

EXHIBIT 17
U.S. Fish and Wildlife Service
Correspondence

This page intentionally left blank.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
3425 Miriam Avenue
Bismarck, North Dakota 58501

OCT 18 2011

Mr. Chris Taylor
Chief Development Officer
Element Power, Inc., North American Headquarters
421 SW Sixth Avenue, Suite 1000
Portland, Oregon 97201

Dear Mr. Taylor:

This is in regard to the planned development of the New Frontier Wind Project in McHenry County, North Dakota, by Element Power, Inc. We offer the following comments under the authority of and in accordance with the Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*) (MBTA), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) (BGEPA), and the Endangered Species Act (16 U.S.C. 1531 *et seq.*) (ESA).

Element Power representatives met with the U.S. Fish and Wildlife Service (Service), North Dakota Ecological Services representatives in Bismarck, North Dakota, on February 24, 2011, and August 24, 2011, to present the status and describe the nature of the planned development. On June 30, 2011, this office responded to Western Ecosystems Technology's, Inc. February 28, 2011, request for information on your behalf concerning the location of Service property interests, federally-listed resources, and any other resource that may be affected by the New Frontier Wind Project.

In addition to the request for information, Western Ecosystems Technology stated in their February 28th letter they were assisting Element Power with a Tier 2 analysis consistent with the Federal Advisory Committee recommendations. We advised against this approach in our June 30th response because we believe use of either the March 2010 Federal Advisory Committee Recommendations or the February 2011 U.S. Fish and Wildlife Service's draft Land-based Wind Energy Guidelines are inappropriate until such time as the guidelines are finalized. We therefore continue to recommend use of the 2003 guidelines. This is particularly important at the early stages of project development when evaluating and ranking potential development sites based upon the anticipated wildlife impact within a wind resource area (WRA). The 2003 guidelines offer an approved protocol developed by Federal, State, academic, and wind energy specialists to objectively evaluate and compare the risks to wildlife associated with each site under consideration by identifying reference sites with a maximum negative impact on wildlife resources within the WRA.

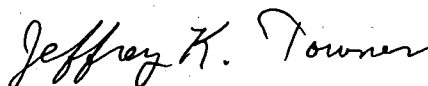
In addition, we advised Element Power of the legal requirement to avoid any unauthorized take of federally-listed threatened and endangered species and their habitats, bald and golden eagles, and migratory birds. If take of listed species and/or eagles is anticipated at the New Frontier Wind Project, we suggested you continue your participation with the Great Plains Wind Energy Programmatic Habitat Conservation Plan in order to apply for authorization for any anticipated take and incorporate the necessary measures to minimize the take of migratory birds and of bats.

Because there is no permit available to authorize the anticipated incidental take of migratory birds, the Service addresses any take through recommendations for prosecution on a discretionary basis. A decision as to whether to recommend prosecution is determined by the responsible party's history of working with the Service to avoid and minimize take of migratory birds. Thus, proactive effort towards avoiding and/or minimizing the unauthorized take of migratory birds is instrumental in the decision to prosecute pursuant to the MBTA. The unauthorized take of listed species, bald and golden eagles, and all migratory birds is subject to substantial penalties under the above Acts.

Element Power has chosen a project site for the New Frontier Wind Project without using the recommended approach contained in the 2003 guidelines and without prior coordination with the Service regarding survey purpose, methods, and/or intended use of the wildlife survey data. As a result, it is impossible to determine if an objective process was used in the site selection and if the wildlife surveys were used to inform the site selection in a manner that minimizes wildlife impacts.

Given the approach that Element Power has chosen, we can no longer offer you or your consultants additional staff time and effort in coordinating the development of the New Frontier Wind Project. You may contact Kevin Shelley of my staff or me with any questions you have about this letter at (701) 250-4402, or at the letterhead address.

Sincerely,



Jeffrey K. Towner
Field Supervisor
North Dakota Field Office

cc: Office of Law Enforcement, Bismarck
(Attn: R. Grosz)
North Dakota Public Service Commission, Bismarck, ND
North Dakota Game and Fish Department, Bismarck, ND
J. Clark Salyer Wetland Management District, Upham, ND
(Takala)
Western Ecosystems Technology, Inc., Bismarck, ND



Element Power
421 SW Sixth Avenue, Suite 1000
Portland, OR 97204
503.416.0800 – Main
503.416.0801 – Fax
www.elpower.com

December 2, 2011

Jeffrey K. Towner, Field Supervisor
North Dakota Field Office
U.S. Fish and Wildlife Service
3425 Miriam Avenue
Bismarck, North Dakota 58501

RE: New Frontier Wind Energy Project, U.S. Fish and Wildlife Service comment letter to Element Power dated October 18, 2011

Dear Mr. Towner,

Element Power US, LLC (Element Power) received the letter from the U.S. Fish and Wildlife Service (Service) dated October 18, 2011 (Letter) in regards to the New Frontier Wind Energy Project (Project), in McHenry County, North Dakota. We appreciate the feedback regarding the Project and would like to assure the Service that Element Power and our subsidiaries are committed to developing all of our projects in an environmentally responsible manner that avoids and minimizes potential impacts to wildlife protected under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Endangered Species Act. Furthermore, by combining appropriate siting and development with conservation measures, we believe that clean energy development projects, such as the Project, can result in a net benefit to wildlife. We would like to take this opportunity to respond to a few points raised by the Service in the Letter and further inform you of the steps we are taking to move this Project forward.

As discussed with the Service in our initial meeting on February 24, 2011, Element Power acquired the Project from another wind developer. As a general matter, when a party is acquiring assets from another party, the seller prohibits the potential buyer from having independent discussions with counterparties and governmental agencies. This is because of the seller's desire for confidentiality and not wanting to create confusion among its counterparties and governmental agencies as to who owns or is responsible for the subject project while the potential sale is pending.

Although Element Power was not able to discuss the Project with agencies, such as the Service, prior to the acquisition being finalized, Element Power conducted an independent due diligence review in connection with its purchase of the Project, which did not identify any fatal flaws that would suggest that the Project would result in

significant or unmanageable risks to wildlife. The primary concern raised during this review was related to the Project's location in the whooping crane migration corridor. Because several other North Dakota wind energy projects located in the migration corridor and in similar habitats have moved forward from development to construction and operation, this issue was considered significant and important, but not a fatal flaw.

We appreciate the Service's recommendations to follow the 2003 *Interim Guidelines on Avoiding and Minimizing Wildlife Impacts from Wind Turbines*¹. In fact, Element Power has incorporated many of the recommendations found in those voluntary guidelines into the development of the Project (e.g., pre-construction studies to assess and monitor wildlife impacts, site development recommendations, turbine design and operation recommendations). However, we respectfully disagree that these are the most appropriate guidelines to follow for all aspects of development for this Project. The 2003 guidelines were developed by a small, narrowly-focused group of wildlife experts with limited input from the wind energy development community. We are of the opinion that aspects of these guidelines – particularly related to the site evaluation process – are impractical and provide limited conservation value. As such, we believe that the March 2010 Federal Advisory Committee guidelines – guidelines that were developed collaboratively by a 22 member group chaired by the Service that included representatives from government agencies, wildlife conservation organizations, and the wind industry – reflect the most recent thinking on wind energy development and wildlife conservation.

As we have also indicated previously, Element Power is committed to continuing its support and involvement in the development of the Great Plains Wind Energy Habitat Conservation Plan (HCP). Our intention is to comply with appropriate portions of this HCP when it is finalized. In the interim, we have developed an Avian and Bat Protection Plan (ABPP) that incorporates many of the conservation measures we anticipate will be included in the final HCP. For example, some of the major components of our ABPP include:

- pre-construction studies to assess and monitor wildlife impacts;
- minimizing the construction footprint, clearing of trees and shrubs, and wetland disturbances and avoiding fragmenting large contiguous blocks of native grasslands;
- wind project design standards relating to the permanent meteorological towers, wind turbine and building lighting, tubular towers, and access roads;
- installing avian flight diverters on all new segments of aboveground transmission lines associated with the Project;
- general construction and operation practices including restoration efforts, erosion minimization, limiting driving speeds and fire management;
- establishment of conservation offsets to allow for the protection of habitat used by whooping crane (and other wildlife);
- post-construction monitoring;

¹ <http://www.fws.gov/habitatconservation/wind.pdf>

- environmental compliance training for construction and operation and maintenance staff; and
- adaptive management procedures to allow for modification of existing mitigation or additional conservation measures for unanticipated impacts.

While we recognize this ABPP has not been formally submitted as part of a project-specific HCP to the Service, we are confident that this plan provides significant wildlife protection and conservation value. In fact, we believe this plan provides equivalent or greater conservation value than similar plans the Service has approved for other wind development projects in North Dakota that were submitted as part of Section 7 consultations or as project-specific HCPs.

We are disappointed to hear that the Service will no longer be willing or able to dedicate additional staff time to coordinate with Element Power or our consultants in the development of the New Frontier Wind Energy Project. We certainly appreciate the heavy workload and the staffing constraints facing your agency due to other projects that are required to undergo a prescribed Section 7 or project-specific Section 10 process. Regardless of the fact that the Project is not required to engage in a formal consultation with the Service as other projects may be, we would like to again assure the Service that we will continue to treat wildlife issues very seriously and any additional input from the Service is appreciated. In addition to continuing work with our local wildlife consultants, we have also opened discussions with wildlife experts with the Audubon Society and Ducks Unlimited regarding the New Frontier Wind Energy Project, the project-specific ABPP, and wildlife conservation measures associated with the Project.

Feel free to contact me or Todd Mattson, Element Power's Director of Environmental Affairs, if you have any questions or have availability to re-open discussions with us regarding this Project.

Sincerely,

Element Power US, LLC



Chris Taylor
Chief Development Officer

Attachment: Avian and Bat Protection Plan – New Frontier Wind Energy Project

cc: Kevin Shelley, U.S. Fish and Wildlife Service
Todd Mattson, Director, Environmental Affairs, Element Power
Clayton Derby, Western EcoSystem Technologies, Inc. (WEST)

Avian and Bat Protection Plan

NEW FRONTIER WIND ENERGY PROJECT

November 2011

Meadowlark Wind I LLC
(a subsidiary of Element Power US, LLC)
421 SW Sixth Avenue, Suite 1000
Portland, OR 97204



I. INTRODUCTION

BACKGROUND

Element Power US, LLC (Element Power) is a global renewable energy company that develops, acquires, builds, and operates utility-scale wind and solar power projects. It is Element Power's goal to conduct its business in a manner that leads to successful, high-quality projects. While this includes developing and operating projects that are wildlife friendly, Element Power recognizes that any energy development, including wind and solar, can sometimes result in direct and indirect impacts to wildlife and their habitats. For wind energy, direct impacts can include mortality from wildlife striking turbine blades, overhead collector and transmission lines and related infrastructure, or electrocution from overhead lines. Indirect impacts may include loss of habitat, displacement of wildlife from their habitats, site avoidance, and behavioral modifications.

Meadowlark Wind I LLC (Project Company), a subsidiary of Element Power, has developed this project-specific Avian and Bat Protection Plan (ABPP) to reduce the risk of wildlife impacts associated with the New Frontier Wind Energy Project (Project) located in McHenry County, North Dakota. This ABPP includes a series of best practices that have or will be implemented to avoid or minimize the risk of impacting birds, bats, and their habitats. Additionally, this ABPP is intended to demonstrate a level of compliance with applicable laws, regulations, and permits related to birds, bats, and other wildlife. The Project Company plans on periodically reviewing and updating this plan as new information becomes available. At a minimum, this plan will be reviewed and, if appropriate, updated at least every five years.

This ABPP incorporates the approach and recommendations submitted to the U.S. Fish and Wildlife Service (USFWS) by the Wind Turbine Guidelines Advisory Committee on March 4, 2010 (WTGAC 2010). This advisory committee was established in 2007 under the Federal Advisory Committee Act to provide advice and recommendations to the Secretary of the Interior on developing effective measures to avoid or minimize impacts to wildlife and their habitats related to land-based wind energy projects, and as such are being utilized by the USFWS in development of the draft Land-based Wind Energy Guidelines. Along with representatives from the wind industry, state and federal agencies, non-government organizations (conservation groups), and tribal interests, Element Power's Chief Development Officer actively participated on the advisory committee as an official member (alternate) and provided comments on the draft recommendations at meetings and in writing.

APPLICABLE REGULATIONS

There are three primary federal laws pertaining to the protection of birds and bats in the United States: the Migratory Bird Treaty Act (16 USC 703-712); the Bald and Golden Eagle Protection Act (16 USC 668); and the Endangered Species Act (16 USC 1538). While some states also have state threatened and endangered species legislation, North Dakota does not.

The Migratory Bird Treaty Act (MBTA), which is administered by the USFWS, is the cornerstone of migratory bird conservation and protection in the United States. Generally speaking, the MBTA protects all birds which belong to a species listed in §10.13, or which is a mutation or a hybrid of any such species, including any part, nest, or egg of any such bird, or any product, whether manufactured, which consists or is composed in whole or part, of any such bird or any part, nest, or egg thereof (50 CFR 10.12). The MBTA prohibits and provides for possible penalties for the "take" of migratory birds. "Take," as defined under the MBTA, includes to "pursue, hunt, shoot, wound, kill, trap, capture, or collect." The MBTA has no provision for allowing for the "incidental" take of a migratory bird. While it is not possible under

MBTA to absolve individuals, companies, or agencies from liability if their activities lead to the “take” of a migratory bird, the Department of Justice has used prosecutorial discretion towards those that have made good faith efforts to avoid the take of migratory birds.

The Bald and Golden Eagle Protection Act (BGEPA) provides additional legal protections beyond the MBTA specific to bald and golden eagles. The BGEPA defines “take” to include “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” a bald or golden eagle including any part, nest, or egg thereof. The term “disturb” 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 injury available, (1) injury to an eagle, (2) 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.” In 2009, two new permit rules were created for eagles. New 50 CFR 22.26 can authorize limited take of bald and golden eagles when the take is associated with, but not the purpose of an otherwise lawful activity, and cannot practicably be avoided. New 50 CFR 22.27 can provide for the intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles, to ensure public health and safety, where nest prevents use of a human-engineered structure, and where the activity or mitigation for the activity will provide a net benefit to eagles. Except in cases of safety emergencies, only inactive nests are allowed to be taken.

Species at risk of extinction, including some birds and bats, are further protected under the federal Endangered Species Act (ESA). The ESA was passed by Congress in 1973 in recognition that many of our Nation’s native plants and animals were in danger of becoming extinct. The purpose of the ESA is to protect these endangered and threatened species and to provide a means to conserve their ecosystems. Take under ESA is defined as “... to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Harm is an act which actually kills or injures the wildlife, which includes significant habitat modification or degradation; whereas harass is defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it where it significantly disrupts normal behavioral patterns such as breeding, feeding, or sheltering. The ESA authorizes the USFWS to issue permits for “incidental take” or take that results from an otherwise legal activity. Ten species occurring in North Dakota are covered by the federal ESA as candidate, threatened, or endangered.

