owl (*Bubo virginianus*), UNRA = unidentified species

² A distance value of 0.0 indicates the nest is located within the Project boundary.

³ DT = deciduous tree

Nest 2207 – This nest was located approximately 3.5 miles southeast of the Project boundary. The nest was in good condition. An adult bald eagle was present on the nest and in incubating position at the time of the survey in April. The nest was still occupied and active with one adult eagle and one chick on the nest at the time of the status check survey in May. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018 (Appendix A, Photograph A-1).

Nest 1619 – This nest was located approximately 3.7 miles southeast of the Project boundary. This nest was documented by WEST as an active eagle nest in 2017 (WEST 2017a). During the

2018 surveys, the nest was in good condition. No eagles were observed on the nest, but the nest appeared to have been recently tended at the time of the survey in April. The nest was inactive with no signs of recent use at the time of the status check survey in May. The nest was therefore classified as an in-use eagle nest, which was occupied and inactive in 2018 (Appendix A, Photograph A-2).

Nest 1618 – This nest was located approximately 5.1 miles east of the Project boundary in Lincoln County, Minnesota. This nest was documented by WEST as an active eagle nest in 2017 (WEST 2017a). During the 2018 surveys, the nest was in good condition. An adult bald eagle was observed incubating on the nest at the time of the survey in April. The nest was still occupied and active with one adult and two chicks on the nest at the time of the status check survey in May. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018 (Appendix A, Photograph A-3).

Nest 1620 – This nest was located approximately 6.5 miles northeast of the Project boundary. This nest was documented by WEST as an active eagle nest in 2017 (WEST 2017b). During the 2018 surveys, the nest was in good condition. An adult bald eagle was observed incubating on the nest at the time of the survey in April. The nest was still occupied and active at the time of the status check survey in May with one adult and two chicks on the nest. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018 (Appendix A, Photograph A-4).

Nest 1621 – This nest was located approximately 7.4 miles northeast of the Project boundary. This nest was documented by WEST as an active great-horned owl (*Bubo virginianus*) nest in 2017 and as an active bald eagle nest in 2016 (Simon et al. 2016, WEST 2017b). During the 2018 surveys, the nest was in good condition. No eagles were observed on the nest and there was no evidence of recent use at the time of the survey in April. The nest was still inactive at the time of the status check survey in May. The nest may be an alternate nest for the nesting pair at Nest 1620, and was considered inactive in 2018 (Appendix A, Photograph A-5).

Nest 1744 – This nest was located approximately 9.5 miles east of the Project boundary in Lincoln County, Minnesota. This nest was documented by WEST as an active eagle nest in 2017 (WEST 2017a). During the 2018 surveys, the nest was in good condition. An adult bald eagle was seen flying near the nest, and the nest appeared recently tended at the time of the survey in April. The nest was still occupied and active with two adults and two chicks on the nest at the time of the status check survey in May. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018 (Appendix A, Photograph A-6).

Nest 2195 – This nest was located approximately 9.7 miles north of the Project boundary. The nest was in good condition. An adult bald eagle was observed incubating on the nest at the time of the survey in April. The nest was still occupied and active with two adult eagles and one chick on the nest at the time of the status check survey in May. The nest was therefore considered an in-use occupied and active nest in 2018 (Appendix A, Photograph A-7).

Other Raptors

A total of 24 additional raptor nests were documented during the surveys (Table 1; Figure 3), which included the following:

- Occupied and active
 - 6 red-tailed hawk (*Buteo jamaicensis*) nests
 - 4 great horned owl nests
- Unoccupied and inactive nests
 - 14 unoccupied and inactive nests of unidentified species

Fourteen of the 24 raptor nests observed in the 2018 surveys were documented within the Project boundary, including eight occupied nests. Of the occupied nests, five were active red-tailed hawk nests and three were active great horned owl nests. The six unoccupied nests within the Project boundary included five nests in good condition and one nest in fair condition.

