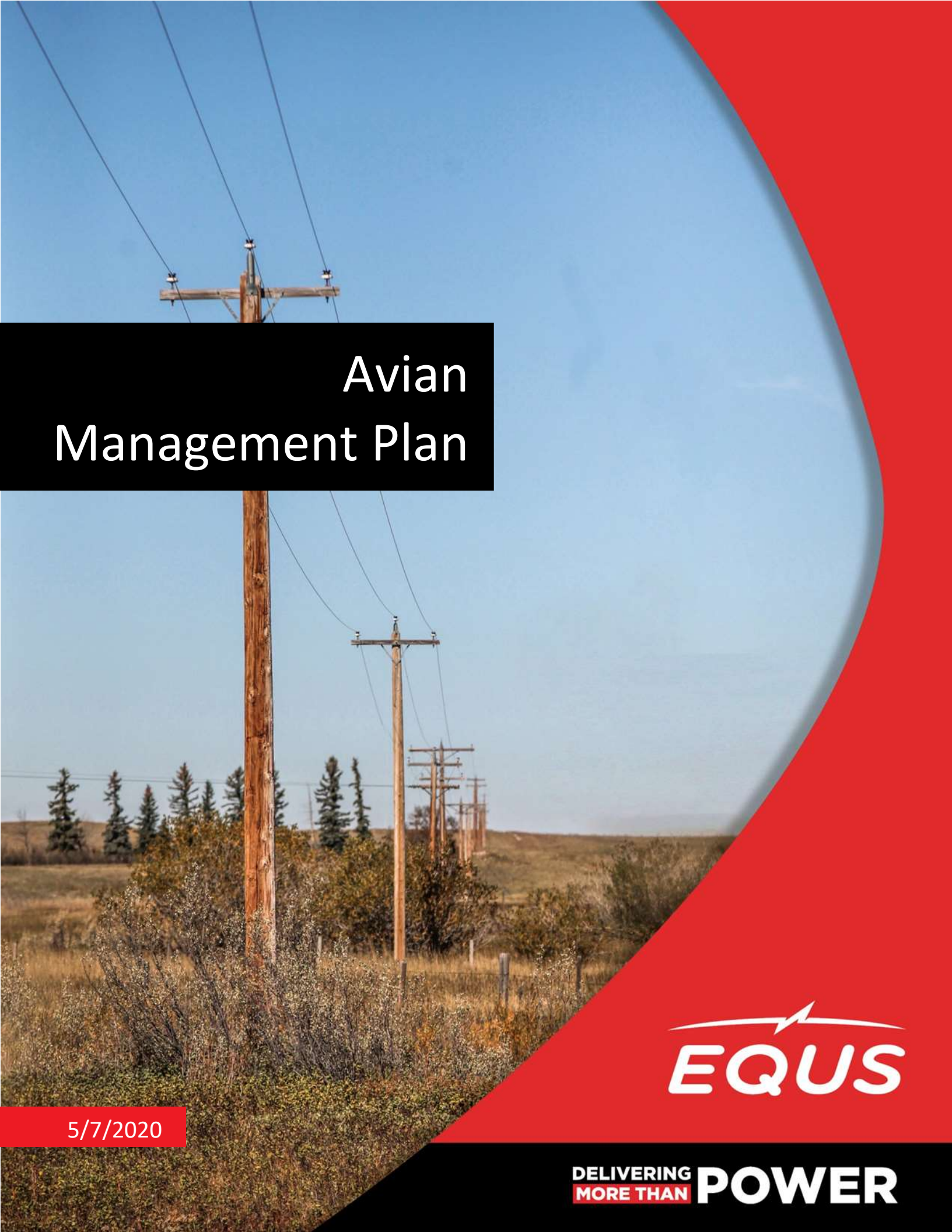

Avian Management Plan

5/7/2020

EQUS

DELIVERING MORE THAN POWER

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1.0 About EQUS

EQUS REA LTD. (EQUS) provides safe and reliable electrical distribution services to commercial and industrial developments, oil and gas operations, telecommunication towers, production facilities and farms throughout 26 Alberta municipal districts and counties. Serving nearly 12,000 members, EQUS is the largest member-owned utility in Canada.

As the electrical provider of choice in rural Alberta, EQUS provides comprehensive distribution services that include:

- The delivery of safe and reliable electricity, 24 hours a day, seven days a week;
- Timely construction, maintenance and upgrades to power lines and facilities; and
- A competitive investment program to mitigate start-up costs.

EQUS is a Rural Electrification Association (REA). EQUS also is a distributor, a regulated rate supplier and carries out for its members any function that is required or permitted to be carried out by a retailer. The EQUS service area spans 26 Alberta municipal districts and counties; starting with the County of Barrhead in the north and extending south to the U.S. border (Figure 1).

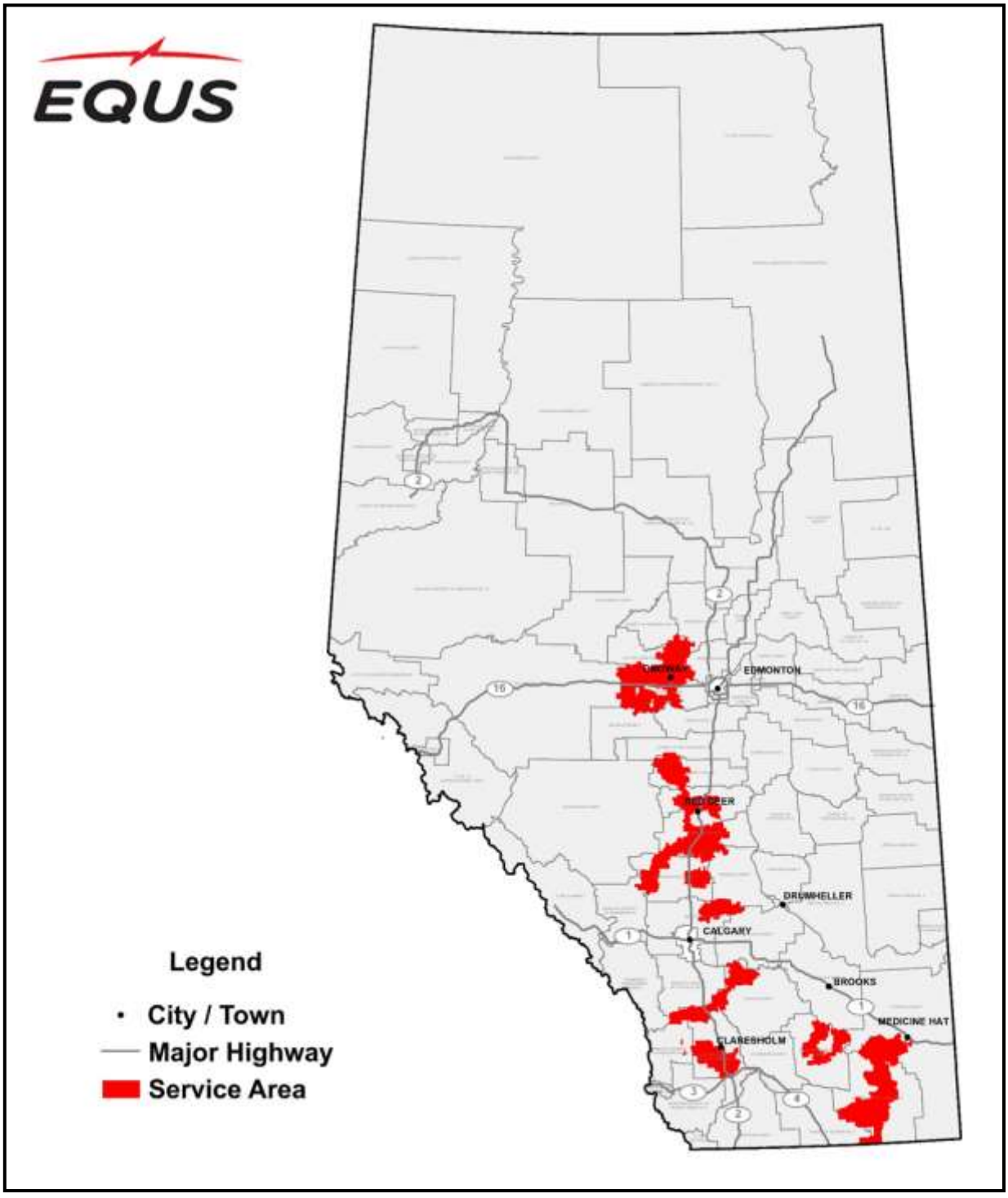

Figure 1: EQUS Service Areas

2.0 Introduction

EQUS service areas are located within a wide range of landscapes throughout Alberta, some of which provide preferred habitat for many resident and migrating bird (avian) species. Preferred broad habitat types include forests, grasslands and wetlands. Human modified habitat types are also present, which also serve to provide preferred habitat for many bird species. These habitat types may include town sites, agricultural areas, industrial sites or perhaps the electrical infrastructure itself.

