APPENDIX A
THE MUNICIPALITY OF THE DISTRICT OF EAST HANTS
LAND USE BY LAW

12 WIND ENERGY ZONE

Wind Energy Permitted Uses

Within the Wind Energy (WE) zone a development permit is not required for any development other than the following wind energy uses.

This table summarizes the uses permitted in the Wind Energy zone.

WE Wind Energy

Wind Energy Uses	WE
Small Scale Wind Turbines	✓
Large Scale Wind Turbines	✓
Wind Farms	✓

12.1 General Provisions for the Wind Energy Zone

a) No other provision of the Land Use By-law shall be applied to the Wind Energy Zone.

b) Unless otherwise specified in this By-law, manufacturer's specifications shall accompany all development/building applications for SWT and LWT.

b) Nothing in this by-law shall exempt wind energy developers from obtaining all necessary approvals from agencies such as but not limited to Nova Scotia Department of Environment and Labour, Nova Scotia Department of Energy, Nova Scotia Department of Natural Resources, Transport Canada, NAV Canada, and Nova Scotia Power.

12.1.2 Small Scale Wind Turbine

a) shall have a maximum power output of 100 KW;

b) there may be more than one SWT located on a property;

c) the total maximum power output of all SWTs, per property, shall not exceed 100 KW;

d) the height of the SWT shall not exceed 170 ft (52 m);

e) shall be setback 1.5 times the height of the tower, measured from grade to the highest point of the rotors arc, from adjoining property lines; and

f) to limit climbing access, a fence 6 feet (1.8 m) high with a locking portal shall be placed around the facility's tower base, or the tower climbing apparatus shall be limited to no lower than 12 feet (3.7 m) from the ground, or the tower shall not be climbable.

12.1.3 Large Scale Wind Turbine

a) no development permit shall be issued for a LWT unless a site plan has been approved, pursuant to the requirements presented in Appendix J of the Land Use By-law, and provided the applicant agrees in writing to carry out the terms of the site plan.

i) a site plan shall be prepared by a qualified professional of sufficient detail to address all of the matters identified in Appendix J of the Land Use By-law; and

ii) a site plan submitted in accordance with Appendix J will be circulated to all property owners within 1000 ft (305 m) of the property.

b) large scale wind turbine(s) shall comply with the following setbacks:

i) a large scale wind turbine shall be located not less than 4 times the height of the turbine, measured from grade to the highest point of the rotors arc, from adjoining property lines; and

ii) in the case of wind farms, where the impact study demonstrates that a lesser or greater setback is appropriate, setbacks may be amended from the minimum setback depending upon the number of wind turbines in a group or the proximity to an existing wind farm.

c) the minimum blade clearance from grade shall be 25 ft (7.5 m);

d) noise levels at adjoining property lines shall not exceed 40 dbs or above the existing background noise;

e) the only signage that shall appear on the wind turbine is the owner's or manufacture's identification, which shall not exceed 5% of the total surface area of the wind turbine;

f) all utility lines on the site shall be located underground; and

g) if a wind turbine/farm discontinues power production for a minimum of 1 year the operator shall provide the Municipality with a status report identifying future plans for the site.

LUB 12 – Wind Energy Zone	Amended Date	Regulation
	June 23, 2008	LUB 12 – Wind Energy Zone (entire section)

Appendix J

Requirements and Application for Large Scale Wind Development

Requirements for Large Scale Wind Turbines and/or Wind Farms

Item Guide	Description
Site Plan	Provide an accurate and to scale site plan addressing the following: a) proposed location of wind turbine(s) and related structure(s), as well as existing structures; b) proposed wind test tower sites; c) proposed and existing roads; d) adjoining property lines; e) utility lines; f) topography and contours; g) proposed landscaping; h) environmentally sensitive lands, and watercourses i) direction of prevailing winds; j) noise levels at adjoining property lines; k) type, size and location of any proposed security fencing; l) location of any proposed public safety signage; and m) possible future site expansion.
Impact Study	Provide an impact study examining how the proposed wind turbine or wind farm will affect neighbouring properties and community. Including an assessment on: a) visual impact including: i) how the turbine modifies the landscape, e.g. shadow flicker, wind patterns, lighting, ice throws; ii) visual perspective of the local community; iii) visibility of the development from public viewpoints; and iv) proximity to conservation areas, as well as, provincial and municipal parks. b) noise impact including: i) existing background noise levels; ii) expected noise levels associated with construction and operation of the wind development; iii) if any, the effects increased noise levels will have on residents and wildlife near the wind development; and iv) decibel ratings for all equipment required in the wind development. c) wildlife impact including: i) how the turbine will effect birds, e.g. flight behavior, ii) sensory disturbance, mortality; iii) how the turbine will effect bats; and iv) how the turbine will effect other native wildlife.
Visual Representation	Provide a visual representation including scale elevations, colour and proportion of wind turbine(s), photographs and/or digital representations showing placement and landscaping.

Manufacture's Details	a) the turbine rated output in Kilowatts; b) sound characteristics; c) type of material used in tower, blade, and/or rotor construction; d) suggested footing construction (engineered plans); and e) safety features.
Decommissioning / Reclamation	Provide a plan for decommissioning and reclamation of the land.
Safety Analysis	Provide a report explaining how human safety will be protected.
Application	Complete the following application for site plan approval.

File Number:_____

Application for Site Plan Approval

Large Scale Wind Energy Developments – Circulated to property owners within 1000' of the subject site.

Property Owner's Name

Agent (if acting on behalf of owner)

Mailing Address

Contact Person

Description of Proposed Development

_____ _____

Applicant's Signature Date

A site plan and information required by Appendix J must accompany this application.

Date Application Received	Initial
Date Application Completed	Initial

Site Plan ☐ Approved

☐ Refused

_____ _____

Signature Date

LUB 11 – Appendix J	Amended Date	Regulation
	October 23, 2007	(ADDED) Appendix J – Requirements and Application for Large Scale Wind Development

APPENDIX B
ENVIRONMENTAL PROTECTION PLAN
SUGGESTED TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

APPENDIX C
HUMAN HEALTH AND WIND FARMS – A LITERATURE REVIEW

In support of the Environmental Assessment (EA) for the Hardwood Lands Community Wind Project, a review was completed of current available literature on the potential effects on human health related to wind energy. Several key health-related issues were identified, and Project-specific studies were completed to address sound. Details of this study are provided in Section 12.0 of the "Environmental Assessment Registration Document".

The following sections provide additional background information on the potential effects of electromagnetic fields (EMFs), air quality, ice throw/shedding and infrasound on human health.

Electromagnetic Fields

EMFs are a type of energy that occurs naturally and is also created through the use of electrical appliances and equipment (i.e. cell phone usage, radio towers, etc.) (City of Toronto 2011). A guidebook to Wind Energy Development was produced in 2011 and identified transmission lines, wind turbine generators, generator transformers, and underground cables as the four potential sources of EMFs as a result of wind farm operations (Canadian Wind Energy Association [CanWEA] 2011). The guidebook goes on to suggest that EMF exposure is not significant due to low emission levels produced by wind farm operations and indicates that generator transformers likely generate the highest levels of EMFs. Similar conclusions have been made by Health Canada and the World Health Organization (Chief Medical Officer of Health of Ontario 2010).

In 2007, a study was completed to assess the possible effects of EMFs on human health. The study concluded that there is little evidence to support the theory that EMFs cause long term health issues (Scientific Committee on Emerging and Newly Identified Health Risks 2007). As well, a study led by the National Institute of Environmental Health Sciences assessed scientific evidence spanning over six years, to determine whether exposure to EMF could result in a potential risk to human health. Results indicated that there were no consistent patterns of biological effects with animals or with cells (Electric and Magnetic Fields Research and Public Information Dissemination Program 2002).

Health Canada states that "research has shown that EMFs from electrical devices and power lines can cause weak electric currents to flow through the human body. However, these currents are much smaller than those produced naturally by your brain, nerves, and heart, and are not associated with any known health risks" (Health Canada 2010). Health Canada goes on to state that EMFs are strongest when close to the source so that at greater distances, the strength of the field fades rapidly and humans need not engage in specific actions to minimize risk including those who are located just outside the boundaries of power line corridors (Health Canada 2010).

Air Quality

The development and construction phases of a wind energy project may affect local air quality by increasing air borne dust associated with on-site equipment, and vehicles. Emissions from vehicles and equipment can also contribute to a reduction in local air quality.

The American Wind Energy Association (AWEA) states that the generation of electricity from the wind does not result in any air emissions (AWEA 2010). Similarly, the US Environmental Protection Agency (EPA) recognizes that the emissions associated with wind technology are negligible because no fuels are combusted. Therefore, wind energy production offsets more polluting forms of energy generation and can actually improve air quality and our health.

Ice Throw and Ice Shedding

Under appropriate temperature and humidity conditions, ice can build up on the rotor blades, nacelle and tower of a wind turbine, which can lead to two types of risk:

- ice fragments dislodge and are shed from the rotor of the operating turbine due to aerodynamic and centrifugal forces; and
- ice fragments dislodge from the structure and fall to the ground when it is shut down or idling without power production (CanWEA 2007).

As part of a project prepared by the Finnish Meteorological Institute entitled "Wind Energy in Cold Climates (WECO)", a set of safety guidelines for wind developments in ice prone areas was developed. A risk assessment methodology demonstrated that the risk of being struck by ice thrown from a turbine is diminishingly small at distances greater than approximately 250 m from the turbine in a climate where moderate icing occurs (Morgan *et al*. 1998). With proper setbacks and on-site safety awareness, hazards are minimized (Colby 2008; Massachusetts Department of Environmental Protection & Massachusetts Department of Public Health 2012).

Turbines for the proposed Project have been located greater than 1,565 m from the nearest known permanent/seasonal residence. Access to the site will be provided from existing logging roads and newly constructed roads off of Blois Road. The nearest turbine to a public road is Turbine 1, located 325 m from Blois Road. Project access roads are expected to be used by on-site workers only. In addition to turbine siting away from public roads, the following mitigative strategies will decrease and/or eliminate the risk of injury from ice to nearby workers and drivers on on-site access and logging roads. In addition, the following additional mitigation strategies will be implemented:

- physical and visual warnings (i.e. signs and fences); and
- restriction of access to trained site personnel (Wahl and Giguere 2006).

Infrasound

General Background - Sound

Humans detect sound from changes in pressure that travel through the air and cause the eardrum and small bones of the middle ear to vibrate. The vibrations are transmitted to the inner ear where sensory hair cells then change the vibrations into nerve impulses, which travel to the brain where they are perceived and interpreted.

The magnitude (loudness) of sound is described as "pressure level", "sound level" or "noise level" and is measured as decibels (dB). Typical sound levels, measured in decibels, are shown in Table A.

Table A: Typical Sound Levels

Source	Distance from Source		Sound Pressure Levels (dBA)
	feet	meters	
Freight train	100	30	70
Vacuum Cleaner	10	3	70
Freeway	100	30	70
Wind in trees	40	12	55
Light traffic	100	30	70
Average home			50
Soft whisper	5	2	30
Quiet bedroom			20

Source: AWEA 2011

The tonal quality or pitch of the sound is related to its frequency and is measure in hertz (Hz). The normal frequency range of sounds that humans can hear (known as audible sound) extends from about 20-50 Hz (a rumbling sound) up to high frequency of about 10,000-15,000 Hz (hissing sound) or even higher for some people. Humans generally hear best in the mid-frequency range of 500-4,000 Hz.

General Background - Infrasound

Infrasound is very low-frequency sound, that is typically defined as being between 1-20 Hz, which is below what human ears can normally hear.

Infrasound is everywhere in the environment. It is emitted from natural sources (e.g. wind, rivers) and from artificial sources including road traffic, aircraft, and ventilation systems. The most common source of infrasound that humans encounter is vehicles (CMOH 2010).

When evaluating potential effects of infrasound, it is important that these frequencies be discussed in the context of the sound pressure levels, or in other words, the loudness of the sound. For instance, very loud sounds at very low frequencies (i.e. 165 dB at 2 Hz, reducing to 145 dB at 20 Hz) may result in pain (Leventhall 2006) and infrasound has been shown to cause annoyance, when the sound level exceeds the threshold of hearing (i.e. the lowest sound levels that a listener can detect) (HGC 2010). Further, research shows that to be physically felt, infrasound must exceed 100–110 dB (Ellenbogen *et al*. 2012).

While there is some variation in the literature and between individual sensitivities, there is fairly good agreement on the level of the threshold of hearing among the various studies that have been completed (Figure 1).

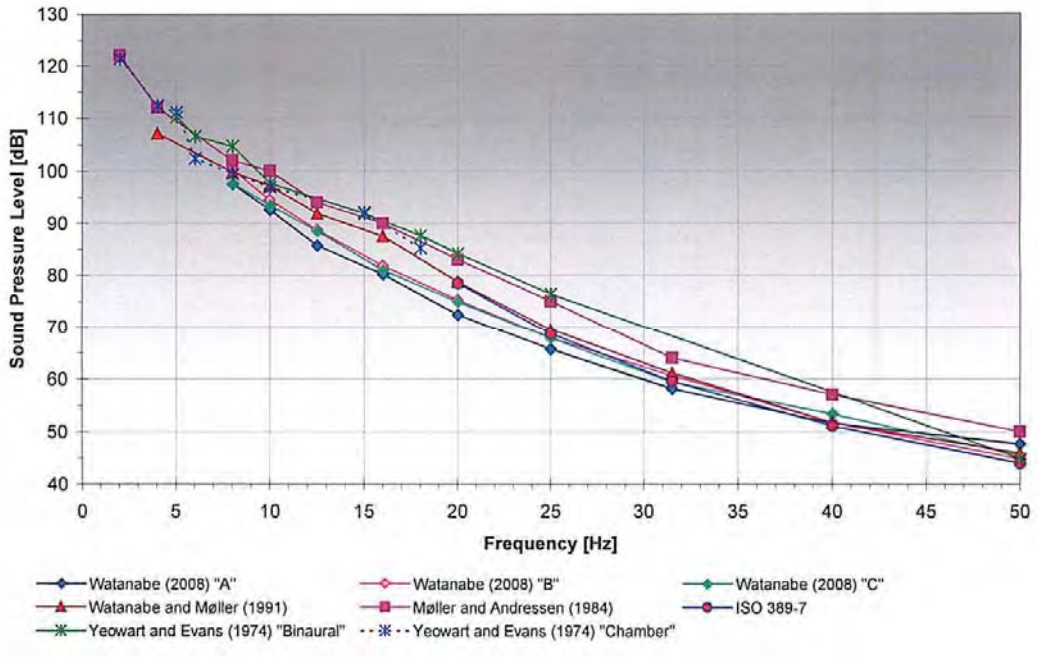


Figure 1: Threshold of Hearing Data from Various Papers (HGC 2010)

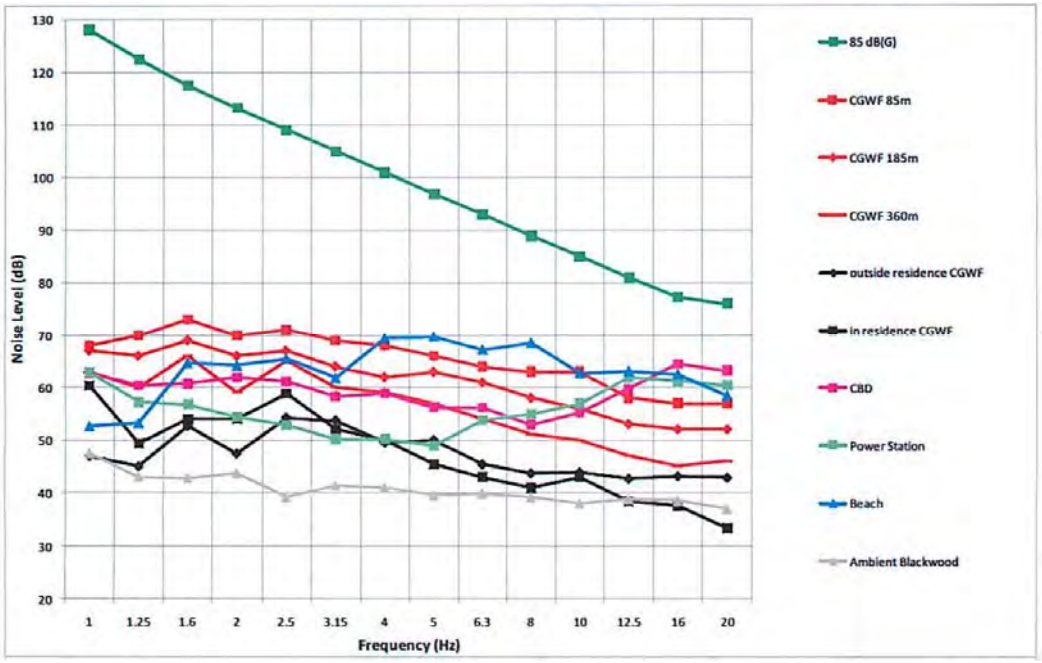
What these results show is that the lower the frequency of the sound, the louder the sound needs to be in order to be perceived.

Measured Infrasound Levels

In 2010, Sonus, an acoustic consulting firm based in South Australia, completed a study to measure infrasound produced by a range of natural and manmade sources using a methodology specifically designed to measure infrasound (Table B, Figure 2). The G-weighting network was applied to the measured infrasound pressure levels as it has been standardized to determine the human perception (i.e. threshold of hearing) and annoyance due to noise that lies within the infrasound frequency range. By comparison, when measuring audible sound levels, meters are usually equipped with weighting circuits to simulate the frequency response characteristics of the human ear. The A-weighting filter is normally used as it correlates well with the human perception of most sounds. Sound levels measured using the G and A-weighting filters are expressed as dBG and dBA, respectively.

Table B: Measured Levels of Infrasound from Natural and Manmade Sources

Source	Infrasound Level (dBG)
Threshold of hearing	85 dBG
Wind Farm (360 m downwind) (CGWF)	61 dBG
100 m downwind from wind farm (CBWF)	66 dBG
200 m downwind from wind farm (CBWF)	63 dBG
Ambient infrasound (100 m from nearest turbine with negligible wind and no turbine operation) (CBWF)	62 dBG
Inside a residence (fridge operating) (1200 m from nearest turbine)	51 dBG
Outside a residence (1200 m from nearest turbine)	58 dBG
Adjacent to the beach (25 m from high water mark)	75 dBG
Cliff face (250 m from the coastline)	69 dBG
Inland forest (8 km from the coastline)	57 dBG
Gas fired power station (350 m)	74 dBG
Business District (70 m from two major road corridors)	76 dBG



Source: Sonus Pty Ltd 2010

Figure 2: Summary of Measurement at the Clements Gap Wind Farm and Other Sources (Sonus Pty Ltd 2010)

The results of the study indicate that while turbines do produce infrasound, levels are well below established levels that can be perceived by humans and are comparable to natural and urban sources that are common in the environment.

Another recent Australian report also measured levels of infrasound within typical environments in South Australia, with a particular focus on comparing wind farm environments to urban and rural

environments away from wind farms. The study concluded that measured infrasound levels at rural locations both near to and away from wind farms were no higher than infrasound levels measured at the urban locations (Figure 3). Human activity and traffic were the main sources of infrasound at urban locations, while localized wind conditions were found to be the main source of infrasound in rural locations. All measurements were below the levels that can be perceived by humans, with most by a significant margin (Evans *et al*. 2013).

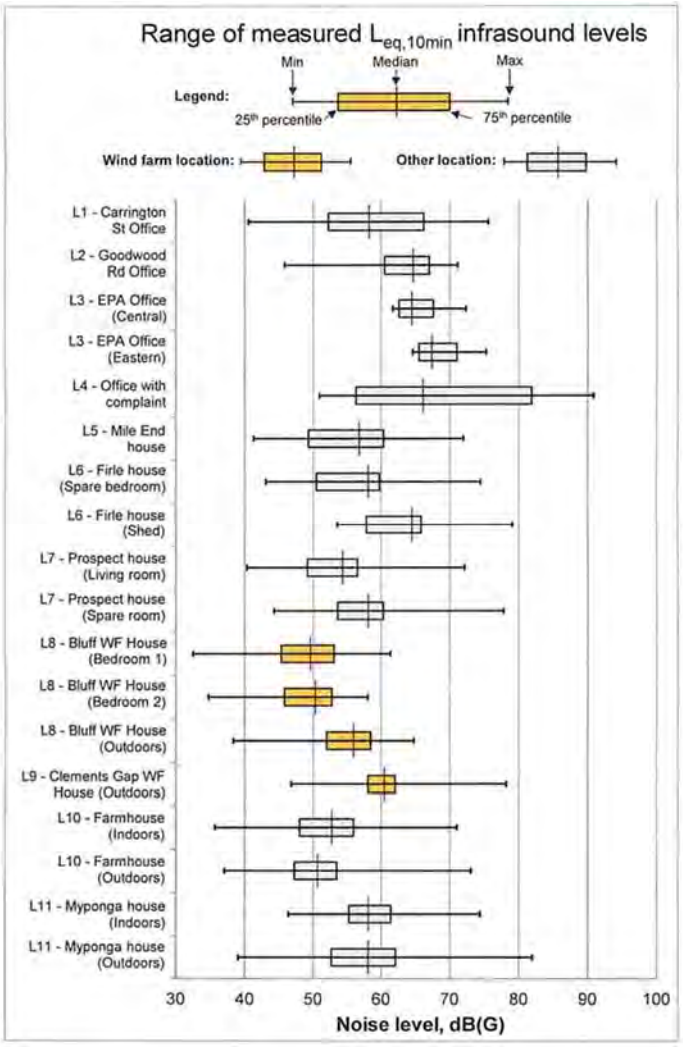


Figure 3: Range of Measured Infrasound Levels (Evans *et al*. 2013)

An investigation was also completed at a wind farm in Pubnico, Nova Scotia to, in part, evaluate infrasound levels at a residence within 330 m of the closest turbine (HGC 2006). Similar to other results from wind farms, infrasound levels were found to be well below the level of sound that can be perceived by humans, as shown in Figure 4.

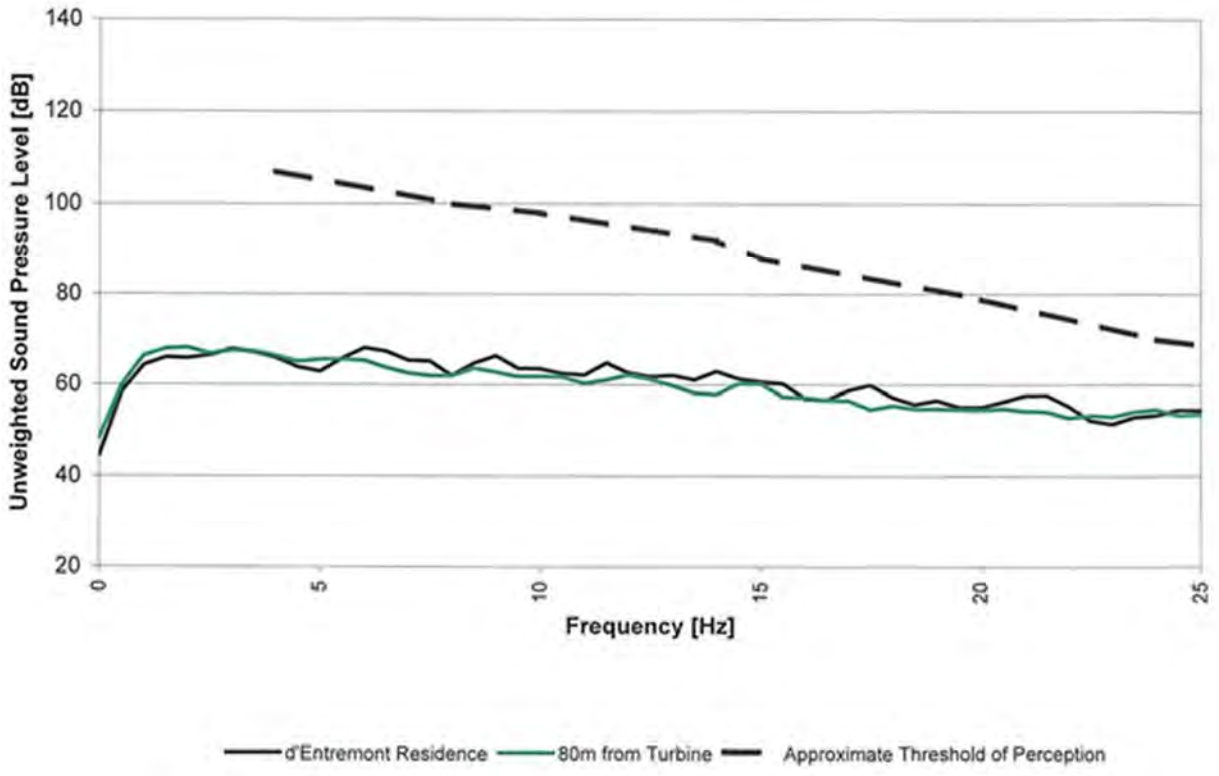


Figure 4: Infrasound Measurements at Pubnico Wind Farm (HGC 2006)

Infrasound and Health Concerns

Concern about infrasound from wind turbines may have originated from the experience of neighbours of early wind turbine designs with downwind rotors (rotors downwind of the tower). In contrast, all modern utility scale wind turbines have upwind rotors that produce significantly lower infrasound emissions (Bastasch *et al*. 2006).

Several studies and panels have been assembled to evaluate the perceived health effects associated with wind turbines.

A scientific advisory panel with expertise in audiology, acoustics, occupational/environmental medicine, and public health was assembled by the wind industry in early 2009 to conduct a review of current literature available on the issue of perceived health effects of wind turbines (Colby *et al*. 2009). Following their review and analysis of the information, the panel reached consensus on the following conclusions:

- There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.
- The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans.

- The sounds emitted by wind turbines are not unique. There is no reason to believe, based on the levels and frequencies of the sounds and the panel's experience with sound exposures in occupational settings, that the sounds from wind turbines could plausibly have direct adverse health consequences.

The Chief Medical Officer of Health in Ontario also conducted a review of papers and reports (from 1970 to date) on wind turbines and health from scientific bibliographic databases, grey literature, and from a structured Internet search. The report concluded that "low frequency sound and infrasound from current generation upwind model turbines are well below the pressure sound levels at which known health effects occur. Further, there is no scientific evidence to date that vibration from low frequency wind turbine noise causes adverse health effects" (CMOH 2010).

The Massachusetts Department of Environmental Protection in collaboration with the Massachusetts Department of Public Health recently convened a panel of independent experts to identify any documented or potential health impacts of risks that may be associated with exposure to wind turbines, and, specifically, to facilitate discussion of wind turbines and public health based on scientific findings. The panel concluded that "measured levels of infrasound produced by modern upwind wind turbines at distances as close as 68 m are well below that required for non-auditory perception". Further, the panel concluded that "the weight of the evidence suggests no association between noise from wind turbines and measures of psychological distress or mental health problems" (Ellenbogan *et al*. 2012).

References

American Wind Energy Association. 2010. *Wind Turbines and Health*. Retrieved from http://www.awea.org/learnabout/publications/upload/Wind-Turbines-and-Health-Factsheet_WP11.pdf.

Bastashe, M., Van Dam, J., Sondergaard, B., and A. Rogers. 2006. Wind Turbine Noise – An Overview. *Canadian Acoustics* 34 (2): 7-15.

Canadian Wind Energy Association. 2007. *Position on Setbacks for Large Scale Wind Turbines in Rural Areas (MOE Class 3) in Ontario*. p21. Retrieved from http://www.manitoba.ca/iem/energy/wind/files/swea_position.pdf.

Canadian Wind Energy Association. 2011. *An Introduction to Wind Energy Development in Canada.* Ottawa, Ontario: CanWEA. Retrieved from http://www.canwea.ca/pdf/canwea-sitingreport-e.pdf

Chief Medical Officer of Health of Ontario. 2010. *Potential Health Impacts of Wind Turbines.* [Report]. Ontario Agency for Health Protection and Promotion. The Ministry of Health and Long-Term Care. Retrieved from http://www.health.gov.on.ca/en/common/ministry/publications/reports/wind_turbine/wind_turbine.pdf.

