



ENVIRONMENTAL & STATISTICAL CONSULTANTS

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August 12, 2016

Sean Flannery
Glacier Ridge Wind Farm, LLC
330 2nd Avenue South, Suite 820
Minneapolis, Minnesota 55401

RE: Glacier Ridge Avian Summary

Dear Mr. Flannery,

Western EcoSystems Technology, Inc. (WEST) has been assisting in surveys and other related wildlife efforts for the Glacier Ridge Wind Project (Project) located in Barnes County, North Dakota, since 2009. The same general Project area was surveyed starting in 2009 and at various times to the present (Figure 1). Following is a brief summary of the avian related topics and surveys that have been conducted as part of the Project.

Whooping Cranes

In early 2009, KLJ Engineering completed a Critical Issues Analysis (CIA) that included a summary of potential impacts to whooping cranes. The summary concluded that the Project area was approximately 25 miles east of the USFWS-defined whooping crane migration corridor. This information was discussed with the US Fish and Wildlife Service (USFWS) and North Dakota Game and Fish Department (NDGFD) in an April 2009 meeting to review the Critical Issues Analysis and was reviewed again with the USFWS and NDGFD in October 2011 and with the NDGFD in April 2016. The Project area is approximately 25 miles east of the defined whooping crane migration corridor (Figure 2); please see the 2009 CIA and meeting materials for further details on this issue.

Raptor and Eagle Nests

Raptor and eagle nest surveys have been completed a total of three times in three distinct years for the Project. In spring 2010 a ground based survey was conducted within the Project and 1-mile buffer around the Project. In spring 2012 a ground based survey was conducted within the Project and a 10-mile buffer. The larger buffer was surveyed to follow the direction from the 2012 Eagle Conservation Plan Guidance. Low numbers of raptor nests and no eagle nests were found during these surveys. In spring 2016 a helicopter based survey was conducted within the Project and a 10-mile buffer. Again there were low numbers of raptor nests observed but five new bald eagle nests were located, three within the 10-mile buffer and two just outside of the buffer. After the April 2016 agency meeting, a request of known eagle nests and other information was made to the NDGFD. No other bald eagle nests were identified from the data requests beyond those located during the 2016 survey. Reports on all three years of survey have been submitted as part of the PSC permit application.

Sharp-tailed Grouse

Sharp-tailed grouse are a common game bird species in parts of North Dakota but are often identified as a species of concern for wind and other development efforts and are a state species of concern. Surveys specific for the species (i.e., lek surveys), were not completed for the Project due to the Project's location that is outside or on the edge of the species primary range (Figure 3) and due to the onsite habitat conditions. Land cover mapping found that nearly 90% of the Project area was comprised of tilled agricultural, with only approximately 6% comprised of grasslands, a necessary component for sharp-tailed grouse habitat. In addition, while not an area regularly surveyed for grouse leks, a review of the NDGFD database did not reveal any historic leks in the Project area. While a small number of individual grouse were documented during avian surveys in 2009-2010 and again in 2016, based on the habitat, general Project location, lack of historic information from NDGFD, and habitat needs of the species, significant impacts to the species are not anticipated. At the April 2016 meeting Mr. Schumacher indicated that the NDGFD primary concern is to avoid or minimize impacts to native prairie, which the Project does overall by being sited in this portion of North Dakota.

Avian and Eagle Use

2009-2010 Avian Use Surveys

Avian use surveys were completed at 10 point count locations from July – November 2009 and March – June 2010 (Figure 1). Surveys were conducted weekly during migration and twice monthly in summer following the standard 20 minute point counts. The mean raptor use was low during all seasons and consisted mostly of red-tailed hawks and northern harriers. No eagles were observed. A final report of full avian use survey results was developed and reviewed with the USFWS and NDGFD during a meeting in October 2011 and was provided to the PSC.

2016-2017 Avian Use Surveys

Avian use surveys were again initiated at the Project area (Figure 1) starting in February 2016. This effort is scheduled to continue for one calendar year. The use survey consists of 18 survey points, each with an 800-m survey radius, to achieve approximately 30% spatial coverage of the Project to meet the survey level recommended in the USFWS Eagle Conservation Plan Guidance¹. This Guidance was not available during the previous survey efforts in 2009-2010. Similar to the 2009-2010 survey, this effort was discussed with the NDGFD and was provided to the USFWS for their review.