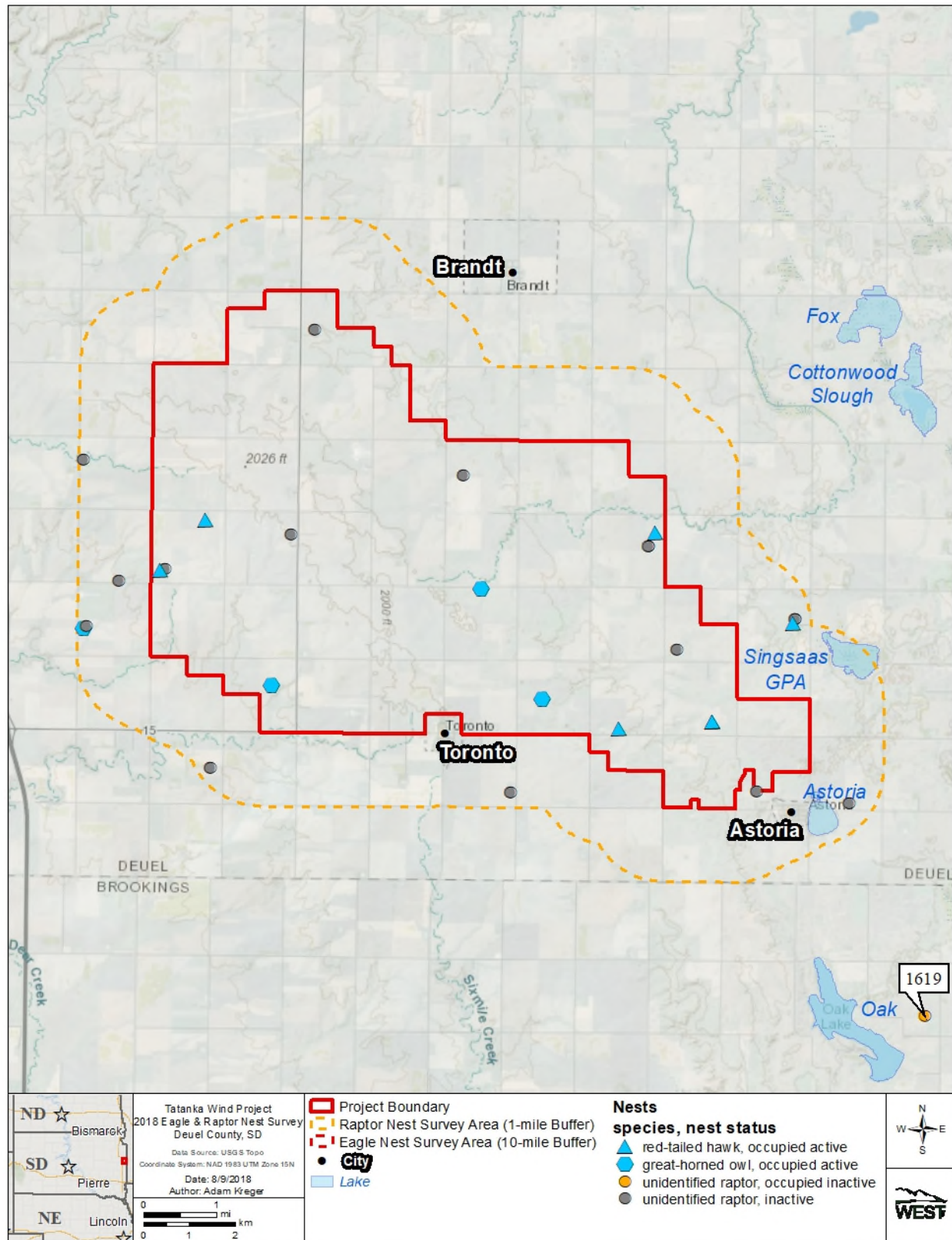


Figure 3. Locations of raptor nests observed within one mile of the Tatanka Wind Project, Deuel County, South Dakota.

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**Appendix A. Photographs of Bald Eagle Nests Documented in April and May 2018 within
10 Miles of the Tatanka Wind Project**



Appendix A, Photograph A-1. Nest 2207 was located approximately 3.5 miles southeast of the Project boundary. The nest was in good condition. An adult bald eagle was present on the nest and in incubating position at the time of the survey in April. The nest was still occupied and active with one adult eagle and one chick on the nest at the time of the status check survey in May. The nest was classified as an in-use eagle nest, which was occupied and active in 2018.



Appendix A, Photograph A-2. Nest 1619 was located approximately 3.7 miles southeast of the Project boundary. The nest was in good condition. No eagles were observed on the nest, but the nest appeared to have been recently tended at the time of the survey in April. The nest was inactive with no signs of recent use at the time of the status check survey in May. The nest was classified as an in-use eagle nest, which was occupied and inactive in 2018.



Appendix A, Photograph A-3. Nest 1618 was located approximately 5.1 miles east of the Project boundary. The nest was in good condition. An adult bald eagle was observed incubating on the nest at the time of the survey in April. The nest was still occupied and active with one adult and two chicks on the nest at the time of the status check survey in May. The nest was classified as an in-use eagle nest, which was occupied and active in 2018.



Appendix A, Photograph A-4. Nest 1620 was located approximately 6.5 miles northeast of the Project boundary. The nest was in good condition. An adult bald eagle was observed incubating on the nest at the time of the survey in April. The nest was still occupied and active at the time of the status check survey in May with one adult and two chicks on the nest. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018.



Appendix A, Photograph A-5. Nest 1621 was located approximately 7.4 miles northeast of the Project boundary. This nest was documented by WEST as an active great-horned owl (*Bubo virginianus*) nest in 2017 and as an active bald eagle nest in 2016. During the 2018 surveys, the nest was in good condition. No eagles were observed on the nest and there was no evidence of recent use at the time of the survey in April. The nest was still inactive at the time of the status check survey in May. The nest may be an alternate nest for the nesting pair at Nest 1620, and was considered inactive in 2018.



Appendix A, Photograph A-6. Nest 1744 was located approximately 9.5 miles east of the Project boundary. The nest was in good condition. An adult bald eagle was seen flying near the nest, and the nest appeared recently tended at the time of the survey in April. The nest was still occupied and active with two adults and two chicks on the nest at the time of the status check survey in May. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018.



Appendix A, Photograph A-7. Nest 2195 was located approximately 9.7 miles north of the Project boundary. The nest was in good condition. An adult bald eagle was observed incubating on the nest at the time of the survey. The nest was therefore classified as an in-use eagle nest, which was occupied and active in 2018.