City of Toronto. 2011. *Electromagnectic Fields*. Retrieved from http://www.toronto.ca/health/emfs.htm.
Colby, D. 2008. *The Health Impact of Wind Turbines: A Review of Current White, Grey, and Published Literature*. Chatam, Ontario: Chatam-Kent Public Health Unit. Retrieved from http://www.wind-works.org/cms/fileadmin/user_upload/Files/Health_and_Wind_by_C-K_Health_Unit.pdf

Colby, W. D., Dobie, R., Leventhall, G., Lipscomb, D.M., McCunney, R.J., Seilo, M.T. and B. Sondergaard. 2009. *Wind Turbine Sound and Health Effects. An Expert Panel Review.* Prepared for

American Wind Energy Association and Canadian Wind Energy Association. Retrieved from http://www.awea.org/learnabout/publications/upload/awea_and_canwea_sound_white_paper.pdf

EDS Consulting. 2009. *Final Report to Manitoba Intergovernmental Affairs on Land Use Planning for Wind Energy Systems in Manitoba*. Retrieved from http://www.gov.mb.ca/ia/plups/pdf/weg.pdf

Electric and Magnetic Fields Research and Public Information Dissemination Program. 2002. *EMF Electric and Magnetic Fields Associated with the Use of Electric Power*. June 2002. Retrieved from http://www.niehs.nih.gov/health/topics/agents/emf/

Ellenbogen, Jeffrey; Grace, Sheryl; Heiger-Bernays, Wendy; Manwell, James; Mills, Dora; Sullivan, Kimberly; and Weisskopf. 2012. Wind Turbine Health Impact Study: Report of Independent Expert Panel. Prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health.

Evans, T; Cooper, J; and Lenchine, V. 2013. Infrasound Levels Near Windfarms and in Other Environments. Prepared for the South Australia Environmental Protection Agency.

Health Canada. 2010. *It's your health fact sheet: Electric and Magnetic Fields at Extremely Low Frequencies*. Retrieved from http://www.hc-sc.gc.ca/hl-vs/alt_formats/pdf/iyh-vsv/environ/magnet-eng.pdf.

Howe, Gastmeier, Chapnick Ltd. 2006. Environmental Noise Assessment Pubnico Point Wind Farm, Nova Scotia. Prepared for Natural Resources Canada.

Howe, Gastmeier, Chapnick Ltd. 2010. Low Frequency Noise and Infrasound Associated With Wind Turbine Generator Systems: A Literature Review. Prepared for the Ontario Ministry of the Environment.

Leventhall, G. 2006. Infrasound from Wind Turbines – Fact, Fiction or Deception. *Canadian Acoustics* 34(2): 29 - 36.

Morgan. C., Bossanyi. E., & H. Seifert. 1998. A*ssessment of Safety Risks Arising From Wind Turbine Icing.* Retrieved from http://www.renewwisconsin.org/wind/Toolbox-Fact%20Sheets/Assessment%20of%20risk%20due%20to%20ice.pdf.

Office of the Deputy Prime Minister. 2004. *Planning for Renewable Energy: A Companion Guide to Planning Policy Statement 22.* Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7779/147447.pdf

Scientific Committee on Emerging and Newly Identified Health Risks. 2007. *Possible effects of Electromagnetic Fields (EMF) on Human Health.* European Commission, Health & Consumer Protection Directorate-General. Retrieved from http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_007.pdf

Seifert, H., Westerhellweg, A., and J. Kroning. 2003. *Risk analysis of ice throw from wind turbines*. Retrieved from http://www.nhsec.nh.gov/2006-01/documents/24_risk_analysis.pdf

Sonus Pty Ltd. 2010. Infrasound Measurements from Wind Farms and Other Sources. Prepared for Pacific Hydro Pty Ltd.

The Society for Wind Vigilance. 2012. *Visual Heath Effects and Wind Turbines*. Retrieved from http://www.windvigilance.com/about-adverse-health-effects/visual-health-effects-and-wind-turbines.

The Weather Network. 2012. *Statistics, Lunenburg, NS*. Accessed on April 13, 2012 from http://www.theweathernetwork.com/statistics/wind/cl8206240/cans0082

Walh. D. and P. Giguere. 2006. *Ice Shedding and Ice Throw – Risk and Mitigation*. Retrieved from http://www.windaction.org/documents/9922.

APPENDIX D
ACCDC AND STUDY AREA PLANT LISTS

Common Name	Scientific Name	SARA Status	NS ESA Status	COSEWIC Status	NSDNR Rank	NS S-Rank
a Pussytoes	*Antennaria parlinii*	Not Listed	Not Listed	Not Listed	2	S1
Acadian Quillwort	*Isoetes acadiensis*	Not Listed	Not Listed	Not Listed	3	S3
Alder Silk Moss	*Plagiothecium latebricola*	Not Listed	Not Listed	Not Listed	3	S2?
Alder-leaved Buckthorn	*Rhamnus alnifolia*	Not Listed	Not Listed	Not Listed	3	S3
Aloe-Like Rigid Screw Moss	*Aloina rigida*	N/A	N/A	N/A	N/A	N/A
Alpine Bilberry	*Vaccinium uliginosum*	Not Listed	Not Listed	Not Listed	3	S3
American Cancer-root	*Conopholis americana*	Not Listed	Not Listed	Not Listed	2	S1S2
American False Pennyroyal	*Hedeoma pulegioides*	Not Listed	Not Listed	Not Listed	3	S2S3
American Waterwort	*Elatine americana*	Not Listed	Not Listed	Not Listed	Not Listed	S1
Anomalous Bristle Moss	*Orthotrichum anomalum*	Not Listed	Not Listed	Not Listed	3	S2S3
Appalachian Fir-Clubmoss	*Huperzia appalachiana*	N/A	N/A	N/A	N/A	N/A
Appalachian Polypody	*Polypodium appalachianum*	Not Listed	Not Listed	Not Listed	5	S3?
Appressed Jellyskin Lichen	*Leptogium subtile*	Not Listed	Not Listed	Not Listed	3	S1S3
Arrow-Leaved Violet	*Viola sagittata*	Not Listed	Not Listed	Not Listed	4	S3S4
Balsam Groundsel	*Packera paupercula*	Not Listed	Not Listed	Not Listed	4	S3
Beaded Jellyskin Lichen	*Leptogium teretiusculum*	Not Listed	Not Listed	Not Listed	3	S2S3
Bearded Sedge	*Carex comosa*	Not Listed	Not Listed	Not Listed	3	S2
Bebb's Sedge	*Carex bebbii*	Not Listed	Not Listed	Not Listed	2	S2
Bicknell's Crane's-bill	*Geranium bicknellii*	Not Listed	Not Listed	Not Listed	4	S3
Big-leaved Marsh-elder	*Iva frutescens*	Not Listed	Not Listed	Not Listed	3	S2
Black Ash	*Fraxinus nigra*	Not Listed	Threatened	Not Listed	3	S1S2
Black-foam Lichen	*Anzia colpodes*	Not Listed	Not Listed	Not Listed	3	S3?
Blistered Jellyskin Lichen	*Leptogium corticola*	Not Listed	Not Listed	Not Listed	3	S2S3
Blistered Tarpaper Lichen	*Collema nigrescens*	Not Listed	Not Listed	Not Listed	3	S2S3
Blistered Tarpaper Lichen	*Collema furfuraceum*	Not Listed	Not Listed	Not Listed	3	S3?
Blood Milkwort	*Polygala sanguinea*	Not Listed	Not Listed	Not Listed	3	S2S3
Bloodroot	*Sanguinaria canadensis*	Not Listed	Not Listed	Not Listed	4	S3S4
Blue Cohosh	*Caulophyllum thalictroides*	Not Listed	Not Listed	Not Listed	2	S2
Blue Felt Lichen	*Degelia plumbea*	No Status	Vulnerable	Special Concern	4	S2
Blue Vervain	*Verbena hastata*	Not Listed	Not Listed	Not Listed	4	S3
Blunt Broom Sedge	*Carex tribuloides*	Not Listed	Not Listed	Not Listed	4	S3?
Blunt Sweet Cicely	*Osmorhiza depauperata*	Not Listed	Not Listed	Not Listed	2	S1
Blunt-leaved Pondweed	*Potamogeton obtusifolius*	Not Listed	Not Listed	Not Listed	3	S3
Bog Birch	*Betula pumila*	Not Listed	Not Listed	Not Listed	3	S2S3
Bog Willow	*Salix pedicellaris*	Not Listed	Not Listed	Not Listed	3	S2

Common Name	Scientific Name	SARA Status	NS ESA Status	COSEWIC Status	NSDNR Rank	NS S-Rank
Boreal Aster	*Symphyotrichum boreale*	Not Listed	Not Listed	Not Listed	3	S2?
Boreal Felt Lichen - Atlantic pop.	*Erioderma pedicellatum*	Endangered	Endangered	Endangered	1	NA
Bottlebrush Frost Lichen	*Physconia detersa*	Not Listed	Not Listed	Not Listed	3	S2S3
Branched Bartonia	*Bartonia paniculata*	Not Listed	Not Listed	Not Listed	4	S4S5
Bristle-leaved Sedge	*Carex eburnea*	Not Listed	Not Listed	Not Listed	3	S3
Broad-Glumed Brome	*Bromus latiglumis*	Not Listed	Not Listed	Not Listed	2	S1
Bulblet Bladder Fern	*Cystopteris bulbifera*	Not Listed	Not Listed	Not Listed	4	S3S4
Butternut	*Juglans cinerea*	Endangered	Not Listed	Endangered	7	SNA
Buttonbush Dodder	*Cuscuta cephalanthi*	Not Listed	Not Listed	Not Listed	2	S2?
Canada Anemone	*Anemone canadensis*	Not Listed	Not Listed	Not Listed	2	S2
Canada Cinquefoil	*Potentilla canadensis*	Not Listed	Not Listed	Not Listed	5	S2S3
Canada Germander	*Teucrium canadense*	Not Listed	Not Listed	Not Listed	3	S3
Canada Lily	*Lilium canadense*	Not Listed	Not Listed	Not Listed	3	S2
Canada Rice Grass	*Piptatherum canadense*	Not Listed	Not Listed	Not Listed	3	S2
Canada Tick-trefoil	*Desmodium canadense*	Not Listed	Not Listed	Not Listed	2	S1
Canada Violet	*Viola canadensis*	Not Listed	Not Listed	Not Listed	0.1	SH
Canada Waterweed	*Elodea canadensis*	Not Listed	Not Listed	Not Listed	4	S2S3
Canada Wood Nettle	*Laportea canadensis*	Not Listed	Not Listed	Not Listed	3	S3
Carey's Smartweed	*Polygonum careyi*	N/A	N/A	N/A	N/A	N/A
Case's Ladies'-Tresses	*Spiranthes casei*	Not Listed	Not Listed	Not Listed	#N/A	S2
Chestnut Sedge	*Carex castanea*	Not Listed	Not Listed	Not Listed	2	S2
Chinese Hemlock-parsley	*Conioselinum chinense*	Not Listed	Not Listed	Not Listed	3	S2
Clammy Hedge-Hyssop	*Gratiola neglecta*	Not Listed	Not Listed	Not Listed	3	S1S2
Climbing False Buckwheat	*Fallopia scandens*	Not Listed	Not Listed	Not Listed	3	N/A
Clustered Sanicle	*Sanicula odorata*	Not Listed	Not Listed	Not Listed	2	S1
Coast Creeping Moss	*Conardia compacta*	Not Listed	Not Listed	Not Listed	3	S2?
Coast Pepper-Bush	*Clethra alnifolia*	Special Concern	Vulnerable	Threatened	3	S1
Coastal Bushy Beard Lichen	*Usnea flammea*	Not Listed	Not Listed	Not Listed	3	S2S3
Comb-leaved Mermaidweed	*Proserpinaca pectinata*	Not Listed	Not Listed	Not Listed	3	S3
Common Bedstraw	*Galium aparine*	Not Listed	Not Listed	Not Listed	7	S2S3
Common Moonwort	*Botrychium lunaria*	Not Listed	Not Listed	Not Listed	2	S1
Common Scouring-rush	*Equisetum hyemale*	Not Listed	Not Listed	Not Listed	4	S3S4
Cursed Buttercup	*Ranunculus sceleratus*	Not Listed	Not Listed	Not Listed	2	S1S2
Cut-Leaved Coneflower	*Rudbeckia laciniata*	Not Listed	Not Listed	Not Listed	3	S1S2
Cut-Leaved Coneflower	*Rudbeckia laciniata*	Not Listed	Not Listed	Not Listed	3	S1S2

Common Name	Scientific Name	SARA Status	NS ESA Status	COSEWIC Status	NSDNR Rank	NS S-Rank
Cut-leaved Moonwort	*Botrychium dissectum*	Not Listed	Not Listed	Not Listed	4	S3
Deer-tongue Panic Grass	*Dichanthelium clandestinum*	Not Listed	Not Listed	Not Listed	4	S3
Dense Blazing Star	*Liatris spicata*	Threatened	Not Listed	Threatened	Not Listed	Not Listed
Disguised St John's-wort	*Hypericum dissimulatum*	Not Listed	Not Listed	Not Listed	3	S2S3
Downy Rattlesnake-Plantain	*Goodyera pubescens*	Not Listed	Not Listed	Not Listed	2	S2
Downy Willowherb	*Epilobium strictum*	Not Listed	Not Listed	Not Listed	3	S3
Drab Brook Moss	*Hygrohypnum luridum*	Not Listed	Not Listed	Not Listed	3	S2S3
Drummond's Rockcress	*Arabis drummondii*	Not Listed	Not Listed	Not Listed	3	S2
Dudley's Rush	*Juncus dudleyi*	Not Listed	Not Listed	Not Listed	3	S3
Dwarf Bilberry	*Vaccinium caespitosum*	Not Listed	Not Listed	Not Listed	3	S3
Dwarf Clearweed	*Pilea pumila*	Not Listed	Not Listed	Not Listed	2	S1
Dwarf Scouring-Rush	*Equisetum scirpoides*	Not Listed	Not Listed	Not Listed	4	S3S4
Eastern Blue-Eyed-Grass	*Sisyrinchium atlanticum*	Not Listed	Not Listed	Not Listed	4	S3S4
Eastern Leatherwood	*Dirca palustris*	Not Listed	Not Listed	Not Listed	2	S1
Eastern Lilaeopsis	*Lilaeopsis chinensis*	Special Concern	Vulnerable	Special Concern	3	S2
Eastern White Cedar	*Thuja occidentalis*	Not Listed	Vulnerable	Not Listed	1	S1
Estuary Beggarticks	*Bidens hyperborea*	Not Listed	Not Listed	Not Listed	2	S1
False Mermaidweed	*Floerkea proserpinacoides*	Not Listed	Not Listed	Not at Risk	3	S2
Farwell's Water Milfoil	*Myriophyllum farwellii*	Not Listed	Not Listed	Not Listed	3	S2
Fernald's Hay Sedge	*Carex foenea*	Not Listed	Not Listed	Not Listed	4	S3?
Fernald's Serviceberry	*Amelanchier fernaldii*	Not Listed	Not Listed	Not Listed	5	S2?
Flat-stemmed Pondweed	*Potamogeton zosteriformis*	Not Listed	Not Listed	Not Listed	3	S2S3
Fowler's Knotweed	*Polygonum fowleri*	Not Listed	Not Listed	Not Listed	4	S3S4
Fragrant Wood Fern	*Dryopteris fragrans*	Not Listed	Not Listed	Not Listed	3	S2
Frankton's Saltbush	*Atriplex franktonii*	Not Listed	Not Listed	Not Listed	Not Listed	S3S4
Fries' Pondweed	*Potamogeton friesii*	Not Listed	Not Listed	Not Listed	2	S2
Fringed Blue Aster	*Symphyotrichum ciliolatum*	Not Listed	Not Listed	Not Listed	3	S2
Frosted Glass-whiskers Lichen - No	*Sclerophora peronella*	N/A	N/A	N/A	N/A	N/A
Garber's Sedge	*Carex garberi*	Not Listed	Not Listed	Not Listed	2	S1
Gasp ├⌐ Arrowgrass	*Triglochin gaspensis*	Not Listed	Not Listed	Not Listed	5	S3?
Ghost Antler Lichen	*Pseudevernia cladonia*	No Status	Not Listed	Not at Risk	3	S2S3
Glaucous Blue Grass	*Poa glauca*	Not Listed	Not Listed	Not Listed	3	S2S3
Gmelin's Water Buttercup	*Ranunculus gmelinii*	Not Listed	Not Listed	Not Listed	4	S3
Golden Alexanders	*Zizia aurea*	Not Listed	Not Listed	Not Listed	2	S1
Graceful Felt Lichen	*Erioderma mollissimum*	Endangered	Endangered	Endangered	2	S1S2

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Green Spleenwort	*Asplenium viride*	Not Listed	Not Listed	Not Listed	3	N/A
Green Starburst Lichen	*Parmeliopsis ambigua*	Not Listed	Not Listed	Not Listed	3	S2S3
Greene's Rush	*Juncus greenei*	Not Listed	Not Listed	Not Listed	2	S1S2
Greenish Sedge	*Carex viridula*	Not Listed	Not Listed	Not Listed	4	S4
Greenland Stitchwort	*Minuartia groenlandica*	Not Listed	Not Listed	Not Listed	3	S3
Ground-Fir	*Lycopodium sabinifolium*	Not Listed	Not Listed	Not Listed	N/A	S3?
Hairlike Sedge	*Carex capillaris*	Not Listed	Not Listed	Not Listed	3	S2
Hairy Goldenrod	*Solidago hispida*	Not Listed	Not Listed	Not Listed	2	S1?
Hairy Lettuce	*Lactuca hirsuta*	Not Listed	Not Listed	Not Listed	3	S2
Halberd-leaved Tearthumb	*Polygonum arifolium*	Not Listed	Not Listed	Not Listed	3	S2
Hayden's Sedge	*Carex haydenii*	Not Listed	Not Listed	Not Listed	2	S1
Heart-leaved Foamflower	*Tiarella cordifolia*	Not Listed	Not Listed	Not Listed	3	S2
Hidden-scaled Sedge	*Carex cryptolepis*	Not Listed	Not Listed	Not Listed	4	S3?
Highbush Blueberry	*Vaccinium corymbosum*	Not Listed	Not Listed	Not Listed	4	S3S4
Hooked Agrimony	*Agrimonia gryposepala*	Not Listed	Not Listed	Not Listed	4	S3
Hooker's Orchid	*Platanthera hookeri*	Not Listed	Not Listed	Not Listed	4	S3
Hop Flatsedge	*Cyperus lupulinus*	Not Listed	Not Listed	Not Listed	2	S1
Hop Sedge	*Carex lupulina*	Not Listed	Not Listed	Not Listed	4	S3
Horned Sea-blite	*Suaeda calceoliformis*	Not Listed	Not Listed	Not Listed	4	S3S4
Houghton's Sedge	*Carex houghtoniana*	Not Listed	Not Listed	Not Listed	3	S2S3
Hyssop-leaved Fleabane	*Erigeron hyssopifolius*	Not Listed	Not Listed	Not Listed	3	S3
Intermediate Mermaidweed	*Proserpinaca intermedia*	Not Listed	Not Listed	Not Listed	2	S1
Inverted Bladderwort	*Utricularia resupinata*	Not Listed	Not Listed	Not Listed	2	S2
Knotted Pearlwort	*Sagina nodosa*	Not Listed	Not Listed	Not Listed	4	S2S3
Labrador Bedstraw	*Galium labradoricum*	Not Listed	Not Listed	Not Listed	3	S2
Lance-Leaf Grape-Fern	*Botrychium lanceolatum*	Not Listed	Not Listed	Not Listed	3	S2S3
Large Purple Fringed Orchid	*Platanthera grandiflora*	Not Listed	Not Listed	Not Listed	4	S3
Large Round-Leaved Orchid	*Platanthera macrophylla*	Not Listed	Not Listed	Not Listed	3	S2
Large St John's-wort	*Hypericum majus*	Not Listed	Not Listed	Not Listed	2	S2
Large Tick-Trefoil	*Desmodium glutinosum*	Not Listed	Not Listed	Not Listed	2	S1
Large Toothwort	*Cardamine maxima*	Not Listed	Not Listed	Not Listed	2	S1
Laurentian Primrose	*Primula laurentiana*	Not Listed	Not Listed	Not Listed	4	S3
Least Moonwort	*Botrychium simplex*	Not Listed	Not Listed	Not Listed	3	S2S3
Lesser Brown Sedge	*Carex adusta*	Not Listed	Not Listed	Not Listed	3	S2S3
Lesser Pyrola	*Pyrola minor*	Not Listed	Not Listed	Not Listed	3	S3

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Lesser Rattlesnake-plantain	*Goodyera repens*	Not Listed	Not Listed	Not Listed	3	S3
Light Beaked Moss	*Eurhynchium hians*	Not Listed	Not Listed	Not Listed	3	S2?
Little Curlygrass Fern	*Schizaea pusilla*	Not Listed	Not Listed	Not Listed	4	S3
Livid Sedge	*Carex livida*	Not Listed	Not Listed	Not Listed	2	S1
Loesel's Twayblade	*Liparis loeselii*	Not Listed	Not Listed	Not Listed	4	S3S4
Long-bracted Frog Orchid	*Coeloglossum viride*	Not Listed	Not Listed	Not Listed	2	S2S3
Long-branched Frostweed	*Helianthemum canadense*	Not Listed	Not Listed	Not Listed	2	S1
Long-leaved Starwort	*Stellaria longifolia*	Not Listed	Not Listed	Not Listed	3	S2
Loose-Flowered Sedge	*Carex laxiflora*	Not Listed	Not Listed	Not Listed	2	S1
Lustrous Peat Moss	*Sphagnum subnitens*	Not Listed	Not Listed	Not Listed	3	S2?
Maidenhair Spleenwort	*Asplenium trichomanes*	Not Listed	Not Listed	Not Listed	3	S3
Marsh Bellflower	*Campanula aparinoides*	Not Listed	Not Listed	Not Listed	3	S3
Marsh Horsetail	*Equisetum palustre*	Not Listed	Not Listed	Not Listed	2	S1
Marsh Mermaidweed	*Proserpinaca palustris*	Not Listed	Not Listed	Not Listed	4	S3
Marsh Mermaidweed	*Proserpinaca palustris*	Not Listed	Not Listed	Not Listed	4	S3
Meadow Horsetail	*Equisetum pratense*	Not Listed	Not Listed	Not Listed	3	S3
Meadow Willow	*Salix petiolaris*	Not Listed	Not Listed	Not Listed	4	S3
Metropolitan Timmia Moss	*Timmia megapolitana*	Not Listed	Not Listed	Not Listed	3	S2?
Michaux's Dwarf Birch	*Betula michauxii*	Not Listed	Not Listed	Not Listed	3	S2
Mistassini Primrose	*Primula mistassinica*	Not Listed	Not Listed	Not Listed	3	S2
Naked Kidney Lichen	*Nephroma bellum*	Not Listed	Not Listed	Not Listed	3	S3?
Nantucket Serviceberry	*Amelanchier nantucketensis*	Not Listed	Not Listed	Not Listed	2	S1
Narrow False Oats	*Trisetum spicatum*	Not Listed	Not Listed	Not Listed	4	S3S4
Narrow-leaved Evening Primrose	*Oenothera fruticosa*	Not Listed	Not Listed	Not Listed	5	S2
Narrow-leaved Panic Grass	*Dichanthelium linearifolium*	Not Listed	Not Listed	Not Listed	3	S2
Necklace Spike Sedge	*Carex ormostachya*	Not Listed	Not Listed	Not Listed	2	S1
Nodding Fescue	*Festuca subverticillata*	Not Listed	Not Listed	Not Listed	2	S1
Northern Adder's-tongue	*Ophioglossum pusillum*	Not Listed	Not Listed	Not Listed	3	S2S3
Northern Bedstraw	*Galium boreale*	Not Listed	Not Listed	Not Listed	2	S2
Northern Blueberry	*Vaccinium boreale*	Not Listed	Not Listed	Not Listed	2	S3
Northern Bog Violet	*Viola nephrophylla*	Not Listed	Not Listed	Not Listed	3	S2
Northern Clubmoss	*Diphasiastrum complanatum*	Not Listed	Not Listed	Not Listed	4	N/A
Northern Comandra	*Geocaulon lividum*	Not Listed	Not Listed	Not Listed	3	S3
Northern Dewberry	*Rubus flagellaris*	Not Listed	Not Listed	Not Listed	5	S1?
Northern Firmoss	*Huperzia selago*	Not Listed	Not Listed	Not Listed	5	S1?