From start of surveys in mid-February through July 2016, WEST completed 114 hours of survey. Surveys were completed one time per month at each point. In regards to eagles, five adult bald eagle observations were recorded during the spring migration season. One bald eagle was observed on February 24, 2016, three total eagles were observed on March 10,

¹ US Fish and Wildlife Service (USFWS). 2013. Eagle Conservation Plan Guidance. Module 1 - Land-Based Wind Energy. Version 2. Division of Migratory Bird Management, USFWS. April 2013. Available online at: http://www.fws.gov/migratorybirds/Eagle_Conservation_Plan_Guidance-Module%201.pdf

2016, and one eagle was observed March 24, 2016. Five eagle flight minutes were recorded within the defined 800-m survey radius and below 200-m in flight height. Bald eagles were observed incidentally on three occasions: one eagle on March 24 and three eagles on March 25. While there are nests in the area, see section above, no bald eagles were observed within the Project during the summer breeding season during use surveys.

In addition to recording eagles, observers recorded all birds during the first 20 minutes of each point count period. This time period was used to allow direct comparison to data collected at many other wind facilities across the region, including at Glacier Ridge in 2009-2010. The species and number of observations of each species is found in Table 1. The primary species observed were red-winged blackbirds, grackles, killdeer, snow geese, Canada geese, horned larks, and other passerine bird species. The most common raptors observed were red-tailed hawks and northern harriers. This is similar to the species and observations made during the 2009-2010 survey and are consistent with species expected in an agricultural landscape in eastern North Dakota. A full report will be prepared after the full year of survey in early 2017.

Table 1. Species and number observed within the 800-m survey radius during avian use surveys from February through July 2016 at the Glacier Ridge Wind Farm^a

Common Name	Number Observed	Common Name	Number Observed
American crow	25	least flycatcher	2
American goldfinch	9	mallard	30
American robin	16	mourning dove	32
American wigeon	1	northern flicker	2
American white pelican	53	northern harrier	17
bald eagle	5	northern pintail	3
barn swallow	44	ring-necked pheasant	1
brown-headed cowbird	71	rock pigeon	10
bobolink	1	red-tailed hawk	13
Brewer's blackbird	4	red-winged blackbird	197
brown thrasher	3	sandhill crane	27
blue-winged teal	33	snow bunting	18
Canada goose	805	snow goose	8,116
California gull	53	song sparrow	2
canvasback	2	sharp-tailed grouse	4
cliff swallow	1	Swainson's hawk	2
common grackle	55	tundra swan	5
common snipe	2	upland sandpiper	2
double-crested cormorant	53	vesper sparrow	2
eastern kingbird	9	western grebe	6
Franklin's gull	58	western kingbird	2
hairy woodpecker	2	western meadowlark	15
horned lark	95	Wilson's phalarope	2
killdeer	63	yellow-headed blackbird	18

^aPreliminary data, may be updated during final reporting.

Stage 1 Eagle Site Assessment

WEST has prepared a Stage 1 Eagle Site Assessment following the USFWS Eagle Conservation Plan Guidance (provided under separate cover). This assessment documents historic and public information on eagle use and potential use in the Project area to help augment use survey and nest survey information as part of the overall risk assessment for eagles.

Please let me know if you need any further information or details. As stated above, a final avian survey report will be prepared at the conclusion of the current surveys in early 2017.

