

**Bull Creek Wind Power Project
2014/2015 Supplemental
Pre-construction Wildlife
Survey Results**

Final Report



Prepared for:
Bull Creek Wind Power Limited
Partnership

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August 25, 2015

Table of Contents

EXECUTIVE SUMMARY	I
ABBREVIATIONS	III
1.0 INTRODUCTION	1.1
1.1 PROJECT DESCRIPTION.....	1.1
1.2 COMPONENTS	1.2
2.0 METHODS.....	2.1
2.1 BIRD MIGRATION SURVEYS	2.1
2.1.1 Survey Design	2.1
2.1.2 Data Analysis.....	2.3
2.2 SHARP-TAILED GROUSE LEK SURVEYS.....	2.3
2.3 RAPTOR NEST SURVEYS	2.5
2.4 NOCTURNAL AMPHIBIAN SURVEYS	2.5
2.5 BREEDING BIRD SURVEYS	2.6
3.0 RESULTS	3.1
3.1 BIRD MIGRATION	3.1
3.1.1 Fall 2014 Migration.....	3.1
3.1.2 Spring 2015 Migration.....	3.5
3.1.3 Total Observations for Migrating Birds	3.8
3.2 SHARP-TAILED GROUSE LEK.....	3.9
3.3 RAPTOR NESTS.....	3.9
3.4 NOCTURNAL AMPHIBIAN	3.11
3.5 BREEDING BIRD	3.13
3.5.1 Breeding Bird Survey Round One	3.13
3.5.2 Breeding Bird Survey Round Two	3.13
3.6 SPECIES OF MANAGEMENT CONCERN	3.14
4.0 DISCUSSION	4.1
5.0 CONCLUSION.....	5.1
6.0 REFERENCES.....	6.1

LIST OF TABLES

Table 1	Behaviour Categories of Birds Recorded during Migration Surveys.....	2.1
Table 2	Relative Flight Height Recorded during Migration Surveys	2.3
Table 3	Bird Species Recorded During Fall 2014 Migration Surveys	3.2
Table 4	Bird Species Recorded During Spring 2015 Migration Surveys	3.6
Table 5	Fall 2014 and Spring 2014 Bird Observations within the RSA.....	3.8
Table 6	Stick Nest Locations in the Study Area	3.9

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Table 7	Canadian Toad Observations in the Study Area	3.11
Table 8	Species of Management Concern Observations in the Study Area	3.14

LIST OF FIGURES

Figure 1	Project Overview	1.3
Figure 2	Bird Migration Station Locations	2.2
Figure 3	Sharp-tailed Grouse Lek Survey Station Locations.....	2.4
Figure 4	Breeding Bird Station Locations.....	2.7
Figure 5	Raptor and Raptor Nest Locations	3.10
Figure 6	Nocturnal Amphibian Survey Station Locations.....	3.12
Figure 7	Species of Management Concern Observations in the Study Area	3.16

LIST OF APPENDICES

APPENDIX A	FALL 2014 BIRD MIGRATION OBSERVATIONS	A.1
APPENDIX B	SPRING 2015 BIRD MIGRATION RESULTS	B.1
APPENDIX C	NOCTURNAL AMPHIBIAN SURVEY RESULTS.....	C.1
APPENDIX D	BREEDING BIRD SURVEY RESULTS.....	D.1

Executive Summary

Stantec Consulting Ltd. (Stantec) was contracted by Bull Creek Wind Power Limited Partnership (BCWP) to conduct wildlife surveys at Bull Creek Wind Power Project (the Project). The Project is located approximately 20 kilometers (km) northeast of Provost and 60 km southeast of Wainwright, Alberta, and consists of 17 GE 1.7-103 wind turbines and ancillary infrastructure with an installed capacity of up to 29.2 megawatts (MW).

The wildlife surveys undertaken and discussed herein were requested by Alberta Environment and Parks (AEP) in the Wind Energy Referral Report dated November 17, 2014. These supplemental pre-construction surveys address potential wildlife impacts as a result of changes to the approved Project layout (i.e., reduced number of turbines from 46 to 17 and change of turbine model from GE 2.5 MW-103 wind turbines to GE 1.7 MW -103 LNT turbines) and include: fall bird migration (August to October, 2014); spring bird migration (March through May, 2015); sharp-tailed grouse lek (April 2015); nocturnal amphibian (May to early-June, 2015); and breeding bird (mid-May and early-June, 2015). Raptor nests were also checked throughout the fall and spring surveys to determine status of previously identified nests.

During fall migration, 85.8% of all observations were recorded within the Rotor Swept Area (RSA). The majority of these were waterfowl species at Station 8 which is the furthest west monitoring station in the Study Area (2,260 m from the closest proposed turbine, Turbine 17). During spring migration, 7.3% of all observations were recorded within the RSA; the majority of which were recorded at Station 4. Taking into account fall and spring surveys, 59.8% of observations were within the RSA, similar to the previous analysis (Golder 2012) which found 61.3% of observations within the RSA. Both studies identified waterfowl as the species guild with the highest potential for collision. However, waterfowl fatalities at wind facilities have been reported to be low, relative to waterfowl use of facility areas (Erikson et al. 2002).

Eight raptor nests were observed in the Study Area. Only one nest was determined to be active at the time of analysis in 2015 and was occupied by a red-tailed hawk. The nest is located approximately 360 m northwest of the closest turbine (Turbine 46) and approximately 60 m east of Range Road 11. As Range Road 11 is an existing road, it is not anticipated that the nest will be disturbed by construction activities; however, it is recommended that the nest be monitored as part of the post-construction monitoring plan (PCMP).

Two individual sharp-tailed grouse (*Tympanuchus phasianellus*) were observed during the sharp-tailed grouse lek survey, however, no sharp-tailed grouse leks were identified within 500 m of proposed development.

Two Canadian toad (*Anaxyrus hemiophrys*) breeding wetlands were identified during nocturnal amphibian surveys: wetland BW034 and an unnamed wetland in NW 12-41-01-W4M (see Figure 5 for breeding pond locations). Wetland BW034 is approximately 11 m from the proposed fibre

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

optic cable. Although the wetland is separated by Township Road 411A, a 100 m buffer is recommended (AEP 2013) from breeding ponds. To avoid disturbance, mitigation is recommended, such as the installation of silt fences. No infrastructure is anticipated within 100 m of the second breeding pond in NW 12-41-01-W4M.

During breeding bird surveys, 25 bird species were recorded at five stations including two species of management concern: Sprague's pipit (*Anthus spragueii*) which is federally listed as Threatened (Government of Canada 2015), and the least flycatcher (*Empidonax minimus*) which is provincially designated as Sensitive (ESRD 2012).

Twenty-one species of management concern were observed in the Study Area including one amphibian species (Canadian toad, observed systematically during the nocturnal amphibian survey) and twenty bird species. In addition to Sprague's pipit which was observed incidentally in native prairie, Common nighthawk (*Chordeiles minor*), also federally listed as Threatened (Government of Canada 2015) was observed incidentally during the nocturnal amphibian survey and Trumpeter swan (*Cygnus buccinator*), listed as a Species of Special Concern under the Alberta *Wildlife Act* (ESRD 2014) was observed systematically during the fall migration survey. The remaining 17 bird species of management concern are designated as Sensitive in Alberta (ESRD 2012).

Based on the 2014/2015 supplemental pre-construction wildlife survey results, Stantec recommends the following during Project construction: silt fencing around Canadian toad Wetland BW034, bird nest sweeps in areas suitable for nesting birds (e.g., native prairie, tame pasture, wetlands and treed habitats), and appropriate setback distances and timing restrictions as agreed upon with AEP.

In addition to commitments already made by BCWP for post-construction fatality monitoring and breeding bird surveys (to be conducted at the same stations established during the pre-construction surveys), it is recommended that any raptor nests deemed active at the time of operation, be monitored as part of the PCMP.

Abbreviations

AEP	Alberta Environment and Parks
AUC	Alberta Utilities Commission
AWA	Alberta <i>Wildlife Act</i>
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
e.g.	example
ESRD	Alberta Environment and Sustainable Resource Development
Km	Kilometers
MW	Megawatt
RSA	Rotor Swept Area
SARA	<i>Species at Risk Act</i>
The Project	<i>Bull Creek Wind Project</i>

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

BULL CREEK WIND POWER PROJECT

2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Introduction
August 25, 2015

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) prepared this report on behalf of Bull Creek Wind Power Limited Partnership (BCWP) to address survey requirements that Alberta Environment and Parks (AEP) (formally Alberta Environment and Sustainable Resource Development (ESRD)) stipulated in the Wind Energy Referral Report, dated November 17, 2014 as a result of changes to Project layout. This report summarizes results of supplemental wildlife surveys conducted in 2014 and 2015, identifies potential project-wildlife interactions and recommends additional construction and post-construction mitigations.

1.1 PROJECT DESCRIPTION

BCWP is constructing the Bull Creek Wind Power Project (the Project) approximately 20 kilometers (km) northeast of Provost and 60 km southeast of Wainwright, Alberta. The total Project Area includes 55 quarter sections of land (Figure 1). Wildlife surveys were conducted in quarter sections potentially affected by the Project and are identified in Figure 1 as 'Study Area'. A 1,000 metre (m) buffer around the Study Area was also surveyed.

Golder Associates (Golder) conducted the previous Environmental Evaluation for the Project (Golder 2012). Wildlife surveys conducted for this evaluation consisted of winter wildlife surveys, bird migration monitoring, sharp-tailed grouse lek, Richardson ground squirrel, breeding bird, burrowing owl, waterfowl surveys, and bat acoustic surveys. Based on this evaluation, AEP (ESRD) issued the wind energy referral report on June 20, 2012. In February 2014, the Project received a Permit and License from the Alberta Utilities Commission (AUC 2014) to construct up to 46 GE 2.5 megawatt (MW)-103 wind turbines and associated infrastructure. An amendment to the Project's AUC approval reduced the number of turbines from 46 to 17 and changed the turbine model to GE 1.7 MW -103 LNTE, therefore reducing the capacity from 115 MW to 29.2 MW.

With the amended layout, all turbines were located at least 4.4 km away from identified piping plover habitat (lakes) and at least 2.2 km away from the Killarney Dillberry Lakes Important Bird Area (ESRD 2014a). AUC approved the amendment and issued a new Project permit. As no construction occurred within 2 years of the issuance of the 2012 wind energy referral report, and changes were being made to the Project layout, AEP requested supplemental wildlife surveys be completed, with emphasis on sensitive species and/or habitat types. Surveys requested by AEP included fall bat acoustic surveys, raptor nest surveys, sharp-tailed grouse lek surveys, acoustic amphibian surveys, spring and fall migration surveys, and breeding bird surveys. In the fall of 2014, Stantec conducted the bat acoustic surveys, the results of which were submitted to AEP in October 2014. The remaining surveys were conducted in the fall of 2014 and spring of 2015 as described in this report.

BULL CREEK WIND POWER PROJECT 2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

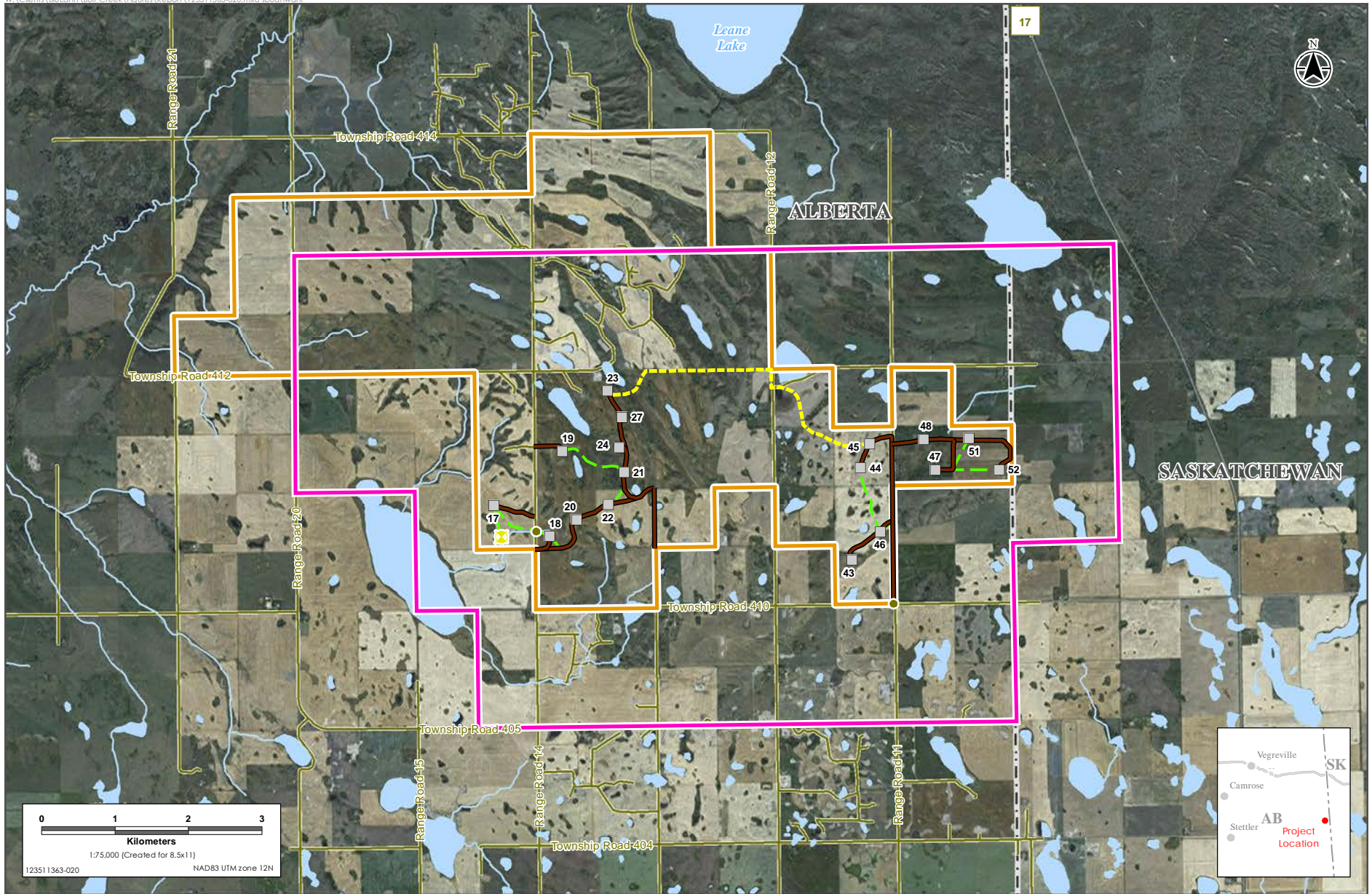
Introduction
August 25, 2015

The terms and conditions under which the Project will be constructed and operated are set out in AUC Approval No. 3520-D02-2015 (Errata), dated 29 April 2015, and the corresponding AEP Wind Referral Report, dated November 17, 2014.

1.2 COMPONENTS

Project components include:

- 17 GE 1.7 MW-103 LNT wind turbines generators (WTGs) and ancillary infrastructure with an installed capacity of up to 29.2 MW, hub height of 80 metres (m) and blade diameter of 103 m
- 24.94 kilovolt (kv) collector system primarily underground, with some overhead sections
- Underground, fibre-optic cable network, connecting turbines
- Access roads (12.45 km)
- One meteorological/communications (met) tower will be constructed on NE-5-41-1W4
- Temporary lay-down area during the construction phase of the project, located in the southwest corner of NW-4-41-1W4.



Sources: ESRI World Imagery Service, Project Data provided by BlueEarth, Base data provided by Canvec.

Disclaimer: this map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.

- | | |
|---------------------------------|-----------------------|
| ● Fortis Interconnection | — Provincial Boundary |
| ⊗ Permanent Met Tower | — Road |
| ■ Turbine | — Watercourse |
| — Access Road | — Project Area |
| — Underground Collector | — Study Area |
| — Underground Fibre Optic Cable | — Waterbody |



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Project Overview Bull Creek Wind Project

Figure 1

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Introduction
August 25, 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Methods
August 25, 2015

2.0 METHODS

2.1 BIRD MIGRATION SURVEYS

2.1.1 Survey Design

Avian mortality as a result of turbine collisions has been documented at wind farms across North America and Europe (Erikson et al. 2001, Kingsley and Whittam 2005; AWWI 2015). Proper risk assessment for wind farms can reduce cumulative risk on resident and migratory bird populations, particularly in high risk areas (i.e., staging, breeding and feeding habitats and migratory corridors). The primary objectives of the migration survey is to identify areas of high flight activity in the Study Area during spring and fall migration, quantify flight paths within the Rotor Swept Area (RSA), and identify the prevailing species/species guilds within the RSA.

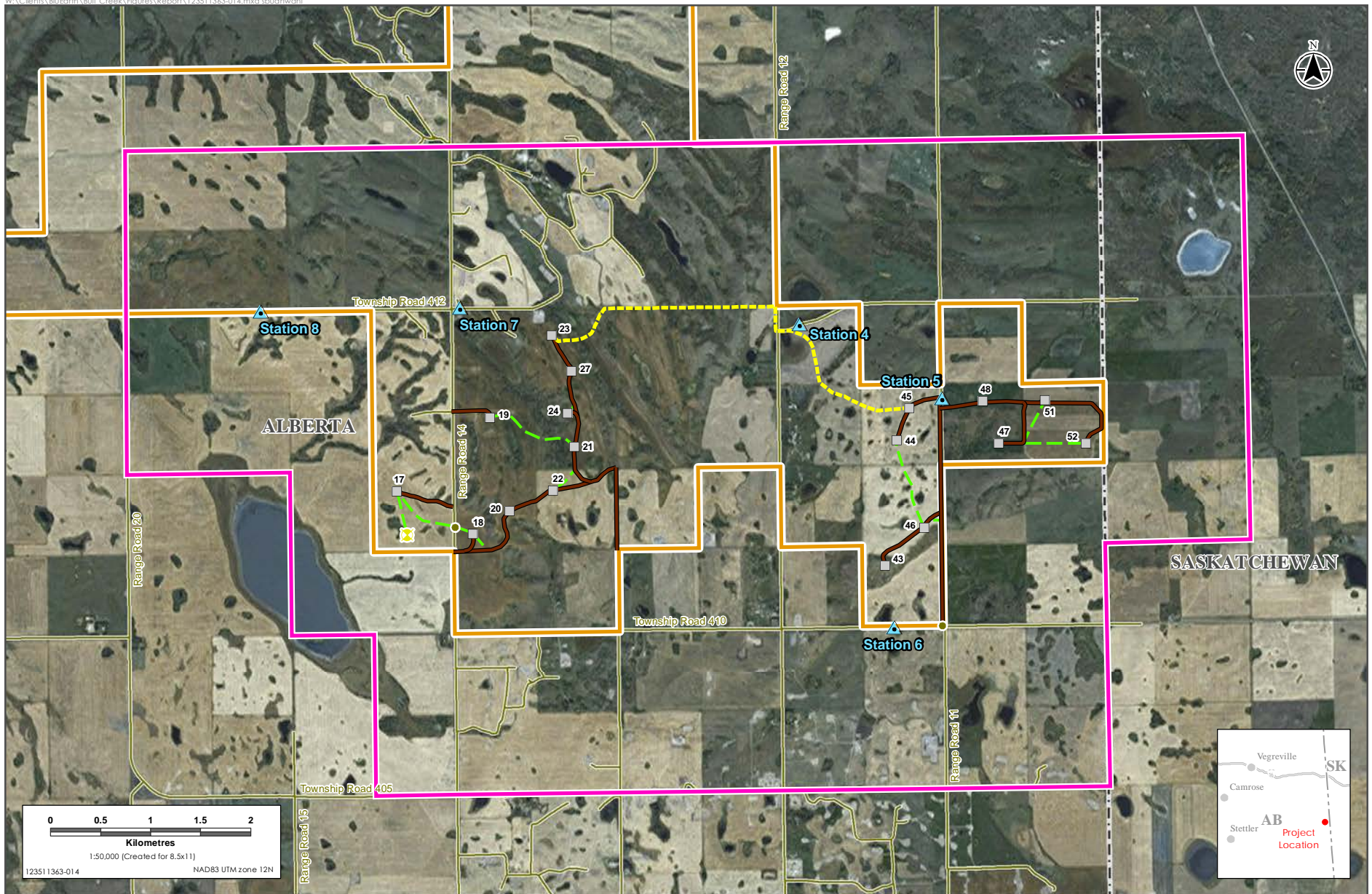
Spring and fall bird migration surveys were completed at five stations (Figure 2, identified as Stations 4 - 8). Survey stations were selected to be as close as possible to Stations 4-8, as previously surveyed by Golder Associates (Golder 2012), and station IDs were kept the same as from the Golder survey. Following the *Wildlife Guidelines for Alberta Wind Energy Projects* (SRD 2011b), fall 2014 migration surveys were conducted six times (August 9, August 22, September 9 and 16, September 23, October 11 and October 29-31, 2014) and spring 2015 migration surveys were conducted five times (March 31, April 16, April 30, May 8 and May 16-17, 2015). Due to weather conditions affecting visibility (i.e., fog) and access (i.e., road conditions), some visits extended over a few days.

Each of the five monitoring stations was surveyed twice during each visit (early morning and mid-day) for thirty minutes. Early morning surveys were conducted from sunrise to 1100 and targeted songbird migration. Mid-day surveys were conducted from 1100 to 1800 to target raptor migration. All birds heard or seen within 1,000 m were recorded, along with their estimated flight path, behavior (perched, loafing or flying; see Table 1), and flight height and direction. Observations greater than 1,000 m were also recorded as incidentals, but were excluded from analysis (see Section 2.1.2).

Weather conditions can greatly influence bird activity. It is therefore important to conduct surveys under a variety of weather conditions, if possible. Migration surveys were only delayed or suspended if poor visibility reduced the ability of observers to detect birds.