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Northern Maidenhair Fern	*Adiantum pedatum*	Not Listed	Not Listed	Not Listed	2	S1
Nova Scotia Agalinis	*Agalinis neoscotica*	Not Listed	Not Listed	Not Listed	4	S3
Orange-fruited Tinker's Weed	*Triosteum aurantiacum*	Not Listed	Not Listed	Not Listed	3	S2S3
Ovate Spikerush	*Eleocharis ovata*	Not Listed	Not Listed	Not Listed	3	S2?
Pale Green Orchid	*Platanthera flava var. herbiola*	N/A	N/A	N/A	N/A	N/A
Pale Jewelweed	*Impatiens pallida*	Not Listed	Not Listed	Not Listed	3	S2
Pale-Spiked Lobelia	*Lobelia spicata*	Not Listed	Not Listed	Not Listed	2	S1
Panicled Hawkweed	*Hieracium paniculatum*	Not Listed	Not Listed	Not Listed	4	S3
Pennsylvania Buttercup	*Ranunculus pensylvanicus*	Not Listed	Not Listed	Not Listed	2	S1
Pennsylvania Sedge	*Carex pensylvanica*	Not Listed	Not Listed	Not Listed	5	S1?
Pennsylvania Smartweed	*Persicaria pensylvanica*	Not Listed	Not Listed	Not Listed	4	N/A
Peppered Moon Lichen	*Sticta fuliginosa*	Not Listed	Not Listed	Not Listed	3	S3?
Petalled Rocktripe Lichen	*Umbilicaria polyphylla*	Not Listed	Not Listed	Not Listed	3	S2S3
Philadelphia Fleabane	*Erigeron philadelphicus*	Not Listed	Not Listed	Not Listed	3	S2
Pinebarren Golden Heather	*Hudsonia ericoides*	Not Listed	Not Listed	Not Listed	3	S2
Pink Crowberry	*Empetrum eamesii*	Not Listed	Not Listed	Not Listed	3	S3
Pink Crowberry	*Empetrum eamesii*	Not Listed	Not Listed	Not Listed	3	S3
Pink Pyrola	*Pyrola asarifolia*	Not Listed	Not Listed	Not Listed	4	S3
Plantain-Leaved Sedge	*Carex plantaginea*	Not Listed	Not Listed	Not Listed	2	S1
Poor-man's Shingles Lichen	*Parmeliella parvula*	Not Listed	Not Listed	Not Listed	2	S1?
Porcupine Sedge	*Carex hystericina*	Not Listed	Not Listed	Not Listed	2	S2
Powdered Moon Lichen	*Sticta limbata*	Not Listed	Not Listed	Not Listed	2	S1S2
Powder-tipped Antler Lichen	*Everniastrum catawbiense*	Not Listed	Not Listed	Not Listed	2	S1S2
Prairie Sedge	*Carex prairea*	Not Listed	Not Listed	Not Listed	2	S1
Prickly Hornwort	*Ceratophyllum echinatum*	Not Listed	Not Listed	Not Listed	2	S2S3
Prototype Quillwort	*Isoetes prototypus*	Special Concern	Vulnerable	Special Concern	3	S2
Pubescent Sedge	*Carex hirtifolia*	Not Listed	Not Listed	Not Listed	3	S2S3
Purple Clematis	*Clematis occidentalis*	Not Listed	Not Listed	Not Listed	2	S1
Purple-stemmed Angelica	*Angelica atropurpurea*	Not Listed	Not Listed	Not Listed	4	S3
Purple-veined Willowherb	*Epilobium coloratum*	Not Listed	Not Listed	Not Listed	3	S2?
Pygmy Pocket Moss	*Fissidens exilis*	N/A	N/A	N/A	N/A	N/A
Quebec Hawthorn	*Crataegus submollis*	Not Listed	Not Listed	Not Listed	5	S1?
Quill Spikerush	*Eleocharis nitida*	Not Listed	Not Listed	Not Listed	4	S3
Racemed Milkwort	*Polygala polygama*	Not Listed	Not Listed	Not Listed	5	S1
Ram's-Head Lady's-Slipper	*Cypripedium arietinum*	Not Listed	Endangered	Not Listed	2	S1

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Red Ash	*Fraxinus pennsylvanica*	Not Listed	Not Listed	Not Listed	2	S1
Red Pigweed	*Chenopodium rubrum*	Not Listed	Not Listed	Not Listed	2	S1S2
Richardson's Pondweed	*Potamogeton richardsonii*	Not Listed	Not Listed	Not Listed	2	S2
Rimmed Shingles Lichen	*Fuscopannaria leucosticta*	Not Listed	Not Listed	Not Listed	2	S1S2
Robinson's Hawkweed	*Hieracium robinsonii*	Not Listed	Not Listed	Not Listed	3	S2
Robinson's Hawthorn	*Crataegus robinsonii*	Not Listed	Not Listed	Not Listed	5	S1?
Rock Spikemoss	*Selaginella rupestris*	Not Listed	Not Listed	Not Listed	2	S1
Rock Whitlow-Grass	*Draba glabella*	Not Listed	Not Listed	Not Listed	2	S1
Rock Whitlow-Grass	*Draba arabisans*	Not Listed	Not Listed	Not Listed	3	S2
Roland's Sea-Blite	*Suaeda rolandii*	Not Listed	Not Listed	Not Listed	2	S1?
Rosy Sedge	*Carex rosea*	Not Listed	Not Listed	Not Listed	4	S3
Round-lobed Hepatica	*Anemone americana*	Not Listed	Not Listed	Not Listed	2	N/A
Rugel's Plantain	*Plantago rugelii*	Not Listed	Not Listed	Not Listed	5	S2S3
Running Serviceberry	*Amelanchier stolonifera*	Not Listed	Not Listed	Not Listed	4	S3?
Russet Cotton-Grass	*Eriophorum russeolum*	Not Listed	Not Listed	Not Listed	4	SNR
Saltmarsh Alkali Grass	*Puccinellia fasciculata*	Not Listed	Not Listed	Not Listed	5	S1
Saltmarsh Starwort	*Stellaria humifusa*	Not Listed	Not Listed	Not Listed	3	S2
Satiny Willow	*Salix pellita*	Not Listed	Not Listed	Not Listed	5	S2S3
Scabrous Black Sedge	*Carex atratiformis*	Not Listed	Not Listed	Not Listed	3	S2
Scaly Pelt Lichen	*Peltigera lepidophora*	Not Listed	Not Listed	Not Listed	2	S1S2
Seabeach Ragwort	*Senecio pseudoarnica*	Not Listed	Not Listed	Not Listed	3	S2
Seaside Brookweed	*Samolus valerandi*	Not Listed	Not Listed	Not Listed	3	S3
Seaside Spurge	*Chamaesyce polygonifolia*	Not Listed	Not Listed	Not Listed	4	S2S3
Secund Rush	*Juncus secundus*	Not Listed	Not Listed	Not Listed	2	S1
Sharp-Fruit Rush	*Juncus acuminatus*	Not Listed	Not Listed	Not Listed	3	S3S4
Sharp-fruited Knotweed	*Polygonum oxyspermum*	Not Listed	Not Listed	Not Listed	5	SNA
Shining Ladies'-Tresses	*Spiranthes lucida*	Not Listed	Not Listed	Not Listed	2	S2
Short-awned Foxtail	*Alopecurus aequalis*	Not Listed	Not Listed	Not Listed	3	S3
Short-pointed Lantern Moss	*Cyrtomnium hymenophylloides*	Not Listed	Not Listed	Not Listed	3	S2?
Showy Lady's-Slipper	*Cypripedium reginae*	Not Listed	Not Listed	Not Listed	2	S2
Siberian Water Milfoil	*Myriophyllum sibiricum*	Not Listed	Not Listed	Not Listed	4	S3S4
Silky Willow	*Salix sericea*	Not Listed	Not Listed	Not Listed	2	S2
Silver Maple	*Acer saccharinum*	N/A	N/A	N/A	N/A	N/A
Silvery-flowered Sedge	*Carex argyrantha*	Not Listed	Not Listed	Not Listed	4	S3S4
Sitka Clubmoss	*Diphasiastrum sitchense*	Not Listed	Not Listed	Not Listed	4	N/A

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Slender Blue Flag	*Iris prismatica*	Not Listed	Not Listed	Not Listed	2	S1
Slender Cottongrass	*Eriophorum gracile*	Not Listed	Not Listed	Not Listed	3	S2
Slim-stemmed Reed Grass	*Calamagrostis stricta*	Not Listed	Not Listed	Not Listed	3	S1S2
Small Burreed	*Sparganium natans*	Not Listed	Not Listed	Not Listed	4	S3
Small Round-leaved Orchid	*Platanthera orbiculata*	Not Listed	Not Listed	Not Listed	4	S3
Small Yellow Lady's-Slipper	*Cypripedium parviflorum*	Not Listed	Not Listed	Not Listed	3	S2S3
Small-flowered Bittercress	*Cardamine parviflora*	Not Listed	Not Listed	Not Listed	3	S2
Small-flowered Woodrush	*Luzula parviflora*	Not Listed	Not Listed	Not Listed	4	S3S4
Small's Knotweed	*Polygonum buxiforme*	Not Listed	Not Listed	Not Listed	N/A	S2S3
Smooth Cliff Fern	*Woodsia glabella*	Not Listed	Not Listed	Not Listed	3	S2
Smooth Sweet Cicely	*Osmorhiza longistylis*	Not Listed	Not Listed	Not Listed	2	S2
Soapberry	*Shepherdia canadensis*	Not Listed	Not Listed	Not Listed	3	S2S3
Southern Mudwort	*Limosella australis*	Not Listed	Not Listed	Not Listed	3	S3
Southern Rein Orchid	*Platanthera flava*	Not Listed	Not Listed	Not Listed	3	S2
Southern Twayblade	*Listera australis*	Not Listed	Not Listed	Not Listed	2	S3
Spotted Pondweed	*Potamogeton pulcher*	Not Listed	Vulnerable	Not Listed	2	S2S3
Spreading Wild Rye	*Elymus hystrix*	Not Listed	Not Listed	Not Listed	2	S1
Spurred Gentian	*Halenia deflexa*	Not Listed	Not Listed	Not Listed	3	S2S3
Squashberry	*Viburnum edule*	Not Listed	Not Listed	Not Listed	3	S3
Stalked Bulrush	*Scirpus pedicellatus*	Not Listed	Not Listed	Not Listed	5	S2?
Steller's Rockbrake	*Cryptogramma stelleri*	Not Listed	Not Listed	Not Listed	2	S1S2
Sturdy Bulrush	*Bolboschoenus robustus*	Not Listed	Not Listed	Not Listed	5	N/A
Swamp Milkweed	*Asclepias incarnata*	Not Listed	Not Listed	Not Listed	4	S4
Swan's Sedge	*Carex swanii*	Not Listed	Not Listed	Not Listed	3	S2S3
Sweet Wood Reed Grass	*Cinna arundinacea*	Not Listed	Not Listed	Not Listed	2	S1
Tattered Jellyskin Lichen	*Leptogium lichenoides*	Not Listed	Not Listed	Not Listed	2	S1S2
Tender Sedge	*Carex tenera*	Not Listed	Not Listed	Not Listed	3	S2
Thread-Like Naiad	*Najas gracillima*	Not Listed	Not Listed	Not Listed	2	S2
Thyme-Leaved Speedwell	*Veronica serpyllifolia*	Not Listed	Not Listed	Not Listed	4	S5
Tierra del Fuego Dock	*Rumex fueginus*	Not Listed	Not Listed	Not Listed	4	S3S4
Tiny-leaved Haplocladium Moss	*Bryohaplocladium microphyllum*	N/A	N/A	N/A	N/A	N/A
Toothed-leaved Nitrogen Moss	*Tetraplodon angustatus*	Not Listed	Not Listed	Not Listed	3	S2S3
Tower Mustard	*Arabis glabra*	Not Listed	Not Listed	Not Listed	5	S1
Tree Pelt Lichen	*Peltigera collina*	Not Listed	Not Listed	Not Listed	3	S2S3
Triangular-valve Dock	*Rumex triangulivalvis*	Not Listed	Not Listed	Not Listed	3	N/A

Common Name	Scientific Name	SARA Status	NS ESA Status	COSEWIC Status	NSDNR Rank	NS S-Rank
Tuckerman's Panic Grass	*Panicum tuckermanii*	Not Listed	Not Listed	Not Listed	3	S3S4
Tuckerman's Sedge	*Carex tuckermanii*	Not Listed	Not Listed	Not Listed	2	S2
Tufted Fen Moss	*Paludella squarrosa*	Not Listed	Not Listed	Not Listed	3	S2?
Valley Oakmoss Lichen	*Evernia prunastri*	Not Listed	Not Listed	Not Listed	3	S2S3
Variegated Horsetail	*Equisetum variegatum*	Not Listed	Not Listed	Not Listed	4	S3
Vasey Rush	*Juncus vaseyi*	Not Listed	Not Listed	Not Listed	2	S1
Virginia Anemone	*Anemone virginiana*	Not Listed	Not Listed	Not Listed	3	S2
Virginia Anemone	*Anemone virginiana*	Not Listed	Not Listed	Not Listed	3	S2
Virginia Anemone	*Anemone virginiana*	Not Listed	Not Listed	Not Listed	3	S2
Virginia Meadow Beauty	*Rhexia virginica*	Not Listed	Not Listed	Not Listed	4	S3
Water Beggarticks	*Bidens beckii*	Not Listed	Not Listed	Not Listed	3	N/A
Water Blinks	*Montia fontana*	Not Listed	Not Listed	Not Listed	2	S1
Water Pygmyweed	*Crassula aquatica*	Not Listed	Not Listed	Not Listed	3	S2
Wavy-leaved Aster	*Symphyotrichum undulatum*	Not Listed	Not Listed	Not Listed	3	S2
Western Hairy Rockcress	*Arabis hirsuta*	Not Listed	Not Listed	Not Listed	2	S1S2
White Adder's-Mouth	*Malaxis monophyllos*	Not Listed	Not Listed	Not Listed	2	N/A
White Mountain Saxifrage	*Saxifraga paniculata*	Not Listed	Not Listed	Not Listed	3	S2
White Snakeroot	*Ageratina altissima*	Not Listed	Not Listed	Not Listed	2	S1
White Trillium	*Trillium grandiflorum*	Not Listed	Not Listed	Not Listed	5	S1
White-stemmed Pondweed	*Potamogeton praelongus*	Not Listed	Not Listed	Not Listed	3	S3?
White-Tinged Sedge	*Carex peckii*	Not Listed	Not Listed	Not Listed	2	S2?
Whorled Water Milfoil	*Myriophyllum verticillatum*	Not Listed	Not Listed	Not Listed	3	S2
Whorled Yellow Loosestrife	*Lysimachia quadrifolia*	N/A	N/A	N/A	N/A	N/A
Wiegand's Sedge	*Carex wiegandii*	Not Listed	Not Listed	Not Listed	2	S3
Wiegand's Wild Rye	*Elymus wiegandii*	Not Listed	Not Listed	Not Listed	2	S1
Wild Black Currant	*Ribes americanum*	Not Listed	Not Listed	Not Listed	5	S1
Wild Celery	*Vallisneria americana*	Not Listed	Not Listed	Not Listed	2	S2
Wild Chives	*Allium schoenoprasum*	Not Listed	Not Listed	Not Listed	2	S2
Wild Comfrey	*Cynoglossum virginianum*	Not Listed	Not Listed	Not Listed	2	S1
Wild Leek	*Allium tricoccum*	Not Listed	Not Listed	Not Listed	2	S1
Wood Anemone	*Anemone quinquefolia*	Not Listed	Not Listed	Not Listed	3	S2
Woodland Owl Lichen	*Solorina saccata*	Not Listed	Not Listed	Not Listed	2	S1
Woodland Strawberry	*Fragaria vesca*	Not Listed	Not Listed	Not Listed	4	S3S4
Woods-Rush	*Juncus subcaudatus*	Not Listed	Not Listed	Not Listed	3	S3
Woolly Beach-heath	*Hudsonia tomentosa*	Not Listed	Not Listed	Not Listed	2	S1

Common Name	Scientific Name	SARA Status	NS ESA Status	COSEWIC Status	NSDNR Rank	NS S-Rank
Woolly Panic Grass	*Dichanthelium acuminatum*	Not Listed	Not Listed	Not Listed	4	S5
Woolly Sedge	*Carex pellita*	Not Listed	Not Listed	Not Listed	2	S1
Wulf's Peat Moss	*Sphagnum wulfianum*	Not Listed	Not Listed	Not Listed	3	S2S3
Yellow Bartonia	*Bartonia virginica*	Not Listed	Not Listed	Not Listed	4	S3
Yellow Ladies'-tresses	*Spiranthes ochroleuca*	Not Listed	Not Listed	Not Listed	3	S3
Yellow Lady's-slipper	*Cypripedium parviflorum*	Not Listed	Not Listed	Not Listed	3	S2S3
Yellow Lady's-slipper	*Cypripedium parviflorum*	Not Listed	Not Listed	Not Listed	3	S2S3
Yellow Marsh Marigold	*Caltha palustris*	Not Listed	Not Listed	Not Listed	3	S2
Yellow Spikerush	*Eleocharis flavescens*	Not Listed	Not Listed	Not Listed	3	N/A
Yellow-seeded False Pimperel	*Lindernia dubia*	Not Listed	Not Listed	Not Listed	4	S3
Yew-leaved Pocket Moss	*Fissidens taxifolius*	Not Listed	Not Listed	Not Listed	3	S2?

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Rank	NS - S Rank
American Fly-Honeysuckle	*Lonicera canadensis*	Not Listed	Not Listed	Not Listed	4	S5
American Mountain Ash	*Sorbus americana*	Not Listed	Not Listed	Not Listed	4	S5
Arrow-Leaved Tearthumb	*Polygonum sagittatum*	Not Listed	Not Listed	Not Listed	4	S5
Balsam Fir	*Abies balsamea*	Not Listed	Not Listed	Not Listed	4	S5
Beaked Hazelnut	*Corylus cornuta*	Not Listed	Not Listed	Not Listed	4	S5
Bebb's Willow	*Salix bebbiana*	Not Listed	Not Listed	Not Listed	4	S5
Birds-Foot Trefoil	*Lotus corniculatus*	Not Listed	Not Listed	Not Listed	7	SNA
Black Cherry	*Prunus serotina*	Not Listed	Not Listed	Not Listed	4	S5
Black Knapweed	*Centaurea nigra*	Not Listed	Not Listed	Not Listed	7	SNA
Bladder Sedge	*Carex intumescens*	Not Listed	Not Listed	Not Listed	4	S5
Blue Flag	*Iris versicolor*	Not Listed	Not Listed	Not Listed	4	S5
Bluebead Lily	*Clintonia borealis*	Not Listed	Not Listed	Not Listed	4	S5
Blue-eyed grass	*Sisyrinchium montanum*	Not Listed	Not Listed	Not Listed	4	S5
Bluejoint Reed-grass	*Calamagrostis canadensis*	Not Listed	Not Listed	Not Listed	4	S5
Bog Aster	*Oclemena nemoralis*	Not Listed	Not Listed	Not Listed	4	S5
Bracken fern	*Pteridium aquilinum*	Not Listed	Not Listed	Not Listed	4	S5
Bristly Black Currant	*Ribes lacustre*	Not Listed	Not Listed	Not Listed	4	S5
Bristly Sarsaparilla	*Aralia hispida*	Not Listed	Not Listed	Not Listed	4	S5
Broad Leaved Plantain	*Plantago major*	Not Listed	Not Listed	Not Listed	7	SNA
Broad-Leaf Cattail	*Typha latifolia*	Not Listed	Not Listed	Not Listed	4	S5
Brownish Sedge	*Carex brunnescens*	Not Listed	Not Listed	Not Listed	4	S5
Bullrush	*Scirpus hattorianus*	Not Listed	Not Listed	Not Listed	4	S5
Calico Aster	*Symphyotrichum lateriflorum*	Not Listed	Not Listed	Not Listed	4	S5
Canada Goldenrod	*Solidago canadensis*	Not Listed	Not Listed	Not Listed	4	S5
Canada Holly	*Ilex verticillata*	Not Listed	Not Listed	Not Listed	4	S5
Canada Manna-Grass	*Glyceria canadensis*	Not Listed	Not Listed	Not Listed	4	S5
Canada Mayflower	*Maianthemum canadense*	Not Listed	Not Listed	Not Listed	4	S5
Canadian Bunchberry	*Cornus canadensis*	Not Listed	Not Listed	Not Listed	4	S5
Choke Cherry	*Prunus virginiana*	Not Listed	Not Listed	Not Listed	4	S5
Christmas Fern	*Polystichum acrostichoides*	Not Listed	Not Listed	Not Listed	4	S5

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Rank	NS - S Rank
Cinnamon Fern	*Osmunda cinnamomea*	Not Listed	Not Listed	Not Listed	4	S5
Coltsfoot	*Tussilago farfara*	Not Listed	Not Listed	Not Listed	7	SNA
Common Boneset	*Eupatorium perfoliatum*	Not Listed	Not Listed	Not Listed	4	S5
Common Cinquefoil	*Comarum palustre*	Not Listed	Not Listed	Not Listed	4	S5
Common Dandelion	*Taraxacum officinale*	Not Listed	Not Listed	Not Listed	7	SNA
Common Eyebright	*Euphrasia nemorosa*	Not Listed	Not Listed	Not Listed	4	S5
Common Speedwell	*Veronica officinalis*	Not Listed	Not Listed	Not Listed	7	S5
Common Wild Rose	*Rosa virginiana*	Not Listed	Not Listed	Not Listed	4	S5
Common Woodsorrel	*Oxalis montana*	Not Listed	Not Listed	Not Listed	4	S5
Cottongrass Bulrush	*Scirpus cyperinus*	Not Listed	Not Listed	Not Listed	4	S5
Cow-wheat	*Melampyrum lineare*	Not Listed	Not Listed	Not Listed	4	S5
Creeping Snowberry	*Gaultheria hispidula*	Not Listed	Not Listed	Not Listed	4	S5
Crested Shield Fern	*Dryopteris cristata*	Not Listed	Not Listed	Not Listed	4	S5
Daisy Fleabane	*Erigeron annuus*	Not Listed	Not Listed	Not Listed	4	S4S5
Deptford-pink	*Dianthus armeria*	Not Listed	Not Listed	Not Listed	7	SNA
Dewdrop	*Dalibarda repens*	Not Listed	Not Listed	Not Listed	4	S5
Drooping Woodland Sedge	*Carex arctata*	Not Listed	Not Listed	Not Listed	4	S5
Dry Land Sedge	*Carex siccata*	N/A	N/A	N/A	N/A	N/A
Dwarf Raspberry	*Rubus pubescens*	Not Listed	Not Listed	Not Listed	4	S5
Eastern Poison Ivy	*Toxicodendron radicans*	Not Listed	Not Listed	Not Listed	4	S4
Eastern White Pine	*Pinus strobus*	Not Listed	Not Listed	Not Listed	4	S5
Eyebright	*Euphrasia officinalis*	N/A	N/A	N/A	N/A	N/A
False Solomon's Seal	*Maianthemum trifolium*	Not Listed	Not Listed	Not Listed	4	S5
Field Forget-me-not	*Myosotis arvensis*	Not Listed	Not Listed	Not Listed	7	SNA
Field Horsetail	*Equisetum arvense*	Not Listed	Not Listed	Not Listed	4	S5
Fireweed	*Chamerion angustifolium*	Not Listed	Not Listed	Not Listed	4	S5
Eastern Burnweed	*Erechtites hieraciifolius*	Not Listed	Not Listed	Not Listed	4	N/A
Fowl Manna-Grass	*Glyceria striata*	Not Listed	Not Listed	Not Listed	4	S5
Fox Sedge	*Carex vulpinoidea*	Not Listed	Not Listed	Not Listed	4	S4?
Fringed Sedge	*Carex crinita*	Not Listed	Not Listed	Not Listed	4	S5

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Rank	NS - S Rank
Giant Hogweed	*Heracleum mantegazzianum*	Not Listed	Not Listed	Not Listed	7	SNA
Goldthread	*Coptis trifolia*	Not Listed	Not Listed	Not Listed	4	S5
Grass-leaved Goldenrod	*Euthamia graminifolia*	Not Listed	Not Listed	Not Listed	4	S5
Green Alder	*Alnus viridis*	Not Listed	Not Listed	Not Listed	4	S5
Grey Birch	*Betula populifolia*	Not Listed	Not Listed	Not Listed	4	S5
Hairy Wood Mint	Blephilia hirsuta	N/A	N/A	N/A	N/A	N/A
Hairy Woodrush	*Luzula acuminata*	Not Listed	Not Listed	Not Listed	4	S5
Hay-scented Fern	*Dennstaedtia punctilobula*	Not Listed	Not Listed	Not Listed	4	S5
Heart-leaved Willow	*Salix eriocephala*	Not Listed	Not Listed	Not Listed	4	S5
Indian Pipe	*Monotropa uniflora*	Not Listed	Not Listed	Not Listed	4	S5
Interrupted Fern	*Osmunda claytoniana*	Not Listed	Not Listed	Not Listed	4	S5
Jewelweed	*Impatiens capensis*	Not Listed	Not Listed	Not Listed	4	S5
Large Evening Primrose	*Oenothera grandiflora*	Not Listed	Not Listed	Not Listed	7	SNA
Large Toothed Aspen	*Populus grandidentata*	Not Listed	Not Listed	Not Listed	4	S5
Larger Bedstraw	*Larger bedstraw*	N/A	N/A	N/A	N/A	N/A
Little Club-Spur Orchid	*Platanthera clavellata*	Not Listed	Not Listed	Not Listed	4	S5
Marsh Bedstraw	*Galium palustre*	Not Listed	Not Listed	Not Listed	4	S5
Mayflower	*Epigaea repens*	Not Listed	Not Listed	Not Listed	4	S5
Meadow Timothy	*Phleum pratense*	Not Listed	Not Listed	Not Listed	7	SNA
Mountain Fly-Honeysuckle	*Lonicera villosa*	Not Listed	Not Listed	Not Listed	4	S4S5
Mountain Holly	*Nemopanthus mucronatus*	Not Listed	Not Listed	Not Listed	4	S5
Mouseear	*Hieracium pilosella*	Not Listed	Not Listed	Not Listed	7	SNA
Mouse-ear Hawkweed	*Hieracium pilosella*	Not Listed	Not Listed	Not Listed	7	SNA
Narrow-Leaved Cattail	*Typha angustifolia*	Not Listed	Not Listed	Not Listed	4	S5
New York aster	*Symphyotrichum novi-belgii*	Not Listed	Not Listed	Not Listed	4	S5
New York Fern	*Thelypteris noveboracensis*	Not Listed	Not Listed	Not Listed	4	S5
Nodding Sedge	*Carex gynandra*	Not Listed	Not Listed	Not Listed	4	S5
Northern Bush-Honeysuckle	*Diervilla lonicera*	Not Listed	Not Listed	Not Listed	4	S5
Northern Red Oak	*Quercus rubra*	Not Listed	Not Listed	Not Listed	4	S5
Northern Starflower	*Trientalis borealis*	Not Listed	Not Listed	Not Listed	4	S5

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Rank	NS - S Rank
Old-Field Cinquefoil	*Potentilla simplex*	Not Listed	Not Listed	Not Listed	4	S5
Oxeye Daisy	*Leucanthemum vulgare*	Not Listed	Not Listed	Not Listed	7	SNA
Oxeye daisy	*Leucanthemum vulgare*	Not Listed	Not Listed	Not Listed	7	SNA
Painted Trillium	*Trillium undulatum*	Not Listed	Not Listed	Not Listed	4	S5
Paper Birch	*Betula papyrifera*	Not Listed	Not Listed	Not Listed	4	S5
Patridgeberry	*Mitchella repens*	Not Listed	Not Listed	Not Listed	4	S5
Pearly Everlasting	*Anaphalis margaritacea*	Not Listed	Not Listed	Not Listed	4	S5
Pin Cherry	*Prunus pensylvanica*	Not Listed	Not Listed	Not Listed	4	S5
Pink Ladyslipper	*Cypripedium acaule*	Not Listed	Not Listed	Not Listed	4	S5
Pointed Broom Sedge	*Carex scoparia*	Not Listed	Not Listed	Not Listed	4	S5
Purple Stemmed Aster	*Symphyotrichum puniceum*	Not Listed	Not Listed	Not Listed	4	S5
Purple Vetch	*Vicia americana*	N/A	N/A	N/A	N/A	N/A
Queen Anne’s Lace	*Daucus carota*	Not Listed	Not Listed	Not Listed	7	SNA
Rabbit-Foot Clover	*Trifolium arvense*	Not Listed	Not Listed	Not Listed	7	SNA
Ragged fringed Orchid	*Platanthera lacera*	Not Listed	Not Listed	Not Listed	4	S4S5
Red Chokeberry	*Photinia pyrifolia*	Not Listed	Not Listed	Not Listed	4	S4?
Red Clover	*Trifolium pratense*	Not Listed	Not Listed	Not Listed	7	SNA
Red Maple	*Acer rubrum*	Not Listed	Not Listed	Not Listed	4	S5
Red Spruce	*Picea rubens*	Not Listed	Not Listed	Not Listed	4	S5
Reed Canary Grass	*Phalaris arundinacea*	Not Listed	Not Listed	Not Listed	4	S5
Rhodora	*Rhododendron canadense*	Not Listed	Not Listed	Not Listed	4	S5
Rough Goldenrod	*Solidago rugosa*	Not Listed	Not Listed	Not Listed	4	S5
Saint John’s Wort	*Hypericum perforatum*	Not Listed	Not Listed	Not Listed	7	SNA
Self-Heal	*Prunella vulgaris*	Not Listed	Not Listed	Not Listed	4	S5
Sensitive Fern	*Onoclea sensibilis*	Not Listed	Not Listed	Not Listed	4	S5
Shallow Sedge	*Carex lurida*	Not Listed	Not Listed	Not Listed	4	S5
Sheep laurel	*Kalmia angustifolia*	Not Listed	Not Listed	Not Listed	4	S5
Shining Willow	*Salix lucida*	Not Listed	Not Listed	Not Listed	4	S5
Shinleaf	*Pyrola elliptica*	Not Listed	Not Listed	Not Listed	4	S5
Skunk Currant	*Ribes glandulosum*	Not Listed	Not Listed	Not Listed	4	S5

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Rank	NS - S Rank
Slender Rush	*Juncus tenuis*	Not Listed	Not Listed	Not Listed	4	S5
Small Enchanter's Nightshade	*Circaea alpina*	Not Listed	Not Listed	Not Listed	4	S5
Small Sundrops	*Oenothera perennis*	Not Listed	Not Listed	Not Listed	4	S5
Smooth Goldenrod	*Solidago gigantea*	Not Listed	Not Listed	Not Listed	4	S5
Soft Rush	*Juncus effusus*	Not Listed	Not Listed	Not Listed	4	S5
Speckled Alder	*Alnus incana*	Not Listed	Not Listed	Not Listed	4	S5
Spreading Dogbane	*Apocynum androsaemifolium*	Not Listed	Not Listed	Not Listed	4	S5
Stalk-Grain Sedge	*Carex stipata*	Not Listed	Not Listed	Not Listed	4	S5
Starflower	*Borago officinalis*	Not Listed	Not Listed	Not Listed	7	SNA
Steeplebush	*Spiraea tomentosa*	Not Listed	Not Listed	Not Listed	4	S5
Striped Maple	*Acer pensylvanicum*	Not Listed	Not Listed	Not Listed	4	S5
Sugar Maple	*Acer saccharum*	Not Listed	Not Listed	Not Listed	4	S5
Swamp dewberry	*Rubus hispidus*	Not Listed	Not Listed	Not Listed	4	S5
Swamp Loosestrife	*Lysimachia terrestris*	Not Listed	Not Listed	Not Listed	4	S5
Sweet Fern	*Comptonia peregrina*	Not Listed	Not Listed	Not Listed	4	S5
Tall Butter-Cup	*Ranunculus acris*	Not Listed	Not Listed	Not Listed	7	SNA
Tall Meadow-rue	*Thalictrum pubescens*	Not Listed	Not Listed	Not Listed	4	S5
Tall White Aster	*Doellingeria umbellata*	Not Listed	Not Listed	Not Listed	4	S5
Tamarack	*Larix laricina*	Not Listed	Not Listed	Not Listed	4	S5
Tansy Ragwort	*Senecio jacobaea*	Not Listed	Not Listed	Not Listed	7	SNA
Three-leaved Rattlesnakeroot	*Prenanthes trifoliolata*	Not Listed	Not Listed	Not Listed	4	S5
Three-seeded Sedge	*Carex trisperma*	Not Listed	Not Listed	Not Listed	4	S5
Toad Rush	*Juncus bufonius*	Not Listed	Not Listed	Not Listed	4	S5
Trembling Aspen	*Populus tremuloides*	Not Listed	Not Listed	Not Listed	4	S5
Tufted Vetch	*Vicia cracca*	Not Listed	Not Listed	Not Listed	7	SNA
Twinflower	*Linnaea borealis*	Not Listed	Not Listed	Not Listed	4	S5
Velvet-leaved Blueberry	*Vaccinium myrtilloides*	Not Listed	Not Listed	Not Listed	4	S5
Wand Goldenrod	*Solidago stricta*	N/A	N/A	N/A	N/A	N/A
Water Horsetail	*Equisetum fluviatile*	Not Listed	Not Listed	Not Listed	4	S5
White Ash	*Fraxinus americana*	Not Listed	Not Listed	Not Listed	4	S5