Unintentional negative impacts on migratory birds caused by human activity, including their nests and eggs, is collectively known as *Incidental Take*. Some examples of activities resulting in incidental take include but are not limited to: ground disturbance, tree/shrub removal or modification, trampling and intentional flooding or dewatering (Environment Canada 2011, Canadian Wildlife Service 2014).

Most migratory birds are protected under the Migratory Bird Convention Act (MBCA), while some migratory and resident bird species in Alberta are protected under the Wildlife Act. Further protection of "at risk" bird species is provided through the federal Species at Risk Act (SARA).

Due diligence related to legislative frameworks protecting migratory birds can be defined as the actions taken by individuals or industry that demonstrate precautions taken to help eliminate the possibility of incidental take. Legislative frameworks protecting migratory birds hold the power to investigate and potentially prosecute instances of incidental take, particularly in instances where a lack of due diligence is demonstrated (Walton 2017). Regulatory bodies at both the Provincial and Federal level coordinate with consultants and industry to achieve compliance with Provincial and Federal legislation and reduce the risk of incidental take.

The focus of this Bird Management Plan (the Plan) is on activities associated with construction, operation and maintenance of electrical distribution lines and related facilities that have potential to affect bird populations. These activities pose varying levels of risk to migratory birds depending on the timing, extent, magnitude and duration of work activities. Generally, operational activities are localized and the risk of direct mortality, loss of nests and sensory disturbance is much less than exists for construction-related activities.

3.0 Scope and Goals

The Plan's purpose is to install a management framework that will reduce impacts to migratory birds, minimize on-going operational risks and ensure compliance with environmental legislation. The Plan is dependent on the location and geographic extent of a particular operating infrastructure. The Plan will ensure service reliability, reduce avian incidental take, increase public perception, demonstrate due diligence and promote positive working relationships with regulatory bodies.

Specifically, the Plan will:

- Provide a legal background pertaining to migratory birds and avian species at risk (Migratory Bird Convention Act, Species at Risk Act and Wildlife Act),
- Identify and discuss avian species of management concern, by region,
- Outline various avian breeding windows by region,
- Describe, classify and assess risk,
- Outline protocols for Pre-Disturbance Assessments (Bird Nest Sweeps),
- Develop procedures for active nest sites (Common and Highly Scrutinized Species),
- Develop Best Management Practices (BMPs),
- Develop strategies to train and to increase awareness of onsite contractors, and,
- Develop procedures for incident reporting.

The management goals of the Plan are to:

- Provide EQUS with a framework to ensure compliance with federal and provincial legislation,
- Support the desired outcomes of the Migratory Bird Convention Act,
- Support the desired outcomes of the Species at Risk Act,
- Provide a framework to allow EQUS to expand the reach of their electrical network while demonstrating due diligence towards avian species and their preferred habitat, and,
- Maintain EQUS service reliability through regular maintenance activities unimpeded by regulatory constraints related to migratory birds.

4.0 Regulatory and Legal Background

Birds in Alberta are protected under both provincial and federal legislation, included the Migratory Birds Convention Act (MBCA), Alberta Wildlife Act and Species at Risk Act (SARA).

4.1 Migratory Birds Convention Act

The Migratory Birds Convention Act (MBCA) protects the nests, eggs, and individuals of most migratory birds in Canada. The regulations of the MBCA are enforced by Environment and Climate Change Canada (ECCC).

Specifically:

Section 5 of the regulations prohibits the hunting of a migratory bird except under authority of a permit, where "hunt" means chase, pursue, worry, follow after or on the trail of, lie in wait for, or attempt in any manner to capture, kill, injure or harass a migratory bird, whether or not the migratory bird is captured, killed or injured.

And,

Section 5.1 of the Act prohibits the deposition of substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

And,

Section 6 of the Regulations prohibits the disturbance, destruction, or taking of a nest, egg or nest shelter of a migratory bird. Possession of a migratory bird, nest or egg without lawful excuse is also prohibited.

4.2 Alberta Wildlife Act

Birds not falling under federal jurisdiction within Canada include upland game birds (grouse, quail, pheasants, ptarmigan), raptors (hawks, owls, eagles, falcons), cormorants, pelicans, crows, jays, kingfishers and non-native species (doves, starlings, house sparrows etc.). These species are covered under the Alberta Wildlife Act.

The Wildlife Act states: It is prohibited to "wilfully molest, disturb or destroy a house, nest or den". These prohibitions are subject to specific timing constraints and apply to the nests of endangered and threatened birds, raptors, upland game birds, all birds protected under the MBCA and nest of birds in wildlife or game bird sanctuaries.

4.3 Species at Risk Act

The federal Species at Risk Act (SARA) provides protection to species designated as endangered, threatened, special concern or extirpated. Definitions of these categories are provided below:

Endangered: Species facing imminent extirpation or extinction.

Threatened: Species which are likely to become endangered if nothing is done to reverse the factors leading to their extirpation or extinction.

Special Concern: Species which may become threatened or endangered because of a combination of biological characteristics and identified threats.

Extirpated: Species which no longer exist in the wild in Canada but exist elsewhere in the wild.

The Act includes protection including a prohibition against killing or harming the species and its residence. To ensure the protection of species at risk, SARA contains general prohibitions that make it an offence to:

- Kill, harm, harass, capture, or take an individual of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated,
- Possess, collect, buy, sell or trade an individual of a species listed in Schedule 1 of SARA as endangered, threatened or extirpated, and,
- Damage or destroy the residence (e.g. nest or den) of one or more individuals of a species listed in Schedule 1 of SARA as an endangered or threatened species, or as an extirpated species if a recovery strategy has recommended the reintroduction of the extirpated species into the wild in Canada.

The Act also includes a prohibition protecting critical habitat of Schedule 1 SARA wildlife species. The Act defines Critical habitat as the habitat necessary for the survival or recovery of a listed endangered, threatened or extirpated species.

Schedule 1 is an official federal list of wildlife species at risk, which have received legal protection under the Act. The schedule list is updated regularly and is found on the SARA Public Registry.

5.0 Species of Management Concern and Breeding Windows

5.1 Regional Considerations

EQUS' service areas span three main operating areas in Alberta. The North Area is located predominately west of Edmonton near the townsites of Alberta Beach, Onoway and Calahoo. The central area is mainly comprised of the areas between Rimbey, Innisfail and Sundre. The South Areas is situated near Claresholm, Brooks and Medicine Hat. These three areas comprise a diverse range of broad habitat types that arise primarily from topography and level of human induced impact. Some examples of the diverse landscapes available in each area include: Aspen forests in the North, agricultural fields in the Central and native grassland prairie in the South. This wide variability in available habitat supports an equally wide variability in breeding bird assemblages as well as a number of species of conservation concern.

ECCC provides approximate migratory bird nesting zones and calendars. Nesting zones are broad geographic units which consider variations in species diversity, variations in mean annual temperature and similarities in the nesting periods within and between zones (Figure 2). Nesting zones also largely overlap Bird Conservation Regions (BCRs) (Figure 3). These regions are the primary units for federal biological planning (ECCC 2020). BCR strategies consider the following elements for determining unit boundaries:

- priority bird species;
- priority bird species habitat associations;
- population objectives;
- threats faced by priority species;
- conservation objectives; and,
- proposed conservation actions.

Nesting calendars display the variation in nesting frequency by habitat type and nesting zone. The frequency of nesting activity is defined as the proportion of species that are estimated to be actively nesting on a given date during the migratory bird breeding period (ECCC 2020).

Nesting calendars are based upon species richness (number of nesting species) as opposed to the number of nesting individuals. Periods with fewer nesting species may still have a high number of individuals within those species that nest during that time period. For example, many waterfowl species nest in early spring (April), a time period much earlier than many migrant songbirds.