Table 1 Behaviour Categories of Birds Recorded during Migration Surveys

Code	Description
F	Flying – Migration or commuting; purposeful flight
L	Loafing; non-purposeful flight, foraging
P	Perched or on ground



Sources: ESRI World Imagery Service, Project Data provided by BlueEarth, Stantec Survey Locations provided by Stantec, Base data provided by Canvec.

Disclaimer: this map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.

- ▲ Bird Movement Survey Station
- Fortis Interconnection
- ✕ Permanent Met Tower
- Turbine
- Access Road
- Underground Collector
- - - Underground Fibre Optic Cable
- Provincial Boundary
- Road
- Project Area
- Study Area



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Bird Migration Station Locations
Bull Creek Wind Project

Figure 2

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2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Methods
August 25, 2015

2.1.2 Data Analysis

Analysis of migration surveys focused on species, species guilds (e.g., waterfowl, shore birds, raptors), number of individuals, number of observations, flight direction and flight height relative to the RSA (Table 2). Target flight path and direction for each species guild was summarized using circular histograms with direction split of 15 degree increments. Flight height and flight path direction were analyzed for seasonal trends and site-specific patterns. Spring and fall results were also combined for comparison with the previous migration study (Golder 2012). Figures were generated using R (version 3.1.0).

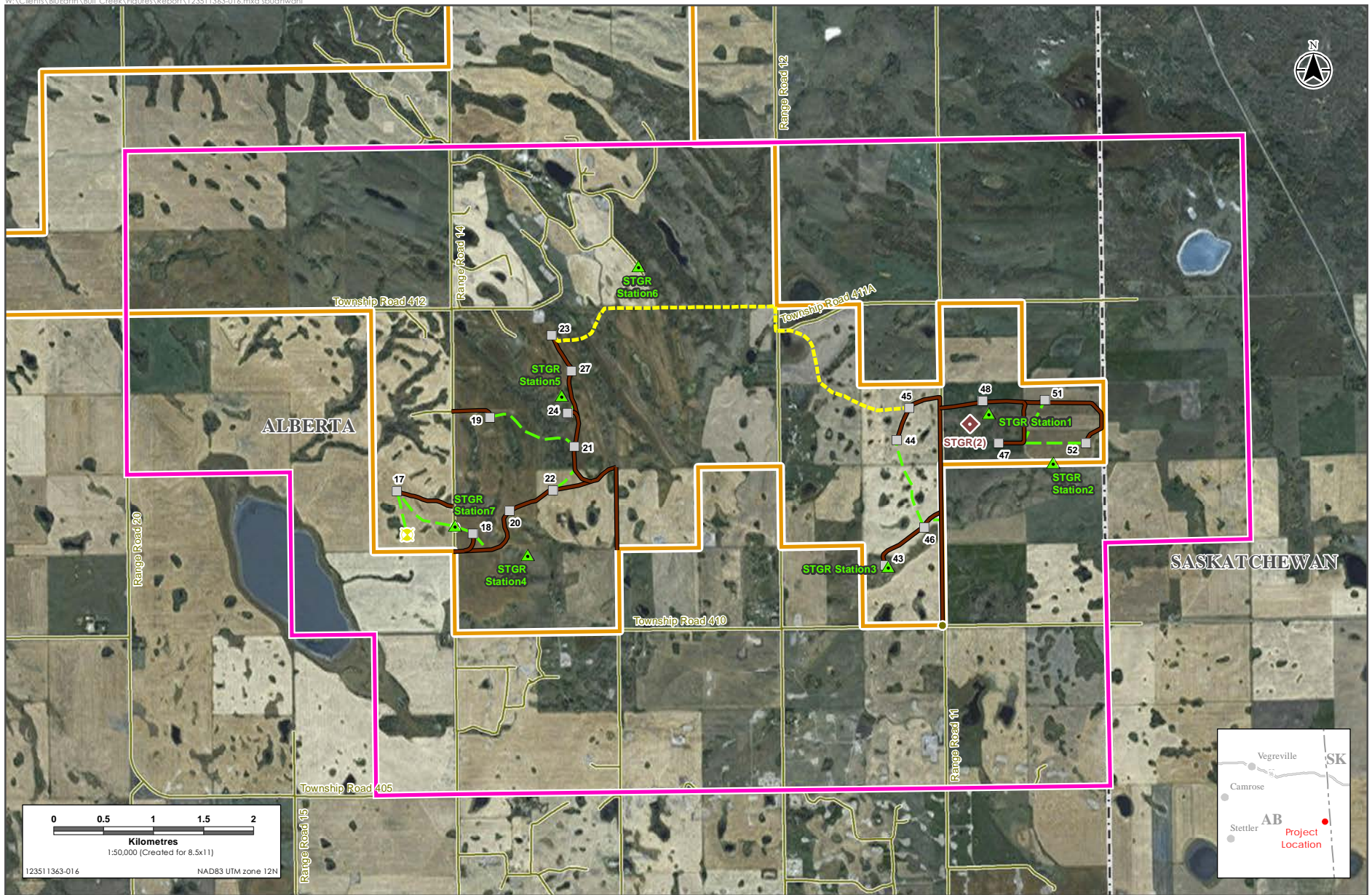
Table 2 Relative Flight Height Recorded during Migration Surveys

Height	Description
0 – 28.5 m	Below rotor swept area
28.5 – 131.5 m	Within rotor swept area
>131.5 m	Above rotor swept area
NOTE: Assumes General Electric 1.7-103 model turbine with a hub height of 80 m and turbine blade length of 51.5 m. If a bird passed through the RSA it was recorded as occurring there, regardless of where it spent the majority of its flight time.	

2.2 SHARP-TAILED GROUSE LEK SURVEYS

Sharp-tailed grouse lek surveys were conducted on May 1, 2015 following the *Sensitive Species Inventory Guidelines* (ESRD 2013). Areas of suitable habitat (native prairie and tame pasture) within 500 m of proposed development were surveyed. Surveys were conducted under ideal weather conditions (winds under 20 km/h, no precipitation, with temperatures ranging between 5-9°C). Surveys were conducted on foot, from vantage points that provided a good view of the Study Area and adjacent habitat. Upon arrival at each station, the observer waited for two minutes to mitigate the effects of disturbance from initial arrival. Each survey consisted of a five-minute period where the observer listened for grouse and scanned the landscape in all directions.

Seven survey stations were established in the Study Area (Figure 3). Surveys were conducted between 0630 and 0930. As per the *ESRD Wildlife Management's Sensitive Species Inventory Guidelines* (ESRD 2013) and in order to survey an area a minimum of two times, three stations with high quality habitat (stations 1, 2, and 3) were revisited the same morning. The remaining four stations were determined to have low suitability for lek habitat and were therefore only surveyed once.



Sources: ESRI World Imagery Service, Project Data provided by BlueEarth, Stantec Survey Locations provided by Stantec, Base data provided by Canvec.

Disclaimer: this map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.



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- | | |
|----------------------------------------|-------------------------------|
| 2015 Sharp-tailed Grouse Lek Survey | Access Road |
| Sharp-tailed Grouse Lek | Underground Collector |
| Incidental Observation | Underground Fibre Optic Cable |
| Sharp-tailed Grouse Lek Survey Station | Provincial Boundary |
| Fortis Interconnection | Road |
| Permanent Met Tower | Project Area |
| Turbine | Study Area |

Sharp-tailed Grouse Lek Survey Station Locations
Bull Creek Wind Project

Figure 3

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Methods
August 25, 2015

2.3 RAPTOR NEST SURVEYS

The Study Area was surveyed for raptor nests during the fall and spring migration surveys, to identify raptor nests within 1,000 m of Project infrastructure. An appropriate species-specific setback buffer was applied as defined in the *Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* (SRD 2011a) and through discussions with AEP (Brett Boukall pers. comm.)

Surveyors scouted for potential nests in the Study Area and adjoining lands, and recorded all observed stick nests and individual raptors. When possible, nests were attributed to individual species. All raptor nests observed during the Fall 2014 surveys (including unoccupied nests) were revisited during the spring 2015 surveys to determine status and if applicable, species. Any new nests were also identified and distances to proposed infrastructure were recorded. All raptor observations included behavior (e.g., perched, nesting, flying), number, sex (if known), and life stage (adult, juvenile).

2.4 NOCTURNAL AMPHIBIAN SURVEYS

As requested by AEP in the Wind Energy Referral Report (ESRD 2014a), all wetlands with water, within 100 m of proposed development (i.e., turbines, access roads and collector lines) were surveyed for amphibians three times during the breeding season (i.e., May and June). Wetlands requiring surveys were identified using delineated wetlands from the Fall 2014 Supplemental Pre-construction Wetland Assessment (Stantec 2014), with survey locations selected to target specific wetlands and maximize coverage. Surveys followed the *Sensitive Species Inventory Guidelines* (ESRD 2013) and began a half-hour after sunset and continued until 01:00. Surveys were conducted under ideal weather conditions (no precipitation, temperature around 10°C, and no wind). On May 17, temperatures reached levels too cold to survey within the guidelines and as a result the visit was rescheduled to May 25. The second and third surveys occurred on May 26 and June 1.

Data recorded at each survey station included: time, UTM coordinates, standard weather data (temperature, wind, cloud cover, and precipitation), noise, and moon visibility. Before the surveys began, observers waited for two minutes to mitigate the effects of disturbance associated with initial arrival. Consistent with the protocol of the North American Amphibian Monitoring Program (USGS 2010) and AEP (ESRD 2013), the survey consisted of five minutes at each station listening for calling males.

BULL CREEK WIND POWER PROJECT 2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Methods
August 25, 2015

When calling individuals or choruses were detected, the following population index was used (USGS 2010):

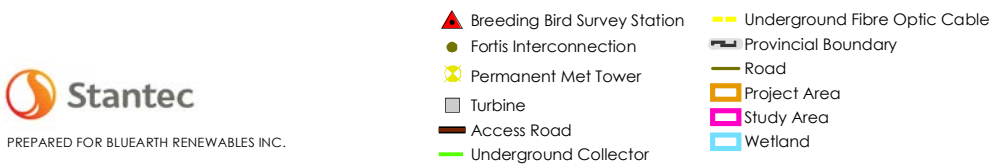
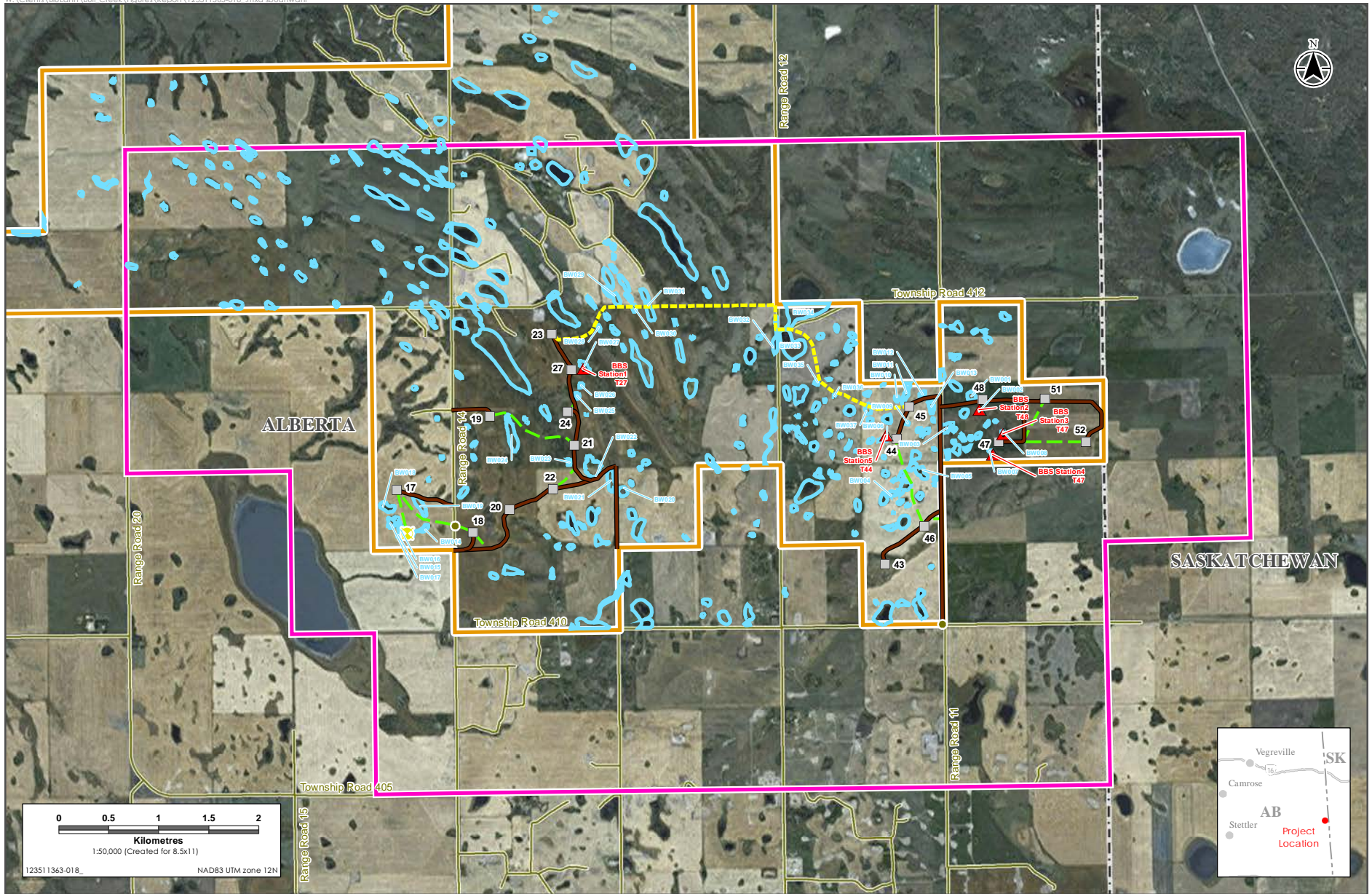
- 0 = no frogs or toads of a given species can be heard calling
- 1 = individual calls, not overlapping
- 2 = calls are overlapping, but individuals are still distinguishable
- 3 = numerous frogs or toads can be heard; chorus is constant and overlapping

If the survey point was not immediately next to a wetland where amphibians were heard, an estimated distance and bearing was recorded to identify the breeding wetland using imagery.

2.5 BREEDING BIRD SURVEYS

Recognizing that timing of peak breeding activity varies among species and following AEP guidelines (SRD 2011b, ESRD 2013), breeding bird surveys were conducted twice at each station (five stations total). The first breeding bird survey (i.e., Round One) was conducted on May 18, 2015 and the second breeding bird survey (i.e., Round Two) was conducted on June 2, 2015. General station locations were selected by AEP in the Wind Energy Referral Report (ESRD 2014a) at wetlands near turbines 27 (wetland BW027), 44 (wetland BW006), 47 (wetlands BW007 and 008) and 48 (wetland BW002) (Figure 4). These locations are also to be used for the PCMP. Surveys were conducted using a fixed-radius sampling procedure (Ralph et al. 1993; Bibby et al, 2000). Surveys began at sunrise and concluded by 09:30 and were conducted under ideal weather conditions (temperature above 0°C, winds less than 20 km/h as measured by a Kestrel meter at ground level, and no precipitation).

Upon arrival at the station, the observer completed a two-minute silent period to let effects of disturbance subside. Each survey consisted of two-consecutive five-minute point counts (treated as independent surveys). All birds heard or seen within 100 m were recorded, along with their estimated distance and direction from the observer, and behavior noted (loafing or flying in a specific direction). Observations >100 m from the observer were recorded as incidentals. All species of management concern or wildlife habitat features (e.g., nests) were also recorded.



Breeding Bird Survey Locations
Bull Creek Wind Project

Figure 4

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Methods
August 25, 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Results
August 25, 2015

3.0 RESULTS

3.1 BIRD MIGRATION

Due to the differences in potential risk for collisions of various bird groups (Kingsley and Whittam 2007), data are summarized according to seven guilds: waterfowl (ducks, geese and swans), waterbirds (herons, rails, cranes, and gulls), shorebirds (plovers and sandpipers), raptors (hawks, falcons, and eagles), owls, gamebirds (grouse, pheasants and partridge) and landbirds (pigeons, woodpeckers, crows, ravens and all songbirds).

3.1.1 Fall 2014 Migration

During Fall 2014 surveys, 319 observations of 7,637 individuals (46 species) were made in the Study Area (Table 3). Observations at individual stations are provided in Appendix A. Snow goose (*Chen caerulescens*; 3758 individuals) and Canada goose (*Branta canadensis*; 1587 individuals) were the most abundant birds, together accounting for 70% of birds observed. The next most abundant birds were the greater white-fronted goose (*Anser albifrons*; 825 individuals) and American crow (*Corvus brachyrhynchos*; 220 individuals). Golder (2012) showed similar results in the previous analysis where waterfowl, specifically Canada goose and snow goose, were the most commonly observed species in the fall and were identified as the species group with the highest potential for collision.

A total of 6,566 individual birds of 22 species (accounting for 85.8% of all observations) were recorded within the RSA (between 28.5 and 131.5 m) (Table 3). Waterfowl accounted for the majority of these observations with 3,758 (49%) snow goose, 1,133 (14%) Canada goose and 783 (10%) greater white-fronted goose observations recorded. Waterfowl were also the most commonly recorded species within the RSA in the spring and fall during the previous analysis (Golder 2012). Approximately 57.8% of all raptor observations were within the RSA, with Swainson's hawk (*Buteo swainsonii*) at 17 observations and red-tailed hawk (*Buteo jamaicensis*) at 12 observations, accounting for 78.4% of raptor observations within the RSA. Shorebirds were the only guild not observed in the RSA.

The majority of total observations (3,679 individuals or 48%) were at Station 8 (see Figure 2 for station locations). The most common flight path direction recorded at this station was north, with some observations recorded travelling south (Figure A-5 in Appendix A). Several waterfowl were observed flying to and from the large wetland complex to the south of the survey station (located greater than 1,000 m from the station and Study Area boundary). The abundance of waterfowl at Station 8 was attributed to its proximity to this wetland complex. Station 8 is the western most station in the Study Area, and is approximately 2,260 m northwest of the nearest turbine (Turbine 17). No birds observed at Station 8 were flying in an east or southeast direction (towards proposed turbine locations).

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
 August 25, 2015

Station 6 had the second highest number of observations (1,331 individuals or 17.4%). This station is located on the south edge of the Study Area, approximately 600 m from the closest proposed turbine (Turbine 43). The majority of flight path directions recorded were west (Figure A-3 in Appendix A). Station 7 had the lowest number of observations with 734 individuals (9.6%). This station is located on the north edge of the Study Area, approximately 970 m from the closest proposed turbine (Turbine 23). Flight paths recorded were primarily northeast and southwest (Figure A-4 in Appendix A).

No directional patterns were observed throughout the Study Area (flight direction figures in Appendix A) except at Station 5 (largely south; Figure A-2 in Appendix A).

Eleven species of management concern were observed systematically during the Fall 2014 survey period. This included: trumpeter swan (*Cygnus buccinator*), listed as a species of Special Concern under the Alberta *Wildlife Act* (ESRD 2014b); barn swallow (*Hirundo rustica*) listed as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2015); and lesser scaup (*Aythya affinis*), green-winged teal (*Anas carolinensis*), American bittern (*Botaurus lentiginosus*), sandhill crane (*Grus canadensis*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*), Swainson's hawk, black tern (*Chlidonias niger*) and least flycatcher (*Empidonax minimus*) which are provincially designated as Sensitive (ESRD 2012).