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Rank	NS - S Rank
White Clover	*Trifolium repens*	Not Listed	Not Listed	Not Listed	7	SNA
White Meadowsweet	*Spiraea alba*	Not Listed	Not Listed	Not Listed	4	S5
White Panicled American-Aster	*Symphyotrichum lanceolatum*	Not Listed	Not Listed	Not Listed	4	S4S5
White Poplar	*Populus alba*	Not Listed	Not Listed	Not Listed	7	SNA
White Spruce	*Picea glauca*	Not Listed	Not Listed	Not Listed	4	S5
White Sweet-clover	*Melilotus albus*	Not Listed	Not Listed	Not Listed	7	SNA
White Turtlehead	*Chelone glabra*	Not Listed	Not Listed	Not Listed	4	S5
White-edge Sedge	*Carex debilis*	Not Listed	Not Listed	Not Listed	4	S5
Whorled Wood Aster	*Oclemena acuminata*	Not Listed	Not Listed	Not Listed	4	S5
Wild Oats	*Avena fatua*	Not Listed	Not Listed	Not Listed	7	SNA
Wild Raisin	*Viburnum nudum*	Not Listed	Not Listed	Not Listed	4	S5
Wild Red Raspberry	*Rubus idaeus*	Not Listed	Not Listed	Not Listed	4	S5
Wild Sarsaparilla	*Aralia nudicaulis*	Not Listed	Not Listed	Not Listed	4	S5
Wild Strawberry	*Fragaria virginiana*	Not Listed	Not Listed	Not Listed	4	S5
Wood Aster	*Aster acuminatus*	Not Listed	Not Listed	Not Listed	4	S5
Woolgrass	*Scirpus cyperinus*	Not Listed	Not Listed	Not Listed	4	S5
Yellow Birch	*Betula alleghaniensis*	Not Listed	Not Listed	Not Listed	4	S5
Yellow Sedge	*Carex flava*	Not Listed	Not Listed	Not Listed	4	S5
Yellow Woodsorrel	*Oxalis stricta*	Not Listed	Not Listed	Not Listed	4	S5

APPENDIX E
MOOSE SURVEY METHODOLOGY

MOOSE SURVEY METHODOLOGY

Snow-tracking and pellet group surveys are effective methods of documenting the mammalian fauna present in an area. These surveys consist of assessing transects through the survey areas within the Project site, and recording all indications of wildlife presence. Survey areas were developed with consideration for the following:

- Coverage of the Project site: Survey areas were designed to cover as much of the Project site as possible.
- Habitat: Multiple habitats were targeted including mature softwood forest, mixed wood forest, wetlands, and clear cuts.
- Development footprint: Survey areas focused on land incorporating the development footprint (access roads and turbines), to the extent possible.
- Access to the Project site: The Project site incorporates a large tract of land which is accessible via logging roads. On-foot transects were designed to start and finish at existing logging roads/access roads.

Pellet Group Survey Methodology

Two pre-construction surveys were completed on December 5, 2014 and May 21, 2015 using the pellet group survey methodology. The survey was conducted by a team of biologists with a demonstrable knowledge of mammalian animal sign. Survey areas were located across the Project site and included three triangular transects 0.9 km in length and 7.3 km of logging road (Drawing 1).

Transects were followed according to tracks laid out on GPS units and qualified biologists searched for pellet groups within approximately 2-3 m on either side of the transect line. All wildlife sign (primarily tracks but also foraging sign, scat, and rubs) encountered during the surveys were identified to species, where possible. In addition, the locations of all noteworthy observations were recorded using GPS receivers capable of sub 5 m accuracy, with representative photos taken.

Snow Tracking Methodology

One pre-construction survey was completed on January 29, 2015 using the snow-tracking methodology. The survey was conducted by a team of biologists with a demonstrable knowledge of mammalian animal sign. The survey was completed 1 to 7 days after a ≥ 10 cm snowfall. Survey areas were located across the Project site and included three triangular transects 0.9 km in length and 7.3 km of logging road (Drawing 1).

The logging roads and transects were completed on foot. All wildlife sign (primarily tracks but also foraging sign, scat, and rubs) encountered during the surveys were identified to species, where possible. In addition, the locations of all noteworthy observations were recorded using GPS receivers capable of sub 5 m accuracy, with representative photos taken.

N

Blois Rd

PID 45271939
Everett & Marilyn Clarke

PID 45188810
Atlantic Star Forestry Ltd.

PID 45366630
Atlantic Star Forestry Ltd.

PID 45366648
Atlantic Star Forestry Ltd.

PID 45119344
Atlantic Star Forestry Ltd.

WTG 1

WTG 2

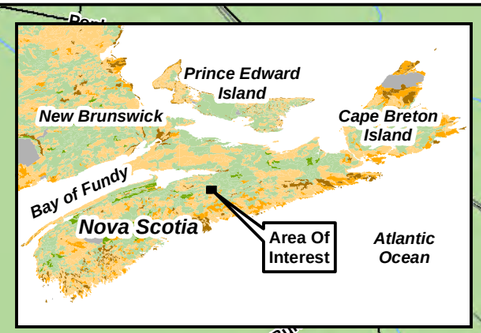
WTG 3

PID 45289675
Brian Leahy

PID 45101128
Elmsdale Lumber Co. Ltd.

PID 45271939
Everett & Marilyn Clarke

Indian Brook
Native Reserve 14



0 200 400 600 800 1,000 Metres

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.
3. GPS Data Collected is Typically to +/-5m Accuracy.

Legend:

- Proposed Turbine
- Proposed Access Road
- Moose Transects
- Project Site Boundary
- Property Boundary
- Study Area
- 100m Turbine Buffer
- Native Reserve
- Public Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream
- Water Bodies
- Cleared Area

Hardwood Lands Community Wind Project - Moose Transect Locations

Strum 20 YEARS Taking Charge CONSULTING

Date: August 2015	Project #: 14-5169
Scale: 1:12,000	Drawing #: 1
Drawn By: H. Serhan	
Checked By: A. Walter	

APPENDIX F
BIRD SURVEY FIELD DATA RESULTS

Date	Coordinates (UTM NAD 83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
21-Jan-15	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	low	-10	overcast	None	7:30 AM	Black-capped Chickadee	3	0-50
…	…	…	…	…	…		…	…	Golden-crowned Kinglet	2	0-50
…	…	…	…	…	…		…	…	Common Redpoll	1	0-50
…	…	…	…	…	…		…	…	Common Redpoll	2	50-100
21-Jan-15	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	low	-10	overcast	None	8:03 AM	Barred Owl	1	0-50
…	…	…	…	…	…		…	…	Pine Siskin	2	50-100
…	…	…	…	…	…		…	…	Common Raven	1	100+
…	…	…	…	…	…		…	…	Common Redpoll	4	50-100
21-Jan-15	20 T 459309 4992808	781	softwood regeneration	…	…	overcast	…	8:08 AM	Common Raven	2	100+
…	…	…	…	low	-10	overcast	None	…	Ruffed Grouse	1	0-50
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	50-100
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	100+
21-Jan-15	20 T 459630 4992851	782	Cutover, mixed woods, softwood regeneration	low	-10	overcast	None	8:19 AM	N/A		
21-Jan-15	20 T 459301 4993312	783	Alders, medium sized hardwoods	low	-10	overcast	None	8:47 AM	N/A		
21-Jan-15	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	low	-10	overcast	None	8:59 AM	N/A		
21-Jan-15	20 T 458915 4993714	1146	Mature hardwood with regenerating softwood understoru	low	-10	overcast	None	9:24 AM	N/A		
21-Jan-15	20 T 458689 4993334	786	Mixed wood treed swamp	low	-10	overcast	None	9:40 AM	N/A		
21-Jan-15	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	low	-10	overcast	None	9:50 AM	N/A		
21-Jan-15	20 T 458939 4993029	789	Cutover, mixed woods, softwood regeneration	low	-10	overcast	None	9:58 AM	N/A		
21-Jan-15	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	low	-10	overcast	None	10:08 AM	Black-capped Chickadee	2	0-50
…	…	…	…	…	…		…	…	Common Raven	2	100+
…	…	…	…	…	…		…	…	Sharp-shinned Hawk	1	50-100
21-Jan-15	20 T 458829 4992587	1147	Mixed wood treed swamp	low	-10	overcast	None	10:22 AM	Black-capped Chickadee	3	0-50
…	…	…	…	…	…		…	…	Golden-crowned Kinglet	1	0-50
26-Feb-15	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	low	-8	clear sky	None	7:21 AM	Common Raven	3	100+
…	…	…	…	…	…		…	…	Black-capped Chickadee	2	0-50
…	…	…	…	…	…		…	…	Golden-crowned Kinglet	1	0-50
26-Feb-15	20 T 459230 4992192	779	Medium aged hardwood /mixed wood	low	-8	clear sky	None	7:43 AM	N/A		
26-Feb-15	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	low	-8	clear sky	None	7:52 AM	Pileated Woodpecker	1	100+
…	…	…	…	…	…		…	…	Black-capped Chickadee	2	0-50
…	…	…	…	…	…		…	…	Ruffed Grouse	1	0-50
26-Feb-15	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	low	-8	clear sky	None	8:04 AM	White-breasted Nuthatch	1	50-100
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	0-50
26-Feb-15	20 T 459630 4992851	782	Cutover, mixed woods, softwood regeneration	low	-7	clear sky	None	8:18 AM	Common Raven	1	100+
26-Feb-15	20 T 459301 4993312	783	Alders, medium sized hardwoods	low	-7	clear sky	None	8:30 AM	Black-capped Chickadee	1	0-50
…	…	…	…	…	…		…	…	Pileated Woodpecker	1	100+

Date	Coordinates (UTM NAD 83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
26-Feb-15	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	low	-7	clear sky	None	8:47 AM	N/A		
26-Feb-15	20 T 458689 4993334	786	Mixed wood treed swamp	low	-7	clear sky	None	9:00 AM	Red-tailed Hawk	1	100+
…	…	…	…	…	…		…	…	Black-capped Chickadee	2	0-50
26-Feb-15	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	low	-6	clear sky	None	9:11 AM	Golden-crowned Kinglet	1	0-50
26-Feb-15	20 T 458939 4993029	789	Cutover, mixed woods, softwood regeneration	low	-6	clear sky	None	9:24 AM	Black-capped Chickadee	1	100+
26-Feb-15	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	low	-6	clear sky	None	9:35 AM	Common Raven	1	100+
26-Feb-15	20 T 458829 4992587	1147	Mixed wood treed swamp	low	-6	clear sky	None	9:49 AM	N/A		

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	S-Rank	Number of Observations	Total Individuals Observed
Barred Owl	*Strix varia*	Not Listed	Not Listed	Not Listed	4	S5	1	1
Black-capped Chickadee	*Poecile atricapillus*	Not Listed	Not Listed	Not Listed	4	S5	8	16
Common Raven	*Corvus corax*	Not Listed	Not Listed	Not Listed	4	S5	6	10
Common Redpoll	*Acanthis flammea*	Not Listed	Not Listed	Not Listed	4	S5N	3	7
Golden-crowned Kinglet	*Regulus satrapa*	Not Listed	Not Listed	Not Listed	3	S4	4	5
Hairy Woodpecker	*Picoides villosus*	Not Listed	Not Listed	Not Listed	4	S5	3	3
Pileated Woodpecker	*Dryocopus pileatus*	Not Listed	Not Listed	Not Listed	4	S5	2	2
Pine Siskin	*Spinus pinus*	Not Listed	Not Listed	Not Listed	3	S3S4B, S5N	1	2
Red-tailed Hawk	*Buteo jamaicensis*	Not Listed	Not Listed	Not at Risk	4	S5	1	1
Ruffed Grouse	*Bonasa umbellus*	Not Listed	Not Listed	Not Listed	4	S4S5	2	2
Sharp-shinned Hawk	*Accipiter striatus*	Not Listed	Not Listed	Not at Risk	4	S4S5B	1	1
White-breasted Nuthatch	*Sitta carolinensis*	Not Listed	Not Listed	Not Listed	4	S4	1	1

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
05-May-15	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	10-20 to east	7	cloudy	None	5:42 AM	American Robin	1	0-50
…	…	…	…	…	…		…	…	American Robin	2	50-100
…	…	…	…	…	…		…	…	American Robin	2	100+
…	…	…	…	…	…		…	…	White-throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	White-throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Ruby-crowned Kinglet	1	50-100
…	…	…	…	…	…		…	…	Ruby-crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	0-50
…	…	…	…	…	…		…	…	Mourning Dove	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	Blue Jay	1	100+
…	…	…	…	…	…		…	…	Swamp Sparrow	1	100+
…	…	…	…	…	…		…	…	Song Sparrow	1	50-100
…	…	…	…	…	…		…	…	Common Grackle	2	100+
05-May-15	20 T 459230 4992192	779	Medium aged hardwood /mixed wood	10-20 to east	7	cloudy	None	6:03 AM	American Robin	1	50-100
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Mourning Dove	1	100+
…	…	…	…	…	…		…	…	Ruby-crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	2	0-50
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	50-100
…	…	…	…	…	…		…	…	Purple Finch	1	50-100
…	…	…	…	…	…		…	…	Hermit Thrush	1	50-100
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	American Goldfinch	1	50-100
…	…	…	…	…	…		…	…	Song Sparrow	1	0-50
05-May-15	20 T 459220 4992499	780	Cutover, mixed	10-20 to east	7	cloudy	None	6:17 AM	Winter Wren	1	100+
…	…	…	…	…	…		…	…	White-throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	Ruby-crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	100+
…	…	…	…	…	…		…	…	Purple Finch	1	50-100
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	Canada Goose	2	100+
…	…	…	…	…	…		…	…	American Robin	1	50-100
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	American Crow	1	100+
…	…	…	…	…	…		…	…	Pileated Woodpecker	1	100+
…	…	…	…	…	…		…	…	Blue Jay	1	100+
…	…	…	…	…	…		…	…	Osprey	1	
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
05-May-15	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	10-20 to east	7	cloudy	None	6:30 AM	Winter Wren	1	0-50
…	…	…	…	…	…		…	…	Black-and-white Warbler	1	0-50
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	White-throated Sparrow	1	0-50
…	…	…	…	…	…		…	…	White-throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	White-throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Herring Gull	1	
…	…	…	…	…	…		…	…	Downy Woodpecker	1	50-100
…	…	…	…	…	…		…	…	Common Raven	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Merlin	1	
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	
…	…	…	…	…	…		…	…	Northern Flicker	1	50-100
…	…	…	…	…	…		…	…	Northern Flicker	1	100+
…	…	…	…	…	…		…	…	Ruffed Grouse	1	100+
05-May-15	20 T 459630 4992851	782	Cutover, mixed woods, softwood regeneration	10-20 to east	7	cloudy	None	6:46 AM	Palm Warbler	1	50-100
…	…	…	…	…	…		…	…	Palm Warbler	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	2	50-100
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	100+
…	…	…	…	…	…		…	…	Swamp Sparrow	1	50-100
…	…	…	…	…	…		…	…	Purple Finch	1	
05-May-15	20 T 459301 4993312	783	Alders, medium sized hardwoods	10-20 to east	7	cloudy	None	7:10 AM	Ruffed Grouse	1	100+
…	20 T 458915 4993714	19-Feb-03	Mature hardwood with regenerating softwood understoru	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	Black-capped Chickadee	1	100+
…	…	…	…	…	…		…	…	American Robin	1	50-100
…	…	…	…	…	…		…	…	Canada Goose	1	100+
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	50-100
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	100+
…	…	…	…	…	…		…	…	Common Grackle	1	100+
…	…	…	…	…	…		…	…	Downy Woodpecker	1	100+
05-May-15	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	10-20 to east	7	cloudy	None	7:30 AM	Yellow-bellied Sapsucker	1	50-100
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	2	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	50-100
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Mourning Dove	1	100+
…	…	…	…	…	…		…	…	Ring-necked Pheasant	1	100+
…	…	…	…	…	…		…	…	White-throated Sparrow	2	100+
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	
…	…	…	…	…	…		…	…	Brown Creeper	1	50-100
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	Ruby-crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
05-May-15	20 T 458915 4993714	1146	Mature hardwood with regenerating softwood understoru	10-20 to east	7	cloudy	None	7:52 AM	Blue-headed vireo	1	50-100
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	
…	…	…	…	…	…		…	…	Northern Flicker	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	50-100
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Blue Jay	1	100+
05-May-15	20 T 458689 4993334	786	Mixed wood treed swamp	10-20 to east	7	cloudy	None	8:17 AM	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	50-100
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	100+
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Spruce Grouse	1	0-50
…	…	…	…	…	…		…	…	American Goldfinch	1	50-100
…	…	…	…	…	…		…	…	Hermit Thrush	1	50-100
…	…	…	…	…	…		…	…	Evening Grosbeak	1	
…	…	…	…	…	…		…	…	Black-throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	Blue Jay	1	50-100
05-May-15	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	10-20 to east	7	cloudy	None	8:34 AM	Yellow-rumped Warbler	2	0-50
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	Red-winged Blackbird	1	
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Swamp Sparrow	1	50-100
…	…	…	…	…	…		…	…	Downy Woodpecker	1	50-100
…	…	…	…	…	…		…	…	Northern Flicker	1	0-50
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	Ruby-crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	2	100+
…	…	…	…	…	…		…	…	Ring-necked Pheasant	1	100+
05-May-15	20 T 458939 4993029	789	Cutover, mixed woods, softwood regeneration	10-20 to east	7	cloudy	None	8:52 AM	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	White-throated Sparrow	1	0-50
…	…	…	…	…	…		…	…	White-throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	White-throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Northern Flicker	2	0-50
…	…	…	…	…	…		…	…	Northern Flicker	1	50-100
…	…	…	…	…	…		…	…	Common Raven	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	2	50-100
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
05-May-15	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	10-20 to east	7	cloudy	None	9:10 AM	Swamp Sparrow	1	50-100
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Northern Flicker	1	100+
…	…	…	…	…	…		…	…	Common Raven	1	100+
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	0-50
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	50-100
…	…	…	…	…	…		…	…	Palm Warbler	2	50-100
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Gray Jay	2	50-100
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	White-throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	American Robin	1	100+
05-May-15	20 T 458829 4992587	1147	Mixed wood treed swamp	10-20 to east	7	cloudy	None	9:27 AM	Common Raven	1	100+
…	…	…	…	…	…		…	…	White-throated Sparrow	2	0-50
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…	…		…	…	Yellow-rumped Warbler	1	50-100
…	…	…	…	…	…		…	…	Swamp Sparrow	1	50-100
…	…	…	…	…	…		…	…	Northern Flicker	1	100+
…	…	…	…	…	…		…	…	Purple Finch	1	50-100
…	…	…	…	…	…		…	…	Palm Warbler	1	0-50
…	…	…	…	…	…		…	…	Hermit Thrush	1	50-100
21-May-15	20 T 458736 4992134	31	New regeneration, some medium sized mixed wood. Burnt areas.	Low wind N	14	Clear	None	5:16 AM	White-Throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	2	100+
…	…	…	…	…	…		…	…	Ruby-Crowned Kinglet	1	50-100
…	…	…	…	…	…		…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…	…		…	…	Mourning Dove	1	100+
…	…	…	…	…	…		…	…	Song Sparrow	1	100+
…	…	…	…	…	…		…	…	Ovenbird	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	1	0-50
…	…	…	…	…	…		…	…	Common Yellowthroat	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	1	100+
…	…	…	…	…	…		…	…	American Robin	2	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	0-50
…	…	…	…	…	…		…	…	Ruffed Grouse	1	50-100
…	…	…	…	…	…		…	…	Canada Goose	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	50-100
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	100+
…	…	…	…	…	…		…	…	Nashville Warbler	1	0-50
…	…	…	…	…	…		…	…	Blue-Headed Vireo	1	50-100
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	50-100

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
21-May-15	20 T 459099 4992265	32	Medium aged hardwood /mixed wood	Low wind N	14	Clear	None	5:34 AM	Black-Throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	100+
…	…	…	…	…	…		…	…	Purple Finch	1	50-100
…	…	…	…	…	…		…	…	OvenBird	1	50-100
…	…	…	…	…	…		…	…	Yellow-Rumped Warbler	1	0-50
…	…	…	…	…	…		…	…	Yellow-Rumped Warbler	1	100+
…	…	…	…	…	…		…	…	American Goldfinch	1	0-50
…	…	…	…	…	…		…	…	Magnolia Warbler	1	50-100
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…	…		…	…	Blue-Headed Vireo	1	100+
…	…	…	…	…	…		…	…	Canada Goose	2	100+
…	…	…	…	…	…		…	…	Black-and-White Warbler	1	50-100
…	…	…	…	…	…		…	…	Hermit Thrush	2	50-100
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	2	100+
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Mourning Dove	1	100+
21-May-15	20 T 459226 4992522	33	Cutover, mixed woods, softwood regeneration	Low wind N	14	Clear	None	5:48 AM	Yellow-Throated Warbler	2	50-100
…	…	…	…	…	…		…	…	Yellow-Throated Warbler	1	100+
…	…	…	…	…	…		…	…	Magnolia Warbler	1	50-100
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Dark-eyed Junco	2	50-100
…	…	…	…	…	…		…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Ovenbird	2	100+
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Blue-Headed Vireo	2	50-100
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	Blackburnian Warbler	1	50-100
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	White-Throated Sparrow	2	0-50
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Ruffed Grouse	1	50-100
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	Least Flycatcher	1	50-100
…	…	…	…	…	…		…	…	Nashville Warbler	1	100+
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	Northern Parula	1	50-100
…	…	…	…	…	…		…	…	Downy Woodpecker	1	100+
…	…	…	…	…	…		…	…	Pileated Woodpecker	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
21-May-15	20 T 459309 4992809	34	Cutover, mixed woods, softwood regeneration	Low wind N	14	Clear	None	6:04 AM	Olive-Sided Flycatcher	1	50-100
…	…	…	…	…	…		…	…	Ovenbird	1	50-100
…	…	…	…	…	…		…	…	Black-and-White Warbler	2	50-100
…	…	…	…	…	…		…	…	Hairy Woodpecker	1	100+
…	…	…	…	…	…		…	…	Blackburnian Warbler	1	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	2	100+
…	…	…	…	…	…		…	…	Magnolia Warbler	2	50-100
…	…	…	…	…	…		…	…	Magnolia Warbler	1	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	2	100+
…	…	…	…	…	…		…	…	Northern Parula	1	50-100
…	…	…	…	…	…		…	…	Blue-Headed Vireo	1	100
…	…	…	…	…	…		…	…	American Goldfinch	1	100
…	…	…	…	…	…		…	…	Magnolia Warbler	2	50-100
…	…	…	…	…	…		…	…	Sharp-Shinned Hawk	1	0-50
…	…	…	…	…	…		…	…	Least Flycatcher	1	0-50
…	…	…	…	…	…		…	…	Canada Warbler	1	0-50
…	…	…	…	…	…		…	…	Ruffed Grouse	1	50-100
…	…	…	…	…	…		…	…	Purple Finch	1	100+
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Northern Flicker	1	0-50
…	…	…	…	…	…		…	…	Northern Flicker	1	50-100
21-May-15	20 T 459295 4993172	35	Alders, medium sized hardwoods	Low wind N	14	Clear	None	6:32 AM	Least Flycatcher	3	50-100
…	…	…	…	…	…		…	…	American Redstart	2	50-100
…	…	…	…	…	…		…	…	Ovenbird	1	50-100
…	…	…	…	…	…		…	…	Northern Parula	2	0-50
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	100+
…	…	…	…	…	…		…	…	Magnolia Warbler	1	50-100
…	…	…	…	…	…		…	…	Magnolia Warbler	1	100+
…	…	…	…	…	…		…	…	Ruffed Grouse	1	0-50
…	…	…	…	…	…		…	…	Blue-Headed Vireo	2	0-50
…	…	…	…	…	…		…	…	American Robin	1	100+
…	…	…	…	…	…		…	…	Common Yellowthroat	1	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Ring-necked Pheasant	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
21-May-15	20 T 459049 4993364	36	Cutover, mixed woods, softwood regeneration	Low wind N	14	Clear	None	6:53 AM	Ovenbird	1	50-100
…	…	…	…	…	…		…	…	Ovenbird	2	100+
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	2	0-50
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	2	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	0-50
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Least Flycatcher	1	50-100
…	…	…	…	…	…		…	…	Black-throated Blue Warbler	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	1	100+
…	…	…	…	…	…		…	…	Blackburnian Warbler	2	0-50
…	…	…	…	…	…		…	…	Black-and-White Warbler	1	0-50
…	…	…	…	…	…		…	…	Magnolia Warbler	1	50-100
…	…	…	…	…	…		…	…	Magnolia Warbler	1	100