Sincerely,

Clayton Derby
Senior Manager

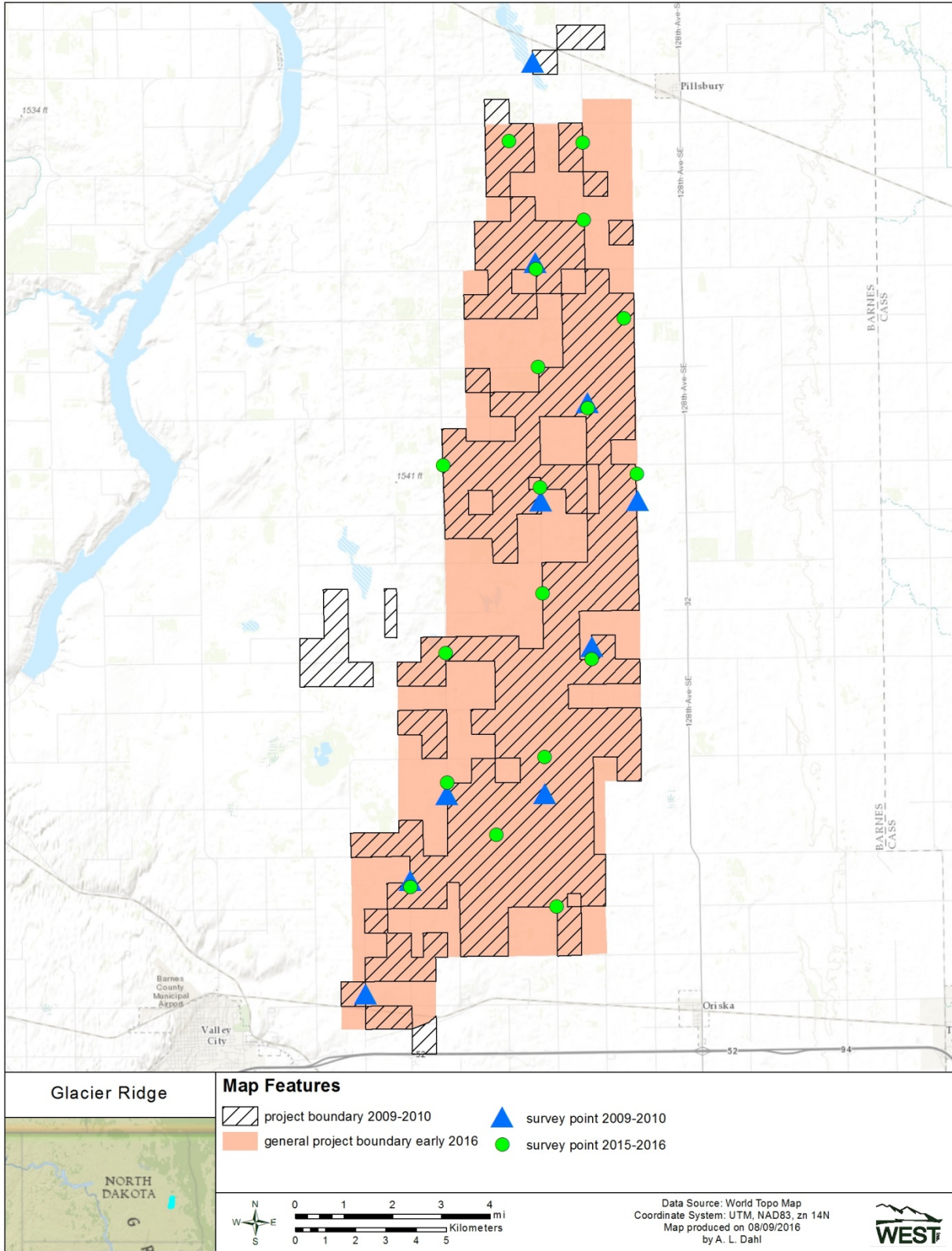


Figure 1. Glacier Ridge Wind Farm Project boundaries and avian use survey locations in 2009-2010 and 2016-2017.

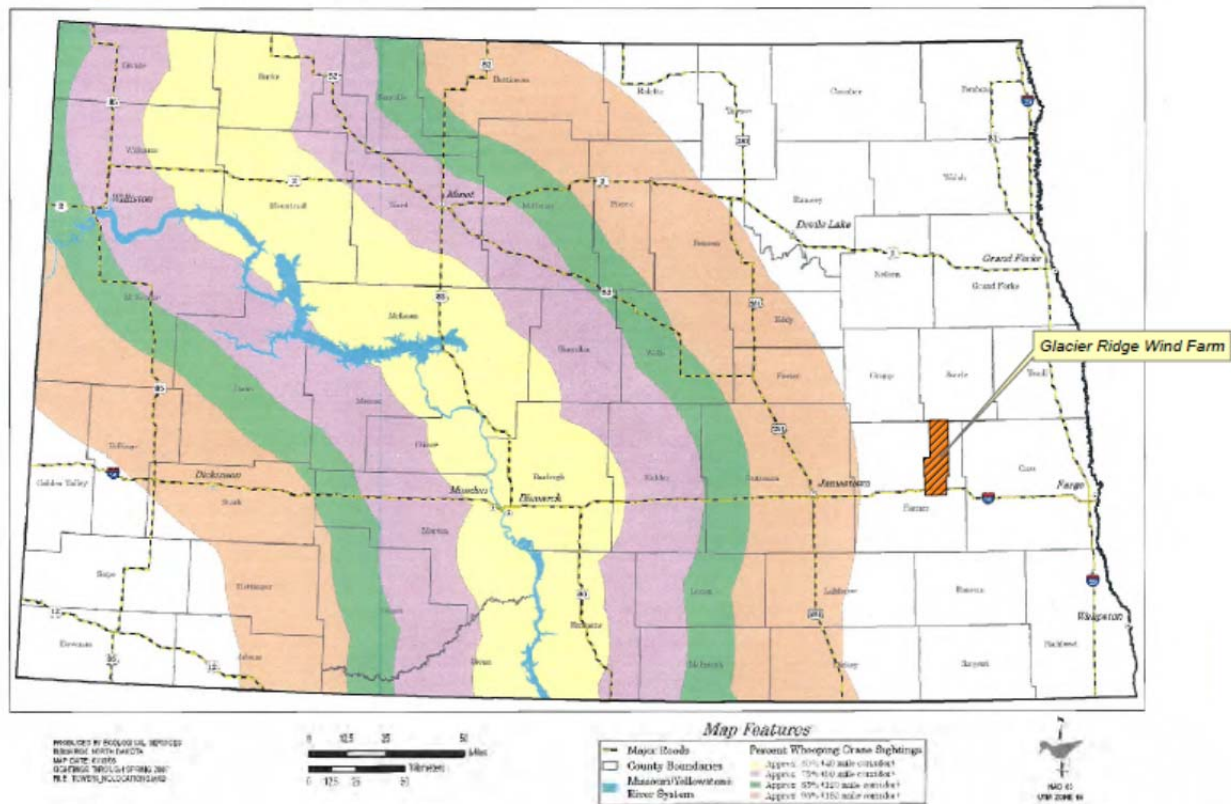


Figure 2. Glacier Ridge Wind Farm in relation to the defined USFWS Whooping Crane migration corridor.