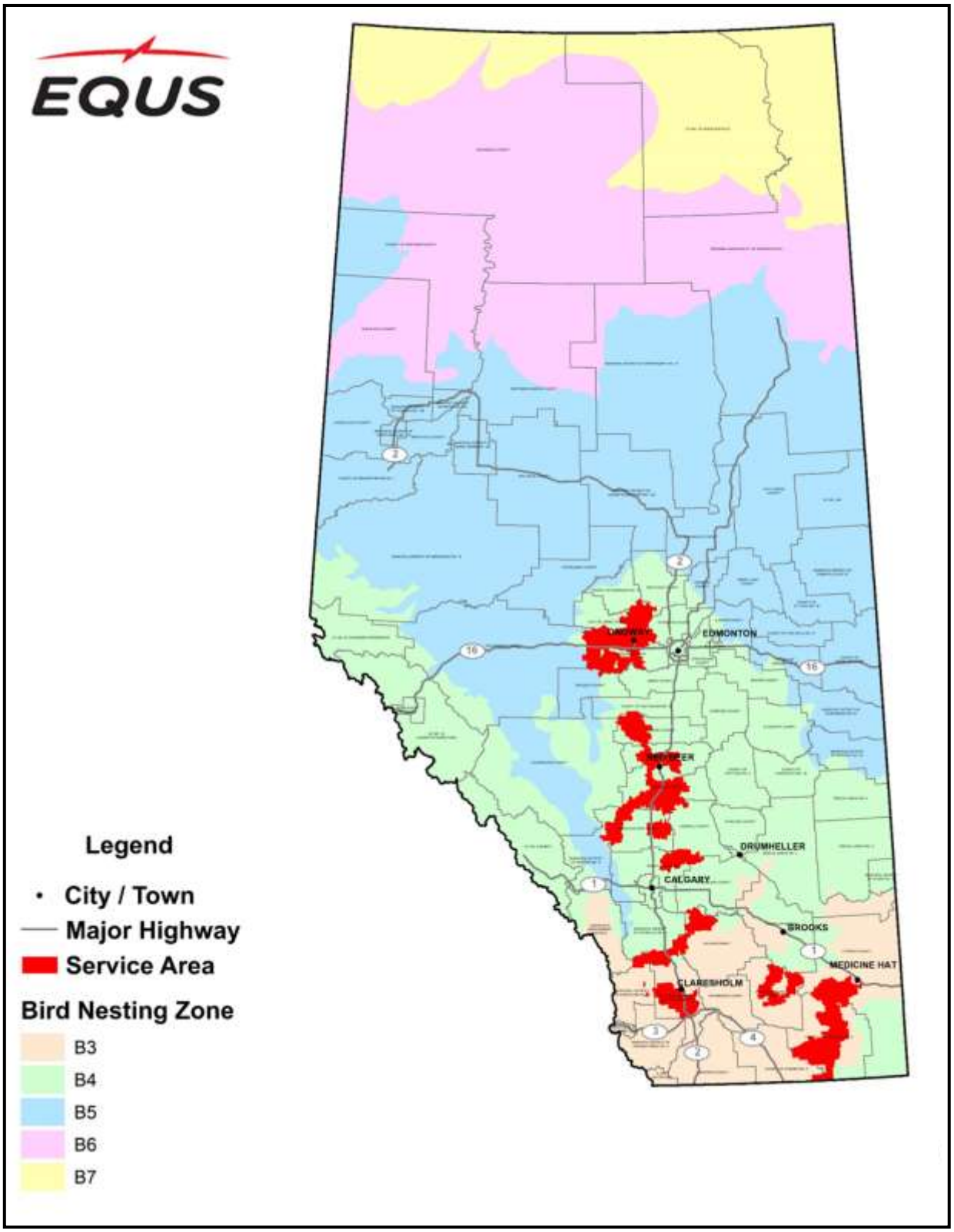

Figure 2: Nesting Zones of Alberta

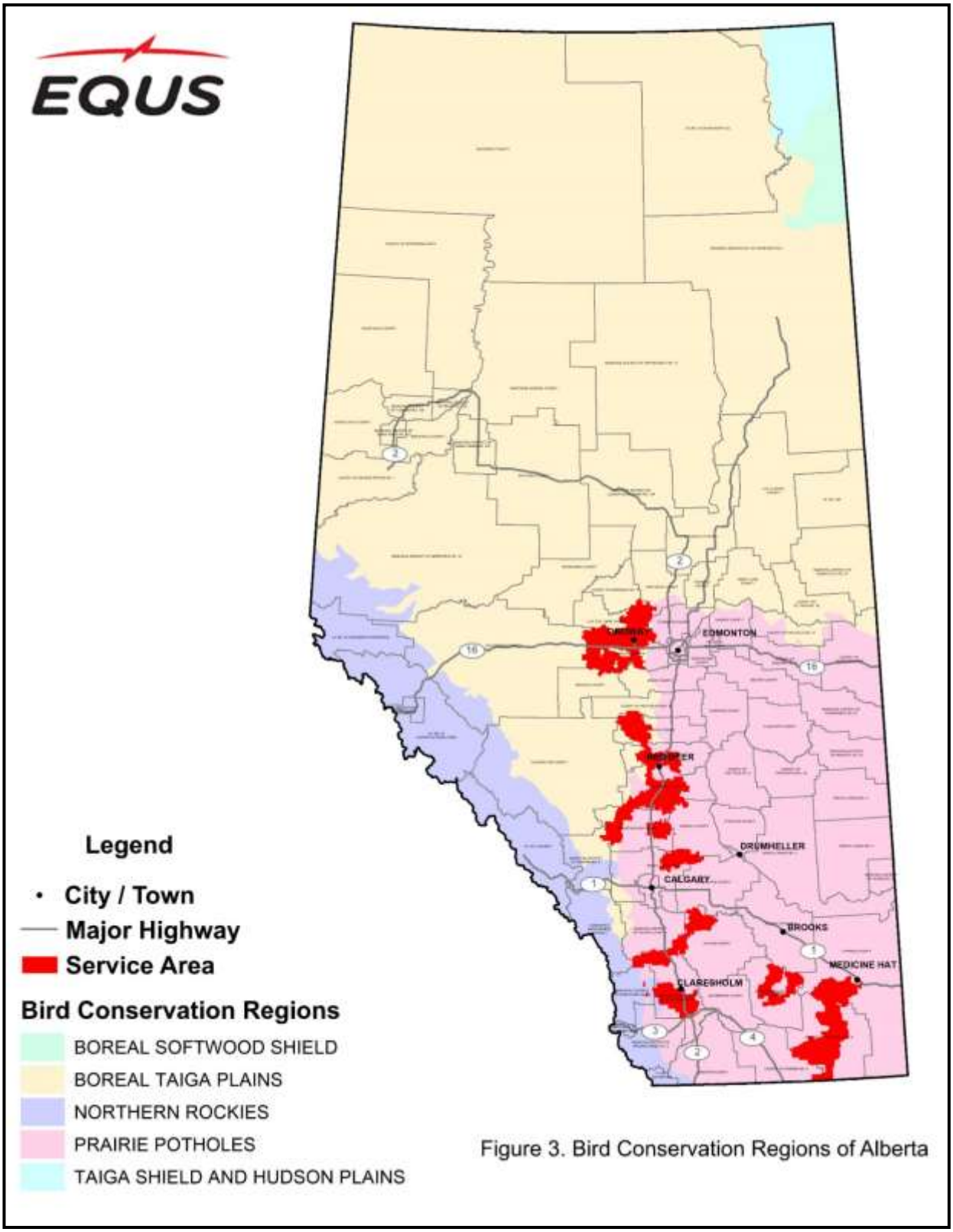

Figure 3: Bird Conservation Regions of Alberta

Table 1: Natural Regions Overlapping North, Central and South Operational Areas

Natural Region	Natural Subregion	Description	North Area	Central Area	South Area
Rocky Mountain	Montane	Upper elevations of the Montane include open limber pine and Douglas-fir stands, while lower elevations may include stands of lodgepole pine, Douglas-fir, white spruce, and aspen or grasslands dominated by bluebunch wheatgrass and mountain rough fescue.	-	-	South
Grassland	Dry Mixedgrass	The Dry Mixedgrass is characterized by low-growing, drought-tolerant mixedgrass communities.	-	-	South
	Mixedgrass	The Mixedgrass is similar to the Dry Mixedgrass; however, is more productive and includes occurrences of species associated with cooler and moister conditions.	-	-	South
	Northern Fescue	The dominance of plains rough rescue differentiates this subregion from other subregions within the Grassland Natural Region.	-	Central	-
	Foothills Fescue	The prevalence of mountain rough fescue, parry oatgrass, and bluebunch fescue differentiates this subregion from the other subregions within the Grassland Natural Region.	-	Central	South
Parkland	Foothills Parkland	Floristically similar to the Foothills Fescue and Montane (mountain rough fescue), but characterized by containing three distinct moisture levels (dry, moist, and poorly drained). Aspen woodlands or willow shrublands in low-lying areas or on northerly slopes.	-	-	South
	Central Parkland	This subregion is characterized by the dominance of plains rough fescue with embedded aspen forest stands. It has been largely converted to agricultural use.	North	Central	-
Boreal Forest	Dry Mixedwood	The Dry Mixedwood is characterized by aspen forests and cultivated areas, with fens in low-lying areas.	North	Central	-
	Central Mixedwood	The Central Mixedwood is characterized by a mix of aspen stands, aspen-white spruce forests, while spruce, and jack pine stands in uplands. Wetlands cover almost half of this subregion made up of fens and bogs.	North	Central	-

5.2 EQUS Operational Areas

5.2.1 North Area

Broad Landscape Description

The North Area is composed of Central Parkland, Dry Mixedwood and Central Mixedwood natural sub regions. These sub regions are dominated by rough fescue grassland, aspen forests, mixedwood forests, white spruce forests and Jackpine forests. Fens and bogs occur in low lying areas. A large component of central parklands habitats have experienced large conversions into agricultural uses (Table 1).