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
21-May-15	20 T 458622 4993521	37	Open bog with intermittent softwood stands	Low wind N	14	Clear	None	7:37 AM	Common Yellowthroat	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	2	100+
…	…	…	…	…	…		…	…	Nashville Warbler	2	100+
…	…	…	…	…	…		…	…	Yellow-bellied Sapsucker	1	100+
…	…	…	…	…	…		…	…	Palm Warbler	1	0-50
…	…	…	…	…	…		…	…	Palm Warbler	2	100+
…	…	…	…	…	…		…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Canada Warbler	1	100+
21-May-15	20 T 458435 4993279	40	Softwood swamp near bog edge	Low wind N	14	Clear	None	8:01 AM	Black-and-White Warbler	1	0-50
…	…	…	…	…	…		…	…	Blue-Headed Vireo	1	100+
…	…	…	…	…	…		…	…	Canada Warbler	1	0-50
…	…	…	…	…	…		…	…	Canada Warbler	1	100+
…	…	…	…	…	…		…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…	…		…	…	Magnolia Warbler	2	50-100
…	…	…	…	…	…		…	…	Ovenbird	2	100+
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	100+
…	…	…	…	…	…		…	…	Hermit Thrush	2	100+
…	…	…	…	…	…		…	…	American Crow	2	100+
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	2	100+
…	…	…	…	…	…		…	…	Common Yellowthroat	1	50-100
…	…	…	…	…	…		…	…	Nashville Warbler	1	50-100
…				…	…		…	…	Nashville Warbler	1	50-100
21-May-15	20 T 458384 4993059	41	Cutover near mixed woods	Low wind N	14	Clear	None	8:23 AM	Common Yellowthroat	2	0-50
…	…	…	…	…	…		…	…	Common Yellowthroat	1	100+
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+
…	…	…	…	…	…		…	…	Magnolia Warbler	2	50-100
…	…	…	…	…	…		…	…	Magnolia Warbler	1	100+
…	…	…	…	…	…		…	…	Northern Flicker	1	100+
…	…	…	…	…	…		…	…	Nashville Warbler	1	100+
…	…	…	…	…	…		…	…	Ovenbird	2	100+
…	…	…	…	…	…		…	…	Winter Wren	1	100+
…	…	…	…	…	…		…	…	American Goldfinch	1	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	100+
…	…	…	…	…	…		…	…	Song Sparrow	1	100+
21-May-15	20 T 458354 4992755	42	Cutover near mixed woods	Low wind N	14	Clear	None	8:36 AM	American Redstart	2	0-50
…	…	…	…	…	…		…	…	American Redstart	2	50-100
…	…	…	…	…	…		…	…	Magnolia Warbler	1	0-50
…	…	…	…	…	…		…	…	Blue Jay	1	100+
…	…	…	…	…	…		…	…	Ovenbird	1	100+
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	0-50
…	…	…	…	…	…		…	…	Black-Throated Green Warbler	1	50-100
…	…	…	…	…	…		…	…	Northern Parula	1	100+
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	50-100
…	…	…	…	…	…		…	…	Blue-Headed Vireo	1	100+
…	…	…	…	…	…		…	…	Hermit Thrush	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
21-May-15	20 T 458661 4992740	44	Mixed wood treed swamp	Low wind N	14	Clear	None	8:57 AM	Canada Warbler	4	50-100
…	…	…	…	…	…		…	…	Northern Parula	1	50-100
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Magnolia Warbler	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	1	50-100
…	…	…	…	…	…		…	…	Common Yellowthroat	1	100+
…	…	…	…	…	…		…	…	Palm Warbler	1	0-50
…	…	…	…	…	…		…	…	Palm Warbler	1	100+
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…	…		…	…	Dark-eyed Junco	1	100+
…	…	…	…	…	…		…	…	Magnolia Warbler	1	50-100
…	…	…	…	…	…		…	…	Swamp Sparrow	1	0-50
…	…	…	…	…	…		…	…	Swamp Sparrow	1	50-100
…	…	…	…	…	…		…	…	Blue-Headed Vireo	1	50-100
…	…	…	…	…	…		…	…	Black-throated Blue warbler	2	50-100
…	…	…	…	…	…		…	…	White-Throated Sparrow	1	50-100
28-May-15	20 T 458736 4992134	31	New regeneration, some medium sized mixed wood. Burnt areas.	10-15km	12	overcast	None	5:15 AM	Hairy woodpecker	1	100+
…	…	…	…	…			…	…	Common Yellowthroat	2	100+
…	…	…	…	…			…	…	Hermit Thrush	1	0-50
…	…	…	…	…			…	…	Hermit Thrush	2	100+
…	…	…	…	…			…	…	Ring-necked Pheasant	1	50-100
…	…	…	…	…			…	…	Alder Flycatcher	1	50-100
…	…	…	…	…			…	…	Alder Flycatcher	1	100+
…	…	…	…	…			…	…	White-throated Sparrow	1	50-100
…	…	…	…	…			…	…	White-throated Sparrow	2	100+
…	…	…	…	…			…	…	American Robin	1	50-100
…	…	…	…	…			…	…	American Robin	3	100+
…	…	…	…	…			…	…	Chestnut-sided Warbler	1	100+
…	…	…	…	…			…	…	Yellow-Bellied Sapsucker	1	100+
…	…	…	…	…			…	…	Canada Goose	2	100+
…	…	…	…	…			…	…	Dark-eyed Junco	2	50-100
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…			…	…	Winter Wren	1	100+
…	…	…	…	…			…	…	Song Sparrow	1	50-100
…	…	…	…	…			…	…	Black-throated Green Warbler	1	100+
28-May-15	20 T 459099 4992265	32	Medium aged hardwood /mixed wood	10-15km	12	overcast	None	5:30 AM	Blue-Headed Vireo	1	50-100
…	…	…	…	…			…	…	Blue-Headed Vireo	1	100+
…	…	…	…	…			…	…	Black-throated Green Warbler	1	0-50
…	…	…	…	…			…	…	Black-throated Green Warbler	2	50-100
…	…	…	…	…			…	…	Ovenbird	1	50-100
…	…	…	…	…			…	…	Hermit Thrush	1	0-50
…	…	…	…	…			…	…	Hermit Thrush	1	50-100
…	…	…	…	…			…	…	American Robin	1	0-50
…	…	…	…	…			…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…			…	…	Purple Finch	1	100+
…	…	…	…	…			…	…	Magnolia Warbler	1	0-50
…	…	…	…	…			…	…	Common Yellowthroat	1	0-50
…	…	…	…	…			…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…			…	…	Black-and-White Warbler	1	50-100
…	…	…	…	…			…	…	American Redstart	1	50-100
…	…	…	…	…			…	…	Yellow-Bellied Sapsucker	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
28-May-15	20 T 459226 4992522	33	Cutover, mixed woods, softwood regeneration	10-15km	12	overcast	None	5:44 AM	Winter Wren	1	100+
…	…	…	…	…			…	…	Ovenbird	2	100+
…	…	…	…	…			…	…	Yellow-Bellied Sapsucker	2	100+
…	…	…	…	…			…	…	Common Yellowthroat	1	0-50
…	…	…	…	…			…	…	White-throated Sparrow	1	0-50
…	…	…	…	…			…	…	White-throated Sparrow	1	100+
…	…	…	…	…			…	…	Black-and-White Warbler	1	50-100
…	…	…	…	…			…	…	Ruby-Crowned Kinglet	1	100+
…	…	…	…	…			…	…	Blue-Headed Vireo	1	100+
…	…	…	…	…			…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…			…	…	Dark-eyed Junco	1	100+
…	…	…	…	…			…	…	Song Sparrow	1	100+
…	…	…	…	…			…	…	Least Flycatcher	1	100+
…	…	…	…	…			…	…	Hermit Thrush	1	100+
…	…	…	…	…			…	…	Magnolia Warbler	1	100+
…	…	…	…	…			…	…	Chestnut-sided Warbler	1	100+
…	…	…	…	…			…	…	American Robin	1	100+
…	…	…	…	…			…	…	Northern Parula	1	100+
28-May-15	20 T 459309 4992809	34	Cutover, mixed woods, softwood regeneration	10-15km	12	overcast	None	6:00 AM	Canada Warbler	1	50-100
…	…	…	…	…			…	…	Canada Warbler	2	100+
…	…	…	…	…			…	…	Common Yellowthroat	1	50-100
…	…	…	…	…			…	…	Common Yellowthroat	2	100+
…	…	…	…	…			…	…	Black-and-White Warbler	1	50-100
…	…	…	…	…			…	…	Hermit Thrush	1	50-100
…	…	…	…	…			…	…	White-throated Sparrow	2	100+
…	…	…	…	…			…	…	Olive-sided Flycatcher	1	100+
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Red-eyed Vireo	1	100+
…	…	…	…	…			…	…	Black-throated Green Warbler	1	50-100
…	…	…	…	…			…	…	Northern Parula	1	100+
…	…	…	…	…			…	…	Magnolia Warbler	1	50-100
28-May-15	20 T 459295 4993172	35	Alders, medium sized hardwoods	10-15km	12	overcast	None	6:17 AM	Northern Parula	1	50-100
…	…	…	…	…			…	…	Northern Parula	1	0-50
…	…	…	…	…			…	…	Red-eyed Vireo	1	50-100
…	…	…	…	…			…	…	Red-eyed Vireo	1	100+
…	…	…	…	…			…	…	American Redstart	1	0-50
…	…	…	…	…			…	…	American Redstart	1	50-100
…	…	…	…	…			…	…	Ovenbird	1	0-50
…	…	…	…	…			…	…	Least Flycatcher	2	50-100
…	…	…	…	…			…	…	Hermit Thrush	1	100+
…	…	…	…	…			…	…	Magnolia Warbler	1	50-100
…	…	…	…	…			…	…	Ruffed Grouse	1	0-50
…	…	…	…	…			…	…	Black-throated Green Warbler	1	50-100
…	…	…	…	…			…	…	Yellow-Bellied Sapsucker	1	100+
…	…	…	…	…			…	…	White-throated Sparrow	1	100+
…	…	…	…	…			…	…	Chestnut-sided Warbler	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
28-May-15	20 T 459049 4993364	36	Cutover, mixed woods, softwood regeneration	10-15km	12	overcast	None	6:34 AM	Ovenbird	1	50-100
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Common Yellowthroat	1	100+
…	…	…	…	…			…	…	Canada Warbler	1	50-100
…	…	…	…	…			…	…	Black-throated Blue Warbler	1	50-100
…	…	…	…	…			…	…	Blue-Headed Vireo	1	100+
…	…	…	…	…			…	…	Chestnut-sided Warbler	1	50-100
…	…	…	…	…			…	…	American Redstart	1	50-100
…	…	…	…	…			…	…	Canada Goose	2	100+
…	…	…	…	…			…	…	Magnolia Warbler	1	100+
…	…	…	…	…			…	…	White-throated Sparrow	1	100+
…	…	…	…	…			…	…	Yellow-Bellied Sapsucker	1	100+
…	…	…	…	…			…	…	Least Flycatcher	1	50-100
…	…	…	…	…			…	…	Least Flycatcher	1	100+
…	…	…	…	…			…	…	Brown Creeper	1	50-100
…	…	…	…	…			…	…	American Robin	1	100+
28-May-15	20 T 458915 4993714	1146	Mature hardwood with regenerating softwood understoru	10-15km	12	overcast	None	6:51 AM	Least Flycatcher	1	0-50
…	…	…	…	…			…	…	Black-throated Blue Warbler	1	0-50
…	…	…	…	…			…	…	Black-and-White Warbler	1	50-100
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Eastern Wood-Pewee	1	100+
…	…	…	…	…			…	…	Yellow-Bellied Sapsucker	1	100+
…	…	…	…	…			…	…	Red-eyed Vireo	1	100+
…	…	…	…	…			…	…	Hermit Thrush	1	100+
…	…	…	…	…			…	…	American Goldfinch	1	100+
…	…	…	…	…			…	…	Ruffed Grouse	1	50-100
…	…	…	…	…			…	…	Magnolia Warbler	1	50-100
…	…	…	…	…			…	…	Nashville Warbler	1	50-100
…	…	…	…	…			…	…	Downy Woodpecker	1	50-100
…	…	…	…	…			…	…	Black-throated Green Warbler	1	100+
…	…	…	…	…			…	…	Winter Wren	1	100+
…	…	…	…	…			…	…	Northern Parula	1	50-100
28-May-15	20 T 458622 4993521	37	Open bog with intermittent softwood stands	10-15km	12	overcast	None	7:16 AM	Canada Warbler	1	50-100
…	…	…	…	…			…	…	Canada Warbler	2	100+
…	…	…	…	…			…	…	Olive-sided Flycatcher	1	100+
…	…	…	…	…			…	…	White-throated Sparrow	1	100+
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Common Yellowthroat	1	0-50
…	…	…	…	…			…	…	Common Yellowthroat	1	100+
…	…	…	…	…			…	…	Yellow-bellied Flycatcher	1	0-50
…	…	…	…	…			…	…	Yellow-bellied Flycatcher	1	50-100
…	…	…	…	…			…	…	Nashville Warbler	1	50-100
…	…	…	…	…			…	…	Nashville Warbler	1	100+
…	…	…	…	…			…	…	Blue Jay	1	50-100
…	…	…	…	…			…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…			…	…	Common Raven	1	100+
…	…	…	…	…			…	…	American Robin	1	100+
…	…	…	…	…			…	…	Red-eyed Vireo	1	100+

Table F3: Detailed Spring Bird Survey Results, Hardwood Lands Community Wind Project *Project # 14-5169*

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation				
28-May-15	20 T 458435 4993279	40	Softwood swamp near bog edge	10-15km	12	overcast	None	7:33 AM	Yellow-bellied Flycatcher	1	0-50
…	…	…	…	…			…	…	Blue Jay	1	50-100
…	…	…	…	…			…	…	Palm Warbler	1	50-100
…	…	…	…	…			…	…	Black-and-White Warbler	1	0-50
…	…	…	…	…			…	…	Nashville Warbler	1	50-100
…	…	…	…	…			…	…	Ruby-Crowned Kinglet	1	50-100
…	…	…	…	…			…	…	Magnolia Warbler	1	50-100
…	…	…	…	…			…	…	White-throated Sparrow	1	50-100
…	…	…	…	…			…	…	Ruffed Grouse	1	0-50
28-May-15	20 T 458384 4993059	41	Cutover near mixed woods	10-15km	12	overcast	None	7:52 AM	Ovenbird	1	100+
…	…	…	…	…			…	…	Common Yellowthroat	1	0-50
…	…	…	…	…			…	…	Common Yellowthroat	1	50-100
…	…	…	…	…			…	…	Common Yellowthroat	3	100+
…	…	…	…	…			…	…	Hermit Thrush	1	100+
…	…	…	…	…			…	…	Black-throated Green Warbler	1	100+
…	…	…	…	…			…	…	Magnolia Warbler	1	100+
…	…	…	…	…			…	…	Nashville Warbler	1	100+
…	…	…	…	…			…	…	Northern Flicker	1	50-100
…	…	…	…	…			…	…	American Redstart	2	100+
…	…	…	…	…			…	…	Dark-eyed Junco	1	50-100
…	…	…	…	…			…	…	American Robin	1	50-100
…	…	…	…	…			…	…	American Robin	1	100+
…	…	…	…	…			…	…	White-throated Sparrow	1	0-50
…	…	…	…	…			…	…	White-throated Sparrow	1	100+
…	…	…	…	…			…	…	Pileated Woodpecker	1	100+
28-May-15	20 T 458661 4992740	44	Mixed wood treed swamp	10-15km	12	overcast	None	8:11 AM	White-throated Sparrow	1	0-50
…	…	…	…	…			…	…	Ovenbird	1	50-100
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Nashville Warbler	1	50-100
…	…	…	…	…			…	…	Common Yellowthroat	1	50-100
…	…	…	…	…			…	…	Common Yellowthroat	1	100+
…	…	…	…	…			…	…	Red-eyed Vireo	1	100+
…	…	…	…	…			…	…	Blue Jay	1	50-100
…	…	…	…	…			…	…	Northern Parula	1	50-100
…	…	…	…	…			…	…	Canada Warbler	2	50-100
…	…	…	…	…			…	…	Canada Warbler	1	100+
…	…	…	…	…			…	…	Black-and-White Warbler	1	50-100
…	…	…	…	…			…	…	Magnolia Warbler	1	50-100
…	…	…	…	…			…	…	Dark-eyed Junco	2	50-00
…	…	…	…	…			…	…	Black-throated Green Warbler	1	100+
…	…	…	…	…			…	…	Yellow-bellied Flycatcher	1	100+
28-May-15	20 T 458354 4992755	42	Cutover near mixed woods	10-15km	12	overcast	None	8:41 AM	Ruffed Grouse	1	50-100
…	…	…	…	…			…	…	American Redstart	3	0-50
…	…	…	…	…			…	…	American Redstart	2	50-100
…	…	…	…	…			…	…	Black-throated Green Warbler	1	0-50
…	…	…	…	…			…	…	Black-throated Green Warbler	1	100+
…	…	…	…	…			…	…	Alder Flycatcher	1	50-100
…	…	…	…	…			…	…	Ovenbird	1	100+
…	…	…	…	…			…	…	Chestnut-sided Warbler	1	100+
…	…	…	…	…			…	…	Northern Parula	1	100+
…	…	…	…	…			…	…	Dark-eyed Junco	1	0-50
…	…	…	…	…			…	…	American Robin	1	0-50
…	…	…	…	…			…	…	Nashville Warbler	1	50-100
…	…	…	…	…			…	…	Red-eyed Vireo	1	50-100
…	…	…	…	…			…	…	Red-eyed Vireo	1	100+
…	…	…	…	…			…	…	Least Flycatcher	1	100+

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	S-Rank	Number of Times Observed	Number of Individuals Observed
Alder Flycatcher	*Empidonax alnorum*	Not Listed	Not Listed	Not Listed	4	S5B	3	3
American Crow	*Corvus brachyrhynchos*	Not Listed	Not Listed	Not Listed	4	S5	2	3
American Goldfinch	*Spinus tristis*	Not Listed	Not Listed	Not Listed	4	S5	6	6
American Redstart	*Setophaga ruticilla*	Not Listed	Not Listed	Not Listed	4	S5B	10	17
American Robin	*Turdus migratorius*	Not Listed	Not Listed	Not Listed	4	S5B	28	33
Black-and-white Warbler	*Mniotilta varia*	Not Listed	Not Listed	Not Listed	4	S4S5B	11	12
Blackburnian Warbler	*Dendroica fusca*	Not Listed	Not Listed	Not Listed	4	S4B	3	4
Black-capped Chickadee	*Poecile atricapillus*	Not Listed	Not Listed	Not Listed	4	S5	1	1
Black-throated Blue Warbler	*Dendroica caerulescens*	Not Listed	Not Listed	Not Listed	4	S5B	4	5
Black-throated Green Warbler	*Dendroica virens*	Not Listed	Not Listed	Not Listed	4	S4S5B	25	28
Blue Jay	*Cyanocitta cristata*	Not Listed	Not Listed	Not Listed	4	S5	8	8
Blue-headed vireo	*Vireo solitarius*	Not Listed	Not Listed	Not Listed	4	S5B	13	15
Brown Creeper	*Certhia americana*	Not Listed	Not Listed	Not Listed	4	S5	2	2
Canada Goose	*Branta canadensis*	Not Listed	Not Listed	Not Listed	4	SNAB,S4N	6	10
Canada Warbler	*Wilsonia canadensis*	Not Listed	Endangered	Threatened	4	S3B	12	18
Chestnut-sided Warbler	*Dendroica pensylvanica*	Not Listed	Not Listed	Not Listed	1	S5B	5	5
Common Grackle	*Quiscalus quiscula*	Not Listed	Not Listed	Not Listed	4	S5B	2	3
Common Raven	*Corvus corax*	Not Listed	Not Listed	Not Listed	4	S5	5	5
Common Yellowthroat	*Geothlypis trichas*	Not Listed	Not Listed	Not Listed	4	S5B	26	33
Dark-eyed Junco	*Junco hyemalis*	Not Listed	Not Listed	Not Listed	4	S4S5	26	29
Downy Woodpecker	*Picoides pubescens*	Not Listed	Not Listed	Not Listed	4	S5	5	5
Eastern Wood-Pewee	*Contopus virens*	No Status	Vulnerable	Special Concern	4	S3S4B	1	1
Evening Grosbeak	*Coccothraustes vespertinus*	Not Listed	Not Listed	Not Listed	3	S4B,S5N	1	1
Gray Jay	*Perisoreus canadensis*	Not Listed	Not Listed	Not Listed	4	S3S4	1	2
Hairy Woodpecker	*Picoides villosus*	Not Listed	Not Listed	Not Listed	3	S5	6	6
Hermit Thrush	*Catharus guttatus*	Not Listed	Not Listed	Not Listed	4	S5B	26	29
Herring Gull	*Larus argentatus*	Not Listed	Not Listed	Not Listed	4	S4S5	1	1
Least Flycatcher	*Empidonax minimus*	Not Listed	Not Listed	Not Listed	4	S4B	10	13
Magnolia Warbler	*Dendroica magnolia*	Not Listed	Not Listed	Not Listed	4	S5B	24	28
Merlin	*Falco columbarius*	Not Listed	Not Listed	Not at Risk	4	S5B	1	1
Mourning Dove	*Zenaida macroura*	Not Listed	Not Listed	Not Listed	4	S5	5	5
Nashville Warbler	*Vermivora ruficapilla*	Not Listed	Not Listed	Not Listed	4	S5B	13	14
Northern Flicker	*Colaptes auratus*	Not Listed	Not Listed	Not Listed	4	S5B	12	13
Northern Parula	*Parula americana*	Not Listed	Not Listed	Not Listed	4	S5B	12	13
Olive-Sided Flycatcher	*Contopus cooperi*	Threatened	Threatened	Threatened	4	S3B	3	3
Osprey	*Pandion haliaetus*	Not Listed	Not Listed	Not Listed	1	S5B	1	1
Ovenbird	*Seiurus aurocapilla*	Not Listed	Not Listed	Not Listed	4	S5B	23	28
Palm Warbler	*Dendroica palmarum*	Not Listed	Not Listed	Not Listed	4	S5B	9	11

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	S-Rank	Number of Times Observed	Number of Individuals Observed
Pileated Woodpecker	*Dryocopus pileatus*	Not Listed	Not Listed	Not Listed	4	S5	3	3
Purple Finch	*Carpodacus purpureus*	Not Listed	Not Listed	Not Listed	4	S4S5	13	13
Red-eyed Vireo	*Vireo olivaceus*	Not Listed	Not Listed	Not Listed	4	S5B	8	8
Red-winged Blackbird	*Agelaius phoeniceus*	Not Listed	Not Listed	Not Listed	4	S4S5B	1	1
Ring-necked Pheasant	*Phasianus colchicus*	Not Listed	Not Listed	Not Listed	4	SNA	4	4
Ruby-crowned Kinglet	*Regulus calendula*	Not Listed	Not Listed	Not Listed	7	S4B	15	15
Ruffed Grouse	*Bonasa umbellus*	Not Listed	Not Listed	Not Listed	3	S4S5	10	10
Sharp-Shinned Hawk	*Accipiter striatus*	Not Listed	Not Listed	Not at Risk	4	S4S5B	1	1
Song Sparrow	*Melospiza melodia*	Not Listed	Not Listed	Not Listed	4	S5B	6	6
Spruce Grouse	*Falcipennis canadensis*	Not Listed	Not Listed	Not Listed	4	S5	1	1
Swamp Sparrow	*Melospiza georgiana*	Not Listed	Not Listed	Not Listed	4	S5B	7	7
White-throated Sparrow	*Zonotrichia albicollis*	Not Listed	Not Listed	Not Listed	4	S5B	36	44
Winter Wren	*Troglodytes troglodytes*	Not Listed	Not Listed	Not Listed	4	S5B	15	15
Yellow-bellied Flycatcher	*Empidonax flaviventris*	Not Listed	Not Listed	Not Listed	4	S3S4B	4	4
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Not Listed	Not Listed	Not Listed	3	S4S5B	25	30
Yellow-rumped Warbler	*Dendroica coronata*	Not Listed	Not Listed	Not Listed	4	S5B	16	19
Yellow-Throated Warbler	*Dendroica dominica*	Not Listed	Not Listed	Not Listed	4	SNA	2	3