Table 3 Bird Species Recorded During Fall 2014 Migration Surveys

Bird Guild & Species	On Ground (Below RSA)	0-28.5 m (Below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	59 (2)¹ – 0.9%	523 (34) – 7.7%	6196 (79) – 90.9%	42 (2) – 0.6%	6820 (117)
Common loon	---	---	1 (1)	---	1 (1)
Snow goose	---	---	3758 (15)	---	3758 (15)
Canada goose	18 (1)	436 (8)	1133 (33)	---	1587 (42)
Greater white-fronted goose	---	---	783 (10)	42(2)	825 (12)
Tundra swan	---	---	84 (2)	---	84 (2)
Trumpeter swan	---	2(1)	---	---	2 (1)
Mallard	41 (1)	47 (14)	49 (8)	---	137 (23)
Gadwall	---	6 (1)	40 (1)	---	46 (2)
American wigeon	---	---	1 (1)	---	1 (1)
Lesser scaup	---	---	1 (1)	---	1 (1)
Blue-winged teal	---	11 (3)	---	---	11 (3)
Green-winged teal	---	5 (1)	---	---	5 (1)

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
 August 25, 2015

Table 3 Bird Species Recorded During Fall 2014 Migration Surveys

Bird Guild & Species	On Ground (Below RSA)	0-28.5 m (Below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Unknown goose	---	1 (1)	---	---	1 (1)
Unknown duck	---	15 (5)	346 (7)	---	361 (12)
Waterbird	1 (1) – 0.6%	15 (4) – 9.5%	132 (9) – 83.5%	10 (1) – 6.3%	158 (15)
American bittern	1 (1)	---	---	---	1 (1)
Sandhill Crane	---	---	39 (3)	10 (1)	49 (4)
Black tern	---	4 (3)	8 (3)	---	12 (6)
Unknown gull	---	11 (1)	85 (3)	---	96 (4)
Shorebird	3 (3) – 18.8%	13 (6) – 81.2%	0	0	16 (9)
Killdeer	3 (3)	7 (3)	---	---	10 (6)
Lesser yellowlegs	---	5 (2)	---	---	5 (2)
Wilson's snipe	---	1 (1)	---	---	1 (1)
Raptor	0	25 (22) – 39.1%	37 (28) – 57.8%	2 (2) – 3.1%	64 (52)
Bald eagle	---	1 (1)	2 (2)	---	3 (3)
Merlin	---	2 (2)	3 (1)	---	5 (3)
Northern harrier	---	3 (3)	---	---	3 (3)
Swainson's hawk	---	11 (9)	17 (13)	---	28 (22)
Red-tailed hawk	---	6 (5)	12 (9)	2 (2)	20 (16)
Rough-legged hawk	---	2 (2)	1 (1)	---	3 (3)
Unknown raptor	---	---	2 (2)	---	2 (2)
Landbird	5 (4) – 0.9%	383 (101) – 66.1%	191 (21) – 33.0%	0	579 (126)
Rock dove	---	3 (1)	---	---	3 (1)
Hairy woodpecker	---	2 (2)	---	---	2 (2)
Northern flicker	---	6 (1)	---	---	6 (1)
Least flycatcher	---	3 (1)	---	---	3 (1)
Eastern kingbird	---	5 (4)	---	---	5 (4)
Blue jay	1 (1)	1 (1)	---	---	2 (2)
Black-billed magpie	1 (1)	41 (20)	2 (1)	---	44 (22)
American crow	---	37 (6)	183 (19)	---	220 (25)
Common raven	---	7 (7)	---	---	7 (7)

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Results
August 25, 2015

Table 3 Bird Species Recorded During Fall 2014 Migration Surveys

Bird Guild & Species	On Ground (Below RSA)	0-28.5 m (Below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Barn swallow	---	27 (10)	6 (1)	---	33 (11)
Marsh wren	2(1)	---	---	---	2 (1)
American robin	---	21 (5)	---	---	21 (5)
Cedar waxwing	---	17 (3)	---	---	17 (3)
Clay-colored sparrow	1(1)	---	---	---	1 (1)
Vesper sparrow	---	3 (1)	---	---	3 (1)
Dark-eyed junco	---	9 (2)	---	---	9 (2)
Western meadowlark	---	1 (1)	---	---	1 (1)
Red-winged blackbird	---	3 (1)	---	---	3 (1)
Brewer's blackbird	---	5 (1)	---	---	5 (1)
Yellow-headed blackbird	---	8 (2)	---	---	8 (2)
Pine siskin	---	8 (2)	---	---	8 (2)
American goldfinch	---	113 (25)	---	---	113 (25)
Unknown blackbird	---	45 (2)	---	---	45 (2)
Unknown passerine	---	18 (3)	---	---	18 (3)
Grand Total	68 (10)– 0.9%	959 (167) – 12.6%	6556 (137) – 85.8%	54 (5) – 0.7%	7637 (319)
NOTES: ¹ Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

BULL CREEK WIND POWER PROJECT 2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
August 25, 2015

3.1.2 Spring 2015 Migration

During the Spring 2015 surveys, 358 observations of 3,773 individuals (52 species) were made in the Study Area (Table 4). Observations at individual stations are provided in Appendix B. Snow goose (1350 individuals) and Canada goose (953 individuals) were the most abundant birds, together accounting for approximately 61% of birds observed. The next most abundant species was sandhill crane (*Grus canadensis*) with 761 individuals recorded (20% of all observations), followed by Brewer's blackbird (*Euphagus cyanocephalus*) and red-winged blackbird (*Agelaius phoeniceus*), with 80 and 77 observations, respectively (accounting for 4.2% of all observations). In the previous analysis (Golder 2012), passerines were the most commonly observed group, followed by waterfowl.

A total of 276 individual birds of five species (accounting for 7.3% of all observations) were recorded within the RSA (between 28.5 and 131.5 meters), the majority (233 individuals or 84.4%) were Canada goose. No waterbirds, shorebirds or gamebirds were observed in the RSA during spring migration.

The majority of spring migration observations (3,178 observations; 84.3%) were recorded below the RSA (from the ground and up to 28.5 m). Station 4 had the highest number of observations within the RSA with 233 Canada goose (21.3% of observations). At this station, the recorded flight direction was primarily south.

As in the fall period, the majority of total bird observations (2,424 individuals or 64%) were recorded at Station 8 (Figure 2). The recorded flight paths were north and south, with several observations made of waterfowl flying to and from the large wetland south of the station, and foraging in a nearby cultivated field.

During the Spring 2015 migration period, 11 species of management concern were observed systematically, including: barn swallow, listed as Threatened by COSEWIC (COSEWIC 2015); horned grebe, listed as a Species of Special Concern (COSEWIC 2015) and lesser scaup, green-winged teal, northern pintail (*Anas acuta*), sandhill crane, sora (*Porzana carolina*), pied-billed grebe (*Podilymbus podiceps*), northern harrier, Swainson's hawk, eastern phoebe (*Sayornis phoebe*) which are provincially designated as Sensitive (ESRD 2012).

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
 August 25, 2015

Table 4 Bird Species Recorded During Spring 2015 Migration Surveys

Bird Guild & Species	On Ground (Below RSA)	0-28.5 m (Below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	954 (44)¹ – 38.5%	1266 (69) – 51.1%	258 (8) – 10.4%	0	2478 (121)
Snow goose	800 (1)	525 (2)	25 (1)	---	1350 (4)
Canada goose	61 (10)	659 (35)	233 (7)	---	953 (52)
Greater white-fronted goose	30 (2)	---	---	---	30 (2)
Mallard	11 (6)	42 (14)	---	---	53 (20)
Gadwall	---	10 (2)	---	---	10 (2)
American wigeon	11 (5)	2 (1)	---	---	13 (6)
Lesser scaup	8 (5)	3 (1)	---	---	11 (6)
Redhead	8 (4)	3 (1)	---	---	11 (5)
Canvasback	8 (4)	---	---	---	8 (4)
Northern shoveler	---	2 (2)	---	---	2 (2)
Northern pintail	---	2 (1)	---	---	2 (1)
Blue-winged teal	17 (7)	15 (8)	---	---	32 (15)
Green-winged teal	---	1 (1)	---	---	1 (1)
Ruddy duck	---	2 (1)	---	---	2 (1)
Waterbird	56 (29) – 6.6%	30 (11) – 3.5%	0	761 (8) – 89.8%	847 (48)
Sandhill crane	---	---	---	761 (8)	761 (12)
American coot	39 (13)	---	---	---	39 (13)
Sora	12 (11)	---	---	---	12 (11)
Pied-billed grebe	2 (2)	---	---	---	2 (2)
Horned grebe	3 (3)	---	---	---	3 (3)
Franklin's gull	---	19 (3)	---	---	19 (3)
Ring-billed gull	---	9 (7)	---	---	9 (7)
Unknown gull	---	2 (1)	---	---	2 (1)
Shorebird	13 (10) – 34.2%	25 (19) – 65.8%	0	0	38 (29)
Killdeer	13 (10)	18 (13)	---	---	31 (23)
Marbled godwit	---	2 (1)	---	---	2 (1)
Wilson's snipe	---	5 (5)	---	---	5 (5)

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Results
August 25, 2015

Table 4 Bird Species Recorded During Spring 2015 Migration Surveys

Bird Guild & Species	On Ground (Below RSA)	0-28.5 m (Below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Raptor	0	18 (17) – 85.7%	3 (3) – 14.3%	0	21 (20)
Sharp-shinned hawk	---	1 (1)	---	---	1 (1)
Northern harrier	---	3 (3)	---	---	3 (3)
Swainson's hawk	---	3 (2)	---	---	3 (2)
Red-tailed hawk	---	11 (11)	2 (2)	---	13 (13)
Unknown raptor	---	---	1 (1)	---	1 (1)
Gamebird	1 (1) – 100%	0	0	0	1 (1)
Ruffed grouse	1 (1)	---	---	---	1 (1)
Landbird	95 (50) – 24.5%	278 (84) – 71.6%	15 (1) – 3.9%	0	388 (135)
Northern flicker	6 (6)	1 (1)	---	---	7 (7)
Eastern phoebe	1 (1)	---	---	---	1 (1)
Northern shrike	---	2 (2)	---	---	2 (2)
Black-billed magpie	---	17 (7)	---	---	17 (7)
American crow	1 (1)	74 (20)	---	---	75 (21)
Common raven	1 (1)	12 (7)	---	---	13 (8)
Horned lark	---	3 (1)	---	---	3 (1)
Barn swallow	---	6 (3)	---	---	6 (3)
Tree swallow	---	28 (8)	---	---	28 (8)
Black-capped chickadee	1 (1)	---	---	---	1 (1)
American robin	2 (2)	12 (6)	---	---	14 (8)
Yellow warbler	1 (1)	---	---	---	1 (1)
Clay-colored sparrow	10 (6)	---	---	---	10 (6)
Savannah sparrow	4 (4)	2 (1)	---	---	6 (5)
Song sparrow	7 (6)	1 (1)	---	---	8 (7)
Vesper sparrow	13 (5)	9 (3)	---	---	22 (8)
White-throated sparrow	1 (1)	---	---	---	1 (1)
Dark-eyed junco	1 (1)	---	---	---	1 (1)

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
 August 25, 2015

Table 4 Bird Species Recorded During Spring 2015 Migration Surveys

Bird Guild & Species	On Ground (Below RSA)	0-28.5 m (Below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Brown-headed cowbird	---	4 (1)	---	---	4 (1)
Red-winged blackbird	43 (13)	34 (10)	---	---	77 (23)
Brewer's blackbird	---	65 (11)	15 (1)	---	80 (12)
Yellow-headed blackbird	3 (1)	4 (1)	---	---	7 (2)
Unknown blackbird	---	4 (1)	---	---	4 (1)
Grand Totals	1,119 (134) – 29.7%	1,607 (200) – 42.6%	276 (12) – 7.3%	761 (8) – 20.2%	3,773 (354)
NOTES: ¹ Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

3.1.3 Total Observations for Migrating Birds

Combining observations from Fall 2014 and Spring 2015, a total of 11,410 bird observations were recorded throughout the Study Area. Of these, 6,832 observations were within the RSA, accounting for 59.9% (Table 5). During the previous analysis (Golder 2012), 61.3% of all observations were within the RSA. Waterfowl were the species guild most commonly reported in the RSA, accounting for 52.1% of all observations in the RSA in this study and 73.8% of all observations in the previous study (Golder 2012).

Table 5 Fall 2014 and Spring 2014 Bird Observations within the RSA

Guild	Survey Period	Station 4	Station 5	Station 6	Station 7	Station 8
Waterfowl	Fall	542	776	769	580	3529
	Spring	221	3	0	9	26
Waterbird	Fall	95	20	0	11	6
	Spring	0	0	0	0	0
Shorebird	Fall	0	0	0	0	0
	Spring	0	0	0	0	0
Raptor	Fall	10	12	5	5	5
	Spring	0	1	1	0	0
Landbird	Fall	60	10	18	9	94
	Spring	0	0	0	0	15
Totals	Combined	928	822	793	614	3675

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
August 25, 2015

3.2 SHARP-TAILED GROUSE LEK

Areas of potentially suitable habitat within 500 m of proposed Project development were identified in Sections NW and SW 04-41-01-W4M, NE and SE 09-41-01-W4M, SW 15-41-01-W4M, NE 01-41-01-W4M, SE 02-41-01-W4M, and SW 12-41-01-W4M, with the latter two outside the Study Area boundary but within 500 m of proposed development.

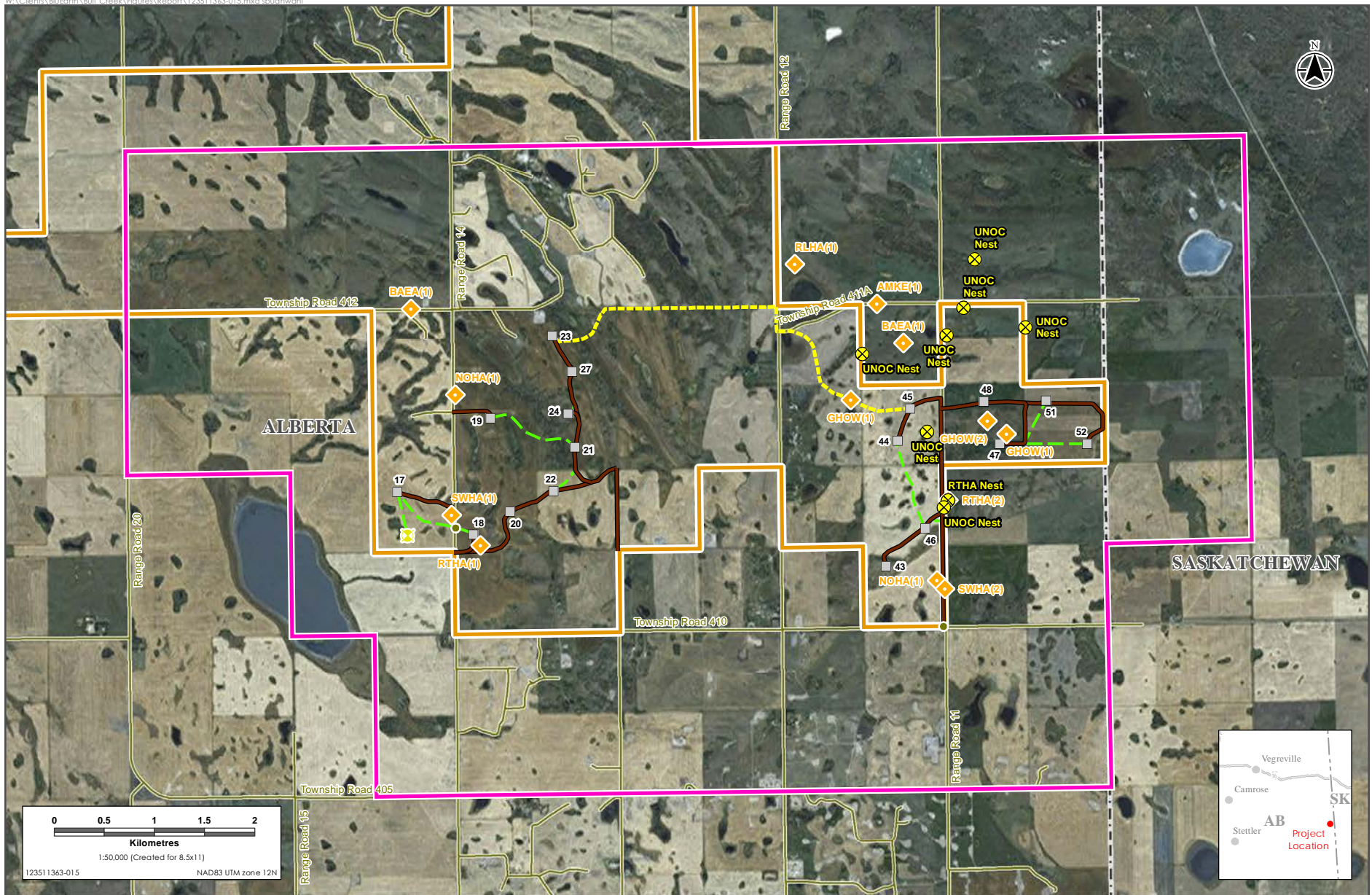
No sharp-tailed grouse leks were observed during the Spring 2015 surveys, and one incidental observation (n = 2; see Figure 2 for location) was recorded (Figure 3).

3.3 RAPTOR NESTS

Seven unoccupied stick nests and one red-tailed hawk nest were observed within the Study Area (Table 6; Figure 5); none of the stick nests observed were occupied by a species of management concern or raptor species requiring a large setback (as identified in SRD 2011a). Six raptor and one owl species were observed in the Study Area: American kestrel (*Falco sparverius*), bald eagle, northern harrier, Swainson's hawk, red-tailed hawk, rough-legged hawk (*Buteo lagopus*) and great horned owl (*Bubo virginianus*).

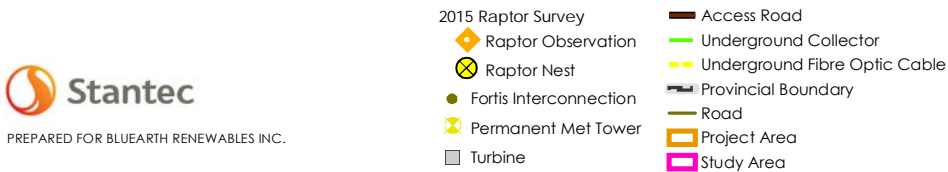
Table 6 Stick Nest Locations in the Study Area

Habitat Feature	# Observed	Easting	Northing	Comments
Red-tailed Hawk Nest	2 birds observed at nest	565958	5817503	Not observed during 2014 surveys; first activity observed May 8, 2015 and confirmed active on May 25, 2015 Located approximately 60 m east of access road (existing RR11), 213m east of underground collector line, and 360 m east of closest turbine (Turbine 46)
Unoccupied Stick Nest	N/A	565104	5818964	Found during 2014 surveys, not active in 2015
Unoccupied Stick Nest	N/A	566225	5819911	Found during 2014 surveys, not active in 2015
Unoccupied Stick Nest	N/A	565946	5819148	Found during 2014 surveys, not active in 2015
Unoccupied Stick Nest	N/A	566732	5819231	Found during 2014 surveys, not active in 2015
Unoccupied Stick Nest	N/A	566115	5819427	Found during 2014 surveys, not active in 2015
Unoccupied Stick Nest	N/A	565750	5818187	Found during 2014 surveys, not active in 2015
Unoccupied Stick Nest	N/A	565916	5817429	Found during 2014 surveys, not active in 2015



Sources: ESRI World Imagery Service, Project Data provided by BlueEarth, Stantec Survey Locations provided by Stantec, Base data provided by Canvec.

Disclaimer: this map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.



Raptor and Raptor Nest Locations
Bull Creek Wind Project

Figure 5

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
 August 25, 2015

Activity was first observed at the red-tailed hawk nest on May 8, and was confirmed active on May 25 (two adults present at the nest site). This nest is approximately 60 m east of the existing Range Road 11. No other nests were confirmed active within the Study Area).

3.4 NOCTURNAL AMPHIBIAN

Three amphibian species were detected in the Study Area during the nocturnal amphibian surveys: boreal chorus frog (*Pseudacris maculata*); wood frog (*Rana sylvatica*) and Canadian toad (*Anaxyrus hemiophrys*). Canadian toad is listed as May Be At Risk in Alberta (ESRD 2012).

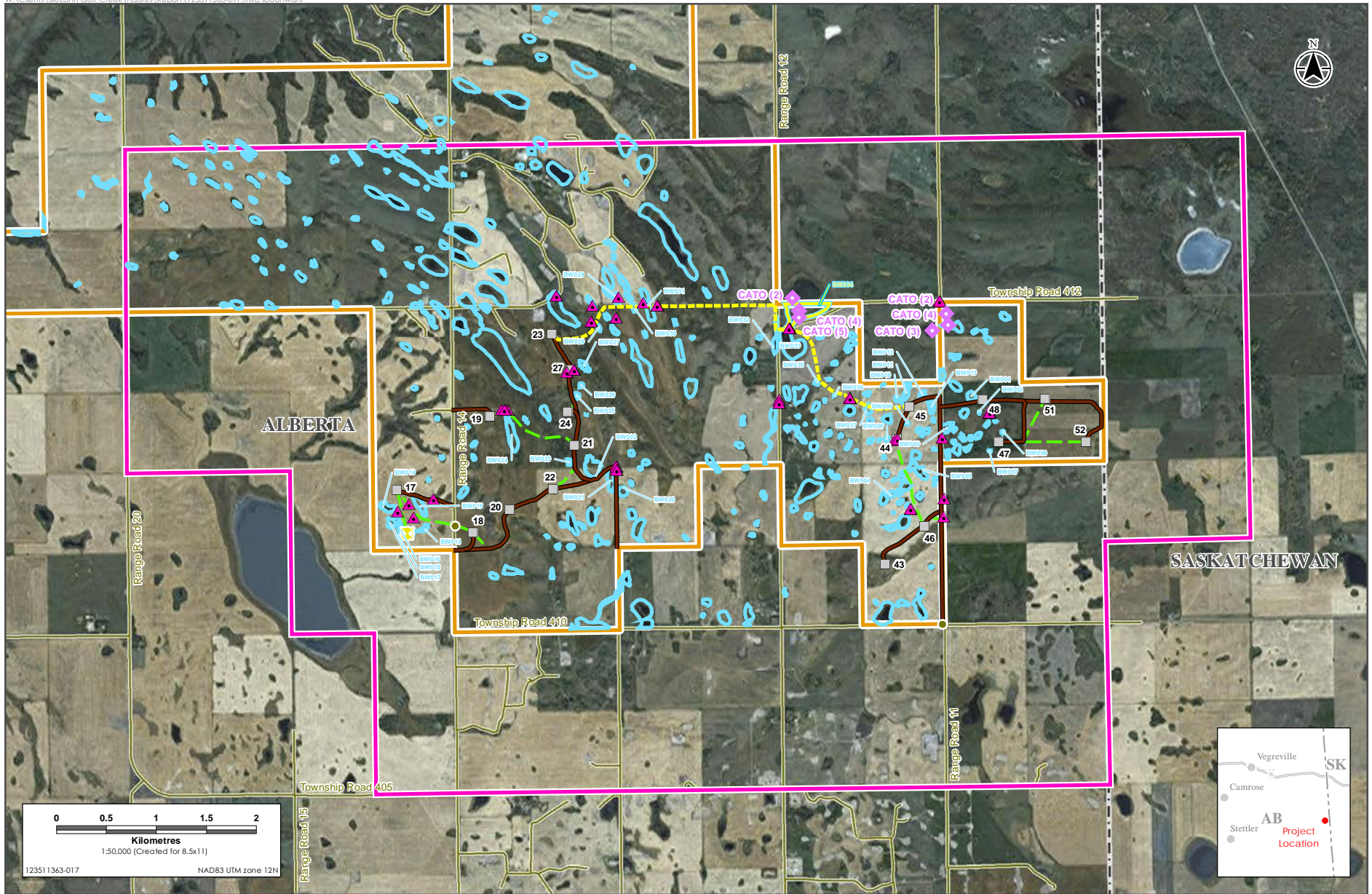
Boreal chorus frog were the most abundant amphibian (n = 1264), and were observed throughout the Study Area (see Appendix C for details on locations). Wood frog was only systematically observed once (n = 1), but was observed incidentally in several wetlands during diurnal surveys.