CORPORATE POLICY

Element Power and its subsidiaries are dedicated to being responsible stewards of the environment. It is Element Power and its subsidiaries’ corporate policy to conduct its business in an environmentally sustainable and responsible manner while providing clean, reliable, economical energy to utilities and their customers. Element Power and its subsidiaries are committed to siting, designing, constructing, and operating its project facilities in a way that minimizes adverse environmental impacts and is consistent with state and federal regulations. Further, Element Power and its subsidiaries are committed to working cooperatively with the USFWS and state wildlife agencies towards the protection of wildlife resources. Element Power and its subsidiaries’ projects that comply with this principle will minimize potential impacts on birds, bats and other wildlife and their habitats. Despite these efforts, it is recognized that wind turbines and their associated facilities may directly and indirectly affect wildlife. The Project Company has developed and will implement this ABPP to support its commitment to comply with key wildlife laws by undertaking consistent procedures and practices to minimize impacts on birds and bats and their habitats.

II. SITE AND ROUTE SUITABILITY ASSESSMENTS

In following the Wind Turbine Guidelines Advisory Committee’s recommendations, the Project Company implemented and continues to implement a “tiered approach” for assessing potential impacts to wildlife and their habitats at the New Frontier Wind Energy Project. The tiered approach is an iterative decision-making process for collecting information in increasing detail, quantifying the possible risks of proposed wind energy projects to wildlife and habitats, and evaluating those risks to make siting, construction, and operation decisions. Subsequent tiers refine and build upon issues raised and efforts undertaken in previous tiers. At each tier, a set of questions is provided to help the developer identify potential problems associated with each phase of a project, and to guide its decision process. The tiered approach is designed to assess the risks of project development by formulating questions that relate to site-specific conditions regarding potential species and habitat impacts. The tiers are outlined briefly as:

- **Tier 1** – Preliminary evaluation or screening of sites (landscape-level screening of possible project sites; generally based on readily available public information)
- **Tier 2** – Site characterization (comprehensive characterization of one or more potential project sites; generally based on consulting with the appropriate agencies/authorities and one or more reconnaissance level site visits by a wildlife biologist)
- **Tier 3** – Field studies to document site wildlife conditions and predict project impacts (site-specific assessments at the proposed project site; quantitative and scientifically rigorous studies; e.g., acoustical monitoring, point count avian surveys, raptor nest surveys, lek surveys, etc.)
- **Tier 4** – Post-construction fatality studies (to evaluate direct fatality impacts)
- **Tier 5** – Other post-construction studies (to evaluate direct and indirect effects of adverse habitat impacts, and assess how they may be addressed; not done for most projects; e.g., post-construction displacement and/or use studies, curtailment effectiveness studies, etc.)

By following this tiered approach, the Project Company is able to determine whether it has sufficient information, whether and/or how to proceed with development of the Project, or whether additional information gathered at a subsequent tier is necessary to make those decisions. Included below is a description of the questions and decision process that was applied during the Tier 1, 2, and 3 reviews for this Project. Subsequent tiers are discussed in section V.

Tier 1

Information on the general wind resource area was gathered and presented in a report prepared by HDR Engineering titled *New Frontier Wind Project Critical Issues Analysis* (HDR 2010). The New Frontier Wind Project Critical Issues Analysis (CIA) evaluated many different issues potentially related to the Project, include wildlife and non-wildlife issues as part of a desktop analysis and initial site visit. Information on wildlife presented in this report was used to answer the Tier 1 questions:

1. *Are there species of concern¹ present on the proposed site, or is habitat (including designated critical habitat) present for these species?*

Yes. There are a large number of birds species protected under the MBTA that occur, at least seasonally, in the Project area. Additionally, the report by HDR identified four federally listed or candidate species under the ESA (Dakota skipper, gray wolf, piping plover, and whooping crane) and five North Dakota Species of Conservation Priority (Richardson's ground squirrel, Canadian toad, Plains spadefoot, western hognose snake, and smooth green snake) as potentially occurring in the general area. Since this report was prepared, the Sprague's pipit has been added as a Candidate Species under the ESA.

2. *Does the landscape contain areas where development is precluded by law or areas designated as sensitive according to scientifically credible information? Examples of designated areas include, but are not limited to: "areas of scientific importance;" "areas of significant value;" federally-designated critical habitat; high-priority conservation areas for non-government organizations (NGOs); or other local, state, regional, federal, tribal, or international categorizations.*

Yes, there are two Waterfowl Production Areas (WPA's) within the Project boundary, Johnson WPA 1 and Johnson WPA 2. There are also federal grassland and/or wetland easements within the Project boundary and areas of private ownership enrolled in the state sponsored PLOTS Program (Private Lands Open To Sportsman).

3. *Are there known critical areas of wildlife congregation, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?*

None were identified based on the desktop review and initial site assessment presented in the HDR report.

4. *Are there large areas of intact habitat with the potential for fragmentation, with respect to species of habitat fragmentation concern needing large contiguous blocks of habitat?*

Yes, the western portion of the Project area was identified as largely native prairie. The eastern side was more cropland (HDR 2010).

The report concluded that there were wildlife related issues to be considered in developing the New Frontier Wind Farm, similar in nature to many other wind energy developments in North Dakota. Nevertheless, the data available from the HDR report was insufficient to fully answer all of the Tier 1 questions. As such, the Project Company proceeded to a Tier 2 and 3 review.

Tier 2 and 3

To follow-up on the Tier 1 analysis, Western EcoSystems Technologies, Inc. (WEST) was contracted to complete Tier 2 and 3 studies. An initial report summarizing the results of a site characterization study and preliminary field work completed by WEST is included in Appendix A. A report summarizing the results of all baseline field studies will be prepared after the remaining field work has been completed. A

¹ Species of concern include species which 1) is listed as an endangered, threatened or candidate species under the Endangered Species Act, is subject to the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act, or is designated by law, regulation or other formal process for protection and/or management by the relevant agency or other authority, or has been shown to be significantly adversely affected by wind energy development, and 2) is determined to be possibly affected by the project.

final report summarizing the results of all bird related studies should be available in December 2012 with a summary report of fall 2011 surveys available in December 2011. Bird and bat studies will be continuing through the end of October 2012, therefore a final bat report will not be available until December 2012. In addition to characterizing the site, these baseline studies include field work that consider the following issues during the planning, construction, and pre-commercial operation phases of the Project:

- wildlife habitat field evaluation and mapping (spring/summer 2011);
- whooping crane habitat analysis (spring 2011);
- raptor stick nest survey (spring 2011);
- sharp-tailed grouse lek survey (spring 2011);
- avian point-count survey (initiated fall 2011); and
- bat acoustical monitoring (initiated fall 2011).

Information from the studies completed during early spring 2011 was used to answer the following Tier 2 questions. Information from all field studies will be used to address Tier 3 questions and as a basis for considering the results in context of any Tier 4 or 5 studies completed for the Project.

Tier 2 Questions

1. Are there known species of concern present on the proposed site, or is habitat (including designated critical habitat) present for these species?

The USFWS lists five species (whooping crane, piping plover, Dakota skipper, gray wolf, and Sprague's pipit) under ESA which have the potential to occur in or around the Project. Species differences between Tier 1 and Tier 2 are attributed to changing determinations in species listed. Piping plover critical habitat has been designated 24 km (15 mi) southwest and 19 km (10 mi) east of the proposed project. There are 19 bird, two amphibian, and two reptiles species which the state lists as Level I species of conservation need that may use the project area. Sharp-tailed grouse, a growing species of concern by both federal and state agencies, will likely be found in and around the Project with lekking probable. All six bat species which may occur within the general vicinity of the Project have been recorded as fatalities at other wind power facilities.

2. Does the landscape contain areas where development is precluded by law or designated as sensitive according to scientifically credible information? Examples of designated areas include, but are not limited to: "areas of scientific importance;" "areas of significant value;" federally designated critical habitat; high-priority conservation areas for NGOs; or other local, state, regional, federal, tribal, or international categorizations.

The Project area does not appear to contain any designated sensitive or other areas which would preclude development beyond that identified in Tier 1 efforts.

3. Are there plant communities of concern present or likely to be present at the site(s)?

There are no federal or state listed plants listed as occurring in McHenry, McLean, or Ward Counties. The Natural Heritage Database review indicates there are no records of species of concern or sensitive ecological communities in or within one mile of the Project (response from Database review included in SCS report, Appendix A). However, both grassland and wetland habitats are present within and around the Project. Both of these broad habitat categories are of concern on a state, regional and/or national scale.

4. *Are there known critical areas of congregation of species of concern, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?*

The Project has the potential to contain sharp-tailed grouse leks (confirmed in 2011 as part of Tier 3 surveys) and wetlands are likely used as stopover habitat by migrating waterfowl; however, the Project area does not appear to contain any habitats or features which would concentrate plants or animals markedly different than the surrounding region.

5. *Using best available scientific information, has the relevant federal, state, tribal, and/or local agency independently demonstrated the potential presence of a population of a species of habitat fragmentation concern? If not, the developer need not assess impacts of the proposed project on habitat fragmentation.*

No information was found indicating that a government agency has independently demonstrated there is a potential presence of a population of species of habitat fragmentation concern is located in the Project. Based on the review of potential species in this report, it is possible that some species requiring large blocks of habitat occur in the Project (e.g., Baird's sparrow, Sprague's pipit).

6. *What species of birds and bats, especially those known to be at risk by wind energy facilities are likely to use the proposed site based on an assessment of site attributes?*

Any bird or bat using a wind energy facility would be at risk of mortality. There is also risk of displacement from construction and operation of a wind energy facility. Certain bird groups such as raptors and waterfowl may be at greater risk of collisions due to their relatively higher flight heights; however, behavioral characteristic of different species can greatly affect their risk of collision.

To more fully address this question, acoustic bat surveys are needed. It is unclear if bat mortality, in general, is a significant concern in North Dakota as there are limited public data sets currently available. Based on information from grassland/agricultural landscapes, bat mortalities are general low but can be elevated. For example, elevated bat mortalities were found in agricultural lands in Alberta, Canada (Baerwald 2006), where it has been hypothesized that bats may be migrating along the eastern side of the Rocky Mountains. Additionally, higher bat mortalities have been documented in areas of the Midwest where there are more woodlands and water, such as the Blue Sky Green Field project in Wisconsin (Gruver 2009). Neither of these situations are found near the Project area.

To address the issue in regards to birds, the breeding bird surveys would identify the presence of grassland nesting species (e.g. Sprague's pipit). Avian point counts would be used to investigate use of the area by raptors and other large birds. The USFWS has indicated that there is a known bald eagle nest north of project area approximately 10-12 miles. Avian point counts could document if these birds utilize the project area for foraging. Raptor nest surveys and sharp-tailed grouse lek surveys conducted in spring 2011 documented red-tailed hawk nests and sharp-tailed grouse. Additional, based on range information and information from the post-construction study conducted at the PrairieWinds ND1 facility near Minot (Derby et al 2011), numerous waterfowl species and grassland nesting bird species are likely to be found at the site during some portion of the year.

Tier 2 Decision Point

The answer to questions 1, 4, and 6 suggests there is a lack of information to allow for a conclusive assessment of wildlife risk. As such, the Project Company proceeded with additional Tier 3 studies.

Tier 3 Questions

Based on the answers to Tier 2 questions, the Project Company decided to implement Tier 3 studies. Initial studies were conducted in spring 2011 to insure timing restrictions were adhered to for season specific surveys efforts, including sharp-tailed grouse lek surveys and raptor nest surveys. Information from these efforts are available to answer Tier 3 questions. Avian use surveys and acoustic bat surveys were initiated in fall 2011 and were used to begin answering the Tier 3 questions included below. As additional studies are completed, more refined answers to the Tier 3 questions can be completed.

1. Do field studies indicate that species of concern are present on or likely to use the proposed site?

Yes. Many bird species protected under the MBTA occur in the Project area, as documented during the Tier 1 and 2 site visit, literature reviews, and initial Tier 3 studies. Through Tier 3 studies, the presence sharp-tailed grouse leks and raptor nests were confirmed in the Project area and immediate vicinity of the Project (Appendix B contains the 2011 lek survey and raptor nest survey report). More discussion regarding species of concern is found in Tier 3, Question 3 and 4, below.

2. Do field studies indicate the potential for significant adverse impacts on the affected population of the species of habitat fragmentation concern?

Occurrence of species of habitat fragmentation concern has not been confirmed to date within the Project.

3. What is the distribution, relative abundance, behavior, and site use of species of concern identified in Tiers 1 or 2, and to what extent do these factors expose these species to risk from the proposed project?

Distribution, relative abundance, behavior, and site use of species of concern observed during monitoring in 2011 will be described in detail within the Tier 3 reports. Although potential risk cannot be accurately assessed based on the available data, both direct and indirect effects to some individuals is possible. Indirect effects to some non-raptor species could occur, such as displacement of some grassland nesting songbirds; however, the extent of these effects is difficult to completely quantify due to a lack of conclusive studies of bird displacement distances from other wind projects. Micrositing of turbines away from grasslands and minimization of direct impacts (e.g., road placement) for turbines within native grasslands will lessen any indirect impacts to grassland nesting species. Even if there are some indirect effects associated with the Project, it is unlikely that local populations of non-raptors would be significantly impacted by Project development given the relatively small size of the Project, currently fragmented landscape, and the abundance of similar habitats in the surrounding region. There is the potential for cumulative impacts if there are other activities that result in the continued degradation or loss of grasslands in the region. However, the Project Company is not aware of other significant development activities in the area that would contribute to the cumulative loss or degradation of non-raptor habitats beyond those that have already occurred through native prairie conversion to croplands. Direct impacts to non-raptor species are likely to be consistent with other projects in the Midwest where fatalities have ranged from 0.48-8.25 birds/MW/year (see table below). The fatality rate measured at the nearby PrairieWinds ND1 facility south of Minot, North Dakota, which is in very similar habitat as the New Frontier Project, was low for both birds and bats (see table below).

Raptor (defined as hawks, eagles, falcons, osprey, kites, owls, and vultures) distribution, relative abundance, and flight behavior all vary by species. For example, due to their behavior of foraging close to the ground, northern harriers are rarely recorded as fatalities in publicly available documents for operational wind energy facilities, despite the fact they are commonly observed during point counts at these facilities. Based on occurrence and observed behavior at projects around the country and information on avian fatalities at other operational wind facilities, some raptor species (e.g., red-tailed

hawk) likely have higher levels of risk due to collision with Project turbines compared to other species. Tier 3 studies at the Project will investigate raptor use rates within the Project area and compare these use rates to other studies to estimate potential raptor fatality rates. A raptor nest survey conducted in spring 2011 located three active red-tailed hawk nests and one potentially active red-tailed hawk nest within the Project boundary or a two mile buffer around the Project boundary. Based on preliminary results of fall 2011 surveys and the lower raptor nesting numbers, raptor use rates do not appear to be high within the New Frontier Project area. Overall, direct impacts to raptors have been low in the Midwest. The raptor fatality rate at the PrairieWinds ND1 facility in 2010 was estimated to be 0.05/MW, which is low and consistent with other Midwest projects (see table below). It is anticipated that raptor impacts at the Project would be low and similar to other Midwest projects.