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	calm	16	clear	None	5:21 AM	Common Nighthawk	1	0-50	
…	…	…	…	…	…	…	…	…	American Robin	1	0-50	
…	…	…	…	…	…	…	…	…	American Robin	1	50-100	
…	…	…	…	…	…	…	…	…	American Robin	1	100+	
…	…	…	…	…	…	…	…	…	Song Sparrow	1	50-100	
…	…	…	…	…	…	…	…	…	Northern Parula	1	0-50	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	2	100+	
…	…	…	…	…	…	…	…	…	Pileated Woodpecker	1	100+	
…	…	…	…	…	…	…	…	…	Black-and-White Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…	…	…	…	…	Palm Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	50-100	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	100+	
…	…	…	…	…	…	…	…	…	Blue-Headed Vireo	1	0-50	
…	…	…	…	…	…	…	…	…	Blue-Headed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Downy Woodpecker	1	100+	
…	…	…	…	…	…	…	…	…	Winter Wren	1	100+	
…	…	…	…	…	…	…	…	…	Alder Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	1	100+	
…	…	…	…	…	…	…	…	…	Chestnut-Sided Warbler	2	100+	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
18-Jun-15	20 T 459230 4992192	779	Medium aged hardwood /mixed wood	calm	16	clear	None	8:38 AM	American Redstart	1	50-100	
…	…	…	…	…	…	…	…	…	Chestnut-Sided Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	2	100	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	2	50-100	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Magnolia Warbler	1	100+	
…	…	…	…	…	…	…	…	…	American Crow	1	100+	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…	…	…	…	…	…	Hermit Thrush	1	100+	
…	…	…	…	…	…	…	…	…	Canada Goose	1	100+	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	
…	…	…	…	…	…	…	…	…	Pileated Woodpecker	1	100+	
…	…	…	…	…	…	…	…	…	Dark-eyed Junco	1	100+	
…	…	…	…	…	…	…	…	…	Alder Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Mourning Dove	1	100+	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	1	0-50	
18-Jun-15	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	calm	16	clear	None	5:54 AM	Eastern Wood-Pewee	1	100+	
…	…	…	…	…	…	…	…	…	American Robin	1	100+	
…	…	…	…	…	…	…	…	…	Magnolia Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	50-100	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	2	100+	
…	…	…	…	…	…	…	…	…	Black-and-White Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Ovenbird	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	calm	16	clear	None	5:54 AM	Common Yellowthroat	1	0-50	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Winter Wren	1	100+	
…	…	…	…	…	…	…	…	…	Song Sparrow	1	0-50	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Olive-sided Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	50-100	
…	…	…	…	…	…	…	…	…	Ruby-Crowned Kinglet	1	50-100	
…	…	…	…	…	…	…	…	…	Northern Parula	1	50-100	
…	…	…	…	…	…	…	…	…	Hermit Thrush	1	100+	
…	…	…	…	…	…	…	…	…	Blue Jay	1	50-100	
18-Jun-15	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	calm	16	clear	None	6:08 AM	Canada Warbler	1	0-50	
…	…	…	…	…	…	…	…	…	Canada Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Olive-sided Flycatcher	1	0-50	
…	…	…	…	…	…	…	…	…	Blue-Headed Vireo	1	0-50	
…	…	…	…	…	…	…	…	…	American Crow	1	100	
…	…	…	…	…	…	…	…	…	Least Flycatcher	2	50-100	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	0-50	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	calm	16	clear	None	6:08 AM	American Robin	1	100+	
…	…	…	…	…	…	…	…	…	Magnolia Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	American Goldfinch	1	50-100	
…	…	…	…	…	…	…	…	…	Northern Parula	1	50-100	
…	…	…	…	…	…	…	…	…	Veery	1	100+	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	50-100	
…	…	…	…	…	…	…	…	…	Chestnut-Sided Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Pileated Woodpecker	1	100+	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Ovenbird	1	100+	
…	…	…	…	…	…	…	…	…	Chestnut-Sided Warbler	1	100+	
18-Jun-15	20 T 459301 4993312	783	Alders, medium sized hardwoods	calm	16	clear	None	6:28 AM	American Redstart	1	0-50	
…	…	…	…	…	…	…	…	…	American Redstart	1	50-100	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	50-100	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Blue Jay	1	100+	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Ovenbird	1	100+	
…	…	…	…	…	…	…	…	…	Chestnut-Sided Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Canada Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Eastern Wood-Pewee	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 459301 4993312	783	Alders, medium sized hardwoods	calm	16	clear	None	6:28 AM	Black-and-White Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	
…	…	…	…	…	…	…	…	…	Common Raven	1	100+	
…	…	…	…	…	…	…	…	…	Northern Parula	1	100+	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	100+	
18-Jun-15	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	calm	16	clear	None	6:53 AM	Olive-sided Flycatcher	1	50-100	
…	…	…	…	…	…	…	…	…	Eastern Wood-Pewee	1	50-100	
…	…	…	…	…	…	…	…	…	Eastern Wood-Pewee	1	100+	
…	…	…	…	…	…	…	…	…	Canada Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Hermit Thrush	1	100+	
…	…	…	…	…	…	…	…	…	Ovenbird	1	50-100	
…	…	…	…	…	…	…	…	…	Ovenbird	1	100+	
…	…	…	…	…	…	…	…	…	Dark-eyed Junco	1	50-100	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…	…	…	…	…	…	Black-and-White Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Northern Flicker	1	100+	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	50-100	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	50-100	
…	…	…	…	…	…	…	…	…	Magnolia Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Black-Throated Blue Warbler	1	50-100	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 458915 4993714	19-Feb-03	Mature hardwood with regenerating softwood understoru	calm	16	clear	None	7:15 AM	Eastern Wood-Pewee	1	100+	possibly same bird as 785
…	…	…	…	…	…	…	…	…	Ovenbird	1	50-100	
…	…	…	…	…	…	…	…	…	Ovenbird	1	100+	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	50-100	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Magnolia Warbler	2	100+	
…	…	…	…	…	…	…	…	…	Black-and-White Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	0-50	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	100+	
18-Jun-15	20 T 458689 4993334	786	Mixed wood treed swamp	calm	20	clear	None	7:51 AM	Canada Warbler	1	0-50	
…	…	…	…	…	…	…	…	…	Canada Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Canada Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Nashville Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Nashville Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Winter Wren	1	100+	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	50-100	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	100+	
…	…	…	…	…	…	…	…	…	Alder Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Blue Jay	1	100+	
…	…	…	…	…	…	…	…	…	Pileated Woodpecker	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 458689 4993334	786	Mixed wood treed swamp	calm	20	clear	None	7:51 AM	Dark-eyed Junco	2	0-50	Female on Nest
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	100+	
18-Jun-15	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	calm	20	clear	None	7:51 AM	Nashville Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Nashville Warbler	2	100+	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	50-100	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	
…	…	…	…	…	…	…	…	…	Winter Wren	1	100+	
…	…	…	…	…	…	…	…	…	Blackburnian Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Blue-Headed Vireo	1	50-100	
…	…	…	…	…	…	…	…	…	Olive-sided Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Northern Parula	1	100+	
…	…	…	…	…	…	…	…	…	Red-tailed Hawk	1	100+	
…	…	…	…	…	…	…	…	…	Purple Finch	1	100+	
…	…	…	…	…	…	…	…	…	Pileated Woodpecker	1	100+	same bird as last waypoint
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	100+	
…	…	…	…	…	…	…	…	…	Blue Jay	1	100+	
…	…	…	…	…	…	…	…	…	Black-and-White Warbler	1	100+	
…	…	…	…	…	…	…	…	…	American Goldfinch	3	50-100	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	calm	20	clear	None	7:51 AM	Common Yellowthroat	1	0-50	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	50-100	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	0-50	
…	…	…	…	…	…	…	…	…	Least Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Hermit Thrush	2	100+	
…	…	…	…	…	…	…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	50-100	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	1	100+	
…	…	…	…	…	…	…	…	…	Ovenbird	1	100+	
…	…	…	…	…	…	…	…	…	Blue-Headed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Northern Parula	1	50-100	
…	…	…	…	…	…	…	…	…	Purple Finch	1	0-50	
…	…	…	…	…	…	…	…	…	Black-Throated Green Warbler	1	100+	
18-Jun-15	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	calm	20	clear	None	7:51 AM	Olive-sided Flycatcher	1	0-50	
…	…	…	…	…	…	…	…	…	Northern Parula	1	50-100	
…	…	…	…	…	…	…	…	…	Winter Wren	1	50-100	
…	…	…	…	…	…	…	…	…	Blue-Headed Vireo	1	50-100	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Black-and-White Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	2	50-100	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
18-Jun-15	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	calm	20	clear	None	7:51 AM	Blackburnian Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Nashville Warbler	1	100+	
…	…	…	…	…	…	…	…	…	Swamp Sparrow	1	100+	
…	…	…	…	…	…	…	…	…	Dark-eyed Junco	1	50-100	
…	…	…	…	…	…	…	…	…	Palm Warbler	1	100+	
…	…	…	…	…	…	…	…	…	American Goldfinch	1	100+	
18-Jun-15	20 T 458829 4992587	1147	Mixed wood treed swamp	calm	20	clear	None	7:51 AM	Canada Warbler	1	0-50	singing, different birds?
…	…	…	…	…	…	…	…	…	Canada Warbler	1	50-100	
…	…	…	…	…	…	…	…	…	Olive-sided Flycatcher	1	100+	same bird as last waypoint
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	50-100	
…	…	…	…	…	…	…	…	…	Common Yellowthroat	1	100+	
…	…	…	…	…	…	…	…	…	White-Throated Sparrow	2	100+	
…	…	…	…	…	…	…	…	…	Ruby-Crowned Kinglet	1	100+	
…	…	…	…	…	…	…	…	…	Yellow-Bellied Flycatcher	1	100+	
…	…	…	…	…	…	…	…	…	Mourning Dove	1	50-100	
…	…	…	…	…	…	…	…	…	Mourning Dove	1	100+	
…	…	…	…	…	…	…	…	…	Northern Parula	1	50-100	
…	…	…	…	…	…	…	…	…	Red-Eyed Vireo	1	100+	
…	…	…	…	…	…	…	…	…	Nashville Warbler	1	100+	
30-Jun-15	20 T 458736 4992134	31	New regeneration, some medium sized mixed wood. Burnt areas.	10 to 20	19	clear	None	5:15 AM	Ovenbird	1	50-100	
…	…	…	…					…	Nashville Warbler	1	50-100	
…	…	…	…					…	Common Yellowthroat	1	100+	
…	…	…	…					…	Common Nighthawk	1	50-100	
…	…	…	…					…	Common Nighthawk	1	100+	
…	…	…	…					…	American Robin	1	50-100	
…	…	…	…					…	American Robin	1	100+	
…	…	…	…					…	Hermit Thrush	1	0-50	
…	…	…	…					…	Hermit Thrush	2	100+	
…	…	…	…					…	Winter Wren	1	100+	
…	…	…	…					…	Golden-Crowned Kinglet	1	0-50	
…	…	…	…					…	Ruby-Crowned Kinglet	1	50-100	
…	…	…	…					…	White-Throated Sparrow	1	100+	
…	…	…	…					…	Red-tailed Hawk	1	50-100	
…	…	…	…					…	Mourning Dove	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	Red-Eyed Vireo	1	0-50	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
30-Jun-15	20 T 459099 4992265	32	Medium aged hardwood /mixed wood	10 to 20	19	clear	None	5:32 AM	Red-Eyed Vireo	1	50-100	
…	…	…	…					…	Red-Eyed Vireo	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	Black-Throated Green Warbler	1	50-100	
…	…	…	…					…	Black-Throated Green Warbler	1	100+	
…	…	…	…					…	Swamp Sparrow	1	50-100	
…	…	…	…					…	Common Yellowthroat	1	100+	
…	…	…	…					…	Magnolia Warbler	1	100+	
…	…	…	…					…	Yellow-Rumped Warbler	1	100+	
…	…	…	…					…	Hermit Thrush	1	100+	
…	…	…	…					…	Ruby-Crowned Kinglet	1	100+	
…	…	…	…					…	American Redstart	1	0-50	
30-Jun-15	20 T 459226 4992522	33	Cutover, mixed woods, softwood regeneration	10 to 20	19	clear	None	5:47 AM	Least Flycatcher	1	50-100	
…	…	…	…					…	Magnolia Warbler	1	50-100	
…	…	…	…					…	Red-Eyed Vireo	2	50-100	
…	…	…	…					…	Red-Eyed Vireo	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	0-50	
…	…	…	…					…	Yellow-Rumped Warbler	1	50-100	
…	…	…	…					…	White-Throated Sparrow	2	100+	
…	…	…	…					…	Winter Wren	1	100+	
…	…	…	…					…	Yellow-Rumped Warbler	1	100+	
…	…	…	…					…	Dark-eyed Junco	1	0-50	
…	…	…	…					…	Eastern Wood-Pewee	1	100+	
…	…	…	…					…	Northern Parula	1	50-100	
30-Jun-15	20 T 459309 4992809	34	Cutover, mixed woods, softwood regeneration	10 to 20	19	clear	None	6:01 AM	Black-and-White Warbler	1	0-50	
…	…	…	…					…	White-Throated Sparrow	1	100+	
…	…	…	…					…	Red-Eyed Vireo	2	100+	
…	…	…	…					…	Magnolia Warbler	1	50-100	
…	…	…	…					…	Eastern Wood-Pewee	1	100+	
…	…	…	…					…	American Redstart	1	0-50	
…	…	…	…					…	Canada Warbler	1	0-50	
…	…	…	…					…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…					…	Least Flycatcher	1	0-50	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
30-Jun-15	20 T 459309 4992809	34	Cutover, mixed woods, softwood regeneration	10 to 20	19	clear	None	6:01 AM	Common Yellowthroat	1	100+	
…	…	…	…					…	Blue Jay	2	50-100	
…	…	…	…					…	Northern Parula	1	50-100	
30-Jun-15	20 T 459295 4993172	35	Alders, medium sized hardwoods	10 to 20	19	clear	None	6:19 AM	Least Flycatcher	1	0-50	
…	…	…	…					…	Least Flycatcher	1	50-100	
…	…	…	…					…	Magnolia Warbler	1	0-50	
…	…	…	…					…	Veery	1	0-50	
…	…	…	…					…	Cedar Waxwing	2	0-50	
…	…	…	…					…	Northern Parula	1	50-100	
…	…	…	…					…	Ovenbird	1	50-100	
…	…	…	…					…	Red-Eyed Vireo	1	50-100	
…	…	…	…					…	Blue Jay	1	100+	
…	…	…	…					…	American Redstart	1	50-100	
…	…	…	…					…	Common Yellowthroat	1	100+	
30-Jun-15	20 T 459049 4993364	36	Cutover, mixed woods, softwood regeneration	10 to 20	19	clear	None	6:35 AM	Northern Parula	1	0-50	
…	…	…	…					…	Red-Eyed Vireo	1	0-50	
…	…	…	…					…	Red-Eyed Vireo	1	100+	
…	…	…	…					…	Magnolia Warbler	1	50-100	
…	…	…	…					…	Least Flycatcher	1	50-100	
…	…	…	…					…	Ovenbird	1	0-50	
…	…	…	…					…	Ovenbird	1	50-100	
…	…	…	…					…	Black-Throated Green Warbler	1	100+	
…	…	…	…					…	Hermit Thrush	1	0-50	
…	…	…	…					…	Eastern Wood-Pewee	1	100+	
…	…	…	…					…	Olive-sided Flycatcher	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
30-Jun-15	20 T 458915 4993714	28	Mature hardwood with regenerating softwood understoru	10 to 20	19	clear	None	6:56 AM	Black-Throated Green Warbler	1	0-50	
…	…	…	…					…	Ovenbird	1	50-100	
…	…	…	…					…	Ovenbird	1	100+	
…	…	…	…					…	Red-Eyed Vireo	1	100+	
…	…	…	…					…	Brown Creeper	3	0-50	family
…	…	…	…					…	American Robin	2	100+	
…	…	…	…					…	Magnolia Warbler	1	50-100	
…	…	…	…					…	Magnolia Warbler	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	Black-Throated Green Warbler	1	50-100	
…	…	…	…					…	Common Raven	1	100+	
30-Jun-15	20 T 458622 4993521	37	Open bog with intermittent softwood stands	10 to 20	19	clear	None	7:18 AM	Common Yellowthroat	1	50-100	
…	…	…	…					…	Common Yellowthroat	1	100+	
…	…	…	…					…	Yellow-Bellied Flycatcher	1	50-100	
…	…	…	…					…	Cedar Waxwing	1	0-50	
…	…	…	…					…	Canada Warbler	1	50-100	
…	…	…	…					…	Canada Warbler	1	100+	
…	…	…	…					…	Olive-sided Flycatcher	1	100+	
…	…	…	…					…	Palm Warbler	1	50-100	
…	…	…	…					…	White-Throated Sparrow	1	100+	
…	…	…	…					…	Ruby-Crowned Kinglet	1	100+	
…	…	…	…					…	Wilson's Snipe	1	100+	
…	…	…	…					…	Northern Flicker	1	100+	
…	…	…	…					…	Hermit Thrush	1	100+	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
30-Jun-15	20 T 458435 4993279	40	Softwood swamp near bog edge	10 to 20	19	clear	None	7:42 AM	Magnolia Warbler	1	50-100	
…	…	…	…					…	Canada Warbler	2	0-50	Pair
…	…	…	…					…	Common Yellowthroat	1	50-100	
…	…	…	…					…	Yellow-Bellied Flycatcher	1	100+	
…	…	…	…					…	White-Throated Sparrow	1	100+	
…	…	…	…					…	Palm Warbler	1	50-100	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	Ovenbird	1	0-50	
…	…	…	…					…	Brown Creeper	1	50-100	
…	…	…	…					…	Purple Finch	1	100+	
30-Jun-15	20 T 458384 4993059	41	Cutover near mixed woods	10 to 20	19	clear	None	8:05 AM	American Robin	1	100+	
…	…	…	…					…	Red-Eyed Vireo	2	100+	
…	…	…	…					…	Common Yellowthroat	1	0-50	agitated
…	…	…	…					…	Common Yellowthroat	2	50-100	
…	…	…	…					…	Common Yellowthroat	1	100+	
…	…	…	…					…	American Redstart	1	100+	
…	…	…	…					…	Northern Parula	1	100+	
…	…	…	…					…	White-Throated Sparrow	2	100+	
…	…	…	…					…	Common Raven	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	Nashville Warbler	1	50-100	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
30-Jun-15	20 T 458384 4993059	41	Cutover near mixed woods	10 to 20	19	clear	None	8:05 AM	Hermit Thrush	1	100+	
…	…	…	…					…	Song Sparrow	1	50-100	
…	…	…	…					…	Ovenbird	1	100+	
…	…	…	…					…	Black-Throated Green Warbler	1	100+	
…	…	…	…					…	Magnolia Warbler	1	50-100	
30-Jun-15	20 T 458354 4992755	42	Cutover near mixed woods	10 to 20	19	clear	None	8:23 AM	American Redstart	2	0-50	
…	…	…	…					…	American Redstart	1	50-100	
…	…	…	…					…	Veery	1	100+	
…	…	…	…					…	Black-Throated Green Warbler	1	50-100	
…	…	…	…					…	Common Yellowthroat	1	50-100	
…	…	…	…					…	Common Yellowthroat	1	100+	
…	…	…	…					…	Red-Eyed Vireo	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	White-Throated Sparrow	2	0-50	agitated
…	…	…	…					…	White-Throated Sparrow	1	100+	
…	…	…	…					…	American Goldfinch	2	50-100	
…	…	…	…					…	Ovenbird	1	100+	
…	…	…	…					…	Northern Parula	1	50-100	
30-Jun-15	20 T 458661 4992740	44	Mixed wood treed swamp	10 to 20	19	clear	None	8:45 AM	Canada Warbler	2	50-100	
…	…	…	…					…	Canada Warbler	1	100+	
…	…	…	…					…	Black-and-White Warbler	1	50-100	
…	…	…	…					…	Nashville Warbler	2	50-100	
…	…	…	…					…	Alder flycatcher	1	100+	
…	…	…	…					…	Palm Warbler	1	100+	
…	…	…	…					…	Hermit Thrush	1	0-50	
…	…	…	…					…	Hermit Thrush	1	100+	
…	…	…	…					…	Northern Parula	1	50-100	

Date	Coordinates (UTM NAD83)	Transect Number	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Notes
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
30-Jun-15	20 T 458661 4992740	44	Mixed wood treed swamp	10 to 20	19	clear	None	8:45 AM	Common Yellowthroat	2	100+	
…	…	…	…					…	White-Throated Sparrow	1	100+	
…	…	…	…					…	Yellow-Bellied Sapsucker	1	100+	
…	…	…	…					…	Dark-eyed Junco	1	0-50	
…	…	…	…					…	Dark-eyed Junco	1	50-100	
…	…	…	…					…	Olive-sided Flycatcher	1	100+	
…	…	…	…					…	Northern Flicker	1	100+	
…	…	…	…					…	Swamp Sparrow	1	0-50	
…	…	…	…					…	Black-Throated Green Warbler	1	100+	
…	…	…	…					…	Least Flycatcher	1	100+	

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	S-Rank	Number of Times Observed	Number of Individuals Observed
Alder Flycatcher	*Empidonax alnorum*	Not Listed	Not Listed	Not Listed	4	S5B	4	4
American Crow	*Corvus brachyrhynchos*	Not Listed	Not Listed	Not Listed	4	S5	2	2
American Goldfinch	*Spinus tristis*	Not Listed	Not Listed	Not Listed	4	S5	4	7
American Redstart	*Setophaga ruticilla*	Not Listed	Not Listed	Not Listed	4	S5B	9	10
American Robin	*Turdus migratorius*	Not Listed	Not Listed	Not Listed	4	S5B	9	10
Black-and-White Warbler	*Mniotilta varia*	Not Listed	Not Listed	Not Listed	4	S4S5B	16	16
Blackburnian Warbler	*Dendroica fusca*	Not Listed	Not Listed	Not Listed	4	S4B	2	2
Black-capped Chickadee	*Poecile atricapillus*	Not Listed	Not Listed	Not Listed	4	S5	1	1
Black-Throated Blue Warbler	*Dendroica caerulescens*	Not Listed	Not Listed	Not Listed	4	S5B	1	1
Black-Throated Green Warbler	*Dendroica virens*	Not Listed	Not Listed	Not Listed	4	S4S5B	18	19
Blue Jay	*Cyanocitta cristata*	Not Listed	Not Listed	Not Listed	4	S5	6	7
Blue-Headed Vireo	*Vireo solitarius*	Not Listed	Not Listed	Not Listed	4	S5B	6	6
Brown Creeper	*Certhia americana*	Not Listed	Not Listed	Not Listed	4	S5	2	4
Canada Goose	*Branta canadensis*	Not Listed	Not Listed	Not Listed	4	SNAB,S4N	1	1
Canada Warbler	*Wilsonia canadensis*	Not Listed	Endangered	Threatened	1	S3B	15	17
Cedar Waxwing	*Bombycilla cedrorum*	Not Listed	Not Listed	Not Listed	4	S5B	2	3
Chestnut-Sided Warbler	*Dendroica pensylvanica*	Not Listed	Not Listed	Not Listed	4	S5B	5	6
Common Nighthawk	*Chordeiles minor*	Threatened	Threatened	Threatened	1	S3B	3	3
Common Raven	*Corvus corax*	Not Listed	Not Listed	Not Listed	4	S5	3	3
Common Yellowthroat	*Geothlypis trichas*	Not Listed	Not Listed	Not Listed	4	S5B	28	32
Dark-eyed Junco	*Junco hyemalis*	Not Listed	Not Listed	Not Listed	4	S4S5	10	11
Downy Woodpecker	*Picoides pubescens*	Not Listed	Not Listed	Not Listed	4	S5	1	1
Eastern Wood-Pewee	*Contopus virens*	No Status	Vulnerable	Special Concern	3	S3S4B	8	8
Golden-crowned Kinglet	*Regulus satrapa*	Not Listed	Not Listed	Not Listed	3	S4	2	2
Hermit Thrush	*Catharus guttatus*	Not Listed	Not Listed	Not Listed	4	S5B	12	14
Least Flycatcher	*Empidonax minimus*	Not Listed	Not Listed	Not Listed	4	S4B	14	15
Magnolia Warbler	*Dendroica magnolia*	Not Listed	Not Listed	Not Listed	4	S5B	14	15
Mourning Dove	*Zenaida macroura*	Not Listed	Not Listed	Not Listed	4	S5	4	4
Nashville Warbler	*Vermivora ruficapilla*	Not Listed	Not Listed	Not Listed	4	S5B	9	11
Northern Flicker	*Colaptes auratus*	Not Listed	Not Listed	Not Listed	4	S5B	3	3
Northern Parula	*Parula americana*	Not Listed	Not Listed	Not Listed	4	S5B	15	15
Olive-sided Flycatcher	*Contopus cooperi*	Threatened	Threatened	Threatened	1	S3B	9	9
Ovenbird	*Seiurus aurocapilla*	Not Listed	Not Listed	Not Listed	4	S5B	17	17
Palm Warbler	*Dendroica palmarum*	Not Listed	Not Listed	Not Listed	4	S5B	5	5
Pileated Woodpecker	*Dryocopus pileatus*	Not Listed	Not Listed	Not Listed	4	S5	5	5
Purple Finch	*Carpodacus purpureus*	Not Listed	Not Listed	Not Listed	4	S4S5	3	3
Red-Eyed Vireo	*Vireo olivaceus*	Not Listed	Not Listed	Not Listed	4	S5B	21	25
Red-tailed Hawk	*Buteo jamaicensis*	Not Listed	Not Listed	Not at Risk	4	S5	2	2

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	S-Rank	Number of Times Observed	Number of Individuals Observed
Ruby-Crowned Kinglet	*Regulus calendula*	Not Listed	Not Listed	Not Listed	3	S4B	5	5
Song Sparrow	*Melospiza melodia*	Not Listed	Not Listed	Not Listed	4	S5B	3	3
Swamp Sparrow	*Melospiza georgiana*	Not Listed	Not Listed	Not Listed	4	S5B	3	3
Veery	*Catharus fuscescens*	Not Listed	Not Listed	Not Listed	4	S4B	3	3
White-Throated Sparrow	*Zonotrichia albicollis*	Not Listed	Not Listed	Not Listed	4	S5B	21	26
Wilson's Snipe	*Gallinaga delicata*	Not Listed	Not Listed	Not Listed	3	S3S4B	1	1
Winter Wren	*Troglodytes troglodytes*	Not Listed	Not Listed	Not Listed	4	S5B	7	7
Yellow-Bellied Flycatcher	*Empidonax flaviventris*	Not Listed	Not Listed	Not Listed	3	S3S4B	3	3
Yellow-Bellied Sapsucker	*Sphyrapicus varius*	Not Listed	Not Listed	Not Listed	4	S4S5B	10	10
Yellow-Rumped Warbler	*Dendroica coronata*	Not Listed	Not Listed	Not Listed	4	S5B	3	3
								383

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Flyover Height (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
29-Sep-14	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	Calm	15	Clear	None	7:12 AM	Hermit Thrush	1	50-100	
…	…	…	…	…		…	…	…	American Robin	1	0-50	
…	…	…	…	…		…	…	…	American Robin	1	100+	
…	…	…	…	…		…	…	…	Black-capped Chickadee	1	50-100	
…	…	…	…	…		…	…	…	Yellow-rumped Warbler	2	0-50	
…	…	…	…	…		…	…	…	Yellow-rumped Warbler	1	50-100	
…	…	…	…	…		…	…	…	Common Raven	2	50-100	
…	…	…	…	…		…	…	…	Blue Jay	2	0-50	
…	…	…	…	…		…	…	…	Pine Siskin	1	100+	
…	…	…	…	…		…	…	…	Pileated Woodpecker	1	100+	
…	…	…	…	…		…	…	…	Dark-eyed Junco	2	0-50	
…	…	…	…	…		…	…	…	White-throated Sparrow	1	50-100	
…	…	…	…	…		…	…	…	Palm Warbler	2	0-50	
…	…	…	…	…		…	…	…	Swamp Sparrow	2	0-50	
…	20 T 458857 4991810	775	Regneration, 10-15 years old	Calm	15	Clear	None	7:35 AM	Song Sparrow	1	50-100	
…	…	…	…	…		…	…	…	Blue Jay	3	100+	
…	…	…	…	…		…	…	…	White-throated Sparrow	3	0-50	
…	…	…	…	…		…	…	…	White-throated Sparrow	1	50-100	
…	20 T 459122 4991649	776	Regeneration to west. Mixed mid-aged stand to east	Calm	15	Clear	None	7:46 AM	Black-capped Chickadee	3	0-50	
…	#N/A		#N/A	…		…	…	…	American Goldfinch	1	50-100	
…	#N/A		#N/A	…		…	…	…	Blue Jay	1	50-100	
…	20 T 459547 4991774	777	Hardwood/mixed medium aged.	Calm	15	Clear	None	8:00 AM	White-throated Sparrow	1	100+	
…	…	…	…	…		…	…	…	Hermit Thrush	1	50-100	
…	…	…	…	…		…	…	…	Hairy Woodpecker	1	100+	
…	20 T 459641 4992108	778	Medium aged hardwood/mixed	Calm	15	Clear	None	8:16 AM	Fox Sparrow	1	0-50	
…	…	…	…	…		…	…	…	American Robin	1	100+	
…	…	…	…	…		…	…	…	Ruffed Grouse	1	50-100	
…	20 T 459230 4992192	779	Medium aged hardwood /mixed	…		…	…	8:30 AM	Golden-crowned Kinglet	1	50-100	
…	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	20 km/hr N	18	Clear	None	8:45 AM	Dark-eyed Junco	1	0-50	
…	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	20 km/hr N	18	Clear	None	8:48 AM	Blue Jay	1	50-100	
…	…	…	…	…		…	…	…	White-throated Sparrow	1	50-100	
…	20 T 459630 4992851	782	Cutover, mixed woods, softwood regeneration	20 km/hr N	18	Clear	None	8:55 AM	Palm Warbler	5	0-50	
…	…	…	…	…		…	…	…	Blue Jay	1	100+	
…	…	…	…	…		…	…	…	Black-capped Chickadee	3	0-50	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	1	100+	
…	…	…	…	…		…	…	…	Common Yellowthroat	1	0-50	
…	…	…	…	…		…	…	…	American Robin	1	100+	
…	…	…	…	…		…	…	…	Ruby-crowned Kinglet	1	0-50	
…	…	…	…	…		…	…	…	Yellow-rumped Warbler	2	50-100	
…	…	…	…	…		…	…	…	Blue-headed Vireo	1	50-100	
…	…	…	…	…		…	…	…	Swamp Sparrow	1	0-50	
…	…	…	…	…		…	…	…	White-throated Sparrow	2	0-50	
…	…	…	…	…		…	…	…	Black-capped Chickadee	3	50-100	
…	…	…	…	…		…	…	…	American Woodcock	2	0-50	
…	20 T 459301 4993312	783	Alders, medium sized hardwoods	20 km/hr N	18	Clear	None	9:20 AM	Ruffed Grouse	1	0-50	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	50-100	
…	…	…	…	…		…	…	…	Blue Jay	1	100+	
…	20 T 459550 4993491	784	Middle aged to mature mixed wood	25-30 km/hr N	18	Clear	None	9:33 AM	-	-	-	
…	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	18	Clear	None	9:48 AM	White-throated Sparrow	2	0-50	

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Flyover Height (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
…	20 T 458689 4993334	786	Mixed wood treed swamp	25-30 km/hr N	18	Clear	None	10:00 AM	Dark-eyed Junco	1	0-50	
…	…	…	…	…		…	…	…	Dark-eyed Junco	1	50-100	
…	…	…	…	…		…	…	…	White-throated Sparrow	1	0-50	
…	…	…	…	…		…	…	…	White-throated Sparrow	2	50-100	
…	…	…	…	…		…	…	…	American Robin	2	100+	
…	…	…	…	…		…	…	…	Palm Warbler	2	50-100	
…	…	…	…	…		…	…	…	Black-capped Chickadee	3	50-100	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	1	0-50	
…	20 T 458355 4993285	787	Mixed wood treed swamp	25-30 km/hr N	18	Clear	None	10:15 AM	Blue Jay	1	50-100	
…	…	…	…	…		…	…	…	Palm Warbler	1	50-100	
…	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	18	Clear	None	10:25 AM	Black-capped Chickadee	1	50-100	
…	20 T 458939 4993029	789	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	18	Clear	None	10:35 AM	Common Yellowthroat	1	0-50	
…	…	…	…	…		…	…	…	Swamp Sparrow	1	0-50	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	0-50	
…	…	…	…	…		…	…	…	Dark-eyed Junco	2	0-50	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	3	50-100	
…	…	…	…	…		…	…	…	Palm Warbler	2	0-50	
…	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	25-30 km/hr N	18	Clear	None	10:50 AM	-	-	-	
…	20 T 458567 4992534	791	Mixed wood treed swamp	25-30 km/hr N	18	Clear	None	11:00 AM	White-throated Sparrow	1	50-100	
…	…	…	…	…		…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…		…	…	…	Blue Jay	3	100+	
…	…	…	…	…		…	…	…	Hairy Woodpecker	1	50-100	
21-Oct-14	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	25-30 km/hr N	6	Clear	None	7:30 AM	American Robin	2	0-50	flying E-W 50 m high
…	…	…	…	…		…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…		…	…	…	Dark-eyed Junco	1	50-100	
…	…	…	…	…		…	…	…	American Robin	2	100+	
…	…	…	…	…		…	…	…	Evening Grosbeak	1	100+	flying N-S over 100 m high
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	0-50	
…	…	…	…	…		…	…	…	American Crow	2	100+	
21-Oct-14	20 T 458857 4991810	775	Regneration, 10-15 years old	25-30 km/hr N	6	Clear	None	7:43 AM	Pine Siskin	1	100+	flying W, 100+ m high
…	…	…	…	…		…	…	…	Hairy Woodpecker	1	100+	
…	…	…	…	…		…	…	…	Northern Flicker	1	100+	
…	…	…	…	…		…	…	…	American Crow	1	100+	
…	…	…	…	…		…	…	…	American Robin	1	100+	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	50-100	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	100+	
…	…	…	…	…		…	…	…	Common Raven	1	100+	
…	…	…	…	…		…	…	…	Song Sparrow	1	50-100	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	1	50-100	
21-Oct-14	20 T 459122 4991649	776	Regeneration to west. Mixed mid-aged stand to east	25-30 km/hr N	6	Clear	None	7:59 AM	Hairy Woodpecker	1	50-100	
…	…	…	…	…		…	…	…	American Robin	20	100+	flying E 100 m high
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	1	0-50	
…	…	…	…	…		…	…	…	Blue Jay	2	0-50	
…	…	…	…	…		…	…	…	Downy Woodpecker	1	100+	
…	…	…	…	…		…	…	…	Common Grackle	10	100+	flying SW, 100+ m high