Two wetlands were identified as breeding ponds for Canadian toad (Figure 6). On May 25-26, six toads were observed in an unnamed wetland in NW 12-41-01-W4M, south of Township Road 412. This wetland is not within 100 m of any proposed development. Seven toads were observed in wetland BW 034. Township Road 411A separates this wetland from the proposed underground fibre optic cable, which is located approximately 11 m to the south at its closest point. On June 2, 2015, two toads were again recorded in the wetland in NW 12-41-01-W4M and five toads were again observed in wetland BW034 (Table 7). Based on the consistent activity of Canadian toads observed at these two wetlands, it is assumed that Canadian toads were absent from the other wetlands within the Study Area.

Non-amphibian species of management concern observed incidentally during the nocturnal amphibian surveys are provided in Section 3.6.

Table 7 Canadian Toad Observations in the Study Area

Name	Count	Date	Easting	Northing	Wetland	Comments
Canadian Toad	6	25-May-2015	564480	5819373	BW034	Wetland ~11 m north of proposed fibre optic cable; wetland bisected by Township Road 411A
Canadian Toad	7	25-May-2015	565971	58199233	Unnamed (in NW 12-41-01-W4M)	Wetland is not within 100 m of any proposed development
Canadian Toad	5	02-June-2015	564477	58199307	BW034	Wetland ~11 m north of proposed collector line; wetland bisected by Township Road 411A
Canadian Toad	2	02-June-2015	565950	58199345	Unnamed (in NW 12-41-01-W4M)	Wetland is not within 100 m of any proposed development



Sources: ESRI World Imagery Service, Project Data provided by BlueEarth, Stantec Survey Locations provided by Stantec, Base data provided by Canvec.

Disclaimer: this map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.

- | | | |
|------------------------------|-------------------------------|-----------------------------|
| 2015 Amphibian Survey | Turbine | Road |
| Amphibian Survey Observation | Access Road | Canadian Toad Breeding Pond |
| Amphibian Survey Station | Underground Collector | Project Area |
| Fortis Interconnection | Underground Fibre Optic Cable | Study Area |
| Permanent Met Tower | Provincial Boundary | Wetland |



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Nocturnal Amphibian
Survey Station Locations
Bull Creek Wind Project
Figure 6

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Results
August 25, 2015

3.5 BREEDING BIRD

3.5.1 Breeding Bird Survey Round One

On May 18, 2015, 55 birds of 16 species were observed during Round One of the breeding bird surveys at five stations (observations provided in Appendix D). This includes four waterfowl, one waterbird, one shorebird and ten landbirds. The most commonly observed species was the clay-colored sparrow (*Spizella pallida*; n = 12), accounting for 22% of all observations, followed by the black-billed magpie (*Pica hudsonia*) and mallard (*Anas platyrhynchos*) (both n = 6) each accounting for 11% of all observations. Four species had only a single observation in the Study Area: northern shoveler (*Anas clypeata*), American coot (*Fulica americana*), American robin (*Turdus migratorius*) and yellow-rumped warbler (*Setophaga coronata*). The average number of territories per station for Round One was 6.8, with the highest number of territories (n = 10) observed at BBS_Station1_T27, which is a shrubby Class III wetland surrounded by trees (Stantec 2014). The lowest number of territories (n = 2) was observed at BBS_Station5_T44, which is a shrubby Class III wetland surrounded by cultivation (Stantec 2014).

No species of management concern were observed during the first breeding bird survey.

3.5.2 Breeding Bird Survey Round Two

On June 2, 2015, 44 birds of 16 species were observed during Round Two of the breeding bird surveys (observations provided in Appendix D) including three waterfowl, one waterbird and 12 landbirds. Clay-colored sparrow was the most common observed species (n = 9), accounting for 20% of all observations, followed by the American goldfinch (*Spinus tristis*; n = 6) and vesper sparrow (*Pooecetes gramineus*; n = 5) accounting for 14% and 11% of all observations, respectively. Six species had single observations in the Study Area: mallard, blue-winged teal (*Anas discolors*), American coot, least flycatcher, savannah sparrow (*Passerculus sandwichensis*) and red-winged blackbird (*Agelaius phoeniceus*). The average number of territories per station in Round Two was 7.4, with the highest number of territories (n = 12) observed again at BBS_Station1_T27 and the lowest number of territories (n = 4) observed again at BBS_Station5_T44.

Sprague's pipit (*Anthus spragueii*), federally listed as Threatened (Government of Canada 2015), was observed incidentally (greater than 100 m from the point count radius) south of Turbine 47. As the Sprague's pipit breeds in native prairie, it can be assumed a singing/displaying male is indication of nesting, and an appropriate buffer will need to be established during construction activities. One species of management concern, the provincially Sensitive (ESRD 2012) least flycatcher, was observed systematically during the breeding bird survey at Wetland BW027.

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Results
 August 25, 2015

3.6 SPECIES OF MANAGEMENT CONCERN

Twenty-one species of management concern were observed during systematic and incidental surveys in the Study Area (Table 8; Figure 6), including 20 bird species (4 waterfowl, 6 waterbird, 4 raptor, 1 gamebird, and 5 landbird species) and one amphibian species (Section 3.4). Of the 20 bird species, two are federally listed as Threatened under the SARA (Government of Canada 2015), one is listed as a Species of Special Concern under the AWA (ESRD 2014b), one is listed as Threatened by COSEWIC (COSEWIC 2015), and 16 are considered Sensitive in Alberta (ESRD 2012).

Table 8 Species of Management Concern Observations in the Study Area

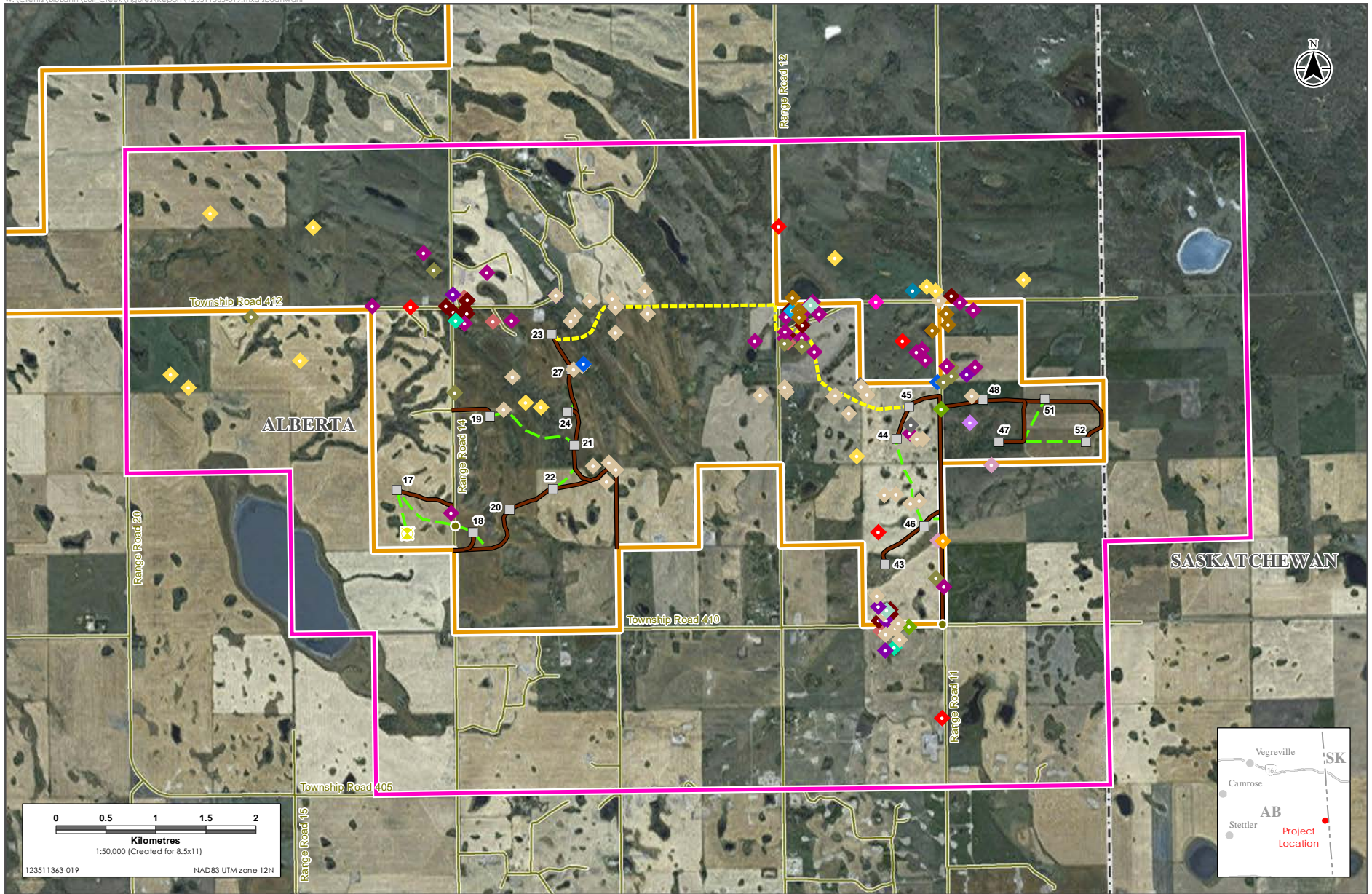
Species	# Observations	SARA Status ¹	COSEWIC Status ²	AWA Status ³	AEP Status ⁴	Observation Type
Waterfowl						
Green-winged teal	6	---	---	---	Sensitive	Systematic (Migration)
Lesser scaup	9	---	---	---	Sensitive	Systematic (Migration)
Northern pintail	2	---	---	---	Sensitive	Systematic (Migration)
Trumpeter swan	2	---		Special Concern	At Risk	Systematic (Migration)
Waterbirds						
American bittern	3	---	---	---	Sensitive	Systematic & Incidental (Migration, Nocturnal Amphibian)
Sora	52	---	---	---	Sensitive	Systematic & Incidental (Migration, Nocturnal Amphibian)
Pied-billed grebe	2	---	---	---	Sensitive	Systematic (Migration)
Sandhill crane	804	---	---	---	Sensitive	Systematic (Migration)
Horned grebe	3	---	---	---	May Be At Risk	Systematic (Migration)
Black tern	12	---	---	---	Sensitive	Systematic (Migration)
Gamebird						
Sharp-tailed grouse	2	---	---	---	Sensitive	Systematic (Sharp-tailed Grouse Lek)

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Results
August 25, 2015

Table 8 Species of Management Concern Observations in the Study Area

Species	# Observations	SARA Status ¹	COSEWIC Status ²	AWA Status ³	AEP Status ⁴	Observation Type
Raptor						
Bald eagle	5	---	---	---	Sensitive	Systematic and Incidental (Migration)
American kestrel	1	---	---	---	Sensitive	Incidental (Migration)
Swainson's hawk	37	---	---	---	Sensitive	Systematic and Incidental (Migration, Raptor)
Northern harrier	9	---	---	---	Sensitive	Systematic and Incidental (Migration)
Landbirds						
Common nighthawk	1	Threatened	Threatened	---	Sensitive	Incidental (Nocturnal Amphibian)
Eastern phoebe	1	---	---	---	Sensitive	Systematic (Migration)
Least flycatcher	4	---	---	---	Sensitive	Systematic (Migration and Breeding Bird)
Barn swallow	39	---	Threatened	---	Sensitive	Systematic (Migration)
Sprague's pipit	2	Threatened	Threatened	Special Concern	Sensitive	Incidental (Breeding Bird)
Amphibian						
Canadian toad	20	No Status	Not Listed	Data Deficient	May Be At Risk	Systematic (Nocturnal Amphibian)
NOTES: ¹ Government of Canada 2015 ² COSEWIC 2015 ³ ESRD 2014b ⁴ ESRD 2012						



Sources: ESRI World Imagery Service. Project Data provided by BlueEarth. Stantec Survey Locations provided by Stantec. Base data provided by Canvec.

Disclaimer: this map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.



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Species of Management Concern
Observations in the Study Area
Bull Creek Wind Project
Figure 7

BULL CREEK WIND POWER PROJECT 2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Discussion
August 25, 2015

4.0 DISCUSSION

The following is a summary of results from the supplemental wildlife surveys undertaken for the Project:

- During the 2014 fall migration, the majority of bird observations were within the RSA and waterfowl were the most commonly observed species guild in the RSA, followed by landbirds.
- During the 2015 spring migration, the majority of bird observations were below the RSA.
- The majority of bird observations in both the fall and spring periods were at Station 8. Most birds observations at this station were recorded flying west of the Study Area and proposed turbines, with several observations made of birds flying to and from the large wetland complex to the south of the station.
- Eight raptor nests were observed in the Study Area; however, only one was occupied during the 2015 analysis and it was not a species of management concern.
- No sharp-tailed grouse leks were observed in the Study Area.
- Two Canadian toad breeding ponds were identified, one of which is approximately 11 m from a proposed fibre optic cable. The breeding pond is separated from the collector line by Township Road 411A; however, the Enhanced Approval Process (EAP) recommends a 100 m setback from identified breeding ponds (AER 2013). The other breeding pond is not within 100 m of proposed development.
- Twenty-five bird species were observed during the breeding bird surveys, two of which are species of management concern: the federally listed Sprague's pipit and the provincially sensitive least flycatcher.
- Twenty-one species of management concern were observed systematically and incidentally within the Study Area. No habitat features (e.g., nests) were found associated with any species of management concern observation.

Migration surveys indicate a high level of avian flight activity within the RSA during fall migration, with waterfowl being the species guild with the highest potential for collision. This is a similar result to those found during the previous analysis (Golder 2012). The majority of observations, and majority of activity within the RSA, were at Station 8 and were attributed to flights to and from the large wetland south of the station. Factoring in only the four stations within closer proximity to the proposed turbines, the level of activity in the RSA is reduced to 73.8% in the fall and to 0.7% in the spring. Waterfowl were also the most commonly observed species guild in the RSA during spring. The presence of large numbers of waterfowl does not necessarily indicate that large numbers of fatalities will occur (Kingsley and Whittam 2005), and that the number of reported waterfowl fatalities at wind facilities has been relatively low in relation to the number of waterfowl using an area (Erikson et al. 2002). However, reduced abundance of waterfowl near wind energy development has been reported (Loesch et al. 2012), which suggest waterfowl may develop avoidance behavior near wind turbines.

BULL CREEK WIND POWER PROJECT

2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Discussion
August 25, 2015

The red-tailed hawk nest is within 60 m of the access road which is assigned a 100 m setback from development (Brett Boukall, pers. comm). However, as the access road is the existing Range Road 11 and has been in use prior to the hawk establishing a nest, no impacts from disturbance from the Project construction activities are anticipated. As this nest is within 1,000 m of turbines (approximately 360 m east of Turbine 46) it is recommended the nest be monitored during the PCMP, along with any other nests that are determined active.

Canadian toad wetlands have a recommended 100 m setback from proposed development, and therefore a mitigation plan approved by AEP is required to mitigate disturbance to identified breeding ponds. Wetland BW034 is within 11 m of the proposed underground fibre optic cable. Although the wetland is separated from the fibre optic cable by Township Road 411A and minimal disturbance is anticipated, it is recommended that silt fencing be placed around the wetland (placement confirmed with AEP) to minimize any potential disturbances associated with construction activities and increased traffic on Township Road 411A and Range Road 12.

Breeding bird stations conducted for the pre-construction surveys will be surveyed during the PCMP, and the average territories per station identified during the pre-construction surveys will be used for comparison with the PCMP results. Due to the small sample size it is not possible to provide a statistical based calculation of diversity and density; therefore, totals are provided. Breeding bird surveys identified an average of 6.8 and 7.4 territories per station in Round One and Round Two, respectively. The highest territories were observed at BBS_Station1_T27, which was near wetland BW027. This wetland was the largest of the wetlands surveyed during the breeding bird surveys, and contained the most diverse habitat (large wetland surrounded by dense shrubs and trees). One species of management concern was observed systematically at this location, the least flycatcher, which typically breeds in open deciduous and mixed woodlands (Baicich and Harrison 2005). The Sprague's pipit was observed incidentally in the native prairie south of BBS_Station4_T47 during the breeding bird survey and in the native prairie near Turbine 43. As the Sprague's pipit breeds in native prairie, it can be assumed a singing/displaying male is indication of nesting, and an appropriate buffer will need to be established during construction activities. In addition, bird nest sweeps should be conducted in habitats suitable for nesting birds (i.e., native prairie, tame pasture, wetlands and treed habitats) prior to construction activity to reduce the potential for direct mortality associated with construction activities (e.g., vegetation clearing).

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Conclusion
August 25, 2015

5.0 CONCLUSION

Results of the 2014 and 2015 supplemental pre-construction wildlife surveys have led to the following recommendations for construction:

- Silt fencing should be placed around Canadian toad Wetland BW034 during construction
- Bird nest sweeps should be conducted in areas suitable for nesting birds (e.g., native prairie, tame pasture, wetlands and treed habitats) and appropriate setback distances and timing restrictions should be applied as agreed upon with AEP

In addition to commitments already made by BCWP for post-construction monitoring, it is recommended that:

- The red-tailed hawk nest (and any other nests determined to be active at time of operation) should be monitored during the PCMP
- Breeding bird stations should continue to be monitored during the PCMP at the same survey stations established during the pre-construction surveys

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Conclusion
August 25, 2015

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

References
August 25, 2015

6.0 REFERENCES

- Alberta Energy Regulatory (AEP). 2013. Integrated Standards and Guidelines – Enhanced Approval Process (EAP). Effective December 1, 2013. Available at: <http://aep.alberta.ca/forms-maps-services/enhanced-approval-process/eap-manuals-guides/documents/EAP-IntegratedStandardsGuide-Dec01-2013.pdf>
- Alberta Environment and Sustainable Resource Development (ESRD). 2012. Alberta Wild Species General Status Listing – 2010. Fish and Wildlife Division, Sustainable Resource Development. 242 pp.
- Alberta Environment and Sustainable Resource Development (ESRD). 2013. Sensitive Species Inventory Guidelines. Available at: <http://esrd.alberta.ca/fish-wildlife/wildlife-management/documents/SensitiveSpeciesInventoryGuidelines-Apr18-2013.pdf>.
- Alberta Environment and Sustainable Resource Development (ESRD). 2014a. Wind Energy Referral Report – ESRD Resource Management. November 17, 2014. Fish and Wildlife Division, Vermilion, AB. 10 pp.
- Alberta Environment and Sustainable Resource Development (ESRD). 2014b. Government of Alberta. 2014. Species Assessed by Alberta's Endangered Species Conservation Committee. Fish and Wildlife Policy Branch, Environment and Sustainable Resource Development. 2 pp.
- Alberta Sustainable Resource Development (SRD). 2011a. Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta. Fish and Wildlife Division, Sustainable Resource Development. Edmonton, AB. 5 pp.
- Alberta Sustainable Resource Development (SRD). 2011b. Wildlife Guidelines for Alberta Wind Energy Projects. Fish and Wildlife Division, Sustainable Resource Development. Edmonton, AB. 11 pp.
- American Wind Wildlife Institute (AWWI). 2015. Wind turbine interactions with wildlife and their habitats: a summary of research results and priority questions. Available at: <https://awwi.org/resources/summary-of-wind-wildlife-interactions-2/#section-summary-of-windwildlife-interactions>
- Baicich, P. J. And J. O. Harrison. 2005. Nests, Eggs and Nestlings of North American Birds. Second Edition. Princeton Field Guides.
- Bibbey, C.J., N.D. Burgess, D.A. Hill and S. Mustoe. 2000. Bird Census Techniques. Second Edition. Academic Press, London.

BULL CREEK WIND POWER PROJECT 2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

References

August 25, 2015

- Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2015. Wildlife Species Search. Available at: http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed July 21, 2015.
- Erikson, W.P., G.D. Johnson, M.D. Strickland, D.P. Young, K.J. Sernja Jr. and R.E. Good. 2001. Avian collisions with wind turbines: a summary of existing studies and comparisons to other sources of avian collision mortality in the United States. Western Ecosystems Technology Inc. National Wind Coordinating Committee Resource Document. Available at: <http://www.nationalwind.org/publications/avian.htm>
- Erikson, W., G. Johnson, D. Young, D. Strickland, R. Good, M. Bourassa, K. Bay and K. Sernka. 2002. Synthesis and Comparison of Baseline Avian and Bat Use, Raptor Nesting and Mortality Information from Proposed and Existing Wind Developments. Prepared by Western Ecosystems Technology, Inc. Prepared for Bonneville Power Administration, Portland, Oregon.
- Golder Associates (Golder). 2012. Environmental Evaluation – Bull Creek Wind Power Project. Prepared for BluEarth Renewables Inc.
- Government of Canada. 2015. Species at Risk Act Public Registry. Available at: <https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1>
- Kingsley, A. and B. Whittam. 2005. Wind Turbines and Birds: A Guidance Document for Environmental Assessment. Environment Canada, Canadian Wildlife Service, Gatineau, Quebec.
- Kingsley, A. and B. Whittam. 2007. Wind Turbines and Birds – A Background Review for Environmental Assessment. Prepared for Environment Canada/Canadian Wildlife Service. Gatineau, Quebec.
- Loesch, C.R., J.A. Walker, R.E. Reynolds, J.S. Gleason, N.E. Niemuth, S.E. Stephens and M.A. Erikson. 2012. Effect of Wind Energy Development on Breeding Duck Densities in the Prairie Pothole Region. The Journal of Wildlife Management 77(3): 587-598.
- Ralph, C.J., G.R. Geupel, P. Pyle, T.E. Martin, and D.F. DeSante. 1993. Handbook of field methods for monitoring landbirds. Gen. Tech. Rep. PSWGTR-144. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 41 pp.
- Stantec Consulting Ltd. (Stantec). 2014. Bull Creek Wind Power Project Fall 2014 Supplemental Pre-construction Wetland Assessment. Calgary, AB.
- United States Geological Survey (USGS). 2010. North American Amphibian Monitoring Program. Available at: <https://www.pwrc.usgs.gov/naamp/index.cfm>.