Avian Species of Management Concern

A total of 43 avian species at risk have potential to be residents within the North Area. Among these potential residents, a total of approximately 10 are of high conservation value (highly scrutinized) and include bank swallow, barn swallow, common nighthawk, evening grosbeak, horned grebe, olive-sided flycatcher, peregrine falcon, short-eared owl, western grebe and yellow rail (Table 2).

Nesting Zones and Breeding Windows

The North Area predominately overlaps nesting zone B4 and has an overall projected breeding window of April 15 to August 25th. A small proportion of the North Area occurs within nesting zone B5 (Figure 2 and Figure 4).

5.2.2 Central Area

Broad Landscape Description

The Central Area is composed of Central Parkland, Dry Mixedwood, Central Mixedwood, Foothills Fescue and Northern Fescue natural sub regions. The Central Area is similar to the North Area however it contains larger pockets of northern and foothills fescue grasslands. These grasslands are dominated by mountain rough fescue, Parry oatgrass and bluebunch fescue when in a native condition (Table 1).

Avian Species of Management Concern

A total of approximately 58 avian species at risk have potential to be residents within the Central Area. Among these potential residents, a total of 19 species are of high conservation value including Baird's sparrow, bank swallow, barn swallow, black swift, bobolink, burrowing owl, chestnut-collared longspur, common nighthawk, evening grosbeak, ferruginous hawk, horned grebe, loggerhead shrike, long-billed curlew, olive-sided flycatcher, peregrine falcon, piping plover, short-eared owl, Sprague's pipit and western grebe (Table 2).

Nesting Zones and Breeding Windows

The Central Area consists of nesting zone B4 and has an overall projected breeding window of April 15 to August 25th (Figure 2 and Figure 4).

5.2.3 South Area

Broad Landscape Description

The South Area is comprised of Foothills Parkland, Montane, Foothills Fescue, Mixedgrass and Dry Mixedgrass natural sub regions. Foothills Parkland and Montane natural sub regions include patches of aspen woodlands, mixedwood forests, lodgepole pine, and white spruce forests. Higher elevations within montane regions may include small patches of limber pine and Douglas fir forests. Grassland areas are composed of drought tolerant native prairie grass species (Table 1).

Avian Species of Management Concern

A total of 50 avian species at risk have potential to be residents within the South Area. Among these potential residents, a total of 19 are of high conservation value including Baird's sparrow, bank swallow, barn swallow, bobolink, burrowing owl, chestnut-collared longspur, common nighthawk, evening grosbeak, ferruginous hawk, horned grebe, lark bunting, loggerhead shrike, long-billed curlew, McCown's longspur, peregrine falcon, piping plover, short-eared owl, Sprague's pipit and western grebe (Table 2).

Nesting Zones and Breeding Windows

The South Area consists of nesting zones B3 and B4 and has an overall projected breeding window of April 15 to August 25th (Figure 2 and Figure 4).

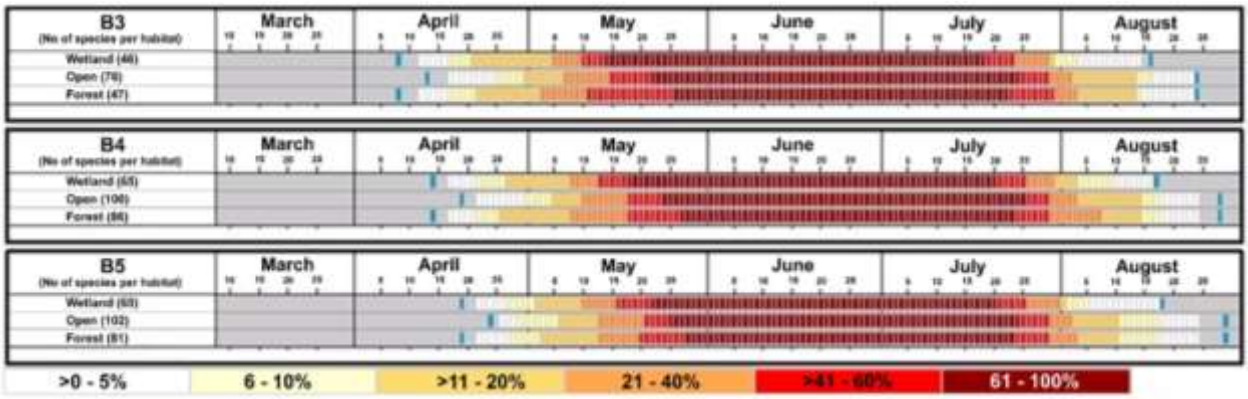

Figure 4: Nesting Calendars for EQUS Service Areas in Alberta

Table 2: Avian Species at Risk with Potential to be Residents within EQUS Operational Areas

Common Name	Scientific Name	At Risk Designations				North Area	Central Area	South Area
		Alberta	COSEWIC	Schedule	SARA			
Alder Flycatcher	*Empidonax alnorum*	Sensitive				North	Central	South
American Bittern	*Botaurus lentiginosus*	Sensitive				North	Central	South
American Kestrel	*Falco sparverius*	Sensitive				North	Central	South
American White Pelican	*Pelecanus erythrorhynchos*	Sensitive	Not at Risk			North	Central	South
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive	Not at Risk			North	Central	South
Baltimore Oriole	*Icterus galbula*	Sensitive				North	Central	South
Baird's Sparrow	*Ammodramus bairdii*	Sensitive	Special Concern	Schedule 1	Special Concern		Central	South
Bank Swallow	*Riparia riparia*	Sensitive	Threatened	Schedule 1	Threatened	North	Central	South
Barn Swallow	*Hirundo rustica*	Sensitive	Threatened	Schedule 1	Threatened	North	Central	South
Barred Owl	*Strix varia*	Sensitive				North	Central	
Black Swift	*Cypseloides niger*	Undetermined	Endangered	Schedule 1	Endangered		Central	
Black Tern	*Chlidonias niger*	Sensitive	Not at Risk			North	Central	South
Black-backed Woodpecker	*Picoides arcticus*	Sensitive				North	Central	
Black-crowned Night Heron	*Nycticorax nycticorax*	Sensitive					Central	South
Black-necked Stilt	*Himantopus mexicanus*	Sensitive					Central	South
Bobolink	*Dolichonyx oryzivorus*	Sensitive	Threatened	Schedule 1	Threatened		Central	South
Brewer's Sparrow	*Spizella breweri*	Sensitive						South
Broad-winged Hawk	*Buteo platypterus*	Sensitive				North	Central	
Brown Creeper	*Certhia Americana*	Sensitive				North	Central	
Burrowing Owl	*Athene cunicularia*	At Risk	Endangered	Schedule 1	Endangered		Central	South
Caspian Tern	*Hydroprogne caspia*	Sensitive	Not at Risk					South
Chestnut-collared Longspur	*Calcarius ornatus*	At Risk	Endangered	Schedule 1	Threatened		Central	South
Clark's Grebe	*Aechmophorus clarkii*	May be At Risk						South