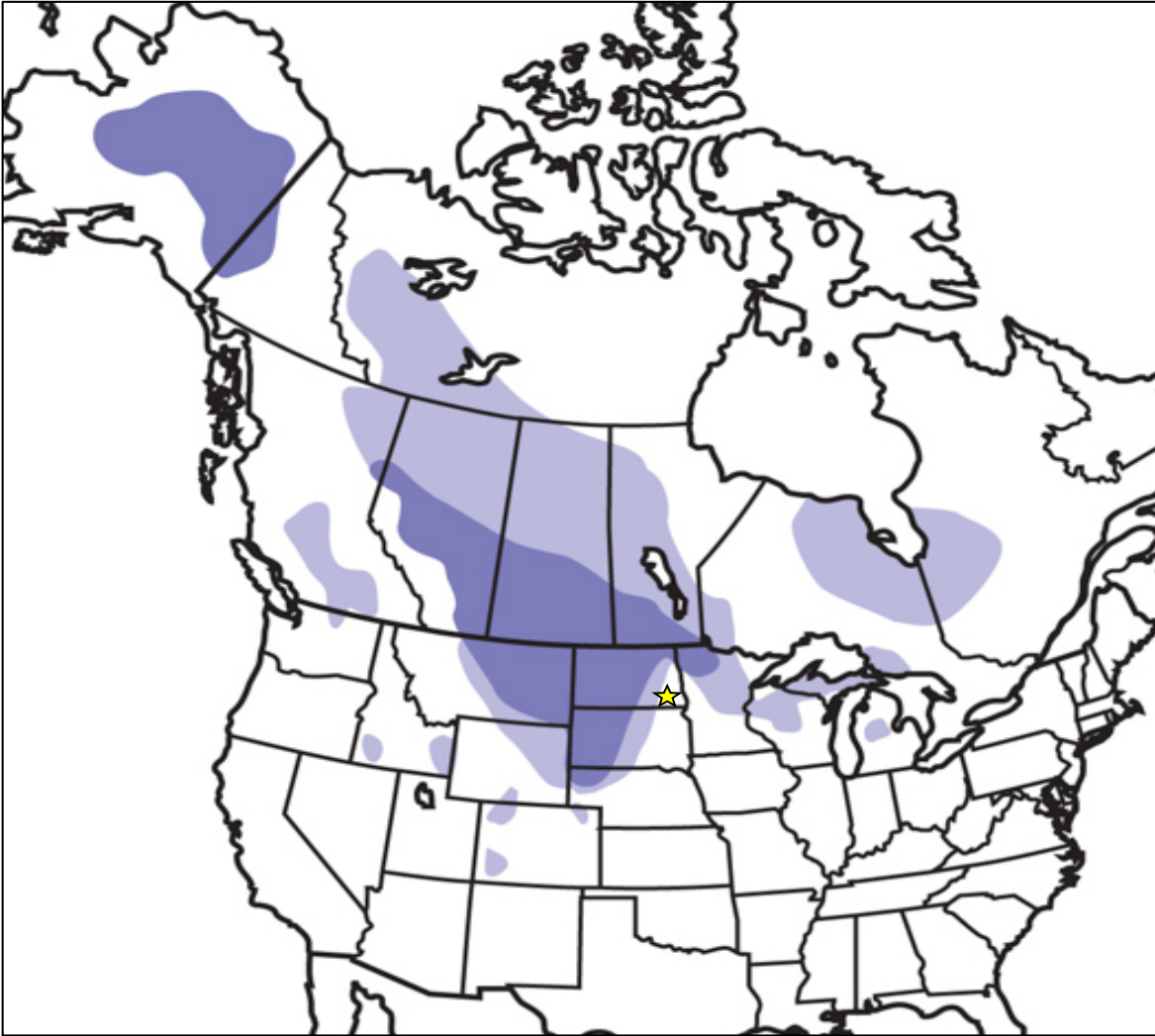


Figure 3. General sharp-tailed grouse range based on Audubon web site (<http://www.audubon.org/field-guide/bird/sharp-tailed-grouse>). Dark blue indicates the species is common, the light blue indicates the species is uncommon, and clear indicating occurrence is not expected. Yellow star indicates approximate Glacier Ridge Wind Farm Project.