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

Appendix A FALL 2014 BIRD MIGRATION OBSERVATIONS

Tables A-1 Bird Species Recorded During Fall 2014 Migration Surveys at Station 4

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	0	59 - 9.8%	542 - 90.2%	0	601 (21)
Snow goose	---	---	85 (1)	---	85 (1)
Canada goose	---	40 (1)	291 (5)	---	331 (6)
Greater white-fronted goose	---	---	91 (2)	---	9 (2)
Tundra swan	---	---	21 (1)	---	21 (1)
American wigeon	---	---	1 (1)	---	1 (1)
Mallard	---	1 (1)	13 (5)	---	14 (6)
Gadwall	---	6 (1)	40 (1)	---	46 (2)
Unknown duck	---	12 (2)	---	---	12 (2)
Waterbird	1 - 1%	0	95 - 99%	0	96 (4)
American bittern	1 (1)	---	---	---	1 (1)
Sandhill crane	---	---	14 (1)	---	14 (1)
Black tern	---	---	1 (1)	---	1 (1)
Unknown gull	---	---	80 (1)	---	80 (1)
Shorebird	0	10 - 100%	0	0	10 (4)
Killdeer	---	5 (2)	---	---	5 (2)
Lesser yellowlegs	---	5 (2)	---	---	5 (2)
Raptor	0	12 - 54.5%	10 - 45.5%	0	22 (15)
Bald eagle	---	1 (1)	---	---	1 (1)
Merlin	---	2 (2)	3 (1)	---	5 (3)
Northern harrier	---	1 (1)	---	---	1 (1)
Swainson's hawk	---	8 (6)	5 (3)	---	13 (9)
Red-tailed hawk	---	---	2 (1)	---	2 (1)
Landbird	3 - 2.4%	64 - 50.4%	60 - 47.2%	---	127 (25)
Rock dove	---	3 (1)	---	---	3 (1)
Hairy woodpecker	---	1 (1)	---	---	1 (1)

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

Tables A-1 Bird Species Recorded During Fall 2014 Migration Surveys at Station 4

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Eastern kingbird	---	1 (1)	---	---	1 (1)
Blue jay	---	1 (1)	---	---	1 (1)
Black-billed magpie	---	7 (4)	---	---	7 (4)
American crow	---	2 (1)	60 (3)	---	62 (4)
Barn swallow	---	5 (2)	---	---	5 (2)
Marsh wren	2 (1)	---	---	---	2 (1)
Cedar waxwing	---	11 (2)	---	---	11 (2)
Clay-colored sparrow	1 (1)	---	---	---	1 (1)
American goldfinch	---	18 (4)	---	---	18 (4)
Unknown blackbird	---	5 (1)	---	---	5 (1)
Unknown passerine	---	10 (2)	---	---	10 (2)
Grand Total	4 – 0.5%	145 – 16.9%	707 – 82.6%	---	856 (59)
NOTE: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

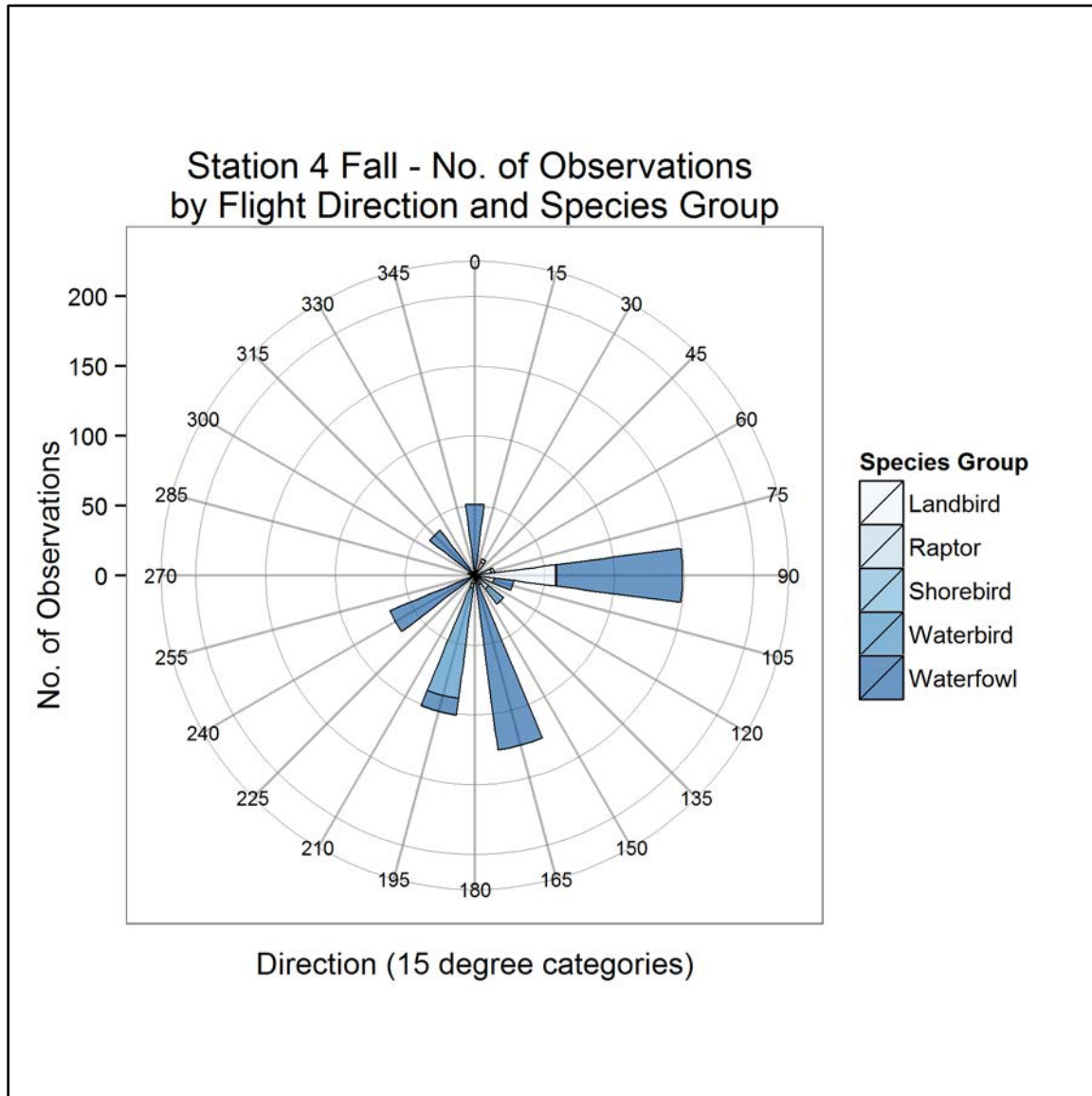


Figure A-1 Direction and Size of Flight Paths Recorded at Station 4 in Fall 2014

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix A Fall 2014 Bird Migration Observations
 August 25, 2015

Table A-2 Bird Species Observed During Fall 2014 Migration Surveys at Station 5

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	0	53 - 6.4%	776 – 93.6%	0	829 (22)
Snow goose	---	---	410 (5)	---	410 (5)
Canada goose	---	35 (1)	287 (10)	---	322 (11)
Greater white-fronted goose	---	---	78 (2)	---	78 (2)
Trumpeter swan	---	2 (1)	---	---	2 (1)
Mallard	---	16 (2)	---	---	16 (2)
Lesser scaup	---	---	1 (1)	---	1 (1)
Waterbird	0	0	20 (3) – 66.7	10 (1) – 33.3%	30 (3)
Sandhill crane	---	---	19 (2)	10 (1)	29 (2)
Unknown gull	---	---	1 (1)	---	1 (1)
Shorebird	1 – 33.3%	2 – 66.7%	0	0	3 (2)
Killdeer	1 (1)	2 (1)	---	---	3 (2)
Raptor	0	7 - 35%	12 - 60%	1 – 5%	20 (18)
Northern harrier	---	2 (2)	---	---	2 (2)
Swainson's hawk	---	2 (2)	7 (6)	---	9 (8)
Red-tailed hawk	---	1 (1)	5 (4)	1 (1)	7 (6)
Rough-legged hawk	---	2 (2)	---	---	2 (2)
Landbird	1 - 0.6%	144 – 92.9%	10 – 6.5%	0	155 (26)
Least flycatcher	---	3 (1)	---	---	3 (1)
Eastern kingbird	---	3 (2)	---	---	3 (2)
Black-billed magpie	1 (1)	10 (6)	---	---	11 (7)
American crow	---	32 (3)	10 (3)	---	42 (6)
Common raven	---	3 (3)	---	---	3 (3)
Barn swallow	---	3 (1)	---	---	3 (1)
American robin	---	3 (2)	---	---	3 (2)
Vesper sparrow	---	3 (1)	---	---	3 (1)
Dark-eyed junco	---	9 (2)	---	---	9 (2)
Western meadowlark	---	1 (1)	---	---	1 (1)
Pine siskin	---	3 (1)	---	---	3 (1)
American goldfinch	---	31 (8)	---	---	31 (8)
Unknown blackbird	---	40 (1)	---	---	40 (1)
Grand Total	2 – 0.2%	206 – 19.9%	818 – 79.8%	11 – 0.1%	1037 (71)
NOTE: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

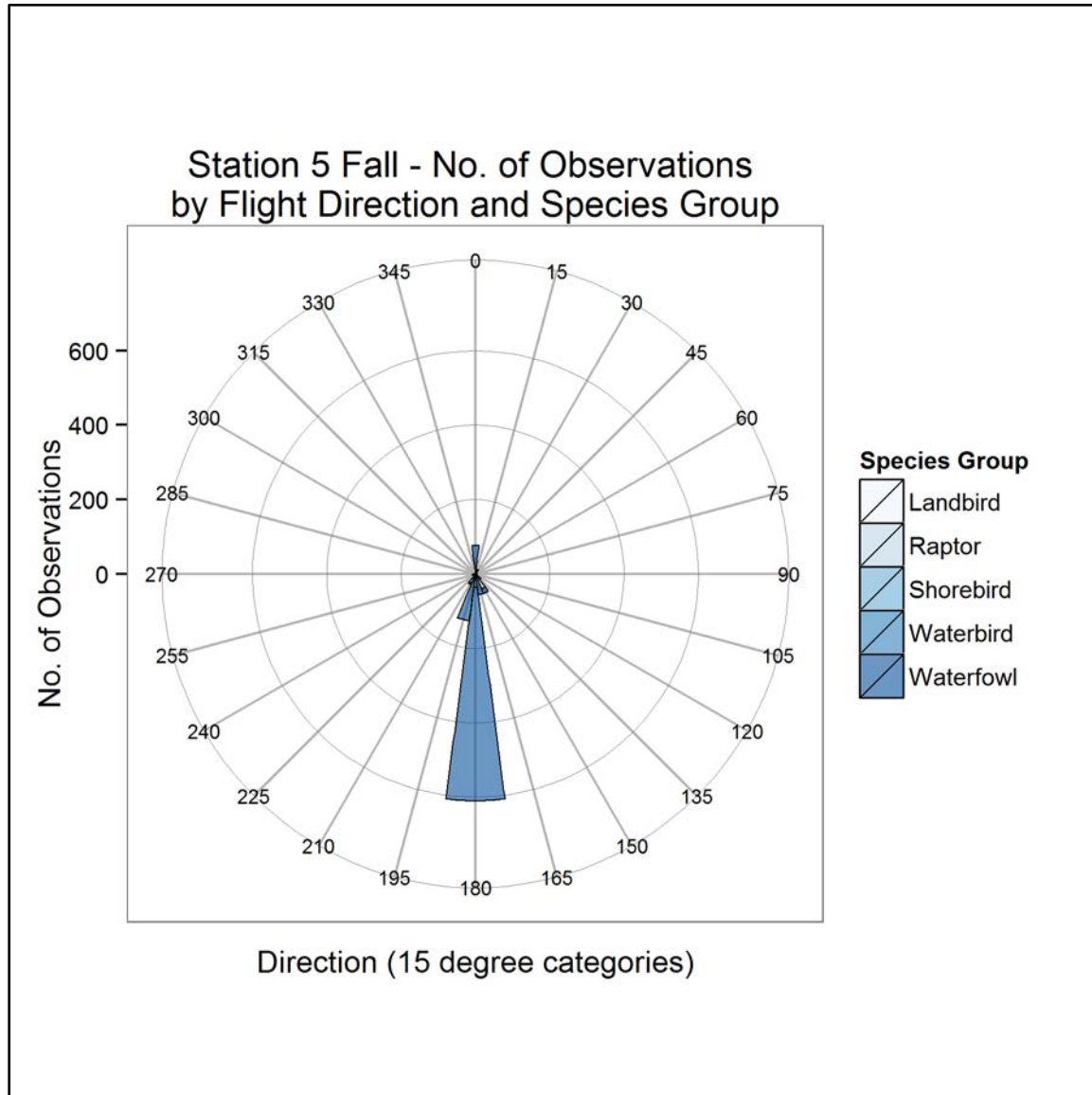


Figure A-2 Direction and Size of Flight Paths Recorded at Station 5 in Fall 2014

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

Table A-3 Bird Species Observed During Fall 2014 Migration Surveys at Station 6

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	59 – 4.7%	400 – 31.8%	769 – 61.2%	28 – 2.2%	1256 (33)
Snow goose	---	---	450 (1)	---	450 (1)
Canada goose	18 (1)	360 (5)	167 (5)	---	545 (11)
Greater white-fronted goose	---	---	---	28 (1)	28 (1)
Mallard	41 (1)	22 (7)	30 (2)	---	93 (10)
Blue-winged teal	---	11 (3)	---	---	11 (3)
Green-winged teal	---	5 (1)	---	---	5 (1)
Unknown goose	---	1 (1)	---	---	1 (1)
Unknown duck	---	1 (1)	122 (4)	---	123 (5)
Waterbird	0	12 – 100%	0	0	12 (2)
Black tern	---	1 (1)	---	---	1 (1)
Unknown gull	---	11 (1)	---	---	11 (1)
Shorebird	2 – 100%	0	0	0	2 (2)
Killdeer	2 (2)	---	---	---	2 (2)
Raptor	0	0	5 - 83.3%	1 – 16.7%	6 (6)
Bald eagle	---	---	2 (2)	---	2 (2)
Red-tailed hawk	---	---	3 (3)	1 (1)	4 (4)
Landbird	0	37 – 67.3%	18 – 32.7%	0	55 (16)
Black-billed magpie	---	5 (1)	2 (1)	---	7 (2)
American crow	--	3 (2)	10 (3)	---	13 (5)
Common raven	---	1 (1)	---	---	1 (1)
Barn swallow	---	6 (2)	6 (1)	---	12 (3)
Cedar waxwing	---	6 (1)	---	---	6 (1)
Red-winged blackbird	---	3 (1)	---	---	3 (1)
Yellow-headed blackbird	---	8 (2)	---	---	8 (2)
Brewer's blackbird	---	5 (1)	---	---	5 (1)
Grand Total	61 – 4.6%	449 – 33.7%	792 – 59.5%	29 – 2.2%	1331 (77)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

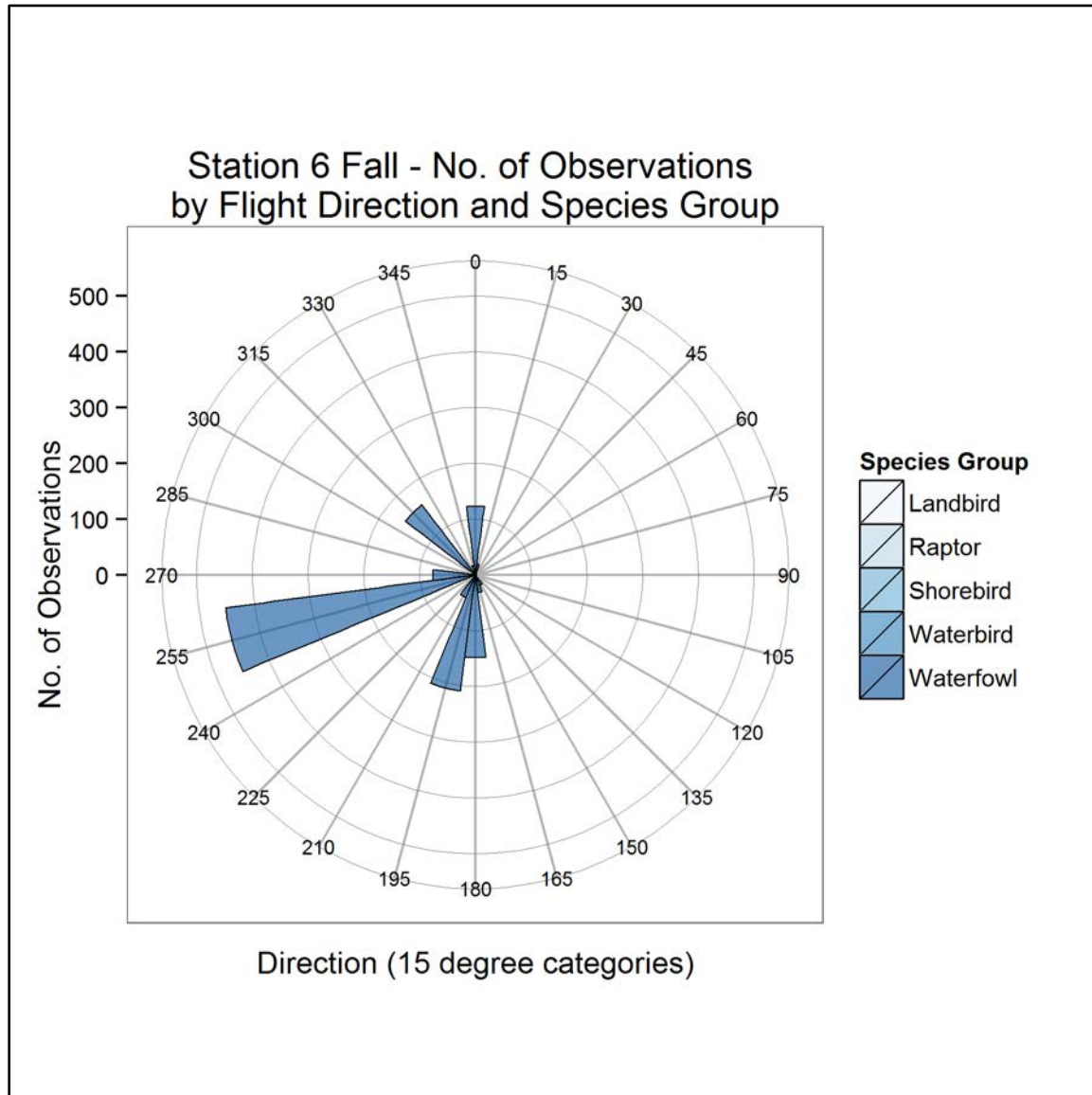


Figure A-3 Direction and Size of Flight Paths Recorded at Station 6 in Fall 2014

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix A Fall 2014 Bird Migration Observations
 August 25, 2015

Table A-4 Bird Species Observed During Fall 2014 Migration at Station 7

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	0	10 – 1.6%	580 – 98.6%	0	590 (17)
Common loon	---	---	1 (1)	---	1 (1)
Snow goose	---	---	150 (2)	---	150 (2)
Canada goose	---	---	233 (5)	---	233 (5)
Greater white-fronted goose	---	---	80 (1)	---	80 (1)
Mallard	---	8 (4)	6 (1)	---	14 (5)
Unknown duck	---	2 (2)	110 (1)	---	112 (3)
Waterbird	0	3 – 21.4%	11 – 78.6%	0	14 (2)
Black tern	---	3 (2)	7 (2)	---	10 (4)
Unknown gull	---	---	4 (1)	---	4 (1)
Shorebird	0	1 – 100%	0	0	1 (1)
Wilson's snipe	---	1 (1)	---	---	1 (1)
Raptor	0	6 – 54.5%	5 – 45.5%	0	11 (9)
Swainson's hawk	---	1 (1)	4 (3)	---	4 (4)
Red-tailed hawk	---	5 (4)	---	---	5 (4)
Unknown raptor	---	---	1 (1)	---	1 (1)
Landbird	0	109– 92.4%	9 – 7.6%	0	118 (32)
Hairy woodpecker	---	1 (1)	---	---	1 (1)
Northern flicker	---	6 (1)	---	---	6 (1)
Eastern kingbird	---	1 (1)	---	---	1 (1)
Black-billed magpie	---	16 (6)	---	---	16 (6)
American crow	---	---	9 (3)	---	9 (3)
Common raven	---	3 (3)	---	---	3 (3)
Barn swallow	---	13 (5)	---	---	13 (5)
American robin	---	15 (2)	---	---	15 (2)
American goldfinch	---	46 (9)	---	---	46 (9)
Unknown passerine	---	8 (1)	---	---	8 (1)
Grand Total	0	129 – 17.6%	605 – 82.4%	0	734 (61)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