Common Nighthawk	*Chordeiles minor*	Sensitive	Special Concern	Schedule 1	Threatened	North	Central	South
Common Yellowthroat	*Geothlypis trichas*	Sensitive				North	Central	South
Eastern Kingbird	*Tyrannus tyrannus*	Sensitive				North	Central	South
Eastern Phoebe	*Sayornis phoebe*	Sensitive				North	Central	South
Evening Grosbeak	*Coco-thraustes vespertinus*	Secure	Special Concern	Schedule 1	Special Concern	North	Central	South
Ferruginous Hawk	*Buteo regalis*	At Risk	Threatened	Schedule 1	Threatened		Central	South
Forster's Tern	*Sterna forsteri*	Sensitive	Data Deficient			North	Central	South
Golden Eagle	*Aquila chrysaetos*	Sensitive	Not At Risk				Central	South
Grasshopper Sparrow	*Ammodramus savannarum*	Sensitive					Central	South
Great Blue Heron	*Ardea Herodias*	Sensitive				North	Central	South
Great Gray Owl	*Strix nebulosi*	Sensitive	Not At Risk			North	Central	
Horned Grebe	*Podiceps auritus*	Sensitive	Special Concern	Schedule 1	Special Concern	North	Central	South
Lark Bunting	*Calamospiza melanocorys*	Sensitive	Threatened	Schedule 1	Threatened			South
Least Flycatcher	*Empidonax minimus*	Sensitive				North	Central	South
Loggerhead Shrike	*Lanius ludovicianus*	Sensitive	Threatened	Schedule 1	Threatened		Central	South
Long-billed Curlew	*Numenius americanus*	Sensitive	Special Concern	Schedule 1	Special Concern		Central	South
McCown's Longspur	*Calcarius mccownii*	May Be At Risk	Threatened	Schedule 1	Threatened			South
Northern Goshawk	*Accipiter gentilis*	Sensitive	Not At Risk			North	Central	South
Northern Pygmy-owl	*Glaucidium gnoma*	Sensitive				North	Central	
Olive-sided Flycatcher	*Contopus cooperi*	Sensitive	Special Concern	Schedule 1	Threatened	North	Central	
Osprey	*Pandion haliaetus*	Sensitive				North	Central	South
Peregrine Falcon	*Falco peregrinus*	At Risk	Special Concern	Schedule 1	Special Concern	North	Central	South
Pied-billed Grebe	*Podilymbus podiceps*	Sensitive				North	Central	South
Pileated Woodpecker	*Dryocopus pileatus*	Sensitive				North	Central	
Piping Plover	*Charadrius melodus*	At Risk	Endangered	Schedule 1	Endangered		Central	South
Prairie Falcon	*Falco mexicanus*	Sensitive	Not At Risk				Central	South

Purple Martin	*Progne subis*	Sensitive				North	Central	
Sedge Wren	*Cistothorus platensis*	Sensitive	Not At Risk			North	Central	
Sharp-tailed Grouse	*Tympanuchus phasianellus*	Sensitive				North	Central	South
Short-eared Owl	*Asio flammeus*	May Be At Risk	Special Concern	Schedule 1	Special Concern	North	Central	South
Sora	*Porzana carolina*	Sensitive				North	Central	South
Sprague's Pipit	*Anthus spragueii*	Sensitive	Threatened	Schedule 1	Threatened		Central	South
Trumpeter Swan	*Cygnus buccinators*	Sensitive	Not At Risk			North	Central	
Turkey Vulture	*Cathartes aura*	Sensitive				North	Central	South
Upland Sandpiper	*Bartramia longicauda*	Sensitive				North	Central	South
Western Wood-Pewee	*Contopus sordidulus*	May Be At Risk				North	Central	South
Western Grebe	*Aech-mophorus occidentalis*	At Risk	Special Concern	Schedule 1	Special Concern	North	Central	South
Western Tanager	*Piranga ludoviciana*	Sensitive				North	Central	
White-faced Ibis	*Plegadis chihi*	Sensitive					Central	South
White-winged Scoter	*Melanitta fusca*	Sensitive				North	Central	South
Yellow Rail	*Coturnicops novebora-censis*	Undetermined	Special Concern	Schedule 1	Special Concern	North		

5.3 Restricted Activity Guidelines

Some avian species at risk have specific provincial or federal mandated disturbance guidelines in place to help protect the species and its preferred core habitat. These guidelines are often published (as seen in Alberta), however in some instances direct consultation with ECCC may need to occur.

In Alberta, specific *Land Use Guidelines* were created by species or species groups. The land use guidelines contain restrictions on activities to limit disturbance upon select at risk wildlife (Government of Alberta 2011). The magnitude of disturbance is generally defined as either low, medium or high as outlined below:

- Low impact disturbances are often infrequent, low impact (e.g., land surveying), habitat is not being modified by the activities, and the duration of the activity is relatively short (i.e., hours).
- Medium impact disturbances are usually high in frequency, may use vehicles and other equipment, and may involve small habitat modifications (e.g. seismic drilling) and the duration is relatively long (i.e. days).

- High impact activities generally involve disturbances that are high in frequency, involve vehicles and machinery, permanently modify the habitat by altering vegetation, soils and perhaps hydrology (e.g., buildings, roads) and the impact is long term (i.e., more than 10 years).

Setback distances are then employed based upon the above parameters. Table 3 presents at risk avian species in Alberta which have mandated recommended activity guidelines.

Table 3: Recommended Activity Guidelines in Alberta Parkland and Grassland Areas

Species	Location	Time of Year	Level of Disturbance		
			Low	Medium	High
Greater Sage Grouse	Leks	Year-Round	3200 m	3200 m	3200 m
	Habitat	Year-Round	1000 m	1000 m	1000 m
Sharp-Tail Grouse	Leks	March 15 – June 15	500 m	500 m	500 m
		June 16 – March 14	100 m	100 m	500 m
Peregrine Falcon, Bald Eagle, Golden Eagle, Prairie Falcon, Ferruginous Hawk	Nesting Sites	March 15 – June 15	1000 m	1000 m	1000 m
		June 16 – March 14	50 m	100 m	1000 m
Burrowing Owl	Nesting Sites	April 1 – August 15	200 m	500 m	500 m
		August 16 – October 15	200 m	200 m	500 m
		October 16 – March 31	50 m	100 m	500 m
Colonial Nesting Birds: American White Pelican, Great Blue Heron	Nesting Sites	April 1 – August 31	1000 m	1000 m	1000 m
		September 1 – March 31	100 m	100 m	1000 m
Piping Plover Waterbodies	Nesting Sites	April 15 – July 31	100 m	200 m	200 m
		August 1 – April 14	100 m	100 m	200 m
Long-billed Curlew, Upland Sandpiper, Mountain Plover, Short-eared Owl, Sprague's Pipit	Active Nest and Surrounding Habitat	April 1 – July 15	100 m	100 m	100 m

Proponents must consult the Fish and Wildlife Information Management System (FWMIS) to determine if their work occurs within one of these species core ranges or if their work area has historical observations of any of the above listed species.

- An online mapping tool is available at:

  https://maps.alberta.ca/FWIMT_Pub/?TermsOfUseRequired=true&Viewer=FWIMT_Pub

- A quick reference guide on how to use the mapping tool is available at:

  https://open.alberta.ca/publications/quick-reference-guide-fish-and-wildlife-internet-mapping-tool

6.0 Best Management Practices

Best Management Practices (BMPs) are approaches often used by industry to reduce some kind of specific negative impact. As it relates to migratory birds, BMPs are utilized because they have been determined to reduce the potential for incidental take. BMPs are used across all industry types in Alberta and while construction and operational factors may be different among industry, BMPs are often similar. In addition to the author's expertise, this management program has consulted several similar programs across all industry in Alberta to develop specific BMPs required for the daily operations of an electrical transmission supplier like EQUS (Altalink 2019, Fortis 2019, Stantec 2018, CWS 2014, Stantec 2013).

Below are recommend BMPs to avoid and minimize project impacts on nesting/breeding birds. These BMPs are tailored specifically to address several phases of a project including planning, construction or maintenance and operational phases.

6.1 Pre-Disturbance Planning

- Outline the timing, location and scope of the activity.
    - Does the work occur during the breeding window? Does the work occur in pristine habitat? Previously disturbed habitat? What is the magnitude and duration of the activities?
- Evaluate potential negative impacts towards migratory birds and core habitat for sensitive species.
    - Is there risk of incidental take? Does the work occur within provincially mapped core habitat?
- Evaluate potential negative impacts towards core habitat or breeding ranges of sensitive species.
    - Do we need to consult FWMIS?
- Evaluate the need to consult with a qualified biologist.
- Evaluate the need to consult with an appropriate provincial or federal regulator.
- Explore potential to complete the proposed work outside of the breeding window for migratory birds.
- Explore opportunities to avoid proposed work within core habitat or breeding ranges of at risk species.
- Explore opportunities to avoid proposed work adjacent to congregating sites (e.g. large wetlands).

6.2 Construction and Maintenance

- Evaluate the need to consult with an appropriate provincial or federal regulator.
- Train EQUS staff and its contractors on issues surrounding migratory bird protection and these protocols.
    - Have workers been updated on how to recognize nest sites? How to minimize disturbance? Compliance standards of the MBCA?
- If construction or maintenance activities cannot avoid a breeding bird window, plan breeding bird nest surveys and consult with a qualified biologist for mitigation plans.
- When necessary, install buffer zones around all active or indicated nest sites as outlined in Section 9.
- Acquire and retain detailed records of all migratory bird nest survey locations and results.
- Occasionally EQUS may consider retaining an environmental monitor to execute mitigation plans for sensitive species, species groups and work adjacent to or within highly sensitive habitat (e.g. large wetlands, large expanses of native grassland, badlands). Use accepted and standardized survey methods.