All publically-available bird, raptor, and bat fatality rates at wind energy facilities in the Midwest					
Project	Bird Fatality/MW / Study Period	Raptor Fatality/MW / Study Period	Bat Fatality/MW / Study Period	Habitat	Reference
Buffalo Ridge, MN (Phase II; 1996)	2.19	n/a	n/a	agriculture	Johnson et al. 2000
Buffalo Ridge, MN (Phase II; 2001)	n/a	n/a	4.35	agriculture	Johnson et al. 2004
Buffalo Ridge, MN (Phase III; 2001)	n/a	n/a	3.71	agriculture	Johnson et al. 2004
Buffalo Ridge I, SD (2010)	5.06	0.2	0.16	agriculture/ grassland	Derby et al 2010a
Cedar Ridge, WI (2009)	6.55	n/a	30.61	agriculture	BHE Environmental 2010
Blue Sky Green Field, WI	7.17	0	24.57	agriculture	Gruver et al. 2009
Crescent Ridge, IL	0.87	n/a	3.27	agriculture	Kerlinger et al. 2007
Crystal Lake II, IA	n/a	n/a	7.42	agriculture	Derby et al. 2010b
Elm Creek, MN	1.55	0	1.49	agriculture	Derby et al 2010c
Grand Ridge, IL	0.48	0	2.1	agriculture	Derby et al 2010d
Kewaunee County, WI	1.95	n/a	6.45	agriculture	Howe et al. 2002
Ripley, Ont (2008)	3.09	n/a	4.67	agriculture	Jacques Whitford. 2009.
Moraine II, MN	5.59	0.37	2.42	agriculture/ grassland	Derby et al 2010e
NPPD Ainsworth, NE	1.63	0.06	1.16	agriculture/ grassland	Derby et al. 2007
Top of Iowa, IA 2004	0.84	n/a	10.27	agriculture	Jain 2005
Wessington Springs, SD	8.25	n/a	1.48	grassland	Derby et al 2010f
Winnebago, IA	3.88	0.27	4.54	agriculture/ grassland	Derby et al 2010g
PrairieWinds ND1, ND	1.48	0.05	2.13	agriculture/ grassland	Derby et al. 2011

4. *What are the potential risks of adverse impacts of the proposed project to individuals and local populations of species of concern and their habitats? (In the case of rare or endangered species, what are the possible adverse impacts to entire species and their habitats?)*

As described above, it is unlikely that raptor and most non-raptors or their habitats will be significantly adversely affected by direct or indirect impacts associated with the Project. Based on studies of 21 western wind energy facilities, fatality rates of all bird species combined have ranged from 0.08 to 4.29/MW/year, and averaged 1.78/MW/year (Johnson and Stephens 2011) and in the Midwest the range for all birds has been 0.48-8.25/MW/year and averaged 3.37/MW/year. The current turbine-related fatality levels are unlikely to affect population trends of most non-raptor species of birds in North America (National Academy of Sciences 2007, Kuvlesky et al. 2007). Final reports from ongoing avian use surveys will help further inform this discussion. Besides species and groups discussed above, other species of concern identified during Tier 1 and Tier 2 review and input from the agencies that are or could be in the Project area include sharp-tailed grouse, Sprague's pipit, piping plover, and whooping crane. The Dakota skipper, an insect, could also be in the Project area. The following discusses each of these species.

Sharp-tailed grouse – Based on Tier 1 and 2 analyses, it was suspected that sharp-tailed grouse could occur in the Project area and leks could also occur in the Project area but specific data on the Project site was not available. Lek surveys were conducted in spring 2011 to determine the presence or absence of grouse leks (Appendix B). Further, sightings of individual grouse are being recorded during avian use surveys and incidentally during other surveys.

Aerial sharp-tailed grouse lek surveys were conducted on April 11, April 26, and May 12, 2011 at the Project. A total of 77 individual sharp-tailed grouse were observed along approximately 185.5 kilometers (115.3 miles) of transects flown. Two potential leks were documented within 0.8 kilometer (0.5 mile) of the Project's western boundary while two potential leks were recorded within the Project boundary. Leks are listed as "potential" as birds were only observed dancing in the location during one of three surveys or birds were observed flying low in the area on one or more survey, indicating that there could be a lek in that area. Based on the Project's size and location, one or two leks would be expected to be found.

Several state and federal agencies have expressed concern regarding impacts of wind development on prairie grouse. While most concern is centered on lesser prairie chickens and sage grouse, concern has also been noted for the more common greater prairie chickens and sharp-tailed grouse. Sharp-tailed grouse are a common, hunted, species in North Dakota. In regards to impacts of grouse, particularly leks, preliminary data are becoming available from ongoing telemetry research projects being conducted on greater prairie chickens in Kansas and Minnesota and greater sage-grouse in Wyoming that might inform the analysis for this Project.

The sage-grouse study is being conducted at the site of two proposed and one existing wind energy facility in Carbon County, Wyoming (Johnson et al. 2009). The existing PacifiCorp Seven Mile Hill facility was completed in 2008 and consists of 79 GE 1.5-MW turbines. The study consists of monitoring leks near each facility as well as monitoring habitat use and demographics of 75 radio-collared female sage grouse. Three leks occur within one mile of the existing Seven Mile Hill facility. The three leks closest to turbines ranged from 0.38 to 0.85 miles from the nearest turbine, and averaged 0.69 miles. All three leks remained active during the first breeding season after turbines were erected. The total number of males counted on all three leks was 130 in 2008, prior to construction of the facility. The maximum number dropped to 103 in 2009, the first breeding season after construction. However, there was also a slight decline of sage grouse on leks in the region between 2008 and 2009, so the decrease may or may not be attributable to the presence of wind turbines. Twenty-five female sage grouse were trapped off of these three leks and radio-collared in the spring of 2009. Nine of these birds (36%) initiated nests within one

mile of a turbine, the closest of which were located 130, 278, 388 and 486 m from the nearest turbine. Only one of the nine nests (11%) initiated within 1 mile of turbines was successful, and none of the four nests closest to turbines was successful. Overall nest success for the entire marked population was 40%. Without any pre-construction data, however, it is not known how successful nests within one mile of turbines were prior to construction. Other intrinsic factors such as poorer habitat or higher predator levels in this area may also have played a factor in the reduced nest success. Radio locations of marked hens from the time of capture in early April 2009 to September 30, 2009 do not indicate significant displacement of these birds from the existing wind energy facility, as numerous locations have been recorded within and adjacent to the turbine development area.

In addition to data collected on leks and radio-collared birds, anecdotal observations of sage-grouse use near turbines have been made. While night-lighting in the area to capture hens in early April 2009, three males were observed night-roosting within 100 m of turbines, the closest of which was approximately 60 m from a turbine. In addition, while conducting fatality monitoring of the Seven Mile Hill turbines, biologists routinely observed adult male sage grouse within the turbine development area.

Incidental observations have also documented greater sage-grouse use of other wind energy facilities. Groups of 5 and 8 individuals were documented on separate occasions during the post-construction fatality study at the Elkhorn facility in Oregon, during July and November, respectively (Jeffrey et al. 2009). Greater sage grouse have been also been infrequently observed at the Wild Horse project in Washington, including one documented nesting attempt within 100 m of a project turbine (Erickson et al. 2008). At the Foote Creek Rim wind energy facility in Wyoming, one sage grouse and a brood were documented within the turbine development area, and one sage grouse collision mortality was documented (Young et al. 2001).

Kansas State University has been conducting a study of greater prairie-chicken response to the 67-turbine Horizon Meridian Way wind energy facility in Kansas. The study includes conducting lek counts as well as monitoring several radio-collared hens. Preliminary results indicate that lek activity may have decreased within the turbine development area following construction, although most leks located prior to construction are still present. One lek, although reduced from 12 to 4 birds following construction, was still active, with the birds booming on the turbine pad itself, or within 10 m of the turbine. One of these birds was even observed perched on the turbine steps (Lance McNew, KSU, pers. commun.). Based on a rigorous statistical analysis of 70 nesting locations within 25 km of the wind energy facility, it was determined that nesting female greater prairie chickens were not displaced by turbines. In fact, results of the statistical analysis indicated that females were nesting closer than expected to turbines. Greater prairie chicken nests were located as close as 74 m from a turbine, 82 m from a transmission line, and 22 m from a road (McNew et al. 2009).

Greater prairie chicken response to a three-turbine wind energy facility in Minnesota has also been monitored through conducting lek counts and following radio marked female greater prairie chickens. Researchers documented six active greater prairie-chicken leks within two miles of the turbines, with the nearest lek located within 0.6 mile of the nearest turbine (USFWS 2004). Subsequent research at this facility based on 40 nest locations also found that nesting hens were not avoiding turbines. As was the case with the Kansas study, hens were actually found to be nesting closer to turbines than expected. Based on extensive research of the prairie chicken population in the vicinity of this wind energy facility from 1997 to 2009, it was concluded that the distribution and location of leks and especially nests was determined by the presence of adequate habitat in the form of residual grass cover, not the presence of vertical structures such as trees, woodlots, power lines and wind turbines (Toepfer and Vodehnal 2009).

In addition to these ongoing telemetry studies, we are aware of one other publicly-available study that examined response of prairie grouse to wind energy development. The Nebraska Game and Parks

Commission (NGPC) monitored both greater prairie-chicken and sharp-tailed grouse leks following construction of the 36-turbine Ainsworth wind-energy facility in Brown County, Nebraska (NGPC 2009). Surveys for leks were conducted four years post-construction (2006-2009) within a 1- to 2-mile radius of the facility, an area that covered approximately 25 mi². The number of leks of both species combined in the study area was 13, 12, 9 and 12 in the first four years post-construction. The number of greater prairie chickens counted on leks increased from 70 to 95 during the 4-year period, whereas the number of sharp-tailed grouse decreased from 66 to 56. The total number of both species combined increased from 136 to 151 individuals. No pre-construction data were available on prairie grouse leks near the site; however, densities of lekking grouse on the study area at the Ainsworth facility were within the range of expected grouse densities in similar habitats in Brown County and the adjacent Rock County (NGPC 2009). The leks ranged from approximately 0.42 to 1.65 miles from the nearest turbine, with an average distance of 0.88 miles.

Anecdotal evidence regarding sharp-tailed grouse lek locations in relation to wind turbines in North and South Dakota indicate that leks greater than 0.5-miles from the nearest turbine continue to be active after construction of the wind energy facility. There is also evidence that in the first year or two after construction that sharp-tailed grouse will continue to lek within much closer distances, but it is unknown if this will continue through later generations (Jill Shaffer, USGS, pers. comm.).

Although the data collected during these studies indicate that prairie grouse may continue to use habitats near wind-energy facilities, research conducted on greater sage-grouse response to oil and gas development has found population declines due to oil and gas development may not occur until four or five years post-construction (Holloran 2005). Therefore, data spanning two or more grouse generations will likely be required to adequately assess impacts of wind-energy development on prairie grouse. However, because prairie chickens and sharp-tailed grouse are not as long-lived as sage-grouse, many, if not most, of those birds using leks near the Ainsworth, Nebraska facility in 2009 were likely not alive when the facility was constructed in 2005. Because these second generation birds continue to use habitats near the wind energy facility, it can be concluded that prairie grouse population declines are likely not solely associated with this facility. Impacts on sharp-tailed grouse at the Project can likely be avoided or minimized by maximizing the distance turbines are placed from lek locations. Given the small project foot-print, few leks within the Project, efforts to minimize impacts to lek areas, and abundance of habitat outside of the Project, significant impacts to sharp-tailed grouse lek populations are not expected.

Sprague's Pipit - The federal candidate Sprague's pipit is a grassland dependent species which prefers medium height native prairie with no shrubs or trees in relative large blocks (Federal Register 2010). The USFWS indicated in their June 30, 2011 letter to Element Power that Sprague's pipits prefer areas of grassland greater than 72 acres in size. Based on the federal register listing for this species, it was noted that Sprague's pipits prefer large patches of native grassland with a minimum size to be approximately 145 ha (358.3 ac) and a range of 69 to 314 ha (170 to 776 ac) (Davis 2004, p. 1134 as cited in Federal Register). It was noted that the species was not observed in areas smaller than 29 ha (71.6 acres) (Federal Register 2010). Grassland habitat is present within the Project area, with some larger blocks of grasslands. To date, no publically available studies are known that investigate the impacts on Sprague's pipits and wind energy development, but it is likely that impacts would be similar to other disturbances that fragment larger blocks of grassland. No Sprague's pipits have been documented as a fatality at a wind farm.

Potential impacts to Sprague's pipit can be avoided or minimized through placing turbines and other infrastructure within previously and/or currently tilled agricultural landscapes. If turbines are to be placed in grassland areas, particularly native grasslands, impacts can be minimized by designing road and connector lines such that they do not significantly fragment grasslands, particularly 170 acres, the lower end of the minimum size range.

Dakota Skipper – Dakota skippers, also a federal candidate species, are found mainly in two types of habitats; a flat, mesic bluestem prairie and a drier, upland prairie along ridges and hill sides (USFWS 2002b). There is grassland habitat within the Project area which may be suitable to Dakota skippers.

Like the Sprague's pipit, impacts to the species can be avoided or minimized by minimizing the impact of the Project to native prairie parcels. If grasslands can't be avoided for this project, Dakota skipper surveys may be needed to determine presences and population size within potentially impacted areas.

Piping Plover – In North Dakota, the threatened piping plover utilizes sand and gravelly shorelines of rivers and lakes, void of vegetation. Their preferred habitat not associated with the Missouri River system is alkali wetlands. Critical habitat has been designated for piping plovers approximately 24 km (15 mi) to the southwest and approximately 19 km (10 mi) to the east of the Project area (USFWS 2002a). No obvious alkali wetlands were visible on recent (2010) aerial imagery or during site visits.

Based on the lack of habitat in the Project and distance to defined critical habitat, no impacts to nesting or foraging plovers are expected. Since it is currently unknown how the species migrates specifically (i.e., straight north-south flight, follow major rivers), it is not possible to predict potential impacts on migrating individuals. However, no piping plovers have been found as fatalities at operating wind facilities and few wind farm related fatalities in general are comprised of shorebirds, likely indicating low susceptibility of the group in general to turbine strikes. Impacts to piping plovers are not anticipated.

Whooping Crane - The Project lies within the defined migration corridor for the endangered whooping crane. Both foraging (cropland and grasslands) and roosting (wetlands) habitat is present within the Project area. A desktop review and analysis of potential whooping crane habitat resources in the Project area and comparison of these resources to areas outside of the project boundary to the north, south, east, and west was completed (Appendix C).

The desktop review was completed using ArcGIS 10, land cover information from North Dakota Gap Analysis (2004), wetland data from the National Wetland Inventory (NWI; 2010), and the Project boundary. The potential whooping crane habitat analysis included a comparison of land cover types (with wetlands broken down by number and regime of basins) within the Project boundary and four alternate areas of the same dimensions with centroids located 16.1 kilometers (km; 10 miles [mi]) in the four cardinal directions from the Project. The Project and all four review areas are located within the defined (95% of confirmed sightings) whooping crane migration corridor (CWCTP 2009).