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Flyover Height (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
21-Oct-14	20 T 459547 4991774	777	Hardwood/mixed medium aged.	25-30 km/hr N	6	Clear	None	8:39 AM	Purple Finch	1	100+	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	50-100	
…	…	…	…	…		…	…	…	Winter Wren	1	0-50	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	3	0-50	
…	…	…	…	…		…	…	…	Blue Jay	1	50-100	
…	…	…	…	…		…	…	…	Barred Owl	1	0-50	
…	…	…	…	…		…	…	…	American Robin	1	50-100	flying S 50 m high
21-Oct-14	20 T 459641 4992108	778	Medium aged hardwood/mixed	25-30 km/hr N	8	Clear	None	9:03 AM	American Robin	1	100+	
21-Oct-14	20 T 459230 4992192	779	Medium aged hardwood /mixed wood	25-30 km/hr N	8	Clear	None	9:13 AM	Black-capped Chickadee	2	0-50	
…	…	…	…	…		…	…	…	Dark-eyed Junco	6	0-50	
…	…	…	…	…		…	…	…	Blue Jay	1	100+	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	4	0-50	
…	…	…	…	…		…	…	…	Boreal Chickadee	2	0-50	
…	…	…	…	…		…	…	…	Song Sparrow	2	0-50	
…	…	…	…	…		…	…	…	Canada Goose	50	100+	flying W 100 m high
21-Oct-14	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	8	Clear	None	9:27 AM	American Goldfinch	3	100+	
…	…	…	…	…		…	…	…	Blue Jay	1	50-100	
…	…	…	…	…		…	…	…	Pileated Woodpecker	1	0-50	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	100+	
…	…	…	…	…		…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…		…	…	…	Hairy Woodpecker	1	100+	
21-Oct-14	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	8	Clear	None	9:42 AM	Yellow-rumped Warbler	1	0-50	
…	…	…	…	…		…	…	…	Ruby-crowned Kinglet	1	0-50	
…	…	…	…	…		…	…	…	Dark-eyed Junco	1	0-50	
…	…	…	…	…		…	…	…	American Crow	1	100+	
21-Oct-14	20 T 459630 4992851	782	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	8	Clear	None	9:54 AM	Blue Jay	1	100+	
…	…	…	…	…		…	…	…	American Robin	1	0-50	flying overhead, less than 50 m high
…	…	…	…	…		…	…	…	Ruffed Grouse	2	0-50	
21-Oct-14	20 T 459301 4993312	783	Alders, medium sized hardwoods	25-30 km/hr N	8	Clear	None	10:11 AM	Evening Grosbeak	1	50-100	flying west 100 m high
…	…	…	…	…		…	…	…	Black-capped Chickadee	3	0-50	
…	…	…	…	…		…	…	…	Common Raven	1	100+	
…	…	…	…	…		…	…	…	Blue Jay	1	100+	
21-Oct-14	20 T 459550 4993491	784	Middle aged to mature mixed wood	25-30 km/hr N	8	Clear	None	10:14 AM	Downy Woodpecker	1	0-50	
…	…	…	…	…		…	…	…	Evening Grosbeak	3	0-50	flying S 100 m high
…	…	…	…	…		…	…	…	Dark-eyed Junco	3	0-50	
…	…	…	…	…		…	…	…	Black-capped Chickadee	2	0-50	
…	…	…	…	…		…	…	…	Blue Jay	1	0-50	
21-Oct-14	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	8	Clear	None	10:42 AM	American Redstart	1	100+	
…	…	…	…	…		…	…	…	Blue Jay	1	100+	
21-Oct-14	20 T 458689 4993334	786	Mixed wood treed swamp	25-30 km/hr N	8	Clear	None	10:49 AM	Evening Grosbeak	5	100+	flying W 50+ m high

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Flyover Height (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
21-Oct-14	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	8	Clear	None	10:53 AM	Pileated Woodpecker	1	100+	
…	…	…	…	…		…	…	…	Blue Jay	1	50-100	
…	…	…	…	…		…	…	…	American Goldfinch	1	0-50	flying N 50 m high
21-Oct-14	20 T 458681 4992851	790	Cutover near mixed wood treed swamp	25-30 km/hr N	8	Clear	None	11:01 AM	Black-capped Chickadee	2	50-100	
…	…	…	…	…		…	…	…	Golden-crowned Kinglet	1	0-50	
…	…	…	…	…		…	…	…	Evening Grosbeak	2	100+	
…	…	…	…	…		…	…	…	Hermit Thrush	1	50-100	
21-Oct-14	20 T 458939 4993029	789	Cutover, mixed woods, softwood regeneration	25-30 km/hr N	8	Clear	None	11:12 AM	Dark-eyed Junco	1	0-50	
21-Oct-14	20 T 458567 4992534	791	Mixed wood treed swamp	25-30 km/hr N	8	Clear	None	11:33 AM	Golden-crowned Kinglet	1	50-100	
10-Nov-14	20 T 458673 4992078	774	New regeneration, some medium sized mixed wood. Burnt areas.	<10km/h	4	Clear	None	5:03 AM	Golden-crowned Kinglet	2	0-50	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	1	50-100	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	4	0-50	
…	…	…	…	…	…	…	…	…	Pileated Woodpecker	1	100+	
…	…	…	…	…	…	…	…	…	Gray Jay	3	0-50	
…	…	…	…	…	…	…	…	…	Blue Jay	1	0-50	
…	…	…	…	…	…	…	…	…	American Robin	2	50-100	
…	…	…	…	…	…	…	…	…	Pine Siskin	2	50-100	flying S 50 m high
10-Nov-14	20 T 459230 4992192	779	Medium aged hardwood /mixed	<10km/h	4	Clear	None	7:28 AM	American Goldfinch	1	100+	
…	…	…	…	…	…	…	…	…	Common Raven	1	100+	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	1	50-100	
10-Nov-14	20 T 459220 4992499	780	Cutover, mixed woods, softwood regeneration	<10km/h	4	Clear	None	7:41 AM	Blue Jay	1	50-100	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	3	0-50	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	5	0-50	
…	…	…	…	…	…	…	…	…	Downy Woodpecker	1	0-50	
…	…	…	…	…	…	…	…	…	Brown Creeper	1	0-50	
10-Nov-14	20 T 459309 4992808	781	Cutover, mixed woods, softwood regeneration	<10km/h	4	Clear	None	7:50 AM	Black-capped Chickadee	3	50-100	
…	…	…	…	…	…	…	…	…	Blue Jay	1	100+	
10-Nov-14	20 T 459630 4992851	782	Cutover, mixed woods, softwood regeneration	<10km/h	4	Clear	None	7:57 AM	Downy Woodpecker	1	50-100	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	2	100+	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	2	50-100	
…	…	…	…	…	…	…	…	…	Blue Jay	1	100+	
…	…	…	…	…	…	…	…	…	Common Raven	1	100+	
…	…	…	…	…	…	…	…	…	American Crow	1	50-100	
10-Nov-14	20 T 459301 4993312	783	Alders, medium sized hardwoods	<10km/h	4	Clear	None	8:21 AM	American Crow	2	100+	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	4	0-50	
…	…	…	…	…	…	…	…	…	Blue Jay	2	0-50	
10-Nov-14	20 T 458978 4993382	785	Cutover, mixed woods, softwood regeneration	<10km/h	4	Clear	None	8:38 AM	American Goldfinch	3	0-50	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	2	0-50	
…	…	…	…	…	…	…	…	…	Brown Creeper	1	0-50	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	2	0-50	
10-Nov-14	20 T 458915 4993714	1146	Mature hardwood with regenerating softwood understoru	<10km/h	4	Clear	None	9:03 AM	American Goldfinch	2	50-100	
…	…	…	…	…	…	…	…	…	Pine Siskin	2	0-50	
…	…	…	…	…	…	…	…	…	Black-capped Chickadee	3	50-100	
…	…	…	…	…	…	…	…	…	Blue Jay	2	100+	

Date	Coordinates (UTM NAD83)	Transect Start Point	Habitat	Conditions				Time	Common Name	Number Observed	Distance to Observer (m)	Flyover Height (m)
				Wind Speed and Direction	Temperature °C	Sky	Precipitation					
10-Nov-14	20 T 458689 4993334	786	Mixed wood treed swamp	<10km/h	4	Clear	None	9:27 AM	Blue Jay	1	50-100	
…	…	…	…	…	…	…	…	…	American Crow	2	100+	
10-Nov-14	20 T 458632 4993144	788	Cutover, mixed woods, softwood regeneration	<10km/h	4	Clear	None	9:34 AM	-	-	-	
10-Nov-14	20 T 458939 4993029	789	Cutover, mixed woods, softwood regeneration	<10km/h	4	Clear	None	9:48 AM	Black-capped Chickadee	2	50-100	
…	…	…	…	…	…	…	…	…	Downy Woodpecker	1	50-100	
…	…	…	…	…	…	…	…	…	American Goldfinch	1	0-50	
10-Nov-14	20 T 458681 4992851	790	Cutover near mixed wood treed	<10km/h	4	Clear	None	9:56 AM	-	-	-	
10-Nov-14	20 T 458829 4992587	1147	Mixed wood treed swamp	<10km/h	4	Clear	None	10:15 AM	Black-capped Chickadee	2	0-50	
…	…	…	…	…	…	…	…	…	Golden-crowned Kinglet	1	0-50	
…	…	…	…	…	…	…	…	…	Hairy Woodpecker	1	0-50	
…	…	…	…	…	…	…	…	…	Barred Owl	1	100+	

Table F8: Summarized Fall Bird Survey Results, Hardwood Lands Community Wind Project ***Project # 14-5169***

Common Name	Scientific Name	SARA Status	NSESA Status	COSEWIC Status	NSDNR Status	S-Rank	Number of Times Observed	Number of Individuals Observed
American Crow	*Corvus brachyrhynchos*	Not Listed	Not Listed	Not Listed	4	S5	6	9
American Goldfinch	*Spinus tristis*	Not Listed	Not Listed	Not Listed	4	S5	7	12
American Redstart	*Setophaga ruticilla*	Not Listed	Not Listed	Not Listed	4	S5B	1	1
American Robin	*Turdus migratorius*	Not Listed	Not Listed	Not Listed	4	S5B	13	36
American Woodcock	*Scolopax minor*	Not Listed	Not Listed	Not Listed	4	S4S5B	1	2
Barred Owl	*Strix varia*	Not Listed	Not Listed	Not Listed	4	S5	2	2
Black-capped Chickadee	*Poecile atricapillus*	Not Listed	Not Listed	Not Listed	4	S5	26	64
Blue Jay	*Cyanocitta cristata*	Not Listed	Not Listed	Not Listed	4	S5	24	32
Blue-headed Vireo	*Vireo solitarius*	Not Listed	Not Listed	Not Listed	4	S5B	1	1
Boreal Chickadee	*Poecile hudsonicus*	Not Listed	Not Listed	Not Listed	3	S3	1	2
Brown Creeper	*Certhia americana*	Not Listed	Not Listed	Not Listed	4	S5	2	2
Canada Goose	*Branta canadensis*	Not Listed	Not Listed	Not Listed	4	SNAB,S4N	1	50
Common Grackle	*Quiscalus quiscula*	Not Listed	Not Listed	Not Listed	4	S5B	1	10
Common Raven	*Corvus corax*	Not Listed	Not Listed	Not Listed	4	S5	5	6
Common Yellowthroat	*Geothlypis trichas*	Not Listed	Not Listed	Not Listed	4	S5B	2	2
Dark-eyed Junco	*Junco hyemalis*	Not Listed	Not Listed	Not Listed	4	S4S5	13	22
Downy Woodpecker	*Picoides pubescens*	Not Listed	Not Listed	Not Listed	4	S5	5	5
Evening Grosbeak	*Coccothraustes vespertinus*	Not Listed	Not Listed	Not Listed	4	S4B,S5N	5	12
Fox Sparrow	*Passerella iliaca*	Not Listed	Not Listed	Not Listed	4	S3S4B	1	1
Golden-crowned Kinglet	*Regulus satrapa*	Not Listed	Not Listed	Not Listed	3	S4	17	29
Gray Jay	*Perisoreus canadensis*	Not Listed	Not Listed	Not Listed	3	S3S4	1	3
Hairy Woodpecker	*Picoides villosus*	Not Listed	Not Listed	Not Listed	4	S5	6	6
Hermit Thrush	*Catharus guttatus*	Not Listed	Not Listed	Not Listed	4	S5B	3	3
Northern Flicker	*Colaptes auratus*	Not Listed	Not Listed	Not Listed	4	S5B	1	1
Palm Warbler	*Dendroica palmarum*	Not Listed	Not Listed	Not Listed	4	S5B	5	12
Pileated Woodpecker	*Dryocopus pileatus*	Not Listed	Not Listed	Not Listed	4	S5	4	4
Pine Siskin	*Spinus pinus*	Not Listed	Not Listed	Not Listed	3	S3S4B, S5N	4	6
Purple Finch	*Carpodacus purpureus*	Not Listed	Not Listed	Not Listed	4	S4S5	1	1
Ruby-crowned Kinglet	*Regulus calendula*	Not Listed	Not Listed	Not Listed	3	S4B	2	2
Ruffed Grouse	*Bonasa umbellus*	Not Listed	Not Listed	Not Listed	4	S4S5	3	4
Song Sparrow	*Melospiza melodia*	Not Listed	Not Listed	Not Listed	4	S5B	3	4
Swamp Sparrow	*Melospiza georgiana*	Not Listed	Not Listed	Not Listed	4	S5B	3	4
White-throated Sparrow	*Zonotrichia albicollis*	Not Listed	Not Listed	Not Listed	4	S5B	10	15
Winter Wren	*Troglodytes troglodytes*	Not Listed	Not Listed	Not Listed	4	S5B	1	1
Yellow-rumped Warbler	*Dendroica coronata*	Not Listed	Not Listed	Not Listed	4	S5B	4	6

APPENDIX G
CANADA WARBLER MONITORING PLAN

July 16, 2015

Mr. Mitch Underhay
Scotian Windfields Inc.
108F Trider Crescent
Dartmouth, NS B3B 1R6

Dear Mr. Underhay,

Re: Canada Warbler Behavioural Study
Hardwood Lands Community Wind Project

Scotian WindFields Inc., Scotian Wind Inc., and WEB Wind Energy North America Inc. have proposed to develop a 6.0 megawatt three-turbine wind project in the community of Hardwood Lands, Nova Scotia (the Project). The proposed Project site is approximately 6.7 km northeast of the community of Nine Mile River, Nova Scotia in the Municipality of the District of East Hants.

During field studies conducted as part of the Environmental Assessment (EA), the presence of Canada Warbler (*Cardellina Canadensis)* was observed in wetlands near the proposed turbines. Through subsequent consultations with appropriate government agencies the Proponents are proposing to collect additional data with respect to Canada Warbler behaviour at the Project site to further the understanding of this endangered species' habitat affiliations and response to disturbance.

In response, the Proponents have engaged Strum Consulting to develop and implement a plan to study Canada Warbler behaviour at the Project site (the Study).

BACKGROUND

Canada Warbler Ecology

The Canada Warbler is a neotropical migrant passerine known to breed throughout Nova Scotia (MBBA 2012). Considered one of the scarcest of the wood warblers (Erskine 1992), the Canada Warbler is a known associate of habitats featuring a dense shrub layer with a structurally complex forest floor (COSEWIC 2008), such as that found in poorly drained shrub/treed swamps and riparian areas (BAM 2013). Canada Warblers are territorial (MBBA 2008) and maintain a breeding territory of up to 2 hectares around an active nest (Reitsma *et al*. 2008). Breeding bird survey results indicate that the species breeds in the Maritime Provinces from early June to mid-July [MBBA n.d. (a)], although anecdotal evidence suggests that singing in successfully mated males declines considerably by early June.

Long-term data suggest the Canada Warbler population decreased in Nova Scotia 2.82% per year during the period 1970 - 2011 (EC 2013). Although still relatively common in the province (EBird 2013), the magnitude of the apparent decline has prompted the listing of Canada Warbler as 'Endangered' under the Nova Scotia *Endangered Species Act* (2013).

Environmental Assessment Survey Results

Strum completed detailed studies of existing environmental conditions at the Project site as part of the EA process. These studies identified multiple areas of wetland habitat throughout the Project site and confirmed that Canada Warbler occurs in the general vicinity of the Project site. Canada Warbler was observed at the Project site during spring migration and the breeding season at the locations indicated in Drawing 1 (attached). Observations made during the surveys indicate that a few of the birds identified were exhibiting confirmed breeding behavior. In addition, ideal Canada Warbler habitat was also identified in land bordering proposed turbine locations. The habitat to which the sightings occurred, in addition to the other areas of suitable habitat identified, consist of balsam fir and black spruce dominated treed swamps, with an average to dense understory of mountain holly shrubs consistent with known habitat requirements for this species.

Prior to submitting the EA, a Project siting approach was completed to limit impact to Canada Warbler habitat. The Project site was selected because of the proximity to 3-phase power lines, the distance to habitable dwellings (1.5 km) and steady winds. In addition the site was selected for the relatively low impact the infrastructure will have due to the amount of previously cleared land. A habitat cover map was developed based on field observations in combination with aerial imagery, the Wet Areas Mapping database and the Significant Species and Habitats database (Drawing 2, attached). Land surrounding proposed Project infrastructure predominantly consists of clear cut and regenerating softwood stands.

Minimal clearing will be required to accommodate the Project and existing roads will be utilized wherever possible.

STUDY METHODOLOGY

Canada Warbler presence/absence and behaviour at the Project site will be determined through the completion of targeted area search surveys completed by an expert birder with an in-depth knowledge of Canada Warbler breeding ecology. The area search methodology consists of visiting priority habitats and identifying all birds observed/heard; in this case, surveys will focus exclusively on Canada Warbler. It is expected that most individuals will be located using auditory cues (singing, call notes). Once located, all individuals will be observed to obtain information on behaviour and breeding evidence.

Area searches will be conducted across the Project site based on the availability of appropriate habitat, including locations where Canada Warbler was previously observed. These surveys will target wetland habitats exhibiting attractive characteristics to breeding Canada Warblers, particularly treed/shrub swamps with a dense shrub layer understory, as identified during pre-construction wetland assessments.

In addition to the wetlands containing Canada Warblers identified during the EA process, control locations will be identified and utilized as part of the Study. The control locations have been identified on lands to the west of Blois Road, in preferred breeding habitats for Canada Warblers based on local knowledge of the expert birder (Drawing 3, attached). Replicate area searches will be conducted at the control locations during similar timing windows as the on-site surveys.

Area search surveys will be conducted as early as possible following sunrise (up to four hours after sunrise) to encompass the peak period of singing for breeding passerines. However, surveys may be extended in the event that an individual(s) is being actively observed after the four hour period, or there is reason to expect that there is a high likelihood that continuing the survey will result in additional Canada Warbler observations.

The 2015 surveys were completed during two separate site visits in the second and third week of July and will build on the information gathered during the spring and breeding surveys completed that same year. Due to reduced audible cues (*i.e.* singing males) during this time period, data from the 2015 spring and breeding season surveys was utilized to pre-identify suitable monitoring locations. Confirmed Canada Warbler sightings were made at all monitoring locations (on-site and control site) during the July surveys, and behavioral observations were recorded.

The post turbine installation surveys will be completed in late-May and early to mid-June 2016, since males with early successful nests may become less territorial and sing less after mid-June (Demko 2012). Data retrieved during the spring, breeding, and July 2015 surveys, together with the post construction 2016 survey results will be processed and interpreted. This design will permit a before/after, control/impact comparison of potential turbine effects on Canada Warbler distribution and behavior.

REPORTING

Study results including, but not necessarily limited to, mapping of Canada Warbler observation locations and an interpretation of behavioral observations, will be provided to NSE and NSDNR at the culmination of the Study.

The proposed Study will use established protocols to evaluate the behavioral ecology of Canada Warbler at the Project site. It is expected that Study results will contribute to the body of knowledge concerning this species and will help guide future management and conservation initiatives.

If you have any questions, please contact us.

Thank you,

Andy Walter, BSc.
Project Manager
awalter@strum.com

REFERENCES

BAM (Boreal Avian Modelling Project). 2013. Canada Warbler *Cardellina canadensis*. Retrieved from http://www.borealbirds.ca/avian_db/accounts.php/Cardellina+canadensis.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2008. COSEWIC Assessment and Status Report on the Canada Warbler *Wilsonia canadensis* in Canada. Ottawa.

Demko, A. 2012. Temporal and individual song variation in the Canada Warbler (*Cardellina canadensis*). M.Sc. Thesis, Department of Biology, Dalhousie University. 114 pp.

EBird Canada. 2013. Explore Data – Canada Warbler. Retrieved from http://ebird.org/ebird/canada/map/canwar?neg=true&env.minX=-69.46894758239284&env.minY=42.90742259885286&env.maxX=-54.46162336364284&env.maxY=47.43483809072262&zh=true&gp=true&ev=Z&mr=on&bmo=5&em o=7&yr=cur.

EC (Environment Canada). 2013. North American Breeding Bird Survey – Canadian Trends Website, data version 2011. Retrieved from http://www.ec.gc.ca/ron-bbs/P005/A001/?lang=e&m=s&r=CAWA&p=L&t=11950.

Erskine, A.J. 1992. Atlas of the Breeding Birds of the Maritime Provinces. Nimbus Publishing and the Nova Scotia Museum. 286 pp.

MBBA (Maritime Breeding Bird Atlas). 2008. Atlassing for Species at Risk in the Maritime Provinces, 2nd Edition. 33 pp.

MBBA (Maritime Breeding Bird Atlas). 2012. Retrieved from http://www.mba-aom.ca/jsp/map.jsp?lang=en.

MBBA (Maritime Breeding Bird Atlas). Undated. Breeding dates. Retrieved from http://www.mba-aom.ca/english/breeding_dates.pdf.

Reitsma, L.R., Hallworth, M.T., and P.M. Benham. 2008. Does age influence territory size, habitat selection, and reproductive success of male Canada Warblers in central New Hampshire? *The Wilson Journal of Ornithology* 120: 446-454.

N

Blois Rd

PID 45366630
Atlantic Star Forestry Ltd.

PID 45188810
Atlantic Star Forestry Ltd.

PID 45271939
Everett & Marilyn Clarke

PID 45366648
Atlantic Star Forestry Ltd.

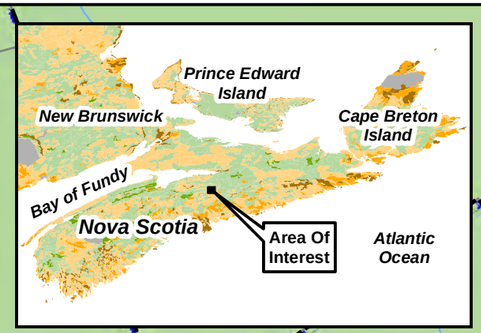
PID 45101128
Elmsdale Lumber Co. Ltd.

PID 45119344
Atlantic Star Forestry Ltd.

PID 45289675
Brian Leahy

PID 45271939
Everett & Marilyn Clarke

Indian Brook
Native Reserve 14



0 100 200 300 400 500 Metres

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.
3. GPS Data Collected is Typically to +/-5m Accuracy.

Legend:

- Proposed Turbine
- *Approximate Canada Warbler Sighting Locations*
- Project Site Boundary
- Property Boundary
- Field Identified Watercourse
- Field Identified Drainage Channel
- Field Identified Wetland Boundary
- Approximate Wetland Boundary
- Wetland Habitat
- Wetland: Clear Cut
- Wetland: Canada Warbler Habitat
- Wetland: Treed Swamp
- 100m Turbine Buffer
- Building
- Native Reserve
- Public Roads
- Access Roads / Trails
- Existing Transmission Lines
- Mapped Stream
- Mapped Indefinite Stream
- Water Bodies
- Cleared Area

Hardwood Lands Community Wind Project - Canada Warbler Sighting Locations

Strum 20 YEARS Taking Charge CONSULTING

Date: July 2015	Project #: 14-5169
Scale: 1:7,000	Drawing #: 1
Drawn By: H. Serhan	
Checked By: A. Walter	

N

PID 45271939
Everett & Marilyn Clarke

PID 45188810
Atlantic Star Forestry Ltd.

Blois Rd

PID 45366630
Atlantic Star Forestry Ltd.

PID 45366648
Atlantic Star Forestry Ltd.

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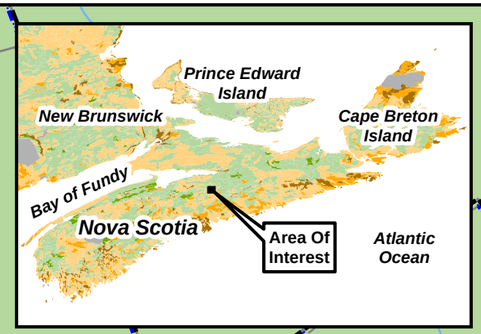
Elmsdale Lumber Co. Ltd.

PID 45119344
Atlantic Star Forestry Ltd.

PID 45289675
Brian Leahy

PID 45271939
Everett & Marilyn Clarke

Indian Brook Native Reserve 14



0 100 200 300 400 500 Metres

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre. Habitat Cover is based on Google & Bing Satellite Imagery Dated 2014.
2. Projection: NAD83(CSRS), UTM Zone 20 North.

Legend:

- Proposed Turbine
- Project Site Boundary
- Property Boundary
- 100m Turbine Buffer
- Native Reserve
- Public Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream

Habitat Cover

- Clear Cut
- Mature Hardwood Forest
- Mixedwood Forest
- Regen Softwood Stand
- Softwood Forest

Hardwood Lands Community Wind Project - Habitat Cover

Strum Consulting — 20 YEARS Taking Charge

Date: July 2015	Project #: 14-5169
Scale: 1:7,000	Drawing #: 2
Drawn By: H. Serhan	
Checked By: A. Walter	

N

PID 45188810
Atlantic Star Forestry Ltd.

PID 45271939
Everett & Marilyn Clarke

Blois Rd

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Atlantic Star Forestry Ltd.

PID 45366648
Atlantic Star Forestry Ltd.

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PID 45289675
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PID 45271939
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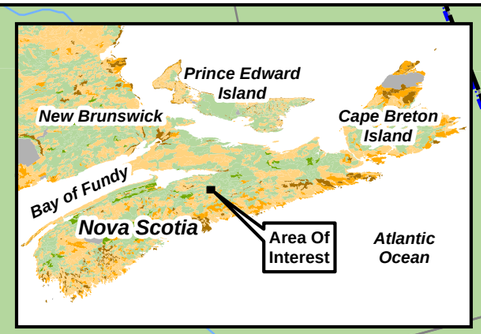

0 100 200 300 400 500 Metres

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.

Legend:

- Proposed Turbine
- Control Site Boundary
- Project Site Boundary
- Property Boundary
- 100m Turbine Buffer
- Native Reserve
- Public Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream

Hardwood Lands Community Wind Project - Control Site Location

Strum 20 YEARS Taking Charge CONSULTING

Date: July 2015	Project #: 14-5169
Scale: 1:7,000	Drawing #: 3
Drawn By: H. Serhan	
Checked By: A. Walter	

August 19, 2015

Mr. Mitch Underhay
Scotian WindFields Inc.
108F Trider Crescent
Dartmouth, NS B3B 1R6

Dear Mr. Underhay,

Re: Canada Warbler Behavioural Study: Preconstruction Survey Results
Hardwood Lands Community Wind Project

Scotian WindFields Inc., Scotian Wind Inc., and WEB Wind Energy North America Inc. have proposed to develop a 6.0 megawatt three-turbine wind project in the community of Hardwood Lands, Nova Scotia (the Project). The proposed Project site is approximately 6.7 km northeast of the community of Nine Mile River, Nova Scotia in the Municipality of the District of East Hants.