6.3 Operating

- Evaluate the need to consult with an appropriate provincial or federal regulator.
- Train EQUS staff and its contractors on issues surrounding migratory bird protection and these protocols.
- Consider nesting deterrents around permanent facilities.
- Examples of nesting deterrents may include: raptor alarm calls, owl and raptor effigies, mylar flagging, reflective tags, propane cannons etc.
- Vegetation control including manicured grasslands should be scheduled to occur outside of the key nesting period when possible.

7.0 Risk Assessment

Similar to BMPs, assessing risk between industries is similar. Assessing overall risk or specific risk to nesting birds is aimed at addressing the following:

- Identifying tasks that are potentially hazardous to migratory birds;
- Identifying specific negative impacts of nesting birds as a result of any hazardous task;
- Determine appropriate procedures to eliminate hazards (if possible); and,
- Control hazards or risks when elimination is not possible.

A framework for managing risk associated with incidental take of migratory birds was developed (Table 4). The following factors were considered:

- Broad activity type,
- Potential Impacts,
- Critical habitat,
- At risk avian species,
- Risk of incidental take, and,
- Mitigation.

Conservative estimates were made when considering the effects or potential outcomes of magnitude/effects of activities, potential negative impacts and risk of incidental take. Some nesting migratory birds or nesting colonies may possess, or over time develop, a high threshold for disturbance. This is particularly true for species which select existing infrastructure as suitable or preferred nesting habitat.

Examples of species of migratory bird which may select EQUS infrastructure on which to build nests may include:

- barn swallow,
- bank swallow, cliff swallow,
- American robin, and
- killdeer.

While these species may develop an increased tolerance to disturbance, extreme care should be taken as to not cause nest abandonment.

Table 4: Risk Assessment Matrix and Mitigation

Construction or Maintenance Description	Dominant Activities	Duration of Activities (Hours /Days /Weeks /Months)	Magnitude /Effect of Activities (Low/Mod /High)	Potential Negative Impacts	Risk of Incidental Take (Low /Mod /High)	Mitigation
Vegetation Management	• Tree/Shrub Trimming • Grass Mowing • Mulching	Days	High	• Loss of nesting habitat • Loss of nests • Direct mortality • Sensory disturbance	High	• Consider rescheduling work outside of breeding period • Complete nest survey prior to work • Consult land use guidelines for additional restrictions
Substation Maintenance	• Driving on existing roadways/ vegetated truck trails	Days	Low	• Sensory disturbance	Low	• Understand effects of sensory disturbance and potential nest abandonment • Avoid prolonged nest or nesting colony disturbance events • Be aware of ground nesting (including gravels) species • Consider installing nesting deterrents • Consult with qualified biologist
Power Pole Inspections	• Driving on existing roadways and vegetated truck trails	Days	Moderate	• Direct mortality • Sensory disturbance	Low	• Limit vehicle use to designated trails or roadways • Be aware of potential trampling of active nest sites • Be aware of ground nesting (including gravels) species
New Line Installation	• Vegetation removal • Ground disturbance • High traffic volume, including heavy *machinery*	Months	High	• Loss of nesting habitat • Loss of nests • Direct mortality • Sensory disturbance	High	• Consider rescheduling work outside of breeding period • Complete nest survey prior to work • Consult land use guidelines for additional restrictions
Wildfire Management	• Tree/shrub trimming • Driving on existing roadways, vegetated truck trails • Mulching	Days	High	• Loss of nesting habitat • Loss of nests • Direct mortality • Sensory disturbance	Moderate	• Consider rescheduling work outside of breeding period • Complete nest survey prior to work • Consult land use guidelines for additional restrictions

8.0 Pre-Disturbance Assessments

8.1 Habitat and Planning Considerations

The BMPs outlined in Section 6 and risk assessment approaches in Section 7 are the preferred methods to reduce impacts on breeding migratory birds. Figure 5 outlines an example approach utilizing both variables to determine if focused nest surveys are required. If after consulting the BMPs and assessing your risk, a construction or maintenance activity must occur during the breeding window of migratory birds, pre-disturbance assessments (nest sweeps) must be completed. Depending on the bird species potentially present, and the complexity of the occurring breeding habitat, qualified biologists should be employed to carry out these assessments. Bird nests can be extremely difficult to locate and can occur in a wide variety of natural and human modified habitats including but not limited to:

- forests including standing snags and tree cavities;
- low and tall shrubs;
- ground substrate including gravels and cobbles;
- agricultural areas including stubble fields;
- wetlands;
- ground burrows;
- cliffs or earthen embankments including construction stockpiles;
- road infrastructure including bridges, culverts and light standards; and,
- other existing infrastructure.

When planning pre disturbance nest sweeps, habitat types can be classified as either simple or complex. Simple habitats include manicured grasslands, sparsely vegetated areas, stubble fields or previously cleared areas. In contrast, complex habitats include forests, shrublands, native grasslands and wetlands.

Nest sweeps can be completed with relative precision within simple habitat types compared to complex sites. Complex sites require additional rigour including increased search intensity and number of observers. Among complex habitat types, nest searches within wetlands and riparian (i.e. river bank or lake shore) areas are the most challenging. These searches will require additional effort and perhaps specific planning frameworks.

Do I Need to Complete a Nest Survey?

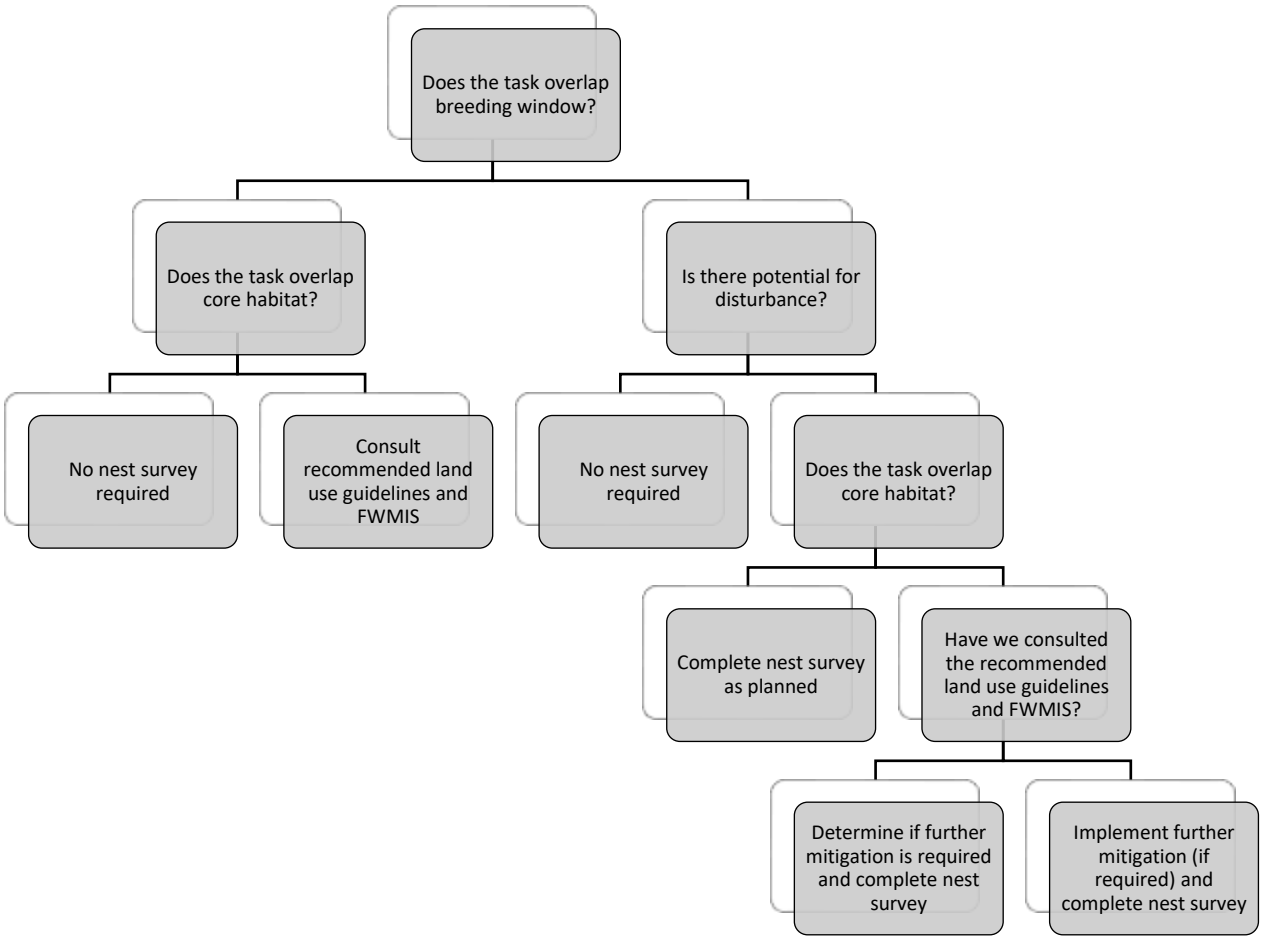

Figure 5: Nest Survey Decision Making Flowchart

8.2 Migratory Bird Nest Survey Methods

Whenever construction or maintenance activities are planned to overlap the breeding window of migratory birds and have potential for incidental take, a migratory bird nest survey must be completed. Migratory bird nest surveys typically "clear" an area for scheduled activities for a period of 7 days. If the scheduled activities are expected to extend beyond the 7 day period, additional nest surveys must be completed. These surveys assess the presence of active nest sites within and occasionally adjacent to the project disturbance footprint.