For the analysis it was assumed that all wetlands are potential whooping crane roosting areas under one water regime or another (e.g., drought, normal, or flood). All areas (Project and four reference areas) were all comprised of between 5.8 and 17.1% wetland habitat with the Project area having 12.1%, so intermediate among all areas reviewed. All areas also had significant portions of cropland, varying between 17.8 and 63.0% cropland, with the Project area have 42.2% cropland. Again, the Project area was intermediate between the four reference areas.

No whooping cranes have been documented within the Project. The closest confirmed sightings (through fall 1010) are approximately 13 km (8 mi) to the west/southwest and northeast (Figure 1 of Appendix C). Each of the four review areas had at least one confirmed sighting within 8 km (5 mi). Scattered, confirmed whooping crane observations have been made around the Project area, with more to the west, nearer the migration corridor centerline. It should be noted that reported whooping crane observations are mostly random events by the public or focused around refuges and other areas of management interest and not the result of a systematic search. Therefore, just because an area has no documented whooping crane sightings, does not mean that birds do not use the area.

While the potential exists for whooping cranes to fly through the area during migration, whooping cranes generally migrate at 1,000-6,000 ft altitudes, well above turbine height (Stehn 2007), and thus for the most part are unlikely to collide with turbines. However, as whooping cranes ascend and descend during takeoff and landing, or migrate during inclement weather, they may fly at lower altitudes and may fly at altitudes corresponding to the rotor-swept areas. No whooping cranes have been reported as being killed or injured by wind turbines (NWCC 2004), but one sandhill crane (*Grus canadensis*) was reported at the Altamont wind energy facility in California (Smallwood and Karas 2009), it is unclear if this was a result of turbine collision or collision with a powerline, and two sandhill cranes were reported as fatalities in Texas (Stehn 2011). None of these mortalities were during migratory periods. It appears that cranes are not overly susceptible to collision with turbines at any time and especially during migration. The USFWS reached similar conclusions in the Biological Opinions for the Wessington Springs Wind Farm (USFWS 2008a) and the PrairieWinds SD1 Wind Farm (USFWS 2010) where proactive measures were initiated, and in concurrence letters for PrairieWinds ND1 near Minot and other sites in North Dakota where the lead federal agency concluded that the projects “may affect, but not likely to adversely affect” whooping cranes.

Besides direct mortality, concern has also been raised regarding potential displacement impacts that wind facilities may have on whooping cranes. For example, if whooping cranes avoid wind facilities, the likelihood of impacts with turbines is further decreased but the availability of habitat in the project area may be diminished, causing cranes to have to fly further to find suitable habitat to roost and forage. Sandhill crane use of the Project area is being collected in fall 2011 during avian use surveys.

In Stehn (2008), the point was made that suitable wetlands for overnight roost sites are available throughout the migration corridor in the Dakotas and Nebraska (Stahlecker 1997a, 1997b in Stehn 2008) and there are abundant croplands for foraging. However, in analyzing the potential for significant impacts from wind development on whooping crane stopover habitat, Stehn also suggests assessing whether there is “lots of suitable stopover habitat in the general area ... or is the proposed wind farm site the only suitable whooping crane stopover habitat for miles around”. This issue was investigated by comparing the potential whooping crane stopover habitat (using wetlands as this indicator) in the project area compared to surrounding areas. To complete this analysis, the exact project area was moved 16 km (10 mi) in each of the four cardinal directions. GIS was used to calculate the amount of various habitats and in the case of wetlands, number of individual basins and their regime, in each of the areas compared to the proposed Project (Appendix C). This analysis shows that habitat for migrating whooping cranes exist in and around the Project. Both roosting (i.e. wetlands) and foraging (i.e. croplands) habitats are plentiful in the Project and alternate areas. Whether whooping cranes would prefer one area over another could not be answered with this analysis but to answer the question posed by Stehn (2008), the Project does not contain “the only suitable whooping crane stopover habitat for miles around”.

The Project is unlikely to have any direct impact on whooping cranes – particularly if aboveground transmission lines are marked with bird flight diverters (as described in Section III). While it is uncertain if there would be indirect impacts, any indirect impact to the species will be addressed by implementation of the conservation measures described in Section III.

5. If significant adverse impacts are predicted to species of concern, can these impacts be mitigated?

Significant impacts to species of concern and their populations are not anticipated. Although potential adverse impacts to some species have been identified, it remains unclear whether these impacts would be significant. The Project Company believes there are a number of options available that could be used to successfully avoid, minimize or offset any potential impacts. These include avoidance, minimization, and the conservation measures described in this ABPP.

6. Are there studies that should be initiated at this stage that would be continued in either Tier 4 or Tier 5?

Currently, there are few available studies of bird or bat mortality at operating wind farms in North Dakota. As such, a rigorous post-construction mortality study is planned for the first year of operation of this Project (see section V). Follow-up surveys of any sharp-tailed grouse leks located within a 1 mile buffer around turbines will be completed during the first and third year of Project operations to document their presence or absence.

Tier 3 Decision Point

While not significant, development of the Project would result in some risk of adverse impacts to species of concern, and some direct impacts to other avian and bat species. However, the Project Company believes there are a number of options available that could be used to successfully avoid, minimize, and compensate for any adverse impacts and to avoid and minimize direct take of species of concern. As such, a decision to develop the site will be made conditional on an adaptive management approach in which appropriate mitigation measures will be implemented in consultation with agency personnel based on the results of post-construction studies (see section V).

III. PROJECT DESIGN STANDARDS, CONSTRUCTION PRACTICES, AND IMPACT-REDUCING CONSERVATION MEASURES

Based on the preliminary results of the Tier 1 through 3 studies, the Project Company developed a Project layout that avoids and minimizes potential impacts on wildlife and their habitats to the extent practicable. Project siting efforts for the Project have or will include:

- **avoiding fragmenting large contiguous blocks of native grasslands** – While the Project is located largely within the Missouri Coteau Ecoregion, an area historically comprised of native grasslands, the overall Project area is currently a mix of grasslands and tilled agricultural lands. To further minimize impacts to grasslands and avoid impacting grassland easements, the Project siting has moved away from the northwestern portion of the Project area. This should also lessen any fragmentation or other indirect impacts to grassland dependent species like the Sprague’s pipit or Dakota skipper.
- **minimizing construction footprint** – Construction footprints and staging areas will be the smallest possible to safely and efficiently complete construction. As noted above, construction work areas will be sited to avoid and/or minimize impacts to sensitive wildlife habitats whenever practicable. Construction traffic (both foot and equipment/vehicle) will be limited to the construction work areas. Existing roads and other disturbed areas will be used as much as possible.
- **minimizing clearing of trees and shrubs** – Project facilities will be sited to minimize the clearing of trees and shrubs. Trees or shrubs within the final construction work area will be inventoried and replaced (on a 2 to 1 basis) as required by the North Dakota Public Service Commission.

- **minimizing wetland disturbances** – Project facilities will be sited to avoid and minimize impacts to wetlands – both wetlands that fall under the jurisdiction of the U.S. Army Corps of Engineers and wetlands that are isolated and considered non-jurisdictional.

After project siting and routing issues are addressed, attention will be focused on reducing risk of adverse impacts to wildlife from proposed turbines and associated infrastructure through carefully selected design and construction standards. The following best practices will be used to reduce potential wildlife impacts. Use of these practices should ensure that the potential adverse impacts to most wildlife and habitat at the Project site will be reduced.

WIND PROJECT DESIGN STANDARDS

- **Permanent Meteorological Tower** – Because guyed meteorological towers have been demonstrated to create a risk to wildlife resources (Johnson et al. 2000), the permanent meteorological tower constructed as part of the Project will be un-guyed to minimize impacts to birds and bats.
- **Wind Turbine Lighting** – Large numbers of songbirds have collided with lighted communication towers and buildings when foggy conditions and spring or fall migrations coincide. Birds appear to become confused by the lights during foggy or low ceiling conditions, flying circles around lighted structures until they become exhausted or collide with the structure (Erickson et al. 2001). Because lighting has been suspected as a contributing cause in collisions of birds with tall structures, the minimal level of lighting acceptable to the Federal Aviation Administration will be used on wind turbines. Steady burning lights will be avoided. Wind turbine lighting will employ only red or dual red and white strobe, strobe-like, or flashing lights.
- **O&M and Substation Lighting** – Lighting at both operation and maintenance buildings and project substations will be kept to a minimum. This will include minimizing the use of high intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights. Lights will also be hooded downward and directed to minimize horizontal and skyward illumination. Whenever possible, lights with motion or heat sensors and switches will be used to keep lights off when not required. These minimal lighting standards will help to reduce impacts on nocturnal species that may be attracted to lights (e.g., to forage on insects) or may avoid lit areas, therefore being displaced from otherwise suitable habitat.
- **Tubular Turbine Towers** – As is becoming standard practice for utility scale wind developments, tubular towers (as opposed to lattice towers) will be used to reduce the potential for birds perching or nesting near the blades of wind turbine generators.
- **Access Roads** – Access roads will be designed to an appropriate standard and be no wider than necessary to accommodate the intended use. Roads will be designed to maintain appropriate drainage control through the use of drainage dips, insloping, ditch turnouts, ditches, or culverts (drainage crossings and culverts will be designed for a 25-year or greater storm frequency). In some cases, low-water crossings may be necessary; however, in no case will a drainage be filled so that water will be impounded. This should help minimize the potential creation of a wildlife attractant. Access roads will be designed as much as possible to use existing roadways and trails to avoid additional impacts and fragmentation of habitats.

COLLECTOR AND TRANSMISSION LINE DESIGN STANDARDS

- **Belowground Collector Lines** – To reduce potential avian collisions, low voltage (34.5 kV) power lines from the wind turbines to the Project substation will be placed underground using a

trenching or directional boring technique. Boring will involve minimal surface disturbances and will be used at some road and wetland locations. Trenching associated with placing the collector lines belowground will abide by the following guidelines:

- trenching and back-filling crews will be kept as close together as practicable to minimize the length of open trenches at any given time; and
- when trenches cannot be back-filled immediately, escape ramps will be constructed at least every 90 meters. Escape ramps will be short lateral trenches or wooden planks sloping to the surface. The slope will be less than 45 degrees (1:1). Trenches that have been left open overnight will be inspected and animals removed prior to backfilling.
- Overhead Transmission Lines – All overhead lines will be designed per the Avian Power Line Interaction Committee's (APLIC) current standards in *Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: the State of the Art in 1994*. Designs include standards such as the following:
 - minimum separation of 150 cm (60 inches) between energized conductors or between energized conductors/hardware and grounded conductors/hardware;
 - where such separation is not feasible, insulation or covers (e.g., covered jumper wires) will be used to prevent electrocution (e.g., see <http://www.cantega.com/>); and
 - bird flight diverters will be placed along all new segments of overhead transmission line to reduce potential risk to whooping cranes and other avian species (e.g., there have been nine documented causalities to whooping cranes due to strikes with overhead transmission lines within the Aransas-Wood Buffalo population (USFWS 2009)) – diverters (e.g., spiral Swan Flight Diverters) will be spaced approximately 35-50 feet apart on the top shield wire to increase the visibility the entire overhead transmission line.

Both documents are available from APLIC at <http://www.aplic.org/>

GENERAL CONSTRUCTION PRACTICES

- Storm Water Pollution Prevention Plan – A Stormwater Pollution Prevention Plan will be prepared prior to construction. When implemented, this plan will protect topsoil and adjacent wetland and wildlife habitats through the minimization of soil erosion. Practices may include containing excavated material, protecting exposed soil, stabilizing restored material, and revegetating disturbed areas with appropriate vegetation.
- Re-Seeding – Whenever possible and with agreement from the landowner, re-seeding will be with native species. A seed mix will be developed in consultation with applicable local authorities such as the USFWS, the North Dakota Game and Fish Department (NDGFD), and the Natural Resource Conservation Service (NRCS). Whenever practicable, seeds will be obtained from local seed sources.
- Restoration Standards – At a minimum and to the extent commercially reasonable, areas disturbed during construction will be restored to a condition substantially similar to the condition that existed prior to construction. When feasible, restoration will strive to establish native grasses and forbs.
- Noxious Weed Control – For restoration of construction areas, a noxious weed control plan will be developed. This plan will include a framework for the inspection and control of non-native species and invasive weeds in the vicinity of the turbines, access roads, and associated facilities after construction is complete. Additionally, the plan will call for the inspection and cleaning of

vehicles and equipment entering the construction site to avoid the introduction of new weeds to the Project area.

- Driving Speeds – Reasonable driving speed limits will be established (i.e., 25 miles per hour) for construction staff within the Project site to minimize potential for road killed wildlife or livestock that could attract foraging raptors.
- Carcass Removal – Livestock and other carcasses found within the construction site will be promptly removed to minimize the potential to attract foraging raptors.
- Good Housekeeping Practices – Garbage or debris will be removed promptly to avoid creating potential attractions for birds and bats. Any garbage material temporarily stored on site that has the potential to attract wildlife (e.g., food waste) will be kept in sealed/wildlife-proof containers.
- Pet/Firearms Restrictions – Construction staff or contractors will confine pets to buildings, vehicles, or leashes at all times when on a project site. Construction staff or project contractors will not discharge firearms on the Project site.
- Fire Management – In order to reduce the potential for wildfire, construction staff will be trained in fire management/response. Smoking will be restricted to vehicles or designated graveled or paved areas. Appropriate disposal of cigarette butts will be strictly enforced. Off-road travel and parking will be restricted.

CONSERVATION MEASURES

As described in Section II, whooping cranes are not likely to be adversely impacted by the Project. However, this species could eventually be indirectly impacted from the cumulative effect of lost habitat as wind power and other developments projects continue to be built within the whooping crane migratory corridor. As such, the Project Company is committed to providing funding to a conservation organization or easement effort to protect important and high quality habitats used by whooping cranes in North Dakota, or other conservation effort best suited to benefit whooping cranes in order to offset any potential adverse impact associated with the Project. The Project Company anticipates providing \$411,860.84 towards this effort prior to beginning commercial operation. Currently, discussions have been initiated with Ducks Unlimited, The Nature Conservancy, and the North Dakota Land Trust. In addition to the whooping crane, the Project Company believes that various sensitive wildlife species that occur in the region (e.g., Sprague's pipit and Dakota skipper) also have the potential to benefit from this effort if the funds are spent in North Dakota. Included below is a description of how the Project Company determined the amount of its whooping crane conservation contribution. The final conservation contribution will be calculated following the methodologies described below once a final turbine layout has been confirmed.

The Project Company used the potential presence of suitable whooping crane habitat within the Project area as an index of the size of the conservation contribution – an approach that has been used by several previous wind developments in North and South Dakota. Specifically, wetland acreages that may provide roosting habitat, even if marginally, for the whooping crane were quantified as a measure to scale compensatory acreages, not as the basis to protect/restore a like amount of wetland acreage. Wetlands were “valued” depending on their relationship to existing potential disturbances such as paved or maintained roads (not trails or two-tracks) or houses. Dollar figures were then calculated based on recent land sales of crop/pastureland in McHenry County.