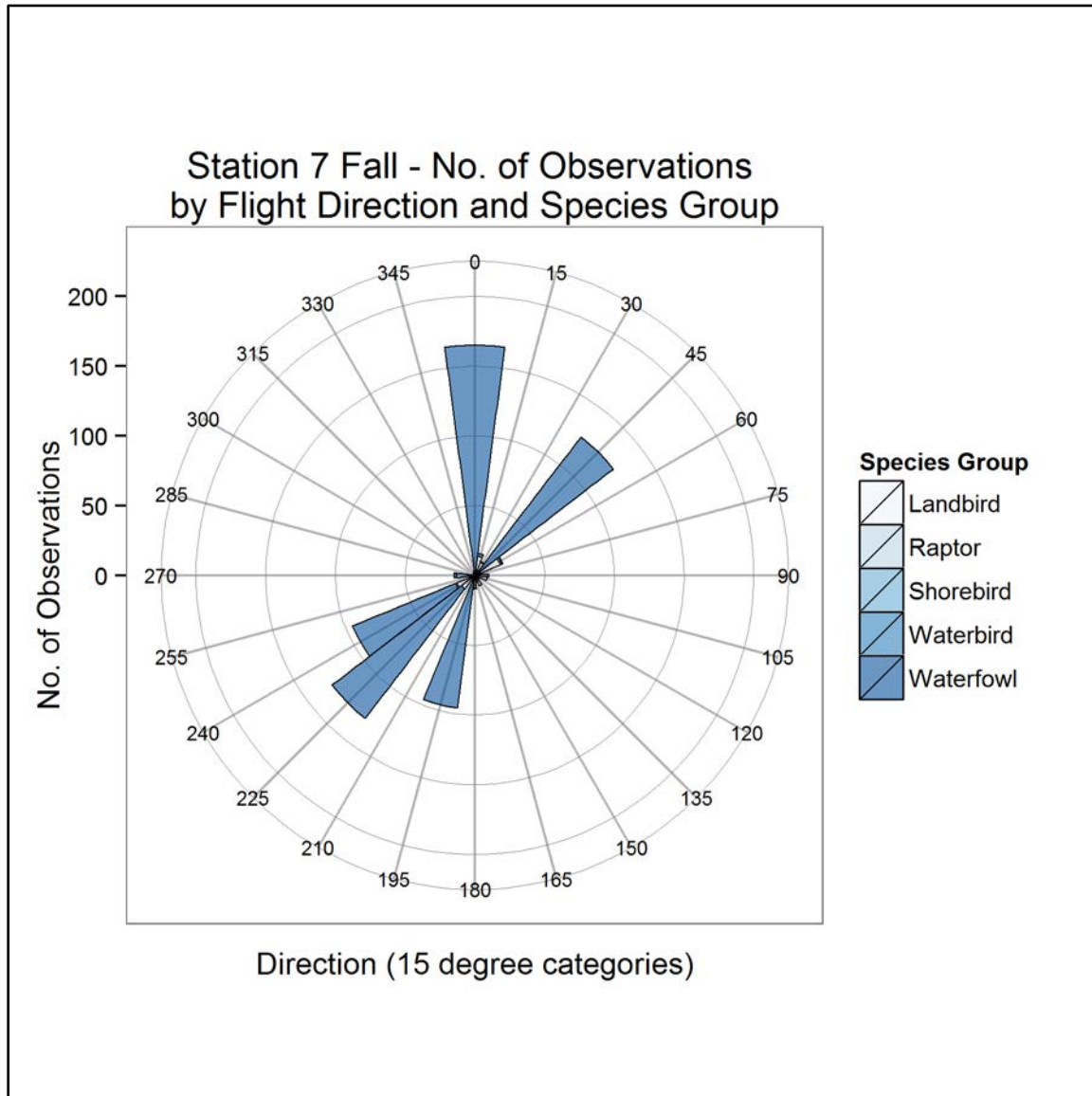


Figure A-4 Direction and Size of Flight Paths Observed at Station 7 in Fall 2014

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix A Fall 2014 Bird Migration Observations
 August 25, 2015

Table A-5 Bird Species Observed During Fall 2014 Migration at Station 8

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	0	1 – 0.03%	3529 – 99.57%	14 – 0.39%	3544 (24)
Snow goose	---	---	2663 (6)	---	2663 (6)
Canada goose	---	1 (1)	155 (8)	---	156 (9)
Greater white-fronted goose	---	---	534 (5)	14 (1)	548 (6)
Tundra swan	---	---	63 (1)	---	63 (1)
Unknown duck	---	---	114 (2)	---	114 (2)
Waterbird	0	0	6 – 100%	0	6 (1)
Sandhill crane	---	---	6 (1)	---	6 (1)
Raptor	0	0	5 – 100%	0	5 (4)
Swainson's hawk	---	---	1 (1)	---	1 (1)
Red-tailed hawk	---	---	2 (1)	---	2 (1)
Rough-legged hawk	---	---	1 (1)	---	1 (1)
Unknown raptor	---	---	1 (1)	---	1 (1)
Landbird	1 – 0.8%	29 – 23.4%	94 – 75.8%	0	124 (15)
Blue jay	1 (1)				1 (1)
Black-billed magpie	---	3 (1)	---	---	3 (1)
American crow	--	---	94 (7)	---	94 (7)
American robin	---	3 (1)	---	---	3 (1)
Pine siskin	---	5 (1)			5 (1)
American goldfinch	---	18 (4)	---	---	18 (4)
Grand Total	1 – 0.03%	30 – 0.8%	3634 – 98.8%	0	3679 (34)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

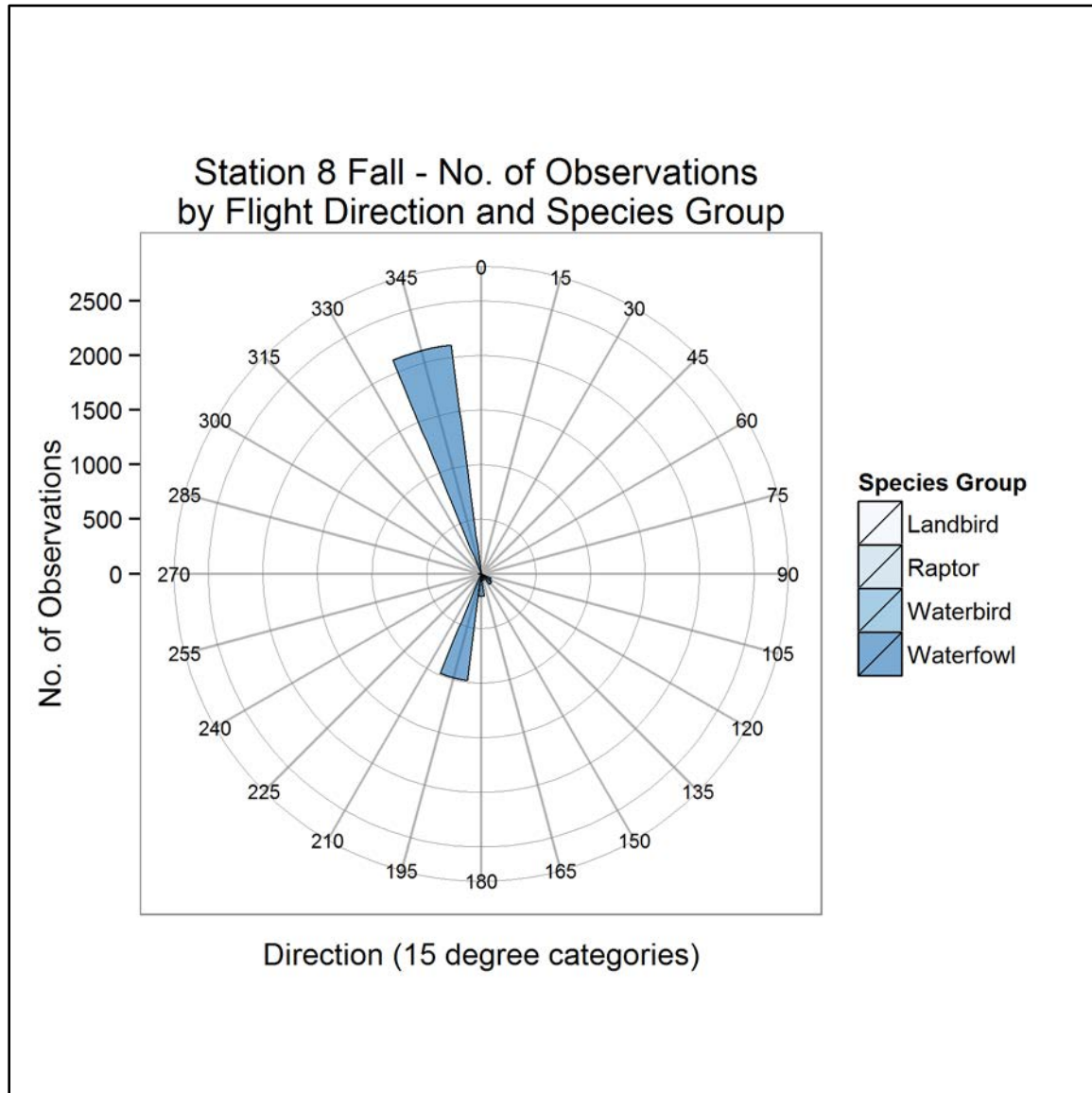


Figure A-5 Direction and Size of Flight Paths Recorded at Station 8 in Fall 2014

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix A Fall 2014 Bird Migration Observations
August 25, 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

Appendix B SPRING 2015 BIRD MIGRATION RESULTS

Table B-1 Bird Species Observations During Spring 2015 Migration at Station 4

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	64 – 6.8%	650 – 69.5%	221 – 23.6%	0	935 (32)
Snow goose	---	500 (1)	---	---	500 (1)
Canada goose	32 (4)	141 (9)	221 (5)	---	394 (18)
Greater white-fronted goose	15 (1)	---	---	---	15 (1)
Mallard	2 (1)	3 (1)	---	---	5 (2)
Redhead	2 (1)	---	---	---	2 (1)
Gadwall	---	5 (1)	---	---	5 (1)
American wigeon	2 (1)	---	---	---	2 (1)
Canvasback	2 (1)	---	---	---	2 (1)
Blue-winged teal	6 (3)	1 (1)	---	---	7 (4)
Lesser scaup	3 (2)	---	---	---	3 (2)
Waterbird	16 – 61.5%	10 – 38.5%	0	0	26 (14)
American coot	9 (3)	---	---	---	9 (3)
Sora	5 (5)	---	---	---	5 (5)
Horned grebe	1 (1)	---	---	---	1 (1)
Pied-billed grebe	1 (1)	---	---	---	1 (1)
Franklin's gull	---	6 (1)	---	---	6 (1)
Ring-billed gull	---	4 (3)	---	---	4 (3)
Shorebird	4 – 40%	6 – 60%	0	0	10 (7)
Killdeer	4 (3)	5 (3)	---	---	9 (6)
Wilson's snipe	---	1 (1)	---	---	1 (1)
Raptor	0	8 – 100%	0	0	8 (7)
Sharp-shinned hawk	---	1 (1)	---	---	1 (1)
Swainson's hawk	---	3 (2)	---	---	3 (2)
Red-tailed hawk	---	3 (3)	---	---	3 (3)
Northern harrier	---	1 (1)	---	---	1 (1)

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix B Spring 2015 Bird Migration Results
 August 25, 2015

Table B-1 Bird Species Observations During Spring 2015 Migration at Station 4

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Landbird	19– 31.1%	42 – 68.9%	0	0	61 (11)
Northern flicker	1 (1)	---	---	---	1 (1)
Eastern phoebe	1 (1)	---	---	---	1 (1)
Northern shrike	---	2 (2)	---	---	2 (2)
Black-billed magpie	---	1 (1)	---	---	1 (1)
American crow	---	7 (3)	---	---	7 (3)
Common raven	---	3 (1)	---	---	3 (1)
Barn swallow	---	1 (1)	---	---	1 (1)
Black-capped chickadee	1 (1)	---	---	---	1 (1)
American robin	---	2 (2)	---	---	2 (2)
Red-winged blackbird	16 (4)	---	---	---	16 (4)
Brewer's blackbird	---	26 (2)	---	---	26 (2)
Grand Total	103 – 9.9%	716 – 68.8%	221 – 21.3%	0	1040 (71)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

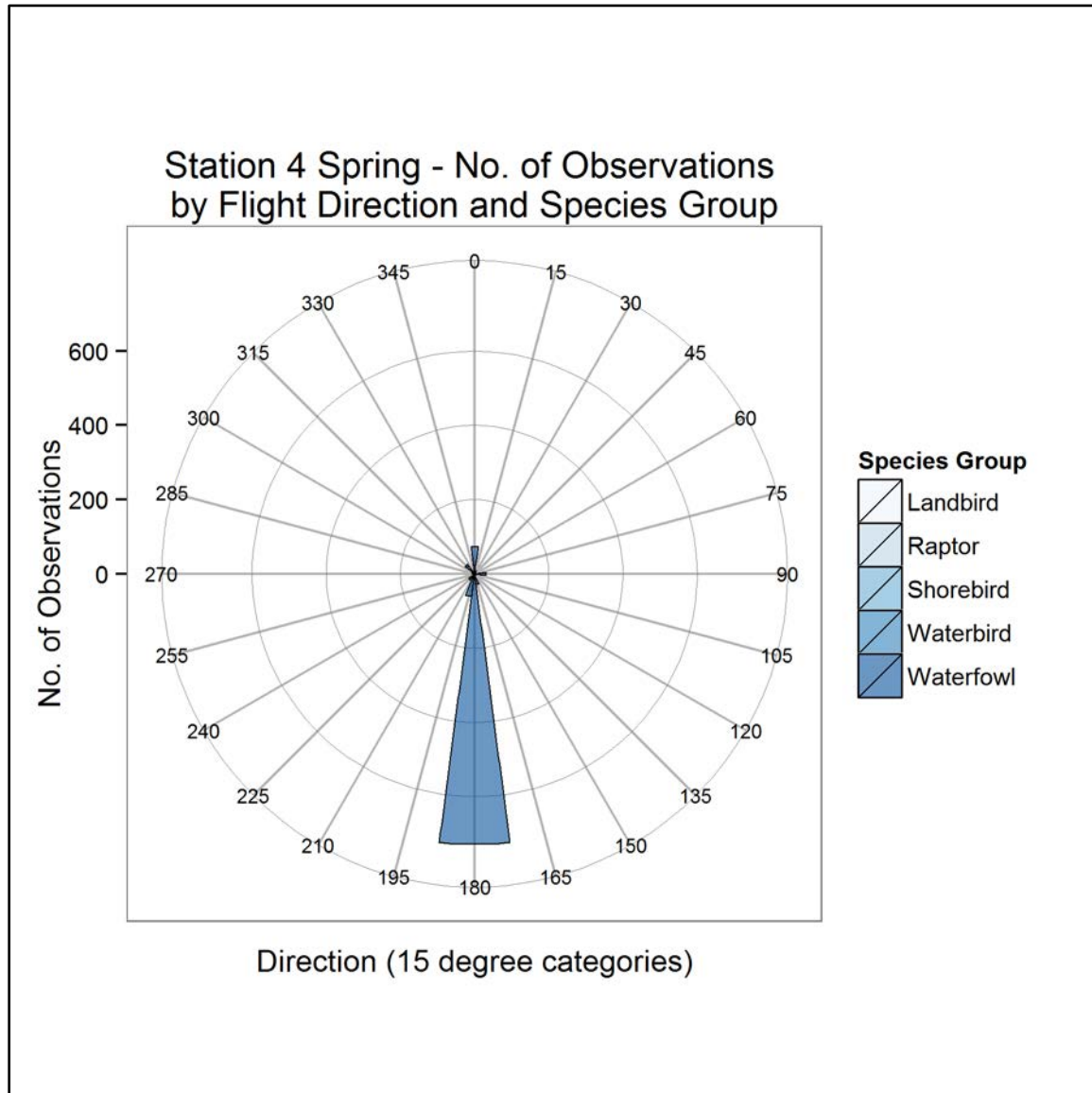


Figure B-1 Direction and Size of Flight Paths Recorded at Station 4 in Spring 2015

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix B Spring 2015 Bird Migration Results
 August 25, 2015

Table B-2 Bird Species Observed During Spring 2015 Migration at Station 5

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	2 – 2.7%	68 – 93.2%	3 – 4.1%	0	73 (20)
Canada goose	---	46 (5)	3 (1)	---	49 (6)
American wigeon	2 (1)	2 (1)	---	---	4 (2)
Mallard	---	10 (6)	---	---	10 (6)
Blue-winged teal	---	9 (5)	---	---	9 (5)
Northern shoveler	---	1 (1)	---	---	1 (1)
Waterbird	1 – 0.4%	4 – 9.4%	0	272 – 90.2%	277 (7)
Sandhill crane	---	---	---	272 (3)	272 (3)
Horned grebe	1 (1)	---	---	---	1 (1)
Ring-billed gull	---	2 (2)	---	---	2 (2)
Unknown gull	---	2 (1)	---	---	2 (1)
Shorebird	2 – 40%	3 – 60%	0	0	5 (4)
Killdeer	2 (2)	2 (1)	---	---	4 (3)
Wilson's snipe	---	1 (1)	---	---	1 (1)
Raptor	0	8 – 88.9%	1 – 11.1%	0	9 (9)
Red-tailed hawk	---	6 (6)	1 (1)	---	7 (7)
Northern harrier	---	2 (2)	---	---	2 (2)
Landbird	15– 20.3%	59 – 79.7%	0	0	74 (15)
Northern flicker	2 (2)	---	---	---	2 (2)
Black-billed magpie	---	8 (2)	---	---	8 (2)
American crow	1 (1)	18 (3)	---	---	19 (4)
Common raven	---	4 (2)	---	---	4 (2)
American robin	---	1 (1)	---	---	1 (1)
Clay-colored sparrow	2 (1)	---	---	---	2 (1)
Savannah sparrow	2 (2)	---	---	---	2 (2)
Song sparrow	---	1 (1)	---	---	1 (1)
Vesper sparrow	6 (2)	3 (1)	---	---	9 (3)
Red-winged blackbird	2 (1)	2 (2)	---	---	4 (3)
Brewer's blackbird	---	22 (4)	---	---	22 (4)
Grand Total	20 – 4.6%	142– 32.4%	4 – 0.9%	272– 62.1%	438 (75)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

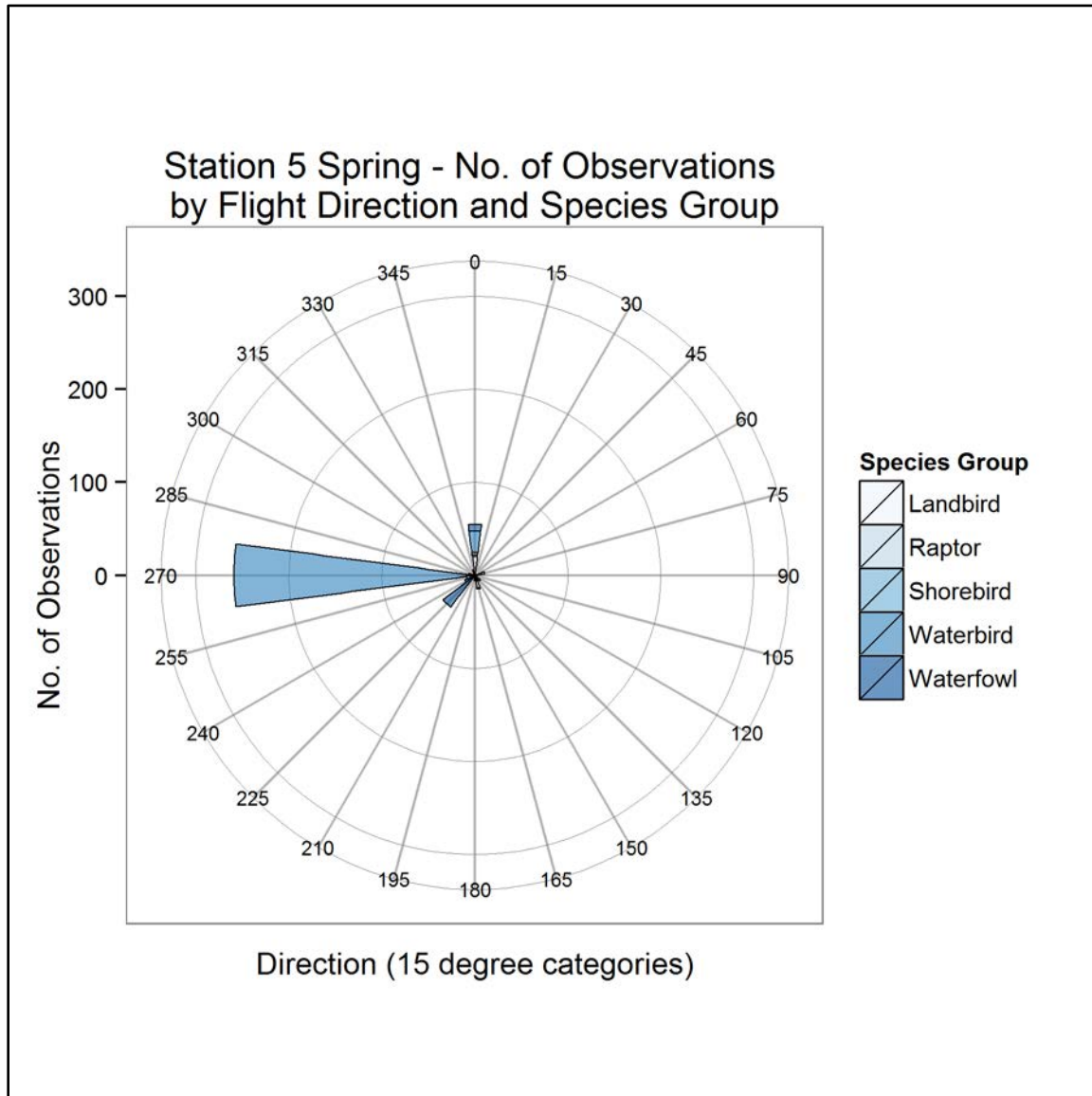


Figure B-2 Direction and Size of Flight Paths Recorded at Station 5 in Spring 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