Generally, the following protocols are completed during a migratory bird nest survey:

- observers walk in a systematic and meandering fashion within a proposed project footprint,

- observers collect track log data with a handheld GPS throughout the survey,
- observers intently search the ground, shrubs and trees for nests,
- observers scan for movement within all vegetation types,
- observers should cue in on bird sign (singing, flushing, indicated mating pairs, nesting behaviour, young of the year, distraction displays) to support locating of nests,
- include photos of characteristic habitat and nest site locations during the survey.

During or at the completion of the survey, notes need to be taken detailing:

- date and time of survey,
- weather conditions,
- project area description,
- habitat type(s) status and condition,
- acquire and record UTM positions of all active, inactive and indicated bird nests,
- photo records,
- active, inactive or indicated bird nest sites including stage of nest and territorial behaviour of adults.

Refer to Appendix B for a copy of the Bird Nest Sweep Field Data Collection Form to be used in this process.

9.0 Procedures for Active Nest Sites

9.1 Indicated Nests VS Active Nests

When active nest sites are identified within an area to be disturbed, appropriate nesting buffers need to be installed to restrict incidental take. Most active nest sites will be easily distinguished in the field with the presence of eggs or young in the nest.

Some active nest sites will not have eggs or young in the nest and should be classified as an *indicated active nest*. Indicated nest sites are protected under the MBCA the same as active nest sites. Indicated nest sites are those in which breeding adults are in the process of either completing a nest or are yet to lay eggs. Indicated nests may never be found but nonetheless need to be treated as active. Indicated nests are located using the same protocols as all active nest sites where the observers look for nesting activity including:

- signs of indicated breeding pairs,
- breeding behaviour (alarm calls, carrying nesting material, fecal sacs),
- displaying behaviour as if distressed or injured (distraction display).

Appropriate buffers will vary on a species to species basis. Most non-listed migratory birds will have a buffer distance of 15 to 30 meters. A 100 meter buffer is typically recommended for non listed migrant and resident raptor species. Table 3 provides recommended setback distances for select provincially-listed avian species. Consultation with ECCC may be required to determine appropriate buffer sizes for some at risk species.

9.2 Methods to Limit Disturbance

When an active or indicated nest is located, all efforts need to be taken to limit disturbance on breeding adults and young (if present). With this in mind, identifying the species is important to determine appropriate buffers or additional mitigation. A professional biologist is preferred to undertake these steps. The approximate buffer radius needs to be delineated in the field using flagging tape. Periodically place flagging tape on existing vegetation at the buffer perimeter as to not create unnecessary sensory disturbance. Do not place flagging tape in the immediate vicinity of the nest. At each active or indicated nest site, the following actions should be taken:

- Acquire a UTM location,
- Take notes on stage of nest and potential fledging of young,
- Take notes on species and presence of adults,
- Capture representative photos of the general nesting area including representative habitat types.

Monitoring of the nest site may be required depending on density of nesting birds, species, duration of activity and magnitude of activity. Once the young have fledged the nest, all buffer flagging tape can be removed and disturbance activities can proceed.

10.0 Administration and Records

10.1 Employee and Contractor Training

General training on the compliance standards of the MBCA, SARA and the Alberta Wildlife Act should be supplied to EQUS employees and construction/maintenance contractors. General training will allow employees and contractors to make informed decisions pertaining to these legislations. Providing this avian management plan to employees and contractors is the simplest initial approach to increasing their knowledge on expectations relating to migratory bird legislation and regulations.

Employees and contractors are regularly in situations where inadvertent incidental take may occur. Below are some examples of everyday tasks which may produce inadvertent incidental take:

- Mowing of manicured grassland adjacent to approach ROWs,
- Preventative maintenance or cleaning of narrow openings or spaces of infrastructure,
- Removing or moving stockpiled soil,
- Removal of danger trees (a tree that is hazardous to people or facilities because of: location or lean),
- Operation of vehicles or heavy machinery off of designated roads or truck trails.

Many more examples of inadvertent incidental take exist and it is the employees' or contractors' obligation to recognize the need to fulfill their due diligence. The employee or contractor should ask themselves the following questions before proceeding with any maintenance or construction activity during the breeding period of migratory birds:

- Will this task negatively impact potential bird nesting habitat?
- Will this task potentially cause nesting birds to be negatively impacted?
- Will this task potentially cause nesting adults to abandon a nest site?
- Will this task potentially result in the incidental take of a migratory bird?

If the employee or contractor answers yes to any of these questions, the employee or contractor should pause the task and steps should be taken to mitigate any negative impacts which may result in the task.

Due to the potential for at-risk avian species to occupy a diverse range of habitat types, it is recommended that qualified biologists undertake most nest searches. Nest sweeps within simple habitat types (industrial infrastructure, bare ground, manicured grasslands, stubble fields) can be completed by EQUS employees and contractors after a thorough understanding of Sections 6 to 9 of this plan. See Appendix B for an example of the Bird Nest Sweep Field Data

Collection Form to be used in this process. It is recommended that qualified biologists are consulted before any nest surveys are completed by employees or contractors.

10.2 Incident Reporting

Incident reporting can be a useful tool for employees and contractors to facilitate communication among departments in EQUS. Incident reporting can describe incidental observations of nesting bird behaviour including:

- Raptor species nesting on line infrastructure,
- Colonial nesting within infrastructure or along line ROWs,
- Unknown mortalities,
- Species electrocutions, and,
- Inadvertent incidental take.

These observations can be important for future planning or adaptive management processes. See Appendix A for a copy of an Avian Incident Report Form.

10.3 Related EQUS Programs and Information

EQUS maintains a variety of planned programs and operational policies and procedures which may at times be relevant to the Avian Management Plan. Related EQUS programs and documents include:

- EQUS Green Zone Program
- EQUS' Health and Safety Program
- EQUS Vegetation Management Plan
- EQUS' Wildfire Management Plan

Conclusion

EQUS' Avian Management Plan is intended to reduce impacts on migratory birds, that may occur during construction and maintenance of our electrical distribution system, while minimizing ongoing operational risks and ensuring compliance with environmental legislation.

If you have further questions regarding EQUS' Avian Management Plan, please contact EQUS for more information.

- Standards Department
  - Phone: 1.888.211.4011
  - Email: sdept@equs.ca
- North Area Office (Onoway):
  - Phone: 1.888.627.4011
  - Email: Onoway_Area@equs.ca
- Central Area Office (Innisfail):
  - Phone: 1.877.527.4011
  - Email: Innisfail_Area@equs.ca
- South Area Office (Claresholm and Medicine Hat):
  - Phone: 1.888.565.5455
  - Email: Claresholm_Area@equs.ca

Glossary

Active Nest: A nest with eggs or young in the nest.

Brush: Individual vegetation that measures less than 6 inches in diameter at the area four feet above ground level.

Clearance Space: The space surrounding a power line, which must be kept clear of vegetation at all times.

Communication Equipment: Cables, conductors, lines and associated devices used for or forming part of a communication utility system.

Dewatering: To drain or remove water from a waterlogged or flooded area, such as a bog or wetland.

Electrical Equipment: Includes machinery, equipment, appliances and devices of every kind and description that are used or intended to be used in the generation, transformation, transmission, distribution, delivery or use of electrical power or energy in Alberta.

Endangered: Species facing imminent extirpation or extinction.

Environment and Climate Change Canada (ECCC): A department of the federal government that addresses various environmental issues, including the enforcement of the Migratory Birds Convention Act.

Extirpated: Species which no longer exist in the wild in Canada but exist elsewhere in the wild.

Field Representative: Any EQUS employee that maintains operations in the field, such as servicemen, Powerline Technicians, meter readers, vegetation representatives, etc.