Based on the an analysis of National Wetland Inventory (NWI) information and other data layers with wetland information, there are 948.3 acres of potential whooping crane roosting habitat, in the form of wetlands and ponds, within ½ mile of current turbine locations. For the purpose of calculating appropriate conservation measures only, it was assumed that all wetlands could provide whooping crane

roosting habitat, even though it is recognized that all wetlands identified within the Project area would not be preferred or suitable habitat on any given year as some would be dry and others too deep given yearly water conditions. According to the USFWS, whooping cranes “prefer to stop in isolated areas away from human disturbance” (May 2005). As such, it is anticipated that wetlands located within the 0.5 mile of areas of human disturbance are less likely to be used by whooping cranes. Therefore, for wetlands that have been previously disturbed (e.g., near a county road), values were adjusted for compensation determination purposes since previously disturbed wetlands may not provide equally suitable habitat as wetlands with no disturbances. For each additional previous disturbance, an incremental decrease of 33% of the land value per acre was selected. Wetlands were considered to be previously disturbed if within 0.5 mile of paved highways, county roads, township roads, and farmsteads and residences.

All wetlands that were not within the applicable proximity to roads, farmsteads, or residences were considered as having no previous disturbances. Generally, 0.5 mile was used because the USFWS suggested that wetlands within 0.5 mile of facilities would likely be avoided by whooping cranes, and previous wind projects have used this as the distance for calculating conservation measures for stopover habitat (BEPC 2009).

Again, the intent is not to provide acre-for-acre wetland mitigation; rather, the calculations are used to establish an appropriate level of funding for conservation efforts. The Project Company will work with a third-party conservation organization, to determine the most effective use for the habitat conservation funds. In lieu of habitat protection or restoration, the funding may also be used for other activities to conserve whooping cranes to the maximum extent possible. These efforts may be in North Dakota or where the greatest good for the species may be achieved. While the focus of this conservation contribution will be on whooping cranes, the Project Company anticipates that other sensitive wildlife species (e.g., Sprague’s pipit, Dakota skipper) will also benefit from this effort.

Conservation Contribution Calculation				
Disturbance Level	Acres of Wetlands	% of Land Value	Land Value/Acre^a	Value
No Disturbance	402.0	100%	\$637	\$256,074.00
One Disturbance	194.8	66%	\$637	\$81,897.82
Two Disturbances	351.5	33%	\$637	\$73,888.82
TOTAL				\$411,860.64

^a http://www.nass.usda.gov/Statistics_by_State/North_Dakota/Publications/Land_Values_and_Farm_Numbers/pub/crents10.pdf

IV. OPERATIONAL PRACTICES

After construction of the New Frontier Wind Energy Project has been completed, the Project Company will implement operational practices that will reduce the potential for the Project to adversely impact wildlife. These practices include:

- Limiting Public Access – Roads constructed as part of the Project will be posted as private roads only for use by authorized personnel in connection with operation of the facility. When

necessary, access will be restricted. With agreement from the landowner, main access points may be gated to limit access by the general public.

- Ongoing Erosion and Weed Control – Reasonable steps will be taken to mitigate erosion and control noxious weeds within one hundred feet of its facilities, along roads built as part of the Project, and at other areas disturbed during Project construction.
- Driving Speeds – Reasonable driving speed limits will be established for operational staff within the Project site to minimize potential for road killed wildlife or livestock that could attract foraging raptors.
- Carcass Removal – Livestock and other carcasses found within the Project site will be promptly removed to minimize the potential to attract foraging raptors.
- Good Housekeeping Practices – Garbage or debris will be removed promptly to avoid creating attractive nuisances for birds and bats and other wildlife. Store parts/equipment that could provide cover for rodents or rabbits away from turbines.
- Pet/Firearms Restrictions – Operational staff or contractors will confine pets to buildings, vehicles, or leashes at all times when on the Project site. Operational staff or contractors will not discharge firearms while working at the site.
- Nest Management – In the absence of other suitable nest sites, raptors and other birds may use transmission line structures, meteorological towers, and substation equipment for nesting. In some cases, bird nests can cause operational problems such as power outages or result in increased risks to the birds. Operational staff will promptly inform the Project Company and Element Power’s environmental compliance specialist when a nest is observed on or near Project facilities. Operational staff will not remove or modify a nest unless directed to do so by Element Power’s environmental compliance specialist. Nests will be removed as soon as possible in accordance with applicable state and federal laws (note: nests occupied by migratory birds or other protected species will not be disturbed until after the nesting season when the nest is no longer in use). The Project Company may install anti-nesting devices or take other appropriate actions to deter future nesting on or near Project facilities.
- Fire Management – In order to reduce the potential for wildfire, operational staff will be trained in fire management/response. Smoking will be restricted to vehicles or designated graveled or paved areas. Appropriate disposal of cigarette butts will be strictly enforced. Off-road travel and parking will be restricted.

V. POST-CONSTRUCTION STUDIES AND ONGOING MONITORING

To validate the wildlife risk assessment (Tiers 2 and 3) completed prior to project construction, the Project Company will conduct post-construction monitoring of wildlife impacts. If the results of monitoring or ongoing operational staff observations indicate significant adverse impacts to wildlife, additional mitigation will be considered (see Section VI below).

Wildlife Mortality Monitoring (Tier 4 Study)

One year of post-construction fatality monitoring will be completed after the Project is operational. Fatality monitoring studies will be completed by qualified wildlife biologists and follow the Wind Turbine Guidelines Advisory Committee’s recommendations for a Tier 4 study. The study will be designed to

document fatality rates for all affected species or groups and identify periods when birds and bats are at the highest risk (e.g., seasonal timeframes of peak fatality). If fatality rates are determined to be significant based on comparison to other local and regional studies, additional studies may be conducted to try and determine the primary environmental conditions which may lead to increased risk (e.g., weather conditions). Results of the first year of fatality monitoring may be used to inform study plans for any additional efforts. For example, if the issue is elevated bat fatality rates during the fall migration period, a more detailed survey during this time period may be warranted. Results of fatality monitoring studies will be the primary driver in determining the need for additional conservation measures (see adaptive management measures below). Appendix D includes a copy of the draft post-construction mortality study plan that describes the techniques used to assess operational mortality.

The Tier 4 wildlife mortality monitoring studies are specifically designed to answer the following questions:

1. *What are the bird and bat fatality rates for the project?*
2. *What are the fatality rates of species of concern?*
3. *How do the estimated fatality rates compare to the predicted fatality rates?*
4. *Do bird and bat fatalities vary within the project site in relation to site characteristics (e.g., are mortalities consistently associated with a particular turbine, set of turbines, or habitats)?*
5. *How do the fatality rates compare to the fatality rates from existing projects in similar landscapes with similar species composition and use?*
6. *What is the composition of fatalities in relation to migrating and resident birds and bats at the site?*
7. *Do fatality data suggest the need for measures to reduce impacts?*

In addition to the rigorous post-construction monitoring studies described above, operational personnel will be trained to identify, record, and respond to dead or injured wildlife found within the Project site – particularly large birds such as raptors. An avian and bat incident report form will be completed to track injuries and mortalities throughout operation of the project. The form will include location of incident, probable cause of incident, and the type of wildlife involved. Appendix E includes a copy of a standard form. As soon as practicable but within no less than 30 days of discovery, the Project Company will report injuries or mortalities of species that are protected under the ESA or BGEPA to the USFWS (see Section IX).

Lek Monitoring (Tier 5 Studies)

In addition to the fatality monitoring efforts, lek monitoring will be implemented in years 1 and 3 at all potential or confirmed leks within one mile of turbine locations to determine the persistence of the leks during operations. This data collected from this study will contribute to the limited understanding of wind energy development and sharp-tailed grouse leking behavior. Appendix F includes a copy of the lek monitoring plan.

Whooping Crane Monitoring

Based on the general flight characteristics and habitat preferences, the risk of whooping cranes colliding with a wind turbine is extremely unlikely. However, to further minimize this potential risk, whooping crane monitoring will be initiated during the spring and fall migration periods during commercial operations. A rigorous training program will be developed to train all operations personnel on key identification features of whooping cranes and the process and procedures to be followed if a whooping crane is observed in the Project area. Below is a brief narrative of what the training will include.

The training program will focus on methods by which operations personnel can accurately determine if a suspected bird is indeed a whooping crane. This will include discussion and photographic descriptions of whooping cranes and the key identification features such as outstretched neck and legs, black-wing tips while in flight, red on top of the head, type of soaring flight, habitat associations, and call type. Handouts will be provided to all operations staff to allow them quick and ready access to materials to assist in identifying whooping cranes. If a bird is spotted that cannot be confirmed as a whooping crane or not, operations personnel will contact the near wildlife biologist (e.g., refuge staff, conservation officer) to assist in confirming the species.

The operations personnel will keep attentive while driving public roads and other accessible roads (e.g., turbine roads) within the Project area and any time they are within approximate two miles around the turbine locations. To further inform operations personnel on potential whooping cranes in the vicinity, information from the USFWS and others will be sought regarding migrating birds as part of the current reporting system for the entire flyway.

Whooping cranes have been documented migrating as individuals, pairs, family groups, small flocks, and as part of larger sandhill crane flocks. All positive observations of whooping cranes will be closely tracked to determine their movements and to report the locations for turbine shut down. During movement tracking, the observer will maintain maximum distance from the whooping crane to avoid flushing the bird(s) into potential collision situations. A general rule is to maintain 2,000 ft of separation if in open country or to screen the areas between the crane(s) and observer with a hill, trees, etc. if this 2,000-foot distance cannot be maintained.

Turbines will be curtailed within two miles of any confirmed whooping crane observation until which time the cranes are observed to leave the area.

In addition to the rigorous training for all operations personnel for the life of the Project, the Project Company will contract with a third-party consultant to implement post-construction whooping crane monitoring efforts at the Project for three years after commercial operation. This effort will entail the same criteria that have been used at other wind facilities in North and South Dakota, namely daily observation for whooping cranes in the mornings/evenings during the spring and fall migration, curtailment of turbines if whooping cranes are observed within 2 miles of turbines, and checking of all turbines daily for whooping crane mortalities. Appendix G has a more detailed discussion of the whooping crane monitoring planned for the first three years of operations.

VI. ADAPTIVE MANAGEMENT

Adaptive management is an iterative learning process producing improved understanding and improved management over time (Williams et al. 2009). The Project Company recognizes the value of applying this approach for their project activities that include some uncertainty. As such, the Project Company has incorporated an adaptive approach for the conservation of wildlife potentially impacted by the Project. The adaptive management model applied includes a series of steps: prediction, mitigation, implementation, monitoring, and adaption.

- **Prediction:** Section II of this ABPP describes the tiered approach used to study wildlife conditions and predict Project impacts. In brief summary, little measurable indirect wildlife impacts associated with the Project are anticipated. An accurate prediction of direct impacts is difficult for this Project, particularly because of the limited availability of post-construction mortality studies from operating wind farms in the region. Based on WEST's evaluation and studies from operating facilities throughout the Midwestern U.S. (see table in Section II), direct

Project impacts are generally be expected to be within the range of other projects in the Midwest or western US (Johnson and Stephens 2011):

- Raptors – 0 to 0.37 raptors/MW/year with an average of approximately 0.13 raptors;
 - Other birds (non-raptors) – 0.48 to 8.25 birds/MW/year with an average of approximately 3.51 birds; and
 - Bats – 0.16 to 30.61 bat/MW/year with an average of approximately 6.79 bats.
- **Mitigation:** Sections III and IV of this ABPP describe the mitigation measures and best management practices that would be used to avoid, minimize, and compensate for the predicted impacts described above.
 - **Implementation:** Construction of the New Frontier Wind Energy Project is scheduled to begin during the 2nd quarter 2012, 2013, or 2014. Construction is scheduled to be complete and facility operation will begin during the 4th quarter of the year construction is initiated.
 - **Monitoring:** Section V of this ABPP describes the post-construction studies and ongoing monitoring that will be implemented to assess Project impacts on wildlife. Appendix D includes a copy of the draft post-construction mortality study plan. If it is found that direct impacts are greater than expected, adaptive management actions will be considered and implemented accordingly. To help define when adaptive management might be required, a probability density function for regional bird, bat, and raptor fatality rates was generated using kernel density estimation (Parzen 1962). Kernel density estimation is a non-parametric data smoothing process used to interpolate population distributions from finite samples. Regional fatality data were log transformed to provide support across the all real numbers and then fit to a probability density function using R-statistical software (2011). The 75th percentile of the resulting density function was calculated and provides a population level estimate for fatality rates exceeding the upper quartile of observed data. This approach was used to ensure that a mitigation response would be triggered if the results of the post construction monitoring indicate fatality rates are above the upper quartile of fatality rates observed for the Midwest region:
 - threatened or endangered Species – 1 or more individuals/MW/year;
 - eagles – 1 or more eagles/MW/year;
 - other raptors – 0.25 raptors/MW/year;
 - other birds (non-raptors) – 5.54 birds/MW/year; and
 - bats – 10.1 bats/MW/year.

If the results of post-construction monitoring show that the fatality rates shown above are exceeded during the first year of operation, the Project Company will discuss the post-construction monitoring results with the USFWS and NDGFD. The purpose of this consultation will be to discuss results of post-construction monitoring studies, additional spatial analysis and/or field surveys conducted, the conclusions drawn from the data, and the purpose and expected outcome of adaptive management actions to be taken. The adaptive management process is discussed further below.

- **Adaption:** Based on the results of this monitoring program, adaptive mitigation measures could be applied to avoid, minimize, or compensate for unanticipated and significant project impacts. Thresholds for triggering adaptive mitigation measures and the list of potential measures are listed in the table below.

Implementation of on-site adaptive mitigation measures may include follow-up monitoring to evaluate their effectiveness at conserving wildlife (unless technically and economically feasible, the Project Company will not be responsible for monitoring the effectiveness of off-site mitigation). If this follow-up

monitoring suggests significant impacts are ongoing, alternative adaptive measures will be pursued. Compliance with this plan, including implementing adaptive mitigation measures and any associated monitoring, will be limited to an annual maximum cost to the Project of \$1,000 per MW of installed generating capacity (including costs associated with lost revenue due to potential altering of cut-in speeds or curtailing turbine operations).