Table B-3 Bird Species Observed During Spring 2015 Migration at Station 6

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	80 – 16.5%	406 – 83.5%	0	0	486 (42)
Snow goose	---	25 (1)	---	---	25 (1)
Canada goose	27 (5)	351 (7)	---	---	378 (12)
Greater white-fronted goose	15 (1)	---	---	---	15 (1)
American wigeon	4 (2)	---	---	---	4 (2)
Blue-winged teal	11 (4)	5 (2)	---	---	16 (6)
Canvasback	6 (3)	---	---	---	6 (3)
Lesser scaup	5 (3)	---	---	---	5 (3)
Mallard	8 (4)	13 (4)	---	---	21 (8)
Redhead	4 (2)	3 (1)	---	---	7 (3)
Gadwall	---	5 (1)	---	---	5 (1)
Northern pintail	---	2 (1)	---	---	2 (1)
Ruddy duck	---	2 (1)	---	---	2 (1)
Waterbird	23 – 59%	16 – 41%	0	0	39 (17)
American coot	14 (5)	---	---	---	14 (5)
Sora	7 (6)	---	---	---	7 (6)
Horned grebe	1 (1)	---	---	---	1 (1)
Pied-billed grebe	1 (1)	---	---	---	1 (1)
Franklin's gull	---	13 (2)	---	---	13 (2)
Ring-billed gull	---	3 (2)	---	---	3 (2)
Shorebird	0	10 – 100%	0	0	10 (8)
Killdeer	---	6 (5)	---	---	6 (5)
Wilson's snipe	---	2 (2)	---	---	2 (2)
Marbled godwit	---	2 (1)	---	---	2 (1)
Raptor	0	2 – 66.7%	1 – 33.3%	0	3 (3)
Red-tailed hawk	---	2 (2)	1 (2)	---	3 (3)
Landbird	22 – 34.9%	41 – 65.1%	0	0	63 (25)
Northern flicker	---	1 (1)	---	---	1 (1)
Black-billed magpie	---	7 (3)	---	---	7 (3)

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

Table B-3 Bird Species Observed During Spring 2015 Migration at Station 6

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
American crow	---	4 (2)	---	---	4 (2)
Common raven	1 (1)	3 (2)	---	---	4 (3)
Horned lark	---	3 (1)	---	---	3 (1)
Tree swallow	---	2 (1)	---	---	2 (1)
Song sparrow	2 (2)	---	---	---	2 (2)
Savannah sparrow	1 (1)	---	---	---	1 (1)
Red-winged blackbird	18 (6)	15 (3)	---	---	33 (9)
Yellow-headed blackbird	---	4 (1)	---	---	4 (1)
Brewer's blackbird	---	2 (1)	---	---	2 (1)
Grand Total	125 – 20.8%	475– 79.0%	1 – 0.2%	0	601 (75)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

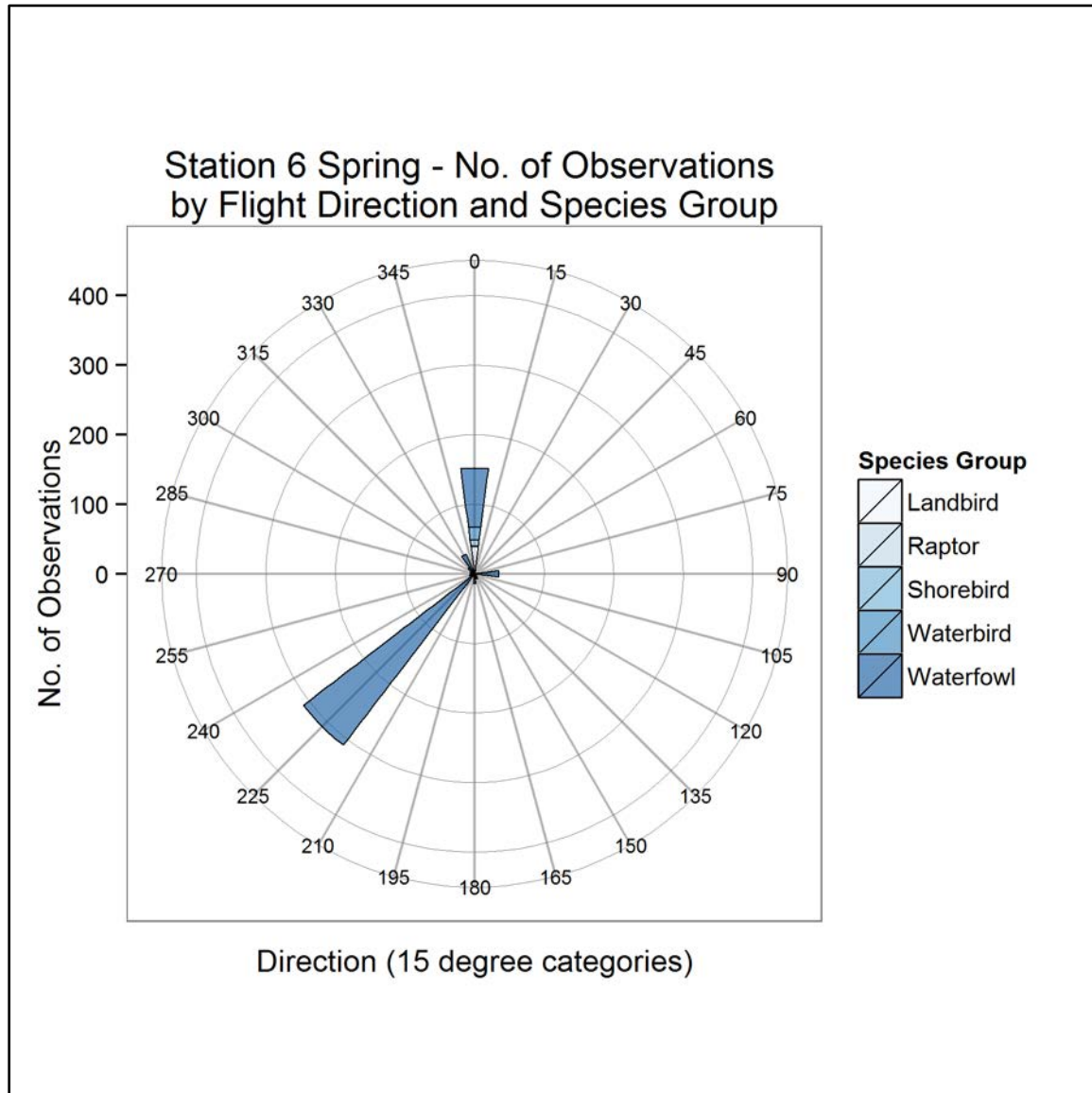


Figure B-3 Direction and Size of Flight Paths Recorded at Station 6 in Spring 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

Table B-4 Bird Species Observed During Spring 2015 Migration at Station 7

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	8 – 10.7%	58 – 77.3%	9 – 12%	0	75 (22)
Canada goose	2 (1)	42 (9)	9 (1)	---	53 (11)
American wigeon	3 (1)	---	---	---	3 (1)
Green-winged teal	---	1 (1)	---	---	1 (1)
Lesser scaup	---	3 (1)	---	---	3 (1)
Mallard	1 (1)	11 (5)	---	---	12 (6)
Redhead	2 (1)	--	---	---	2 (1)
Northern shoveler	---	1 (1)	---	---	1 (1)
Waterbird	16 – 18.8%	0	0	69 – 81.2%	85 (7)
American coot	16 (5)	---	---	---	16 (5)
Sandhill crane	---	---	---	69 (2)	69 (2)
Shorebird	6 – 54.5%	5 – 45.5%	0	0	11 (8)
Killdeer	6 (4)	5 (4)	---	---	11 (8)
Raptor	0	0	0	1 – 100%	1 (1)
Unknown raptor	---	---	---	1 (1)	1 (1)
Landbird	33 – 26.2%	93 – 73.8%	0	0	126 (50)
Northern flicker	3 (3)	---	---	---	3 (3)
American crow	---	14 (5)	---	---	14 (5)
Common raven	---	2 (2)	---	---	2 (2)
Barn swallow	---	5 (2)	---	---	5 (2)
Tree swallow	---	22 (5)	---	---	22 (5)
American robin	1 (1)	9 (3)	---	---	10 (4)
Yellow warbler	1 (1)	---	---	---	1 (1)
Song sparrow	5 (4)	---	---	---	5 (4)
Clay-colored sparrow	6 (4)	---	---	---	6 (4)
White-throated sparrow	1 (1)	---	---	---	1 (1)
Vesper sparrow	4 (2)	3 (1)	---	---	7 (3)
Savannah sparrow	1 (1)	2 (1)	---	---	3 (2)

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Dark-eyed junco	1 (1)	---	---	---	1 (1)
Red-winged blackbird	7 (2)	17 (5)	---	---	24 (7)
Yellow-headed blackbird	3 (1)	---	---	---	3 (1)
Brewer's blackbird	---	15 (4)	---	---	15 (4)
Unknown blackbird	---	4 (1)	---	---	4 (1)
Grand Total	63 – 21.1%	156– 52.3%	9 – 3.0%	70 – 23.5%	298 (87)
NOTES: Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

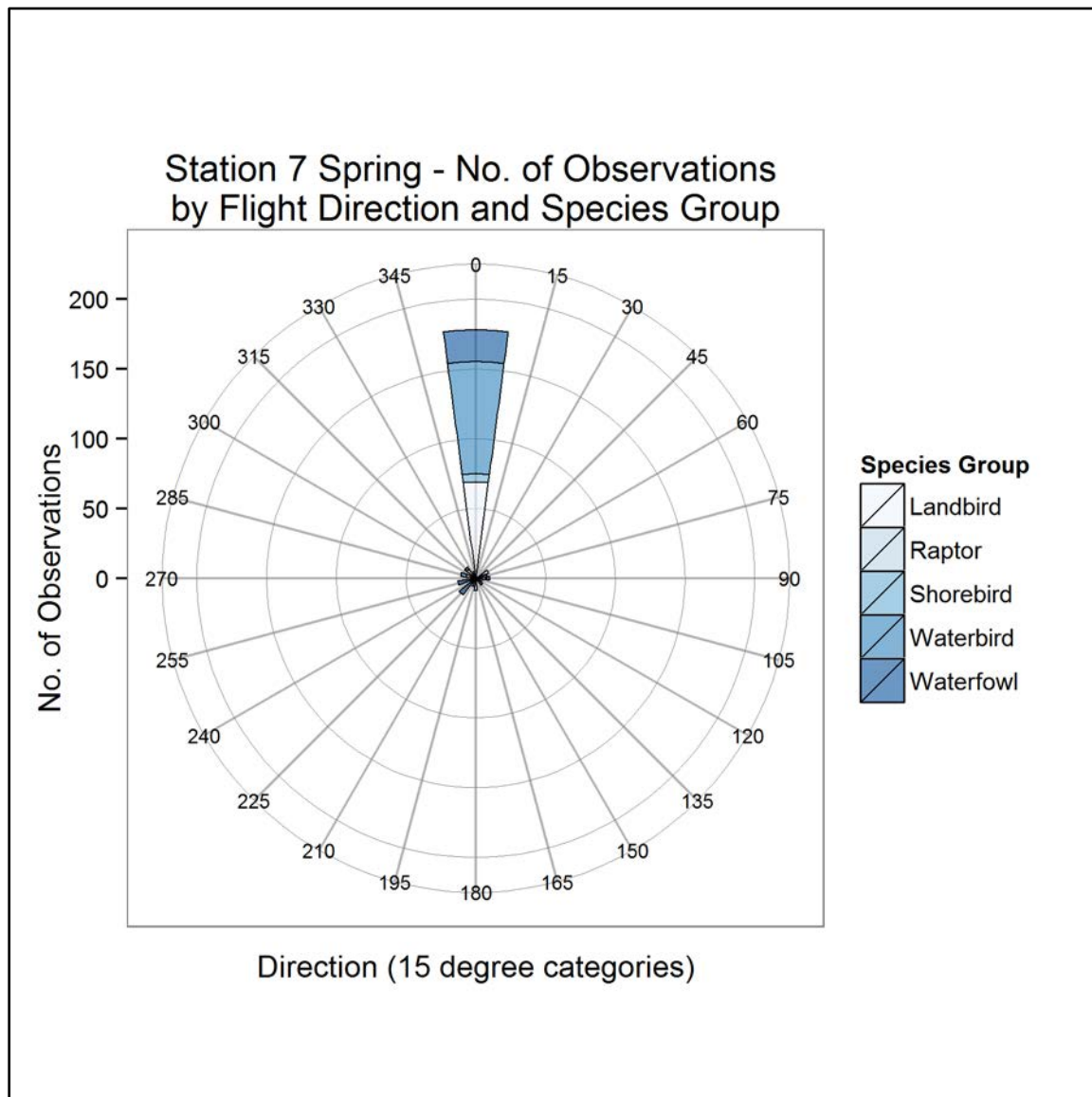


Figure B-4 Direction and Size of Flight Paths Recorded at Station 7 in Spring 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

Table B-5 Bird Species Observed During Spring 2015 Migration at Station 8

Bird Guild & Species	On Ground (below RSA)	0-28.5 m (below RSA)	28.5 – 131.5 m (within RSA)	>131.5 (above RSA)	Grand Total
Waterfowl	1800 – 93%	84 – 4.3%	51 – 2.6%	0	1935 (12)
Snow goose	800 (1)*	---	25 (1)	---	825 (1)
Canada goose	---	79 (5)	26 (2)	---	105 (7)
Canada goose, snow goose, waterfowl	1000 (1) **	---	---	---	1000 (1)
Mallard	---	5 (2)	---	---	5 (2)
Waterbird	0	0	0	420 (3) – 100%	420 (3)
Sandhill crane	---	---	---	420 (3)	420 (3)
Shorebird	1 – 50%	1 – 50%	0	0	2 (2)
Killdeer	1 (1)	---	---	---	1 (1)
Wilson's snipe	---	1 (1)	---	---	21 (1)
Raptor	0	2 – 100%	0	0	2 (2)
Red-tailed hawk	---	1 (1)	---	---	1 (1)
Northern harrier	---	1 (1)	---	---	1 (1)
Gamebird	1 (1) – 100%	0	0	0	1 (1)
Ruffed grouse	1 (1)	---	---	---	1 (1)
Landbird	7 – 10.8%	43 – 66.2%	15 – 23%	0	65 (25)
Black-billed magpie	---	1 (1)	---	---	1 (1)
American crow	---	31 (8)	---	---	31 (8)
Tree swallow	---	4 (2)	---	---	4 (2)
American robin	1 (1)	---	---	---	1 (1)
Vesper sparrow	3 (1)	3 (1)	---	---	6 (2)
Clay-colored sparrow	2 (1)	---	---	---	2 (1)
Brown-headed cowbird	---	4 (1)	---	---	4 (1)
Brewer's Blackbird	---	---	15 (1)	---	15 (1)
Grand Total	1808 – 74.6%	130 – 5.4%	66 – 2.7%	420 (3) – 17.3%	2424 (71)
<p>NOTES:</p> <p>Numbers are of individuals observed throughout the fall monitoring period; number of observations appears in parenthesis; percentage is relative to the total number of individuals observed.</p> <p>*Observed sitting in field near station</p> <p>**Observed staging on wetland >1,000 m south of survey station and therefore was not included in the calculations</p>					

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

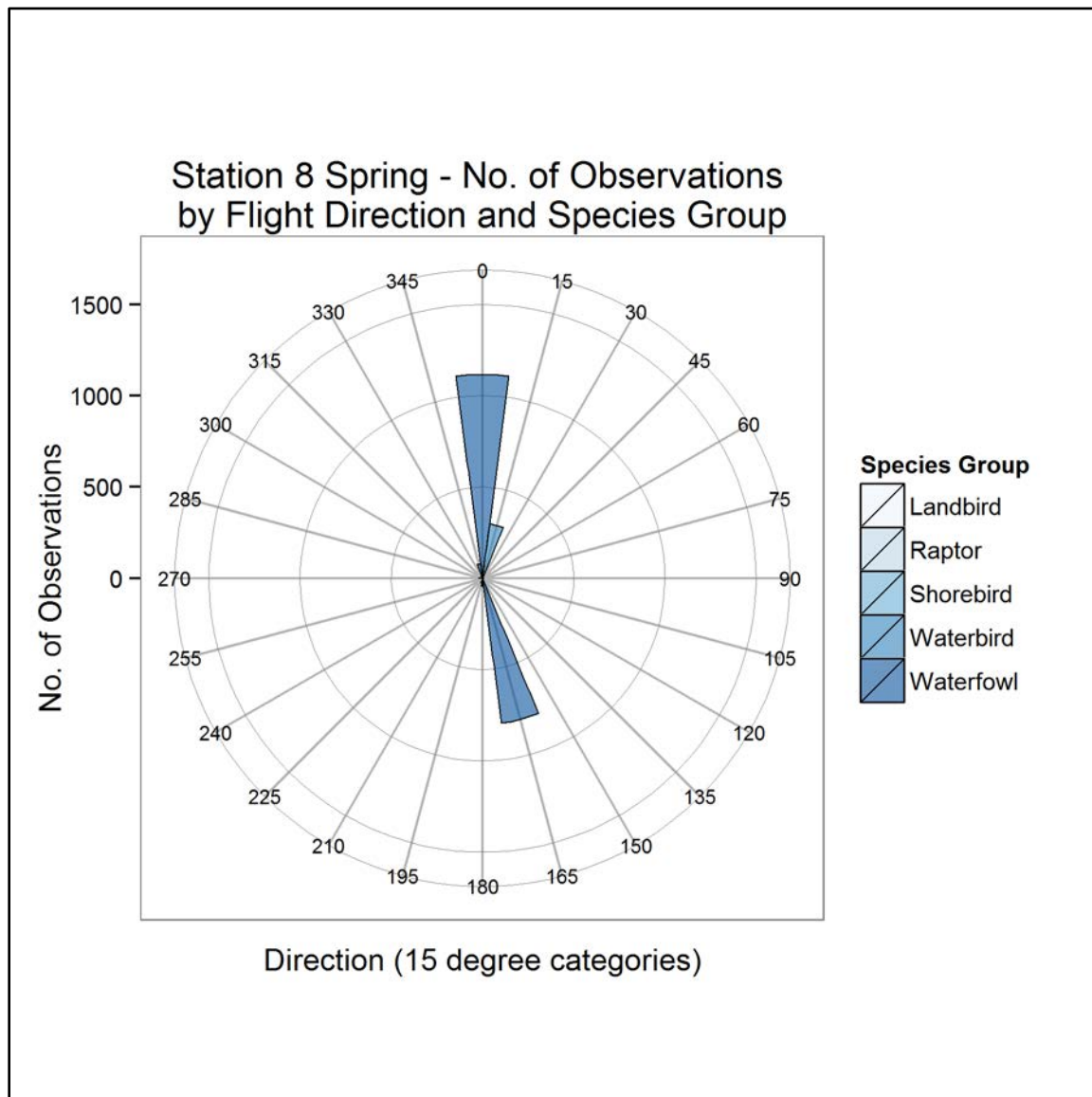


Figure B-5 Direction and Size of Flight Paths Recorded at Station 8 in Spring 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix B Spring 2015 Bird Migration Results
August 25, 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Appendix C NOCTURNAL AMPHIBIAN SURVEY RESULTS

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Boreal chorus frog	5	May 17, 2015	562273	5818883	Secure	---	---	Wetland BW027
Boreal chorus frog	1	May 17, 2015	562093	5819004	Secure	---	---	Unnamed wetland north of survey station, split by existing access road
Boreal chorus frog	5	May 17, 2015	561513	5818533	Secure	---	---	Large unnamed wetland in NW 09-41-01-W4M, north of survey station
Boreal chorus frog	5	May 17, 2015	562691	5817770	Secure	---	---	Wetland BW020
Boreal chorus frog	5	May 17, 2015	562606	5817784	Secure	---	---	Wetland BW021
Boreal chorus frog	10	May 17, 2015	562559	5817841	Secure	---	---	Wetland BW022
Boreal chorus frog	5	May 17, 2015	566360	5818281	Secure	---	---	Unnamed wetland in SW 12-41-01-W4M
Boreal chorus frog	20	May 17, 2015	566217	5818516	Secure	---	---	Wetland BW001
Boreal chorus frog	8	May 17, 2015	565704	5817789	Secure	---	---	Wetland BW005
Boreal chorus frog	5	May 25, 2015	563113	5819522	Secure	---	---	Unnamed wetland in SW 15-41-01-W4M
Boreal chorus frog	25	May 25, 2015	562545	5819192	Secure	---	---	Unnamed wetland in NE 09-41-01-W4M

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Boreal chorus frog	10	May 25, 2015	562490	5819255	Secure	---	---	Wetland BW022
Boreal chorus frog	50	May 25, 2015	562371	5819153	Secure	---	---	Wetland BW028
Boreal chorus frog	25	May 25, 2015	562296	5819302	Secure	---	---	Wetland BW014
Boreal chorus frog	50	May 25, 2015	560458	5817252	Secure	---	---	Wetland BW017
Boreal chorus frog	150	May 25, 2015	560388	5817412	Secure	---	---	Wetland BW018
Boreal chorus frog	50	May 25, 2015	560408	5817458	Secure	---	---	Wetland BW018
Boreal chorus frog	2	May 25, 2015	565180	5818285	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	8	May 25, 2015	564830	5818545	Secure	---	---	Wetland BW036
Boreal chorus frog	20	May 25, 2015	565705	5818140	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	8	May 25, 2015	565349	5818083	Secure	---	---	Wetland BW006
Boreal chorus frog	15	May 25, 2015	565360	5818295	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	20	May 25, 2015	566207	5818532	Secure	---	---	Wetland BW001
Boreal chorus frog	20	May 25, 2015	565663	5817508	Secure	---	---	Unnamed wetland in NE 02-41-01-W4M
Boreal chorus frog	20	May 25, 2015	565522	5817308	Secure	---	---	Unnamed wetland in NE 01-41-01-W4M
Boreal chorus frog	20	May 25, 2015	565362	5817500	Secure	---	---	Unnamed wetland in NE 02-41-01-W4M