Ground Disturbance: Any work, operation, or activity that results in a disturbance of the earth, including digging, directional boring, excavating, drilling, etc.

Incidental Take: Unintentional negative impacts on migratory birds caused by human activity, including their nests and eggs.

Indicated Nest: Nests in which breeding adults are in the process of either completing a nest or are yet to lay eggs.

Leks: An area where birds and other animals carry out display and courtship behaviours. Also may be used to describe a group of male animals conducting courtship behaviours (i.e. lekking).

Riparian: Relating to or located on the bank of a natural watercourse, such as a river or lake.

Special Concern: Species which may become threatened or endangered because of a combination of biological characteristics and identified threats.

Threatened (species): Species which are likely to become endangered if nothing is done to reverse the factors leading to their extirpation or extinction.

Vegetation: Plant life, including trees and brush.

Vegetation Management: The practice of managing vegetation in the vicinity of electrical distribution equipment and structures, by trimming, mowing, mulching and tree removal, in order to meet the requirements of applicable codes and standards of Alberta.

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Appendix

Appendix A: Migratory Bird Incident Report Form

EQUS

Migratory Bird Incident Report Form

GENERAL INFORMATION			
Reported By:		Area:	
Title/Role:		Date Reported:	

INCIDENT INFORMATION			
Incident ID #			
Date of Incident:		Time of Incident:	
Legal Land Location:		Service Area:	
Location Details (Include tap/structure ID#, work order, other identifying features):			
Additional Person(s) Involved:			
Witnesses			

DESCRIPTION OF INCIDENT (include bird species, if known)

DESCRIPTION OF BEHAVIOUR OR CONDITIONS LEADING TO INCIDENT

RESULTING ACTION PLANNED OR COMPLETED

REPORT SIGNOFF					
Employee Name		Signature		Date	
Supervisor Name		Signature		Date	

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Appendix B: Bird Sweep Field Data Collection Form

EQUS

Bird Nest Sweep: Field Data Collection Form

GENERAL INFORMATION			
Employee Name		Area	
Work Order / Project		Date	
Land Location		Time	
Weather		Temperature	
Cloud Cover		Wind Speed / Direction	
Habitat Type(s)		Habitat Condition	❑ L ❑ M ❑ H
		Level of Disturbance	❑ L ❑ M ❑ H

Methods

- Observer to walk in meandering/systematic fashion within footprint (Habitat density/ type to dictate sampling vigor)
- Observer to use a handheld GPS to collect a track log of walked route (10 seconds / 10 metre intervals)
- Observer to search the ground, shrubs and trees (including cavities) attentively for nests
- Observer to denote and observe location of movements/behaviour of birds within vegetation
- Observe bird sign (singing, flushing, mating pairs, nesting behaviour, young, distraction/territorial displays) to support nest activity/location
- Observer to record pertinent information pertaining to discovered nest
- Buffer based on species - Table 2 (30m: non-listed migratory, 100m: non-listed migrant and resident raptors)
- Buffer: Do not place flagging tape in immediate nest vicinity. Periodically place on existing vegetation at buffer distance

NEST LOCATION AND DESCRIPTION							
Nest ID		Location (UTM)		Easting		Northing	
Nest Status (Initial)[A]	❑ Active ❑ Inactive ❑ Specified ❑ Indicated						
Species[B]							
Adult Behaviour				Photos Attached:		❑ Yes ❑ No	
HOST SPECIES				STATUS AND ACTIVITY			
Visit	Date (dd/mmm/yy)	# Eggs	Live Young	Dead Young	Nest Status[C]	Adult Activity[D]	Young Status[E]
1							
2							
3							
4							
5							

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Appendix B: Bird Sweep Field Data Collection Form (continued)

Bird Nest Sweep: Field Data Collection Form

NEST LOCATION AND DESCRIPTION (continued)			
Buffer Description			
First Egg Date		Fledgling Date	
ADDITIONAL NOTES			

A - Nest Status - *Initial*
Active/In-active/Specified/Indicated: Indicated - birds carrying nest-building materials to same location, birds carrying food for nestlings to same location, birds repeatedly flushing from the same location, territorial/defensive behaviour (aggression, drumming, intense singing and/or calling)

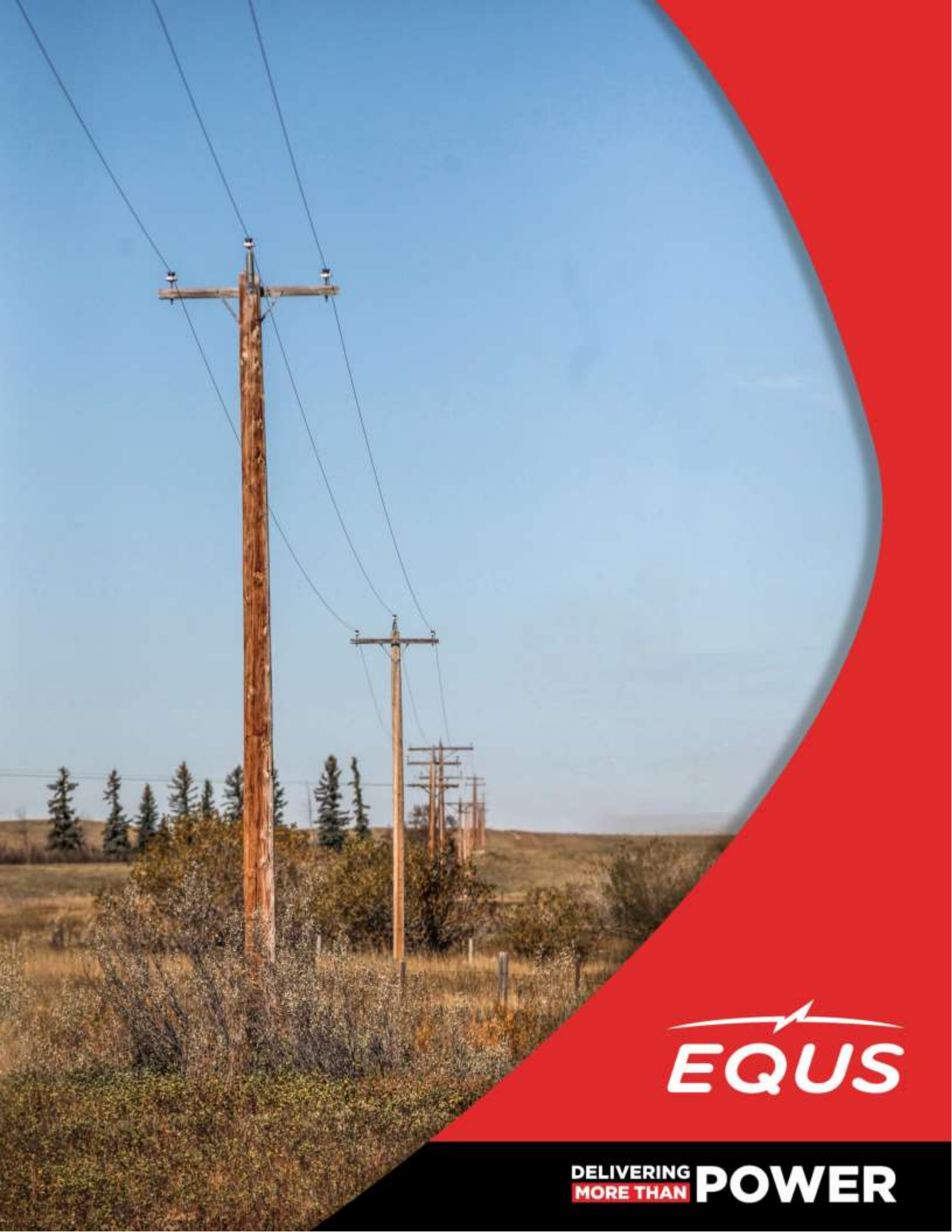
B - Species – Correctly ID'd Songbird, Waterfowl, Swallows, Raptors, Sandhill crane, Great blue heron, etc

C - Nest Status - *Status & Activity*
IN - incomplete nest; nesting materials present **CP** - complete nest; central cup present **DN** - damaged nest **FL** - flattened nest **DIS** - nest disappearance

D - Adult Activity
NO - No adults observed / heard; **BN** - Building nest / carrying materials; **RM** - Remained on nest during check; **LN** – Left nest during check, remained in vicinity **FD** – Feeding young / carrying food **TE** – Territorial behaviour

E – Young Status
NA – No young present **N** – Naked **PF** – partially feathered **FF** – Fully feathered **V** – Vocal

May 2020 Bird Sweep Data Collection Form Page 2 of 2 Version 1


EQUS
DELIVERING MORE THAN POWER