Adaptive Mitigation Measures		
Issue	Adaptive Mitigation Triggers	Adaptive Mitigation Options
Eagle Mortality	Adaptive mitigation measures will be implemented if the results of the post-construction monitoring indicate that one or more bald or golden eagle is killed per year (over at least two years) due to operation of the Project facilities.	<p>On-site Measures</p> <ul style="list-style-type: none"> • additional on-site studies (e.g., fatality monitoring and area use studies through observation and/or telemetry) • addition or modification of anti-perching, anti-nesting, or electrocution protection devices on “problem” project facilities • prey-base management through habitat alteration • consideration of curtailing turbine operations during “high-risk” periods such as midday hours during the peak of raptor migration <p>Off-site Measures</p> <ul style="list-style-type: none"> • fund power pole retrofitting • fund research on eagle population dynamics and habitat relationships (ideally in partnership with other organizations) • fund long-term protection of important eagle use areas • fund planning and implementation of livestock grazing systems or other means of grassland restoration/conservation in potential eagle habitat including migration and overwintering habitat (e.g., work with NRCS, non-governmental conservation organizations, and/or private landowners)
Sandhill (or Whooping) Crane Mortality	Adaptive mitigation measures will be implemented if the results of the post-construction monitoring indicate that three or more sandhill cranes (or one or more whooping cranes) is killed due to operation of the Project facilities.	<p>On-site Measures</p> <ul style="list-style-type: none"> • testing of on-site system including RADAR or observers in conjunction with temporary turbine shut down procedures when cranes are at risk • additional study and/or monitoring <p>Off-site Measures</p> <ul style="list-style-type: none"> • funding conservation programs in North Dakota or elsewhere with focus on cranes and crane habitats (e.g., The Nature Conservancy, Ducks Unlimited, North Dakota Land Trust) • funding retrofit of “problem” distribution lines operated by other entities to APLIC standards

Adaptive Mitigation Measures		
General Avian Mortality	Adaptive mitigation measures will be implemented if the results of the post-construction monitoring indicate that the annual mortality associated with the Project exceeds 5.54 native birds per MW per year (all species combined), 0.25 non-eagle raptors per MW per year (hawks, falcons), or 0.5 Birds of Conservation Concern per MW per year (as identified for BCR 35 in the Birds of Conservation Concern 2008 [USFWS 2008b])	<p>On-site Measures</p> <ul style="list-style-type: none"> • addition or modification of anti-perching, anti-nesting, or electrocution protection devices on “problem” project facilities • Use of visual or sound deterrents around identified problem areas if can be implemented effectively and within other permit conditions • additional study and/or monitoring <p>Off-site Measures</p> <ul style="list-style-type: none"> • funding grassland conservation programs in North Dakota (e.g., The Nature Conservancy, Ducks Unlimited, North Dakota Land Trust, Audubon) • funding retrofit of “problem” distribution lines operated by other entities to APLIC standards
General Bat Mortality	Adaptive mitigation measures will be implemented if the results of the post-construction monitoring indicate that mortality associated with the Project exceeds 10.1 bats/MW/year (all species combined).	<p>On-site Measures</p> <ul style="list-style-type: none"> • altering turbine cut-in speeds • additional study/monitoring (including more detailed monitoring of bat use periods) <p>Off-site Measures</p> <ul style="list-style-type: none"> • funding appropriate bat habitat conservation programs (e.g., The Nature Conservancy, Bat Conservation International) • funding installation of bat friendly gates to local hibernation/roost sites

The Project Company will consult with natural resource agencies and other wildlife experts regarding study protocols and results as well as adaptive management measures. While the ultimate decision regarding implementation of any necessary adaptive management measures will be at the sole discretion of the Project Company, outside wildlife experts will be consulted prior to implementation.

VII. DECOMMISSIONING

The New Frontier Wind Energy Project will be designed to operate for a minimum of 20 years. However, with proper maintenance and potential upgrades, the Project could operate for much longer. At the end of its useful life, the Project will be decommissioned per the North Dakota Public Service Commission permit requirements. This will include following a decommission plan for the removal of Project components. During facility decommissioning, practices that will reduce the potential for the Project to adversely impact wildlife include:

- Facility Removal – All turbines and ancillary structures will be removed from the site, except that any facilities more than three feet below the surface will be left in place. Roads will be removed and restored to pre-construction condition unless the landowner specifically requests that roads be left in place.
- Restoration Standards – On completion of decommissioning, all portions of the area disturbed during decommissioning will be restored to a condition substantially similar to the condition that existed prior to construction, to the extent such restoration is commercially reasonable.
- Revegetation – Whenever possible and with agreement from the landowner, revegetation will be with native species. A seed mix will be developed in consultation with applicable local authorities such as the USFWS, NDGFD, and NRCS.
- Erosion Control – Erosion control devices and procedures will be implementing during and after the decommissioning process until site stabilization/restoration is achieved.

VIII. PERMIT COMPLIANCE

The Project Company will strive to work with the USFWS to help determine whether any wildlife-specific permits may be required for the construction and operation of the Project.

At this point, the Project Company is not aware of any wildlife-related permits that are required to construct and operate the Project. As described previously, whooping cranes will not likely be adversely impacted by the Project. However, Element Power is currently engaged with a number of other renewable energy companies in developing the Great Plains Wind Energy Habitat Conservation Plan (HCP). If appropriate, Element Power and its Project Companies will seek permit coverage under this HCP.

IX. TRAINING

Element Power has, for purpose of use by the Project Company, prepared environmental training programs to ensure construction and operation personnel clearly understand environmental permit requirements and the commitments that the Project Company has made as part of this ABPP. Training will be provided to all personnel and the training program materials will be available at appropriate facilities. Contractors and/or vendors working at Project facilities for extended periods will also be required to review the training materials. A log will be maintained to document that construction and operational personnel, contractors, and vendors all have reviewed the training materials and will abide by the ABPP.

Construction and operation staff will be monitored to ensure compliance with environmental mitigation measures.

X. KEY RESOURCES

For questions regarding implementing this ABPP and other environmental/permitting issues, please contact:

- Todd Mattson, Director of Environmental Affairs
Element Power (representing the Project Company, Meadowlark Wind I LLC)

222 South Ninth Street, Suite 2870
Minneapolis, MN 55402
612.294.4670 (o)
612.655.1726 (m)
todd.mattson@elpower.com

The following agencies can be contacted to help address wildlife issues, including the reporting and disposition of eagles or endangered/threatened species found on the project site:

- US Fish and Wildlife Service
North Dakota Field Office
- North Dakota Game and Fish Department

The Project Company will also maintain internal files for staff to access which would include documents such as the ABPP, reporting forms, APLIC Standards, project permits and any other relevant information.

XI. REFERENCES

- Avian Power Line Interaction Committee (APLIC). 1994. *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. Edison Electric Institute. Washington, D.C.
- Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Public Interest Energy Research Program (PIER) Final Project Report CEC-500-2006-022. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D.C. and Sacramento, California.
- Baerwald, E. 2006. *Bat Fatalities in Southern Alberta*. Presented at the Wildlife Research Meeting VI, San Antonio, Texas. National Wind Coordinating Collaborative. November 2006.
- Basin Electric Power Cooperative (BEPC). 2009. *Prairie Winds ND1 Project Biological Assessment*. Prepared for Rural Utility Service and Western Area Power Administration.
- Cooperative Whooping Crane Tracking Project (CWCTP). 2009. *CWCTP-GIS Data/ Whooping Crane Migration Corridor Data*.
- Davis, S.K. 2004. *Area Sensitivity in Grassland Passerines: Effects of Patch Size, Patch Shape, and Vegetation Structure on Bird Abundance and Occurrence in Southern Saskatchewan*. *Auk* 121: 1130-1145.
- Derby, C., K. Chodachek, and K. Bay. 2010a. *Post-Construction Bat and Bird Fatality Study Crystal Lake II Wind Energy Center, Hancock and Winnebago Counties, Iowa. Final Report: April 2009-October 2009*. Prepared for NextEra Energy Resources, Juno Beach, Florida. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. June 2, 2010.

- Derby, C., K. Chodachek, K. Bay, and A. Merrill. 2010b. Post-Construction Fatality Survey for the Buffalo Ridge I Wind Project. May 2009 - May 2010. Prepared for Iberdrola Renewables, Inc., Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota.
- Derby, C., K. Chodachek, K. Bay, and A. Merrill. 2010c. Post-Construction Fatality Surveys for the Elm Creek Wind Project: March 2009- February 2010. Prepared for Iberdrola Renewables, Inc. (IRI), Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota.
- Derby, C., K. Chodachek, K. Bay, and A. Merrill. 2010d. Post-Construction Fatality Surveys for the Moraine II Wind Project: March - December 2009. Prepared for Iberdrola Renewables, Inc. (IRI), Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota.
- Derby, C., K. Chodachek, K. Bay, and A. Merrill. 2010e. Post-Construction Fatality Surveys for the Winnebago Wind Project: March 2009- February 2010. Prepared for Iberdrola Renewables, Inc. (IRI), Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota.
- Derby, C., K. Chodachek, T. Thorn, K. Bay, and S. Nomani. 2011. Post-Construction Fatality Surveys for the Prairiewinds ND1 Wind Facility, Basin Electric Power Cooperative, March - November 2010. Prepared for Basin Electric Power Cooperative, Bismarck, North Dakota. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. August 2, 2011.
- Derby, C., A. Dahl, W. Erickson, K. Bay, and J. Hoban. 2007. Post-Construction Monitoring Report for Avian and Bat Mortality at the NPPD Ainsworth Wind Farm. Unpublished report prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming, for the Nebraska Public Power District.
- Derby, C., A. Dahl, A. Merrill, and K. Bay. 2010f. 2009 Post-Construction Monitoring Results for the Wessington Springs Wind-Energy Facility, South Dakota. Final Report. Prepared for Wessington Wind Energy Center, LLC, Juno Beach, Florida. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. August 19, 2010.
- Derby, C., J. Ritzert, and K. Bay. 2010g. Bird and Bat Fatality Study, Grand Ridge Wind Resource Area, LaSalle County, Illinois. January 2009 - January 2010. Prepared for Grand Ridge Energy LLC, Chicago, Illinois. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. July 13, 2010. Revised January 2011.
- Erickson, W.P., J. Jeffrey, and V.K. Poulton. 2008. Avian and Bat Monitoring: Year 1 Report. Puget Sound Energy Wild Horse Wind Project, Kittitas County, Washington. Prepared for Puget Sound Energy, Ellensburg, Washington, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. January 2008.
- Erickson, W.P., G.D. Johnson, M.D. Strickland, D.P. Young, Jr., K.J. Sernka, and R.E. Good. 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Bird Collision Mortality in the United States. National Wind Coordinating Collaborative (NWCC) Publication and Resource Document. Prepared for the NWCC by WEST, Inc., Cheyenne, Wyoming. August 2001.
http://www.nationalwind.org/assets/archive/Avian_Collisions_with_Wind_Turbines_-_A_Summary_of_Existing_Studies_and_Comparisons_to_Other_Sources_of_Avian_Collision_Mortality_in_the_United_States__2001_.pdf

- Gruver, J., M. Sonnenburg, K. Bay, and W. Erickson. 2009. Post-Construction Bat and Bird Fatality Study at the Blue Sky Green Field Wind Energy Center, Fond Du Lac County, Wisconsin July 21 - October 31, 2008 and March 15 - June 4, 2009. Unpublished report prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. December 17, 2009.
- HDR Engineering (HDR). 2010. New Frontier Wind Project Critical Issues Analysis. Technical report prepared for Element Power.
- Holloran, M.J. 2005. Greater Sage-Grouse (*Centrocercus urophasianus*) Population Response to Natural Gas Field Development in Western Wyoming. Ph.D. Dissertation. University of Wyoming, Laramie, Wyoming. 211 pp.
- Howe, R.W., W. Evans, and A.T. Wolf. 2002. Effects of Wind Turbines on Birds and Bats in Northeastern Wisconsin. Prepared by University of Wisconsin-Green Bay, for Wisconsin Public Service Corporation and Madison Gas and Electric Company, Madison, Wisconsin. November 21, 2002. 104 pp.
- Jacques Whitford Stantec Limited (Jacques Whitford). 2009. Ripley Wind Power Project Postconstruction Monitoring Report. Project No. 1037529.01. Report to Suncor Energy Products Inc., Calgary, Alberta, and Acciona Energy Products Inc., Calgary, Alberta. Prepared for the Ripley Wind Power Project Post-Construction Monitoring Program. Prepared by Jacques Whitford, Markham, Ontario. April 30, 2009. www.jacqueswhitford.com
- Jain, A. 2005. Bird and Bat Behavior and Mortality at a Northern Iowa Windfarm. M.S. Thesis. Iowa State University, Ames, Iowa.
- Jeffrey, J.D., W.P. Erickson, K. Bay, M. Sonneberg, J. Baker, JR Boehrs, and A. Palochak. 2009. Horizon Wind Energy, Elkhorn Valley Wind Project, Post-Construction Avian and Bat Monitoring, First Annual Report, January-December 2008. Technical report prepared for Telocaset Wind Power Partners, a subsidiary of Horizon Wind Energy, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming, and Walla Walla, Washington. May 4, 2009.
- Johnson, G.D., W.P. Erickson, M.D. Strickland, M.F. Shepherd, and D.A. Shepherd. 2000. Avian Monitoring Studies at the Buffalo Ridge Wind Resource Area, Minnesota: Results of a 4-Year Study. Final report prepared for Northern States Power Company, Minneapolis, Minnesota, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. September 22, 2000. 212 pp. <http://www.west-inc.com>
- Johnson, G.D., M.K. Perlik, W.P. Erickson, and M.D. Strickland. 2004. Bat Activity, Composition and Collision Mortality at a Large Wind Plant in Minnesota. *Wildlife Society Bulletin* 32(4): 1278-1288.
- Johnson, G.D., T. Rintz, D. Strickland, and M. Holloran. 2009. Protocol: Greater Sage-Grouse Telemetry Study for the Simpson Ridge Wind Resource Area, Carbon County, Wyoming. Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.
- Johnson, G.D. and S.E. Stephens. 2011. Wind Power and Bio Fuels: A Green Dilemma for Wildlife Conservation. Chapter 8. *In: Energy Development and Wildlife Conservation in Western North America*. D. E. Naugle, ed. Island Press, Washington, D.C. Pp. 131-155.
- Kerlinger, P., R. Curry, A. Hasch, and J. Guarnaccia. 2007. Migratory Bird and Bat Monitoring Study at the Crescent Ridge Wind Power Project, Bureau County, Illinois: September 2005 - August 2006. Final draft prepared for Orrick Herrington and Sutcliffe, LLP. May 2007.
- Kuvlesky, W.P. Jr., L.A. Brennan, M.L. Morrison, K.K. Boydston, B.M. Ballard, and F.C. Bryant. 2007. Wind Energy Development and Wildlife Conservation: Challenges and Opportunities. *Journal of Wildlife Management* 71: 2487-2498.
-

- McNew, L.B., A.J. Gregory, S.W. Wisely, and B.K. Sandercock. 2009. Location of Greater Prairie-Chicken Nests in Relation to Wind Power Development in Kansas. Presentation at the 28th Meeting of the Prairie Grouse Technical Council, Portales, New Mexico, October 5-8, 2009.
- National Academy of Sciences (NAS). 2007. Environmental Impacts of Wind-Energy Projects. National Academies Press. Washington, D.C. www.nap.edu
- National Wind Coordinating Collaborative (NWCC). 2004. Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions. Fact Sheet. 2nd Edition. November 2004.
http://www.nationalwind.org/assets/archive/Wind_Turbine_Interactions_with_Birds_and_Bats_-_A_Summary_of_Research_Results_and_Remaining_Questions__2004_.pdf
- Nebraska Game and Parks Commission (NGPC). 2009. Location of Sharp-Tailed Grouse and Greater Prairie-Chicken Display Grounds in Relation to NPPD Ainsworth Wind Energy Facility: 2006-2009. NGPC, Lincoln, Nebraska.
- North Dakota (ND) GAP Analysis. 2004. North Dakota Gap Analysis Project. Data available from: <http://gapanalysis.nbii.gov/portal/server.pt>
- Parzen, E. 1962. On the Estimation of Probability Density and Mode. *Annals of Mathematical Statistics* 27: 1065-1076.
- R Development Core Team. 2011. The R Project for Statistical Computing. Institute for Statistics and Mathematics Resources Web Page, Institute for Statistics and Mathematics, Wein, Austria. . R version 2.13.0, 2010-14-13. <http://www.R-project.org>
- Smallwood, K.S. and B. Karas. 2009. Avian and Bat Fatality Rates at Old-Generation and Repowered Wind Turbines in California. *Journal of Wildlife Management* 73(7): 1062-1071.
- Stahlecker, D.A. 1997a. Availability of Stopover Habitat for Migrant Whooping Cranes in Nebraska. *Proceedings North American Crane Workshop* 7: 132-140.
- Stahlecker, D.A. 1997b. Predicting Availability of Stopover Roosting Habitat for Migrant Whooping Cranes in the Northern Great Plains. Report by Eagle Ecological Services for the US Fish and Wildlife Service (USFWS). 21 pp.
- Stehn, T. 2007. Whooping Cranes and Wind Farms - Guidance for Assessment of Impacts. US Fish and Wildlife Services (USFWS) technical report.
- Stehn, T. 2008. Whooping Crane Recovery Activities November 2007 - September 2008. US Fish and Wildlife Service (USFWS).
- Stehn, T. 2011. Whooping Crane Recovery Activities: October, 2010 - August, 2011. Aransas National Wildlife Refuge, US Fish and Wildlife Service (USFWS). August 31, 2011.
- Toepfer, J.E. and W.L. Vodehnal. 2009. Greater Prairie Chickens: Grasslands and Vertical Structures. Presentation at the 28th Meeting of the Prairie Grouse Technical Council, Portales, New Mexico, October 5-8, 2009.
- US Fish and Wildlife Service (USFWS). 2002a. Mountain Plover (*Charadrius montanus*). Endangered and Threatened Wildlife and Plants; Review of Species That Are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Recycled Petitions; Annual Description of Progress on Listing Actions. 67 Federal Register, 40657-40679.
- US Fish and Wildlife Service (USFWS). 2002b. Status Assessment and Conservation Guidelines, Dakota Skipper. USFWS Twin Cities Field Office, Bloomington, Minnesota.