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Wood frog	1	May 25, 2015	560388	5817412	Secure	---	---	Wetland BW018
Boreal chorus frog	150	May 26, 2015	562657	5817717	Secure	---	---	Wetland BW021
Boreal chorus frog	25	May 26, 2015	562641	5817921	Secure	---	---	Unnamed wetland in SE 09-41-01-W4M
Boreal chorus frog	25	May 26, 2015	562472	5817821	Secure	---	---	Wetland BW022
Boreal chorus frog	25	May 26, 2015	561570	5818488	Secure	---	---	Unnamed wetland in NW 09-41-01-W4M
Boreal chorus frog	50	May 26, 2015	561563	5818288	Secure	---	---	Wetland BW024
Boreal chorus frog	25	May 26, 2015	560592	5817145	Secure	---	---	Wetland BW014
Boreal chorus frog	2	May 26, 2015	562495	5819271	Secure	---	---	Unnamed wetland in NE 09-41-01-W4M
Boreal chorus frog	10	May 26, 2015	562974	5819303	Secure	---	---	Wetland BW031
Boreal chorus frog	25	May 26, 2015	562949	5819523	Secure	---	---	Wetland BW031
Boreal chorus frog	50	May 26, 2015	561615	5818714	Secure	---	---	Unnamed wetland in NW 09-41-01-W4M
Boreal chorus frog	50	May 26, 2015	562044	5819499	Secure	---	---	Unnamed wetland in SE 16-41-01-W4M, split by access road
Boreal chorus frog	15	May 26, 2015	564344	5818565	Secure	---	---	Unnamed wetland in SW 11-41-01-W4M

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Boreal chorus frog	5	May 26, 2015	564198	5818583	Secure	---	---	Unnamed wetland in SE 10-41-01-W4M
Boreal chorus frog	8	May 26, 2015	564452	5819350	Secure	---	---	Wetland BW034
Boreal chorus frog	20	May 26, 2015	566218	5818527	Secure	---	---	Wetland BW001
Boreal chorus frog	10	May 26, 2015	565572	5818254	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	8	May 26, 2015	565633	5817959	Secure	---	---	Wetland BW005
Boreal chorus frog	15	May 26, 2015	565381	5818287	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	15	May 26, 2015	565104	5818630	Secure	---	---	Unnamed wetland in NW 11-41-01-W4M
Boreal chorus frog	20	May 26, 2015	565177	5818272	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	15	May 26, 2015	564832	5818529	Secure	---	---	Wetland BW036
Boreal chorus frog	14	May 26, 2015	565798	5819207	Secure	---	---	Unnamed wetland in NW 12-41-01-W4M
Boreal chorus frog	20	May 26, 2015	564398	5819318	Secure	---	---	Unnamed wetland
Boreal chorus frog	6	May 26, 2015	564324	5818533	Secure	---	---	Unnamed wetland in SW 11-41-01-W4M
Boreal chorus frog	20	May 27, 2015	565515	5817474	Secure	---	---	Unnamed wetland in NE 02-41-01-W4M

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Canadian toad	4	May 26, 2015	564480	5819373	May Be At Risk	Data Deficient	No Status	Wetland BW034
Canadian toad	4	May 26, 2015	565971	5819233	May Be At Risk	Data Deficient	No Status	Unnamed wetland south of Township Road 412
Canadian toad	3	May 26, 2015	565813	5819176	May Be At Risk	Data Deficient	No Status	Unnamed wetland south of Township Road 412
Canadian toad	2	May 26, 2015	564414	5819502	May Be At Risk	Data Deficient	No Status	Wetland BW034
Boreal chorus frog	3	June 1, 2015	562667	5819487	Secure	---	---	Unknown wetland off collector line and Wetland BW028
Boreal chorus frog	2	June 1, 2015	562967	5819509	Secure	---	---	Wetland BW024
Boreal chorus frog	1	June 1, 2015	562964	5819456	Secure	---	---	Wetland BW031
Boreal chorus frog	1	June 1, 2015	562061	5819524	Secure	---	---	Unnamed wetland in NE 09-41-01-W4M
Boreal chorus frog	4	June 1, 2015	565456	5818091	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	3	June 1, 2015	565597	5818232	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	3	June 1, 2015	565641	5818091	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M
Boreal chorus frog	5	June 1, 2015	565133	5818503	Secure	---	---	Unnamed wetland in SE 11-41-01-W4M

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Boreal chorus frog	5	June 1, 2015	565089	5818609	Secure	---	---	Unnamed wetland in NW 11-41-01-W4M
Boreal chorus frog	1	June 1, 2015	562044	5819512	Secure	---	---	Unnamed wetland north of gasplant access road in SE 16-41-01-W4M
Boreal chorus frog	5	June 1, 2015	562293	5818859	Secure	---	---	Unnamed wetland south of gasplant access road in SE 16-41-01-W4M
Boreal chorus frog	5	June 1, 2015	560547	5817224	Secure	---	---	Wetland BW027
Boreal chorus frog	5	June 1, 2015	560519	5817326	Secure	---	---	Wetland BW018
Boreal chorus frog	2	June 1, 2015	565659	5817468	Secure	---	---	Wetland BW029
Boreal chorus frog	3	June 1, 2015	565694	5817291	Secure	---	---	Wetland BW031
Boreal chorus frog	2	June 2, 2015	565950	5819345	Secure	---	---	Wetland BW017
Boreal chorus frog	5	June 2, 2015	565855	5819361	Secure	---	---	Unnamed wetland south of Township Road 412 and west of Range Road 11
Boreal chorus frog	5	June 2, 2015	564381	5819211	Secure	---	---	Unnamed wetland south of Township Road 412 and west of Range Road 11

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

Table C-1 Amphibian Species Observed Systematically During 2015 Nocturnal Amphibian Surveys

Species	Number Observed	Observation Date	Easting	Northing	Status			Location Notes
					AEP ¹	AWA ²	SARA ³	
Boreal chorus frog	2	June 2, 2015	564377	5819161	Secure	---	---	Wetland BW034
Canadian toad	2	June 2, 2015	565950	5819345	May Be At Risk	Data Deficient	No Status	Unnamed wetland south of Township Road 412 and west of Range Road 11
Canadian toad	5	June 2, 2015	564477	5819307	May Be At Risk	Data Deficient	No Status	Wetland BW034
Boreal chorus frog	2	June 2, 2015	566378	5818257	Secure	---	---	Unnamed wetland
Boreal chorus frog	3	June 2, 2015	566219	5818516	Secure	---	---	Wetland BW001
Boreal chorus frog	3	June 2, 2015	564240	5818489	Secure	---	---	Unnamed wetland in SE 10-41-01-W4M
Boreal chorus frog	4	June 2, 2015	564310	5818419	Secure	---	---	unnamed wetland in SW 11-41-01-W4M
NOTES: ¹ ESRD 2012 ² ESRD 2014b ³ Government of Canada 2015								

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix C Nocturnal Amphibian Survey Results
August 25, 2015

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Appendix D BREEDING BIRD SURVEY RESULTS

Table D-1 Breeding Bird Survey Station Locations

Station Name	Easting	Northing
BBS_Station1_T27	562317	5818796
BBS_Station2_T48	566276	5818386
BBS_Station3_T47	566513	5818142
BBS_Station4_T47	566411	5817940
BBS_Station5_T44	565343	5818128

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Table D-2 Breeding Bird Results from Round 1 (May 18, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station1_T27	18-May-2015	562321	5818876	Clay-colored Sparrow	M	A	2	F	F	T	F	F	1	F	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562342	5818854	Mallard	M	A	1	F	T	T	T	F	1	F	F	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562342	5818854	Mallard	F	A	1	F	T	T	T	F	1	F	F	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562342	5818854	Northern Shoveler	M	A	1	F	T	F	T	F	1	F	F	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562183	5818844	Canada Goose	U	A	1	T	T	T	F	F	1	F	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562330	5818827	Yellow Warbler	M	A	2	F	F	T	F	F	1	F	F	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562283	5818744	Common Raven	U	A	1	T	T	T	F	F	1	T	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562293	5818844	House Wren	M	A	1	F	F	T	F	F	1	F	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562323	5818844	Song Sparrow	M	A	1	F	F	T	T	F	1	F	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562321	5818876	Clay-colored Sparrow	M	A	2	F	F	T	F	F	2	F	T	F	T	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562233	5818844	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562283	5818744	Common Raven	U	A	3	F	T	T	F	F	2	T	F	F	T	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562330	5818827	Yellow-rumped Warbler	M	A	2	F	F	T	F	F	2	F	T	F	T	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station1_T27	18-May-2015	562293	5818844	Brewer's Blackbird	M	A	2	T	T	T	F	F	2	T	B	F	F	6	1	0	0	1	turbine 27, wetland BW027

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix D Breeding Bird Survey Results
 August 25, 2015

Table D-2 Breeding Bird Results from Round 1 (May 18, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station1_T27	18-May-2015	562280	5818835	House Wren	F	A	1	F	T	T	F	F	2	T	T	F	F	6	1	0	0	1	turbine 27, wetland BW027
BBS_Station2_T48	18-May-2015	566219	5818516	Wilson's Snipe	M	A	1	F	F	T	T	T	1	T	F	T	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566255	5818409	Vesper Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566216	5818431	Common Raven	U	A	1	F	T	T	F	F	1	T	F	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566255	5818409	Clay-colored Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566368	5818399	Clay-colored Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566365	5818457	Yellow-rumped Warbler	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566365	5818457	Mallard	M	A	2	T	T	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566294	5818341	Brewer's Blackbird	M	A	1	F	T	T	F	F	1	T	F	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566255	5818409	Clay-colored Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566195	5818350	Red-winged Blackbird	M	A	1	F	F	T	T	T	1	T	F	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566199	5818331	Canada Goose	U	A	2	T	T	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566199	5818331	Vesper Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566219	5818516	Wilson's Snipe	M	A	1	F	F	T	T	F	2	T	F	T	T	8	1	0	0	1	turbine 48, wetland BW002

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix D Breeding Bird Survey Results
 August 25, 2015

Table D-2 Breeding Bird Results from Round 1 (May 18, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station2_T48	18-May-2015	566255	5818409	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566255	5818409	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566255	5818409	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566255	5818409	Black-billed Magpie	U	A	1	F	F	T	F	F	2	T	F	F	F	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station2_T48	18-May-2015	566195	5818350	Red-winged Blackbird	M	A	1	F	F	T	F	F	2	T	F	F	T	8	1	0	0	1	turbine 48, wetland BW002
BBS_Station3_T47	18-May-2015	566255	5818409	Yellow Warbler	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566492	5818173	Clay-colored Sparrow	M	A	2	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566534	5818188	House Wren	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566555	5818209	Black-billed Magpie	U	A	1	T	F	T	F	F	1	T	F	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566581	5818170	Vesper Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566541	5818133	Clay-colored Sparrow	M	A	1	F	T	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566512	5818097	Vesper Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566458	5818148	Black-billed Magpie	U	A	1	F	T	T	F	F	1	T	F	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566423	5818170	American Robin	M	A	1	F	T	T	F	F	2	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix D Breeding Bird Survey Results
 August 25, 2015

Table D-2 Breeding Bird Results from Round 1 (May 18, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FLYBY	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station3_T47	18-May-2015	566477	5818199	House Wren	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566492	5818173	Clay-colored Sparrow	M	A	2	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566544	5818198	Yellow Warbler	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566516	5818170	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566540	5818188	Song Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566548	5818195	Yellow Warbler	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566555	5818209	Black-billed Magpie	U	A	1	T	T	T	F	T	2	F	F	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566566	5818167	Brown-headed Cowbird	M	A	1	F	T	T	F	T	2	T	F	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566566	5818167	Mallard	M	A	1	T	T	T	F	F	2	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566541	5818133	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566473	5818122	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station3_T47	18-May-2015	566488	5818151	Common Raven	U	A	1	T	T	T	F	F	2	T	F	F	F	8	1	0	0	1	turbine 47, wetland BW008
BBS_Station4_T47	18-May-2015	566304	5818003	Mallard	M	A	1	T	T	F	F	F	1	F	F	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566385	5817967	Clay-colored Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Table D-2 Breeding Bird Results from Round 1 (May 18, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station4_T47	18-May-2015	566409	5817964	Clay-colored Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566437	5817992	Vesper Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566423	5817978	Yellow Warbler	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566395	5817920	Savannah Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566395	5817890	Vesper Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566376	5817943	Clay-colored Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566395	5817845	Black-billed Magpie	U	A	1	F	F	T	F	T	1	T	F	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566373	5817989	Canvasback	M	A	2	T	T	F	F	F	2	F	F	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566373	5817989	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566427	5817982	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566470	5817977	Vesper Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566466	5818021	Common Raven	U	A	1	F	T	T	F	F	2	F	F	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566445	5817950	Yellow Warbler	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566437	5817935	Clay-colored Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW007

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix D Breeding Bird Survey Results
 August 25, 2015

Table D-2 Breeding Bird Results from Round 1 (May 18, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station4_T47	18-May-2015	566395	5817890	Vesper Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566349	5817911	Black-billed Magpie	U	A	3	F	F	T	F	F	2	T	F	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station4_T47	18-May-2015	566290	5817950	Yellow Warbler	M	A	1	F	F	T	F	T	2	F	T	F	F	8	1	0	0	1	turbine 47, wetland BW007
BBS_Station5_T44	18-May-2015	565343	5818128	Vesper Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565355	5818089	American Coot	U	A	1	F	T	T	T	F	1	T	F	F	F	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565453	5818177	Mallard	M	A	1	T	T	F	T	T	1	F	F	F	F	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565350	5818089	Savannah Sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565327	5817986	Wilson's Snipe	M	A	1	F	F	T	T	T	1	F	F	T	F	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565262	5818051	Red-winged Blackbird	M	A	1	F	F	T	T	T	1	T	F	F	F	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565350	5818089	Savannah Sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	0	0	1	turbine 44, wetland BW006
BBS_Station5_T44	18-May-2015	565262	5818051	Gadwall	F	A	1	T	T	F	F	T	2	F	F	F	F	8	1	0	0	1	turbine 44, wetland BW006

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Table D-3 Breeding Bird Results from Round 2 (June 2, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station1_T27	02-June-2015	562309	5818790	Yellow warbler	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562303	5818792	Yellow warbler	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562347	5818805	Yellow warbler	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562350	5818803	Yellow warbler	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562314	5818826	American coot	U	A	1	F	F	T	T	F	1	T	F	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562331	5818810	Blue-winged teal	B	A	1	F	T	F	T	F	1	F	F	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562331	5818818	Blue-winged teal	B	A	1	F	T	F	T	F	2	F	F	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562381	5818791	Clay-colored sparrow	M	A	1	F	F	T	F	F	2	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562350	5818726	Clay-colored sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562372	5818874	Common raven	U	A	1	F	F	T	F	F	2	F	F	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562357	5818889	Common raven	U	A	1	F	F	T	F	F	1	F	F	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562366	5818804	House wren	M	A	1	F	F	T	F	F	2	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562307	5818862	House wren	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562310	5818833	Least flycatcher	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	80	0	1	turbine 27, wetland BW027

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix D Breeding Bird Survey Results
 August 25, 2015

Table D-3 Breeding Bird Results from Round 2 (June 2, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station1_T27	02-June-2015	562324	5818843	Least flycatcher	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562298	5818811	Red-eyed vireo	M	A	1	F	T	T	F	F	2	F	T	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562337	5818756	Red-eyed vireo	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562352	5818756	Red-eyed vireo	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562345	5818849	Red-eyed vireo	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562304	5818831	Song sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562346	5818820	Song sparrow	M	A	1	F	F	T	F	F	1	F	T	F	F	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station1_T27	02-June-2015	562335	5818830	Song sparrow	M	A	1	F	F	T	F	F	2	F	T	F	T	8	1	80	0	1	turbine 27, wetland BW027
BBS_Station2_T48	02-June-2015	566195	5818398	American Goldfinch	M	A	1	F	F	F	F	F	1	F	T	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566246	5818302	Black-Billed Magpie	U	A	1	F	F	F	F	F	2	T	F	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566191	5818500	Blue-Winged Teal	B	A	1	F	T	F	F	T	1	F	F	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566259	5818401	Clay-colored sparrow	B	A	1	F	T	F	F	F	1	F	F	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566258	5818403	Clay-colored sparrow	B	A	2	F	T	F	F	F	2	F	F	F	T	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566295	5818405	Clay-colored sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	1	90	0	1	turbine 48, wetland BW002

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Table D-3 Breeding Bird Results from Round 2 (June 2, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station2_T48	02-June-2015	566297	5818404	Clay-colored sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566172	5818419	Common raven	U	A	1	T	F	F	F	T	1	F	F	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566216	5818347	Gadwall	B	A	3	T	T	F	F	F	1	F	F	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566262	5818419	House Wren	M	A	1	F	F	F	F	F	2	F	T	F	T	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566259	5818420	House Wren	M	A	1	F	F	F	F	F	1	F	T	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566325	5818413	Vesper Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566324	5818419	Vesper Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566277	5818465	Vesper Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station2_T48	02-June-2015	566269	5818471	Vesper Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	1	90	0	1	turbine 48, wetland BW002
BBS_Station3_T47	02-June-2015	566540	5818177	American Goldfinch	M	A	1	F	F	F	F	F	1	T	T	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566540	5818070	American Goldfinch	B	A	2	F	T	F	T	F	1	T	F	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566529	5818186	Black-Billed Magpie	U	A	1	F	F	F	F	F	2	F	F	F	T	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566526	5818194	Black-Billed Magpie	U	A	2	T	F	F	F	F	1	T	F	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566505	5818158	Clay-Colored Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	90	0	1	47, wetland 08 is dry

BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS

Appendix D Breeding Bird Survey Results
 August 25, 2015

Table D-3 Breeding Bird Results from Round 2 (June 2, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station3_T47	02-June-2015	566507	5818163	Clay-Colored Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566488	5818145	Clay-Colored Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566488	5818150	Clay-Colored Sparrow	M	A	1	F	F	F	F	F	1	T	F	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566448	5818167	Common Raven	U	A	1	T	T	F	F	F	2	F	F	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566448	5818148	Mallard	F	A	1	T	T	F	F	F	2	F	F	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566576	5818161	Vesper Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	90	0	1	47, wetland 08 is dry
BBS_Station3_T47	02-June-2015	566577	5818165	Vesper Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	90	0	1	47, wetland 08 is dry
BBS_Station4_T47	02-June-2015	566501	5817951	American Goldfinch	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566401	5817964	Clay-Colored Sparrow	U	A	2	F	F	F	F	F	2	T	F	F	T	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566394	5817970	Clay-Colored Sparrow	U	A	2	F	T	F	F	F	1	T	F	F	F	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566439	5817905	Clay-Colored Sparrow	M		1	F	F	F	F	F	1	T	F	F	F	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566344	5817916	Mallard	M	A	1	T	T	F	F	T	2	F	F	F	F	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566404	5817833	Sprague's Pipit	M	A	1	F	F	F	F	T	1	F	T	T	F	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566395	5817833	Sprague's Pipit	M	A	1	F	F	F	F	T	2	F	T	T	T	8	2	90	0	1	Turbine 47, Wetland bw007

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Table D-3 Breeding Bird Results from Round 2 (June 2, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station4_T47	02-June-2015	566483	5817947	Vesper Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station4_T47	02-June-2015	566483	5817941	Vesper Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	90	0	1	Turbine 47, Wetland bw007
BBS_Station5_T44	02-June-2015	565275	5818086	American Goldfinch	M	A	1	F	F	F	F	F	1	T	T	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565246	5818095	Common Raven	U	A	1	T	T	F	F	T	2	F	F	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565381	5818024	Wilson's Snipe	M	A	1	F	F	F	F	T	2	T	F	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565356	5818115	Red-Winged Blackbird	M	A	1	F	T	F	F	F	1	T	F	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565355	5818242	Red-Winged Blackbird	M	A	3	F	F	F	F	T	2	T	F	F	T	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565369	5818246	Red-Winged Blackbird	M	A	3	F	T	F	F	T	1	T	F	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565308	5818182	Savannah Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565309	5818182	Savannah Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565363	5818104	Song Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565367	5818105	Song Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565378	5818190	Vesper Sparrow	M	A	1	F	F	F	F	F	2	F	T	F	T	8	2	80	0	1	Turbine 44, Wetland bw006
BBS_Station5_T44	02-June-2015	565378	5818196	Vesper Sparrow	M	A	1	F	F	F	F	F	1	F	T	F	F	8	2	80	0	1	Turbine 44, Wetland bw006

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015

Table D-3 Breeding Bird Results from Round 2 (June 2, 2015)

Station	Date	Observed Easting	Observed Northing	Species	Sex	Age	Count	FlyBy	Seen	Heard	Wetland	Incidental	Time Interval	Calling	Singing	Displaying	Duplicate	Temp	Wind	Cloud Cover	Precipitation	Noise	Station Notes
BBS_Station5_T44	02-June-2015	565358	5818243	Yellow-Headed Blackbird	B	A	2	F	T	F	F	T	2	T	F	F	F	8	2	80	0	1	Turbine 44, Wetland bw006

**BULL CREEK WIND POWER PROJECT
2014/2015 SUPPLEMENTAL PRE-CONSTRUCTION WILDLIFE SURVEY RESULTS**

Appendix D Breeding Bird Survey Results
August 25, 2015