- US Fish and Wildlife Service (USFWS). 2004. Prairie Grouse Leks and Wind Turbines: US Fish and Wildlife Service Justification for a 5-Mile Buffer from Leks; Additional Grassland Songbird Recommendations. An unpublished briefing paper.
- US Fish and Wildlife Service (USFWS). 2005. Whooping Cranes: The Road to Survival. May 2005. http://library.fws.gov/Pubs4/whooping_survival05.pdf
- US Fish and Wildlife Service (USFWS). 2008a. Biological Opinion, Wessington Springs Wind Project, Jerauld County, South Dakota. Biological Opinion sent to Nicholas J. Stas, Department of Energy, Western Area Power Administration. 42 pp.
- US Fish and Wildlife Service (USFWS). 2008b. Birds of Conservation Concern 2008. December 2008. Division of Migratory Bird Management. Arlington, Virginia. <http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>
- US Fish and Wildlife Service (USFWS). 2009. Whooping Cranes and Wind Development - an Issue Paper. By Regions 2 and 6, USFWS. April 2009. <http://www.fws.gov/southwest/es/oklahoma/Documents/Wind%20Power/Documents/Whooping%20Crane%20and%20Wind%20Development%20FWS%20issue%20paper%20-%20final%20%20April%202009.pdf>
- US Fish and Wildlife Service (USFWS). 2010a. Biological Opinion, Prairiewinds SD1 Wind Farm, South Dakota. July 13, 2010.
- US Fish and Wildlife Service (USFWS). 2010b. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List Sprague's Pipit as Endangered or Threatened Throughout Its Range. 75 Federal Register 178, 56028-50650. September 15, 2010.
- US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI). 2010. NWI Data Mapper. Updated April 5, 2010. Fort Snelling, Minnesota. Geospatial Wetlands Digital Data: <http://www.fws.gov/wetlands/data/index.html>; Wetlands Mapper: <http://www.fws.gov/wetlands/Data/Mapper.html>; Geocortex Internet Mapping Framework: http://wetlandsfws.er.usgs.gov/imf/imf.jsp?site=NWI_CONUS
- Williams, B.K., R.C. Szaro, and C.D. Shapiro. 2009. Adaptive Management: The U.S. Department of the Interior Technical Guide. Adaptive Management Working Group, US Department of the Interior (USDOI), Washington, D.C. 84 pp.
- Wind Turbine Guidelines Advisory Committee (WTGAC). 2010. Consensus Recommendations on Developing Effective Measures to Mitigate Impacts to Wildlife and Their Habitats Related to Land-Based Wind Energy Facilities. Prepared by Kearns and West for the US Department of the Interior (USDOI), Washington, D.C. WTGAC homepage available online at: http://www.fws.gov/habitatconservation/windpower/wind_turbine_advisory_committee.html; Recommendations to the Secretary of the Interior available online at: http://www.fws.gov/habitatconservation/windpower/Wind_Turbine_Guidelines_Advisory_Committee_Recommendations_Secretary.pdf
- Young, D.P. Jr., W.P. Erickson, G.D. Johnson, M.D. Strickland, and R.E. Good. 2001. Avian and Bat Mortality Associated with the Initial Phase of the Foote Creek Rim Wind Power Project, Carbon County, Wyoming. November 3, 1998 - December 31, 2000. Prepared for SeaWest Windpower Inc., San Diego, California, and the Bureau of Land Management, Rawlins District Office, Rawlins, Wyoming, by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. October 1, 2001.

ACTS AND REGULATIONS

50 Code of Federal Regulations (CFR) 10. 1973. Title 50 - Wildlife and Fisheries, Chapter I -United States Fish and Wildlife Service, Department of the Interior, Part 10 - General Provisions. Subparts A-C, §§10.1-10.22. 38 FR 22015, August 15, 1973, as amended at 53 FR 6649, March 2, 1988.

50 Code of Federal Regulations (CFR) 22. 1999. Title 50 - Wildlife and Fisheries, Chapter I -United States Fish and Wildlife Service, Department of the Interior, Subchapter B - Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants, Part 22 - Eagle Permits. Subparts A-D, §§ 22.1-22.32. 64 FR 50472, September 17, 1999, as amended at 73 FR 29083, May 20, 2008.

Bald and Golden Eagle Protection Act (BGEPA). 1940. 16 United States Code (USC) § 668-668d. June 8, 1940.

Federal Advisory Committee Act. 1972. 5 United States Code (USC) aap. As Amended § 1.

Endangered Species Act (ESA). 1973. 16 United States Code (USC) § 1531-1544. December 28, 1973.

Migratory Bird Treaty Act (MBTA). 1918. 16 United States Code (USC) § 703-712. July 13, 1918.

This page intentionally left blank.

Appendix A. Site Characterization Study Report (See Exhibit 8)

This page intentionally left blank.

Appendix B. Sharp-tailed Grouse Lek Survey Report (See Exhibit 13)

This page intentionally left blank.

Appendix C. Whooping Crane Habitat Analysis (See Appendix C of the Certificate of Site Compatibility Application)

This page intentionally left blank.

Appendix D. Post-Construction Monitoring Plan

This page intentionally left blank.

DRAFT

**Post-Construction Fatality Monitoring Plan
New Frontier Wind Facility
North Dakota**

Prepared for:

Element Power

Prepared by:

Clayton Derby
Western EcoSystems Technology, Inc.
4007 State Street, Suite 109
Bismarck, North Dakota 58503

November 28, 2011



Table of Contents

INTRODUCTION.....	1
PURPOSE.....	1
METHODS AND DESIGN.....	1
Standardized Carcass Searches.....	2
Carcass Removal Trials.....	3
Searcher Efficiency Trials.....	3
ANALYSIS.....	4
LITERATURE CITED.....	5

INTRODUCTION

This post-construction fatality monitoring plan was developed as part of the New Frontier Avian and Bat Protection Plan. The primary purpose of the monitoring study is to estimate avian and bat mortality at the site and determine whether the estimated mortality is lower, similar or higher than the average mortality observed at other local, regional, and national projects. A secondary objective is the collect information useful to inform siting decisions for future development, including expansions of existing facilities. The monitoring study will begin after all the turbines have been commissioned and are fully operational. The study will be conducted for a minimum of one year (12 months), unless there is agreement to shorten or length the period based on existing information or permit requirements.

All casualties located within areas surveyed, regardless of species, will be recorded and a cause of death determined, if possible, based on field inspection of the carcass. Total number of avian and bat carcasses will be estimated by adjusting for search frequency, removal bias (length of stay in the field), searcher efficiency bias (percent found) and area bias (effective area sampled at each turbine). For carcasses where the cause of death is not apparent, the assumption that the fatality is a wind-energy facility casualty will be made for the analysis. This approach may lead to an overestimate of the true number of wind-energy facility-related fatalities. Most wind-energy facility monitoring studies have used this conservative approach because of the relative high costs associated with obtaining accurate estimates of natural or reference mortality.

PURPOSE

The fatality monitoring has three main purposes:

- 1) To estimate annual bird and bat fatalities attributable to the facility, such that the fatality rate can be compared to other projects regionally and nationally to determine the Project's relative fatality rate.
- 2) To determine species composition of bird and bat fatalities.
- 3) To evaluate spatial and temporal patterns of fatalities.

METHODS AND DESIGN

This fatality monitoring protocol is similar to protocols used at other wind energy facilities across the country, including at the nearby PrairieWinds ND1 facility south of Minot. The methods will include standard, regular carcass searching to locate carcasses at turbines in a systematic fashion, as well as carcass removal trials and searcher efficiency trials to provide a corrected estimate of total fatalities. If it is found that fatality rates are greatly exceeding other regional projects, the survey effort would be re-evaluated to more appropriately investigate potential causes of mortality.

Standardized Carcass Searches

Fatality monitoring will begin the season (as defined below) after all turbines are constructed and commercially operational (i.e., after testing). Approximately 40-50% of the turbines will be searched once every 14 days during the spring migration (March 15 – May 15), summer breeding season (May 16 – August 15), and fall migration (August 16 – November 1) and once per month during the winter (November 1-March 15). Square search plots will be centered on each turbine, with the minimum distance searched in any direction equal to 100 m. Transects will be walked 10 m apart within each plot to sample the area under the structure (Figure 1). A technician trained in proper search techniques will walk at a rate of approximately 45-60 meters per minute (e.g., normal walking rates) along each transect searching both sides for casualties. For turbines located in cropfields, the entire plot will be searched when crops are not present or short enough to allow effective searching. When crops are taller, only the road and turbine pad will be searched. The change in search area during the year will be accounted for in the analysis. Search area and speed may be adjusted by habitat type after evaluation of the first searcher efficiency trial. All fatalities documented will be attributed to the facility (i.e., no reference area will be searched) unless another cause is positively determined (e.g., gunshot).

The condition of each carcass found will be recorded using the following condition categories:

- Intact – a carcass that is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger;
- Scavenged – an entire carcass, which shows signs of being fed upon by a predator or scavenger, or a portion(s) of a carcass in one location (e.g., wings, skeletal remains, legs, pieces of skin, etc.);
- Feather Spot - 10 or more feathers at one location indicating predation or scavenging.

A copy of the data sheet for each carcass will be maintained, bagged and frozen with the carcass at all times. For all casualties found, data recorded will include species, sex and age when possible, date and time found, GPS location, condition (e.g., intact, scavenged, feather spot), and any comments that may indicate cause of death. All casualties located will be photographed as found and mapped on a detailed map of the study area showing the location of the wind turbines and any associated structures.

Dead or injured birds/bats found outside the formal search area by carcass search technicians but within 150 m of a wind turbine or other project facility will be processed according to the preceding protocol as closely as possible. Dead or injured birds/bats found within 150 m of a wind turbine or related facility by maintenance personnel and others not conducting the formal searches will also be documented. Any carcass found within the standardized carcass search areas (i.e., within turbine search area), but not during a scheduled search will be recorded, but will be left undisturbed unless it is a state or federal endangered, threatened or otherwise protected species so as not to disrupt the scheduled search efforts (i.e., removing carcasses before scheduled searchers have an opportunity to find them could bias estimated fatality rates).

When non-study personnel discover carcasses or injured animals, a photograph will be taken, and the Project Coordinator or Biologists will be notified to identify the specimen. Personnel involved in searches will receive training prior to working on the project.

Carcass Removal Trials

For this study, carcass removal is defined to include removal by predation or scavenging, or removal by any other means, such as being plowed into a field. Estimates of carcass removal will be used to adjust counts of carcasses found during systematic searches for removal bias. Carcass removal studies will be conducted once during each season near, but outside, the carcass search plots (e.g., near turbines not included in the searches). While carcass removal trials will be conducted during each season, the timing within these periods may vary. Carcasses will be planted randomly within the carcass removal trial plots, which will be located outside the carcass search areas to avoid confusing trial carcasses with actual turbine-related fatalities.

Each season approximately 25 bird carcasses of two size classes (fifteen small, and ten medium to large) will be distributed within the carcass removal plots, resulting in a total of approximately 100 trial carcasses used in carcass removal studies for the monitoring year. The entire wind farm is located in native grassland or cropland; both vegetation types will be included in the sampling. Small carcasses (e.g., house sparrows, starlings, commercially available game bird chicks) will simulate passerines. Medium to large birds such as raptors and waterfowl will be simulated by commercially available adult game birds or rock pigeons. If fresh bat carcasses are available, they will also be used in addition to the bird carcasses.

Carcasses will be checked for a period of 30 days to determine removal rates. They will be checked every day for the first 4 days, and then on days 7, 14, 21, and 30. This schedule may vary depending on weather and coordination with the other survey work. At the end of the 30-day period remaining carcasses will be removed. Experimental carcasses will be marked discreetly (type of marker to be determined) for recognition by searchers and other personnel. Experimental carcasses will be left at the location until the end of the carcass removal trial. The personnel conducting the removal trials will be properly trained.

Searcher Efficiency Trials

Searcher efficiency studies will be conducted in the same survey plots used for carcass searches. One trial will be conducted each season (spring, summer, fall). If there are multiple individuals conducting carcass searches, each individual will participate in the searcher efficiency trials. Searcher efficiency will be estimated by size of carcass and season. Estimates of searcher efficiency will be used to adjust the number of carcasses found (i.e., correcting for detection bias) during the systematic carcass searches.

Searcher efficiency trials will begin when turbines are commercially operation and actual searches begin. Personnel conducting the searches will typically not know when trials are conducted or the location of the detection carcasses. The time spent searching during the trial days versus non-trial days will be recorded. During each season, approximately 15 small and 10 large trial carcasses will be placed, for a total of approximately 100 searcher efficiency trial carcasses for the entire year. An attempt will be made to use several small brown birds during the fall season to simulate bat carcasses. Legally obtained bat carcasses will be used if available.

All carcasses will be placed at random locations within areas being searched prior to the carcass search on the same day. If avian scavengers appear attracted by placement of carcasses, the carcasses will be distributed before dawn. Carcasses will be dropped from waist high, which should simulate a variety of carcass postures.

Each carcass used will be discreetly marked (see scavenger removal studies) so that it can be identified as a study carcass after it is found. The number and location of the detection carcasses found during the carcass search will be recorded. The number of carcasses available for detection during each trial will be determined immediately after the trial by the person responsible for distributing the carcasses.

ANALYSIS

The estimate of the total number of wind facility-related fatalities is based on:

- (1) Observed number of carcasses found during standardized searches for which the cause of death is either unknown or is probably facility-related.
- (2) Searcher efficiency expressed as the proportion of planted carcasses found by searchers during the entire survey period.
- (3) Non-removal rates expressed as the estimated average probability a carcass is expected to remain in the study area and be available for detection by the searchers during the entire survey period.

Details of statistical analysis formulas are described in Erickson et al. 2004 and Kerns et al. 2005.

LITERATURE CITED

- Erickson, W.P., J. Jeffrey, K. Kronner, and K. Bay. 2004. Stateline Wind Project Wildlife Monitoring Report: July 2001–December 2003. Prepared for FPL Energy, Stateline Technical Advisory Committee, Oregon Department of Energy, by Western EcoSystems Technology, Inc., Cheyenne, WY and Walla Walla, WA; and Northwest Wildlife Consultants, Inc., Pendleton, OR. December 2004 [online]. Available: http://www.west-inc.com/reports/swp_final_dec04.pdf
- Kerns, J, W. P. Erickson, and E. B. Arnett. 2005. Bat and bird fatality at wind energy facilities in Pennsylvania and West Virginia. Pages 24–95 *in* E. B. Arnett, editor. Relationships between bats and wind turbines in Pennsylvania and West Virginia: an assessment of bat fatality search protocols, patterns of fatality, and behavioral interactions with wind turbines. A final report submitted to the Bats and Wind Energy Cooperative. Bat Conservation International, Austin, Texas, USA.

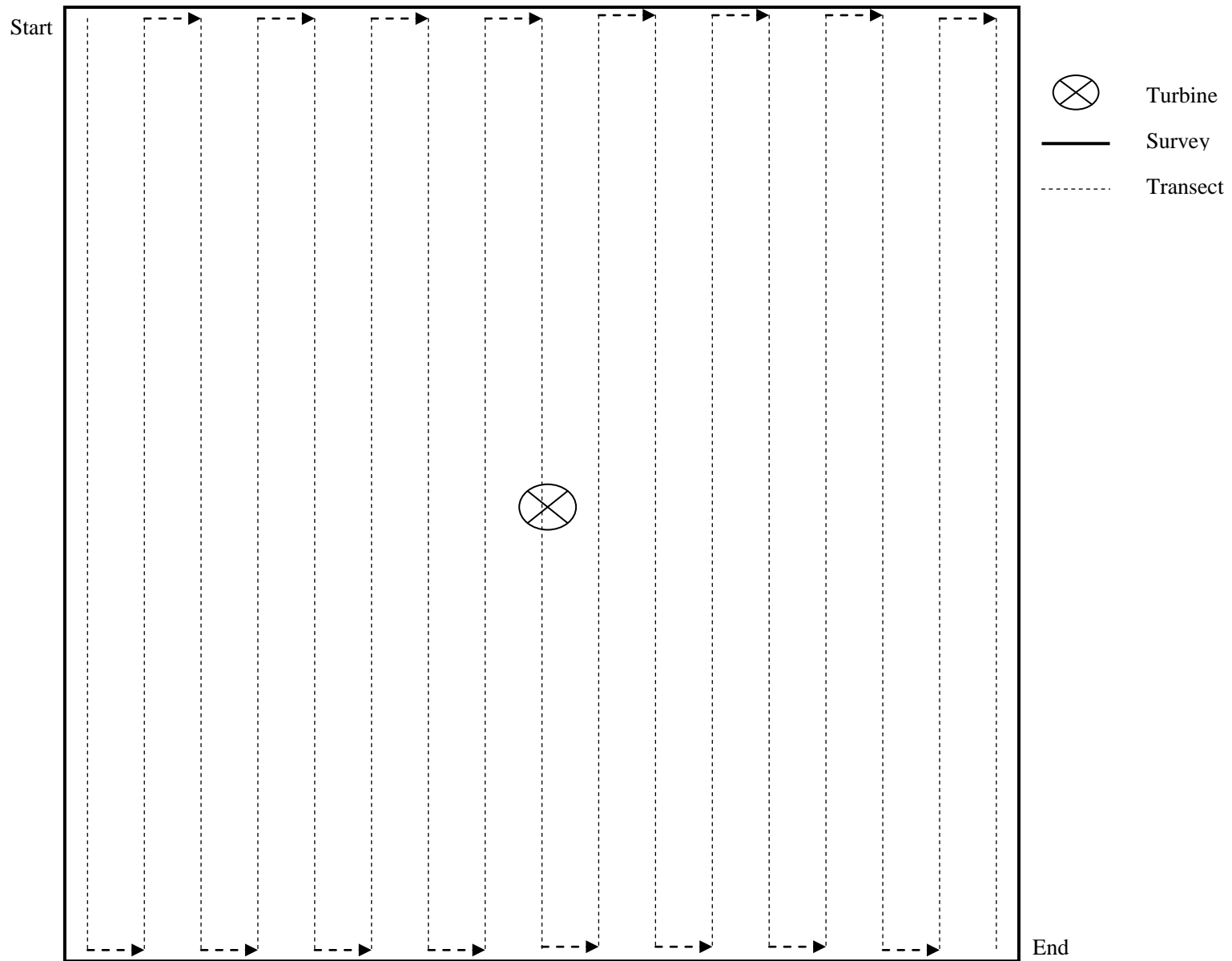


Figure 1. Schematic of survey pattern (not to scale). Transects will be placed 10 m apart.

Appendix E. Operations Wildlife Incident Reporting Form

This page intentionally left blank.



REPORT/DISCOVERY DATE AND TIME: _____
 DATE AND TIME OF PREVIOUS VISIT: _____

Wildlife Incident Reporting Form

Check one: Avian Other (specify): _____

Information About Discovery	
Species:	(Or 'unidentifiable' if unknown)
Field marks:	
State of animal:	<input type="checkbox"/> Fatality <input type="checkbox"/> Injury
Sex/Age:	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Juvenile <input type="checkbox"/> Adult
Location Information:	Nearest turbine number: _____ GPS coordinates/datum: _____
	Distance from turbine (feet): _____ Direction from turbine: _____
	Groundcover type: _____ Other nearby structures: _____
Other fatalities:	(Indicate number nearby)
Turbine state:	Is turbine currently operational? <input type="checkbox"/> Yes <input type="checkbox"/> No If not, when was it last operational? _____
Weather Conditions:	(Temperature, cloud cover, wind speed/direction, etc.)

Physical Condition of Discovery	
Condition of animal:	<input type="checkbox"/> Complete <input type="checkbox"/> Dismembered <input type="checkbox"/> Trace <input type="checkbox"/> Scavenged
Blood on animal, ground, or turbine?:	<input type="checkbox"/> No <input type="checkbox"/> Yes (describe): _____
List any missing parts:	
Describe condition: <i>(e.g., obvious/potential injuries, broken bones, visible skeleton, infestations, electrocution)</i>	Was animal banded? <input type="checkbox"/> Yes <input type="checkbox"/> No
Estimated time since death: <i>(<1, <4, <7, <14, <30, >30)</i>	_____ days <i>Use best judgment. Carcasses less than 4 days old will have round, fluid filled eyes and will lack insect infestation. Maggots indicate 7 - 14 days old. Visible bones indicate more than 30 days. In cold weather, carcasses will look fresh longer than in warmer weather.</i>

Actions Taken	
Ultimate disposition of the animal:	<input type="checkbox"/> Taken to rehab center <input type="checkbox"/> Left in field <input type="checkbox"/> Placed in freezer
Were pictures taken of the animal, all injuries, immediate area, and turbine?:	<input type="checkbox"/> No <input type="checkbox"/> Yes <i>(Print photos and attach to Wildlife Incident Reporting Form)</i>
Were any notifications made?:	<input type="checkbox"/> Yes <input type="checkbox"/> No Notification to: _____ Date/Time: _____

Respondent Name: _____ Date _____

Signature: _____ Date _____

Appendix F. Sharp-tailed Grouse Lek Monitoring Plan

This page intentionally left blank.

Post-Construction Sharp-tailed Grouse Lek Monitoring

Prepared for:

Element Power

Prepared by:

Clayton Derby
Western EcoSystems Technology Inc.
4007 State Street, Suite 109
Bismarck, ND



I. INTRODUCTION

Meadowlark Wind I LLC (Project Company), a subsidiary of Element Power is developing the New Frontier Wind Energy Facility in McHenry County, North Dakota. As part of the Project, Element and the Project Company developed an Avian and Bat Protection Plan (ABPP) to identify avoidance, minimization, and mitigation measures for avian and bat resources related to the Project. The ABPP commits Element and the Project Company to the same or higher level of biological conditions as other projects developed in the region.

II. MONITORING

The Project area was surveyed for sharp-tailed grouse leks in 2011 using systematic aerial surveys as well as opportunistically from public roads. Each lek site documented in 2011 will be visited three times in year 1 and year 3 after the Project becomes operational. If other leks are found or reported, besides those found in 2011, they will be included in the monitoring effort. For example, if biologists conducting whooping crane monitoring document a new lek, that lek will become part of the survey effort going forward. Monitoring will be conducted from one-half hour before sunrise to one hour after sunrise. If birds are present on the lek as seen or heard that day, the biologist will observe the lek for a minimum of 15 minutes so that peak lek attendance numbers can be estimated for that day. If birds are not immediately observed on the lek, the observer will look and listen for a minimum of 5 minutes to ascertain if the birds have simply moved slightly or are not at the lek. Observations will be done from a vehicle whenever possible and from a maximum distance to avoid disturbing the birds.

These data will be useful to determine if lek attendance increases, decreases, or stays the same after turbine construction and if lek locations remain the same or move. It is recognized that lek locations may change between years, regardless of wind facility placement.

III. ANALYSIS AND REPORTING

Annual reports will be prepared after completion of the year one and three monitoring. At a minimum reports will:

- Describe method(s) of lek survey used,
- Amount of effort expended for lek monitoring,
- Location and maps of leks found during surveys,
- Numbers of males, females, and total birds at each lek monitored,
- Post-construction surveys will include statistical analysis (e.g., t-tests with confidence intervals between pre- and post-construction information or other appropriate analysis) to investigate if lek attendance is maintaining, increases, or decreases at individual leks as well as in total for the area as part of a before-after analysis,
- If possible, data from outside of the Project will be used as a control to determine if grouse numbers in the region and state are maintaining, increasing, or decreasing and compare this to the findings from within the Project.

Appendix G. Post-Construction Whooping Crane Use Monitoring

This page intentionally left blank.

Post-Construction Whooping Crane Use Monitoring

Prepared for:

Element Power

Prepared by:

Clayton Derby
Western EcoSystems Technology Inc.
4007 State Street, Suite 109
Bismarck, ND



I. INTRODUCTION

Meadowlark Wind I LLC (Project Company), a subsidiary of Element Power is developing the New Frontier Wind Energy Facility in McHenry County, North Dakota. As part of the Project, Element and the Project Company developed an Avian and Bat Protection Plan (ABPP) to identify avoidance, minimization, and mitigation measures for avian and bat resources related to the Project. While the Project does not have a federal nexus, and therefore no Biological Assessment and Opinion were developed, the ABPP commits Element and the Project Company to the same level of biological conditions as other projects developed in the whooping crane migration corridor. This monitoring scope closely follows similar whooping crane monitoring efforts being implemented at Wessington Springs, PrairieWinds SD1, Wilton, Baldwin, and PrairieWinds ND1 in North and South Dakota.

II. WHOOPING CRANE MONITORING ACTIVITIES

Post-construction whooping crane use monitoring will continue for three years (three spring and three fall migrations) after the turbines have become operational.

II.A. Purpose

The whooping crane monitoring has three main purposes:

- 1) To document use of the project area and two-mile buffer surrounding the wind farm by whooping cranes during the spring and fall migration periods, such that turbine operation can be curtailed if whooping cranes are seen in the project area.
- 2) To document use of the project area and two-mile buffer surrounding the wind farm by sandhill cranes.
- 3) To document any mortality of whooping cranes or sandhill cranes.

II.B. Methods and Design

II.B.1. Use of Project Area

Whooping crane use monitoring will be conducted during spring and fall migration periods. Spring surveys will be conducted daily from April 1 – May 15 and fall surveys will be conducted from September 10 – October 31. These dates encompass approximately 90% of the documented whooping crane observations in North Dakota.

A trained biologist will drive public roads and other accessible roads (e.g., turbine access roads) within the project area and two-mile buffer around the turbine locations. If there are suitable roosting or foraging areas not adequately observable from public roads, access across private lands will be sought. Observations will generally occur from sunrise to three hours after sunrise and from two hours before sunset to sunset, or as necessary to adequately cover the project area. These time frames are selected as it is during the morning and evening when cranes are most likely to be foraging, roosting, or flying lower as opposed to mid-day when cranes typically are migrating at elevations above turbine levels. During early morning and late evening the biologist will focus on areas of potential roosting habitat (e.g., shallow wetlands and ponds). These habitat types are limited in the project area and buffer area. Later in the mornings and early afternoons the observer will focus on potential foraging areas (e.g., croplands, haylands). During inclement weather, additional surveys during the middle of the day will also be conducted. Areas will be scanned with binoculars and/or spotting scope.

All crane observations, flight paths, GPS locations, and behaviors will be recorded. Groups of sandhill cranes will be studied closely for the possible inclusion of one or more whooping cranes migrating with the sandhill cranes. Whooping cranes have been documented migrating as individuals, pairs, family groups, small flocks, and as part of larger sandhill crane flocks. All positive observations of whooping cranes will be closely tracked to determine their movements and to report the locations for turbine shut down. If whooping cranes are located on the project site, the U.S. Fish and Wildlife Service (USFWS) will be immediately notified.

During movement tracking, the biologist will maintain maximum distance from the whooping crane to avoid flushing the bird(s) into power lines or turbine areas. A general rule of thumb is to maintain 2000 feet of separation if in open country or to screen the areas between the crane(s) and observer with a hill, trees, etc. if this 2000 foot distance cannot be maintained.

II.B.2. Turbine shutdown

If a whooping crane is observed within 2 miles of turbines, the observer will immediately contact the site manager and operational personnel for implementation of the curtailment activities within 2 miles of the bird or birds; the exact procedures and protocol to be followed for notifications and chain of command will be established by the Project Company. Any whooping cranes detected will be monitored/observed and behaviors in relation to the wind turbines will be documented. Turbine operations may resume after whooping cranes are confirmed to have left the wind farm area through coordination with the USFWS.

II.B.3. Whooping Crane Fatality Monitoring

During morning and afternoon use monitoring, each turbine and met tower will be checked daily for whooping and sandhill crane fatalities. No set survey effort has been specified at this time. If a whooping crane mortality or injured bird is found, the bird will be left in place and the USFWS will be contacted immediately.

II.C. Reporting

Observation and behavioral reports will be forwarded to the USFWS, North Dakota Ecological Services Field Office in Bismarck, ND, by December 31 each year. These reports will document time and effort used in searching for whooping crane use of the project area. The reports will contain days/hours surveyed and observations made. The number of cranes identified during the monitoring will be clearly identified in the report, and maps of crane use locations will be provided.