During field studies conducted as part of the Environmental Assessment (EA), the presence of Canada Warbler (*Cardellina Canadensis)* was observed in wetlands adjacent to Project infrastructure (turbines and access roads). Through subsequent consultations with appropriate government agencies, the Proponents were requested to collect additional data with respect to Canada Warbler behaviour at the Project site to further the understanding of this endangered species' habitat affiliations and response to disturbance.

BACKGROUND

Canada Warbler Ecology

The Canada Warbler is a neotropical migrant passerine known to breed throughout Nova Scotia (MBBA 2012). Considered one of the scarcest of the wood warblers (Erskine 1992), the Canada Warbler is a known associate of habitats featuring a dense shrub layer with a structurally complex forest floor (COSEWIC 2008), such as that found in poorly drained shrub/treed swamps and riparian areas (BAM 2013). Canada Warblers are territorial (MBBA 2008) and maintain a breeding territory of up to two hectares around an active nest (Reitsma *et al*. 2008). Breeding bird survey results indicate that the species breeds in the Maritime Provinces from early June to mid-July [MBBA n.d. (a)], although anecdotal evidence suggests that singing in successfully mated males declines considerably by early June.

Long-term data suggest the Canada Warbler population decreased in Nova Scotia 2.82% per year during the period 1970 - 2011 (EC 2013). Although still relatively common in the province (EBird 2013), the magnitude of the apparent decline has prompted the listing of Canada Warbler as 'Endangered' under the Nova Scotia *Endangered Species Act* (2013).

Environmental Assessment Survey Results

Strum completed detailed studies of existing environmental conditions at the Project site as part of the EA process. These studies identified multiple areas of wetland habitat throughout the Project site and confirmed that Canada Warbler exists within some of these habitats. Canada Warbler was observed at the Project site during spring migration and the breeding season at the locations indicated in Drawing 1 (attached). Observations made during the surveys indicate that a few of the birds identified were exhibiting confirmed breeding behavior. In addition, ideal Canada Warbler habitat was also identified in land bordering proposed Project infrastructure. The habitat to which the sightings occurred, in addition to the other areas of suitable habitat identified, consist of balsam fir and black spruce dominated treed swamps, with an average to dense understory of mountain holly shrubs consistent with known habitat requirements for this species.

Prior to submitting the EA, a Project siting approach was completed for Project infrastructure. Siting locations for Project infrastructure was selected for the following reasons:

- proximity to 3-phase power lines;
- the distance to habitable dwellings (1.5 km);
- steady winds; and
- located on previously disturbed land (i.e. clear cut and existing road network)

A habitat cover map was developed based on field observations in combination with aerial imagery, the Wet Areas Mapping database and the Significant Species and Habitats database (Drawing 2, attached). Land surrounding proposed Project infrastructure predominantly consists of clear cut and regenerating softwood stands.

Minimal clearing will be required to accommodate the Project, and existing roads will be utilized wherever possible.

STUDY METHODOLOGY

Pre-construction Canada Warbler presence/absence and behaviour at the Project site was determined through the completion of targeted area search surveys completed by an expert birder with an in-depth knowledge of Canada Warbler breeding ecology. The area search methodology consisted of visiting priority habitats, specifically targeted for Canada Warbler, within the Project site boundaries (Drawing 1, attached) and at Control sites. The Control sites are located on the western side of Blois Road in similar habitat to that existing in the Project site (Drawing 3, attached). Priority habitat for surveying was identified during the EA related studies in late May and June 2015 and included wetlands exhibiting suitable habitat characteristics for breeding Canada Warblers, particularly treed/shrub swamps with a dense shrub layer understory.

Area search surveys were conducted within four hours of sunrise to encompass the peak period of singing for breeding passerines.

Survey timing was as follows:

- May 21, 2015 – EA related Project site surveys
- June 18, 2015 - EA related Project site surveys
- July 9, 2015 – first pre-construction Project site survey
- July 17, 2015 – second pre-construction Project site survey
- July 11, 2015 – first pre-construction Control site survey
- July 18, 2015 – second pre-construction Control site survey

The May and June 2015 surveys resulted in the initial identification of Canada Warblers and preferred habitat at the Project site as part of the EA related studies. The Canada Warbler sighting locations and preferred habitat identified during these events were targeted during the July surveys, and breeding activity and behaviour was evaluated.

Most individuals were located using auditory cues (singing, call notes). Once located, all individuals were observed to obtain information on behaviour and breeding evidence. Breeding status was determined in accordance with MBBA Breeding Evidence Coding Sheet [MBBA n.d. (b)]. An explanation of the categories is provided in Table 1.

Table 1: Breeding Evidence Categories [MBBA n.d. (b)]

POSSIBLE	
H	Species observed in its breeding season in suitable nesting habitat
S	Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season
PROBABLE	
P	Pair observed in suitable nesting habitat in nesting season
T	Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during its breeding season.
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation
V	Visiting probable nest site
A	Agitated behaviour or anxiety calls of an adult
B	Brood Patch on adult female or cloacal protuberance on adult male
N	Nest-building or excavation of nest hole by wrens and woodpeckers
CONFIRMED	
NB	Nest building or carrying nest materials, for all species except wrens and woodpeckers
DD	Distraction display or injury feigning
NU	Used nest or egg shells found (occupied or laid within the period of the survey)
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight

AE	Adult leaving or entering nest sites in circumstances indicating occupied nest
FS	Adult carrying fecal sac
CF	Adult carrying food for young
NE	Nest containing eggs
NY	Nest with young seen or heard

RESULTS

Results are summarized in Tables 2 and 3, with observation locations shown on Drawings 1 and 3 (attached). Breeding statuses were selected from the breeding evidence categories listed in Table 1 which best correspond to the observations documented during the July surveys.

Table 2: Canada Warbler Survey Results – Project Site

Survey Location	Habitat Description	Observations	Breeding Status[1]
CW #1 459341 4992642	Regenerating softwood with lots of deadfall.	• 1 male singing continuously (July 9). Same male singing for over a month. No female present. • No Canada Warbler detected (July 17). Possible unsuitable habitat led to unsuccessful breeding.	**Probable:** T = same male singing in the same location for over month
CW #2 459325 4992903	Shrub swamp in mixedwood forest.	• 1 male responded to playback (July 9). Neighbouring male began to sing to the north. No sign of female but sporadic singing in response to playback and presence for over a month are probable signs for attempt on breeding. • No Canada Warbler detected (July 17).	**Probable:** T = same male singing in the same location for over month
CW #3 459225 4992914	Softwood forest with regenerating shrubs and lots of deadfall.	• 1 male singing, aggressive response to playback (July 9). May be same bird as CW2. 1 male singing across the road. Possibly carrying food. One male singing on west side of road during breeding surveys, could have fledged young on the move. • 1 pair, slightly agitated (July 17).	**Probable:** A = agitated behavior P = pair observed
CW #4 458739 4993436	Mountain holly swamp in mixed conifer forest.	• 1 male singing sporadically upon arrival (July 9). Neighbour heard to the east. 1 male approached following playback, chipped and sang sporadically. No sign of female but behaviour indicates possible pairing. • 1 male chipping softly in response to playback (July 17). Female arrived. Both slightly agitated.	**Probable:** P = pair A = agitated behaviour

Survey Location	Habitat Description	Observations	Breeding Status[1]
CW #5 458764 4993625	Softwood forest with regenerating shrubs and lots of deadfall.	• 1 male singing (July 9). Has been singing at this location for over a month. No signs of female. • 1 male singing continuously (July 17). 1 male counter singing to the SW. No signs of female. Male has been singing at his location for over a month.	**Probable:** T = same male singing in the same location for over month
CW #6 458628 4993362	Mountain holly swamp in mixed conifer forest.	• 1 Canada Warbler (sex not confirmed) chipping softly (July 9). Chipping bird refused to sing. Sounded soft for a male. 1 male singing in response to playback in the northeast. Male singing at this location for a month. • No Canada Warbler detected (July 17). 3 males were heard at this location in June.	**Probable:** T = same male singing in the same location for over month
CW #7 458493 4993235	Mountain holly swamp in mixed conifer forest.	• 1 pair chipping on arrival, male agitated (July 9). Probably breeders. • 1 pair agitated (July 17). 1 male singing 100 m to the south. Male carrying food closer to swamp. 2 males counter singing to the south. 2 males were singing at this location on June 30.	**Confirmed:** CF = adult carrying food
CW #8 458474 4992861	Young hardwood forest.	• 1 pair very agitated (July 9). Possible young nearby. A pair was sighted 110 m away the previous week during breeding survey. Possibly same pair. Young could be fledged and moved to this location. • 1 male responded to playback (July 17). Female present as well. Both agitated. Possible fledged young.	**Probable:** P = pair observed A = agitated behaviour
CW #9 458769 4992683	Mountain holly swamp in mixed conifer forest with lots of deadfall.	• 1 male agitated, chipping aggressively at Gray Jay (July 9). Male chipping – probably breeder. Up to 3 males have been heard at this location during breeding surveys. Pair observed 113 m to the southeast during breeding surveys. At least one pair breeding at this location, possibly more. • 1 male carrying food (July 17). Returned following playback with beak full. Nest probably close.	**Confirmed:** CF = adult carrying food

Survey Location	Habitat Description	Observations	Breeding Status[1]
CW #10 458687 4992590	Mountain holly swamp in mixed conifer forest with lots of deadfall.	• 1 male singing in response to playback (July 9). Neighbour singing to the south, at least 2, possibly 3 males in swamp. No evidence of female but all males behaving as if mated. • 1 pair (July 17). Female appeared to be foraging intensely.	**Probable:** P = pair observed
CW #11 458537 4992563	Mountain holly swamp in mixed conifer forest.	• 1 male singing sporadically in response to playback (July 9).	**Possible:** S = singing male

[1]Based on MBBA breeding evidence categories

A summary of the observations during the preconstruction Project site surveys are as follows:

- Eighteen male Canada Warblers were observed in suitable breeding habitat during the July 9, 2015 survey.
- Twelve male Canada Warblers were found in suitable breeding habitat during the July 17, 2015 survey.
- Six pairs were identified on-site, two of which were carrying food on July 17; therefore breeding is confirmed at CW#7 and CW#9.
- Several other males displayed behaviour suggesting that they were paired with a female.

Table 3: Canada Warbler Survey Results – Control Site

Survey Location	Habitat Description	Observations	Breeding Status[1]
CW #1 457969 4993524	Shrub swamp in mixedwood forest with lots of deadfall.	• 1 male agitated (July 11). Male was singing continuously until a couple of weeks prior, became more sporadic, then agitated chip, and now no longer singing. Possibly paired up late. No sure sign of female. • No Canada Warbler detected (July 18).	**Probable:** A = agitated behaviour
CW #2 457652 4993391	Mixedwood forest along a brook.	• 1 male chipped aggressively then sang a few times in response to playback before disappearing (July 11). Male appeared to be losing breeding plumage. Male was singing from roughly same area during breeding surveys. • No Canada Warbler detected (July 18).	**Probable:** A = agitated behaviour T = same male singing in the same location for over month
CW #3 457259 4993517	Young softwood forest.	• 1 male responded to playback from a distance by singing softly once or twice (July 11). 1 pair agitated as approaching thick wet area. Holly swamp ~ 150 m away. 1 male singing to the west (July 18).	**Probable:** P = pair observed A = agitated behaviour

Survey Location	Habitat Description	Observations	Breeding Status[1]
CW # 4 457113 4993601	Mountain holly swamp in mixedwood forest.	• 1 male singing sporadically in response to playback (July 11). Agitated. CW3 began to counter sing. No sign of female, but behaviour suggests pairing. 1 male singing sporadically, jumping around (July 18). Possibly lost nest.	**Probable:** A = agitated behaviour
CW #5 456979 4993316	Shrub swamp in young mixedwood forest.	• 1 male very agitated, sang softly once then chipped aggressively (July 11). No sign of female but behaving as if paired. Agitated pair was spotted at this location on July 1. • 1 male chipping and singing (July 18).	**Probable:** A = agitated behaviour
CW #6 457141 4993068	Canada holly swamp in mixedwood forest.	• 1 male singing softly and sporadically (July 11). Agitated pair was present during July 1 survey. Female may be laying low on nest. • 1 male singing softly (July 18). 1 male chipping within 50 m. Both sang and chipped in response to playback.	**Probable:** T = same male singing in the same location for both monitoring dates

[1]Based on MBBA breeding evidence categories

A summary of the observations during the control site surveys are as follows:

- Seven male Canada Warblers were observed during the July 11, 2015 survey.
- Five male Canada Warblers were observed during the July 18, 2015 survey.
- One pair of Canada Warblers was observed during the July 11, 2015 survey; however breeding could not be confirmed at this location.

Surveys will be completed at the same locations during appropriate timing windows once the Project is operational, and an interpretation and comparison of the pre and post construction observations will be provided. Potential changes to Canada Warbler presence/absence and behaviour will be evaluated.

CLOSURE

This report was prepared by Megan Henley, BSc., Environmental Specialist and reviewed by Shawn Duncan, BSc., Vice President. Should additional information become available, Strum requests that this information be brought to our attention immediately so that we can re-assess the conclusions presented in this report.

This Report and any use of the Report is subject to the terms herein (see attached Statement of Qualifications and Limitations).

If you have any questions, please contact us.

Thank you,

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Shawn Duncan, BSc.
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- represents Consultant's professional judgement in light of the Limitations and industry standards for the preparation of similar reports
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REFERENCES

BAM (Boreal Avian Modelling Project). 2013. Canada Warbler *Cardellina canadensis*. Retrieved from http://www.borealbirds.ca/avian_db/accounts.php/Cardellina+canadensis.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2008. COSEWIC Assessment and Status Report on the Canada Warbler *Wilsonia canadensis* in Canada. Ottawa. vi +35 pp.

EBird Canada. 2013. Explore Data – Canada Warbler. Retrieved from http://ebird.org/ebird/canada/map/canwar?neg=true&env.minX=-69.46894758239284&env.minY=42.90742259885286&env.maxX=-54.46162336364284&env.maxY=47.43483809072262&zh=true&gp=true&ev=Z&mr=on&bmo=5&emo=7&yr=cur.

EC (Environment Canada). 2013. North American Breeding Bird Survey – Canadian Trends Website, data version 2011. Retrieved from http://www.ec.gc.ca/ron-bbs/P005/A001/?lang=e&m=s&r=CAWA&p=L&t=11950.

Erskine, A.J. 1992. Atlas of the Breeding Birds of the Maritime Provinces. Nimbus Publishing and the Nova Scotia Museum. 286 pp.

MBBA (Maritime Breeding Bird Atlas). 2008. Atlassing for Species at Risk in the Maritime Provinces, 2nd Edition. 33 pp.

MBBA (Maritime Breeding Bird Atlas). 2012. Retrieved from http://www.mba-aom.ca/jsp/map.jsp?lang=en.

MBBA (Maritime Breeding Bird Atlas). (n.d.) (a). Breeding dates. Retrieved from http://www.mba-aom.ca/english/breeding_dates.pdf.

MBBA (Maritime Breeding Bird Atlas). (n.d.) (b). Breeding evidence codes. Retrieved from http://www.mba-aom.ca/jsp/codes.jsp?lang=en&pg=breeding

Reitsma, L.R., Hallworth, M.T., and P.M. Benham. 2008. Does age influence territory size, habitat selection, and reproductive success of male Canada Warblers in central New Hampshire? *The Wilson Journal of Ornithology* 120: 446-454.

N

PID 45271939
Everett & Marilyn Clarke

PID 45188810
Atlantic Star Forestry Ltd.

Blois Rd

PID 45366630
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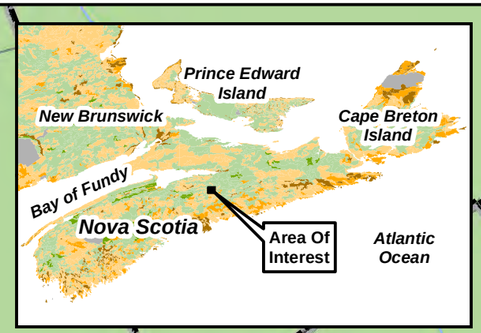
Indian Brook
Native Reserve 14

WTG 1
WTG 2
WTG 3

CW #1
CW #2
CW #3
CW #4
CW #5
CW #6
CW #7
CW #8
CW #9
CW #10
CW #11



Legend:

- Approximate Canada Warbler Sighting Locations
- Proposed Turbine
- Proposed Access Road
- Project Site Boundary
- Property Boundary
- Field Identified Watercourse
- Field Identified Drainage Channel
- Field Identified Wetland Boundary
- Approximate Wetland Boundary
- Wetland Habitat
- Wetland: Clear Cut
- Wetland: Canada Warbler Habitat
- Wetland: Treed Swamp
- 100m Turbine Buffer
- Native Reserve
- Public Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream
- Water Bodies
- Cleared Area

0 100 200 300 400 500 Metres

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.
3. GPS Data Collected is Typically to +/-5m Accuracy.

Hardwood Lands Community Wind Project - Canada Warbler Sighting Locations

Strum 20 YEARS Taking Charge CONSULTING

Date: August 2015	Project #: 14-5169
Scale: 1:7,000	Drawing #: 1
Drawn By: H. Serhan	
Checked By: A. Walter	

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WTG 3

WTG 1

WTG 2

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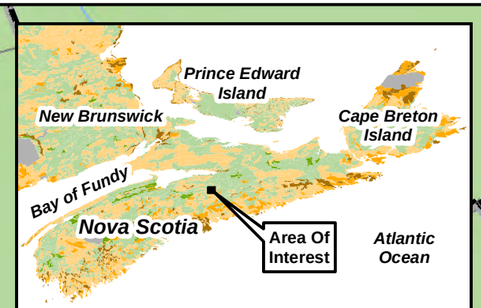
Indian Brook
Native Reserve 14



0 100 200 300 400 500 Metres

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre. Habitat Cover is based on Google & Bing Satellite Imagery Dated 2014.
2. Projection: NAD83(CSRS), UTM Zone 20 North.

Legend:

- Proposed Turbine
- Proposed Access Road
- Project Site Boundary
- Property Boundary
- 100m Turbine Buffer
- Native Reserve
- Public Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream

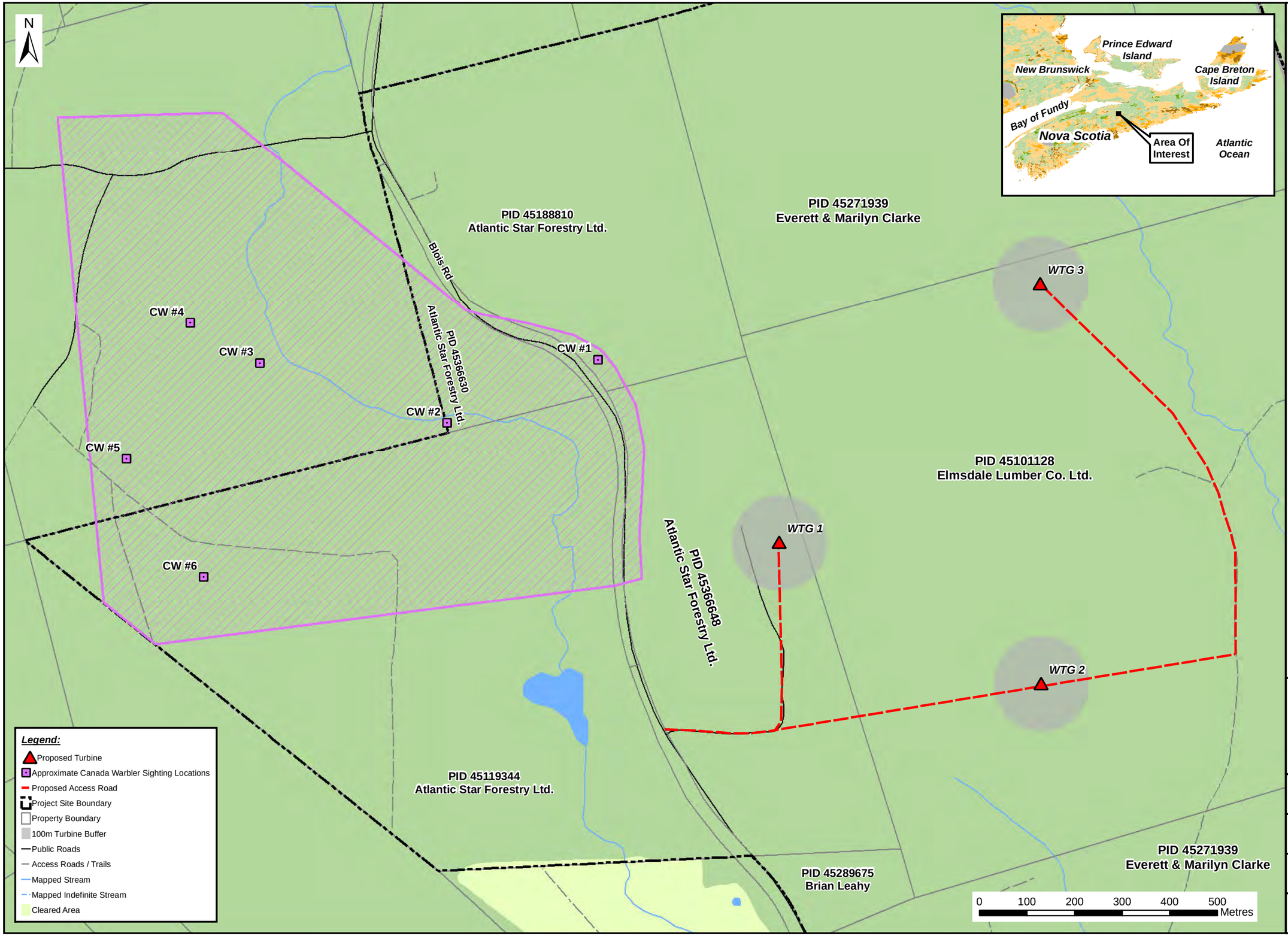
Habitat Cover

- Clear Cut
- Mature Hardwood Forest
- Mixedwood Forest
- Regen Softwood Stand
- Softwood Forest

Hardwood Lands Community Wind Project - Habitat Cover

Strum 20 YEARS Taking Charge CONSULTING

Date: August 2015	Project #: 14-5169
Scale: 1:7,000	Drawing #: 2
Drawn By: H. Serhan	
Checked By: A. Walter	



Legend:

- Proposed Turbine
- Approximate Canada Warbler Sighting Locations
- Proposed Access Road
- Project Site Boundary
- Property Boundary
- 100m Turbine Buffer
- Public Roads
- Access Roads / Trails
- Mapped Stream
- Mapped Indefinite Stream
- Cleared Area

Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU0904 by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.
3. GPS Data Collected is Typically to +/-5m Accuracy.

Hardwood Lands Community Wind Project - Control Site Location

Strum Consulting — 20 Years Taking Charge

Date: August 2015	Project #: 14-5169
Scale: 1:7,000	Drawing #: 3
Drawn By: H. Serhan	
Checked By: A. Walter	

APPENDIX H
SHADOW FLICKER MODELING RESULTS

Receptor ID	Easting	Northing	Predicted Shadow Hours/Year	Predicted Maximum Shadow Hours/Day
R01	460598	4994046	0:00	0:00
R02	459929	4994753	0:00	0:00
R03	460486	4993998	0:00	0:00
R04	460428	4994137	0:00	0:00
R05	460541	4994622	0:00	0:00
R06	460145	4994860	0:00	0:00
R07	460126	4994882	0:00	0:00
R08	460805	4994218	0:00	0:00
R09	460525	4994085	0:00	0:00
R10	459990	4994681	2:39	0:10
R11	460479	4994480	0:00	0:00
R12	460445	4994470	0:00	0:00
R13	459879	4995022	0:00	0:00
R14	460516	4994281	0:00	0:00
R15	460598	4994279	0:00	0:00
R16	460502	4994659	0:00	0:00
R17	460519	4994564	0:00	0:00
R18	456478	4992857	0:00	0:00
R19	460768	4994260	0:00	0:00
R20	460616	4994042	0:00	0:00
R21	460660	4994114	0:00	0:00
R22	460187	4994706	0:00	0:00
R23	460129	4994805	0:00	0:00
R24	460494	4994266	0:00	0:00
R25	460569	4994238	0:00	0:00
R26	460098	4994764	0:00	0:00
R27	459237	4995608	0:00	0:00
R28	460699	4994502	0:00	0:00
R29	460484	4994076	0:00	0:00
R30	460446	4994715	0:00	0:00
R31	459523	4995146	0:00	0:00
R32	460466	4993985	0:00	0:00
R33	460527	4994203	0:00	0:00
R34	460498	4994182	0:00	0:00
R35	460408	4994509	0:00	0:00
R36	460301	4994612	0:00	0:00
R37	460400	4994004	0:00	0:00
R38	460311	4994760	0:00	0:00
R39	460168	4994752	0:00	0:00
R40	460590	4994518	0:00	0:00
R41	460553	4994110	0:00	0:00
R42	460213	4994641	0:00	0:00
R43	460398	4994184	0:00	0:00
R44	460422	4994017	0:00	0:00
R45	460421	4994578	0:00	0:00
R46	460594	4994577	0:00	0:00
R47	459936	4994986	0:00	0:00
R48	460451	4994030	0:00	0:00
R49	460147	4994722	0:00	0:00
R50	460631	4994547	0:00	0:00
R51	460084	4994663	0:00	0:00
R52	460152	4994649	0:00	0:00
R53	460266	4994798	0:00	0:00
R54	460228	4994822	0:00	0:00

Table 1: Shadow Flicker Modeling Results, Hardwood Lands Community Wind Project *Project #14-5169*

Receptor ID	Easting	Northing	Predicted Shadow Hours/Year	Predicted Maximum Shadow Hours/Day
R55	460725	4994424	0:00	0:00
R56	460242	4994633	0:00	0:00
R57	460772	4994174	0:00	0:00
R58	460328	4994591	0:00	0:00
R59	460424	4994665	0:00	0:00
R60	460578	4994148	0:00	0:00
R61	460371	4994629	0:00	0:00
R62	460568	4994594	0:00	0:00
R63	460093	4994733	0:00	0:00
R64	458498	4995587	0:00	0:00
R65	460453	4994151	0:00	0:00
R66	460544	4994312	0:00	0:00
R67	460636	4994091	0:00	0:00
R68	460052	4994670	0:00	0:00
R69	456466	4992841	0:00	0:00
R70	460698	4994449	0:00	0:00
R71	460125	4994656	0:00	0:00
R72	456739	4992260	0:00	0:00
R73	460420	4993956	0:00	0:00
R74	460188	4994645	0:00	0:00
R75	460339	4994653	0:00	0:00
R76	460297	4994849	0:00	0:00
R77	460268	4994623	0:00	0:00
R78	460568	4994044	0:00	0:00
R79	460620	4994489	0:00	0:00
R80	458478	4995611	0:00	0:00
R81	460359	4994718	0:00	0:00
R82	460468	4994613	0:00	0:00
R83	460472	4994520	0:00	0:00
R84	460444	4994549	0:00	0:00
R85	460361	4994564	0:00	0:00
R86	460386	4994543	0:00	0:00
R89	460384	4993983	0:00	0:00
R90	460453	4993975	0:00	0:00
R91	460515	4994028	0:00	0:00
R92	460469	4994166	0:00	0:00
R93	460288	4994696	0:00	0:00
R94	460230	4994692	0:00	0:00
R95	460178	4994782	0:00	0:00
R96	460003	4994749	0:00	0:00
R97	459346	4995619	0:00	0:00
R98	460391	4994626	0:00	0:00

APPENDIX I
ELECTROMAGNETIC INTERFERENCE STUDY CORRESPONDENCE

Mitch Underhay <munderhay@scotianwindfields.ca>

Potential Turbine Impact, Hardwood Lands

Grégoire, Martin <Martin.Gregoire@dfo-mpo.gc.ca> Thu, May 7, 2015 at 10:39 AM
To: Mitch Underhay <munderhay@scotianwindfields.ca>

Hello,

Thanks for the update. Despite the changes, my previous assessment remains valid. Therefore no interference issues are anticipated.

Regards,

Martin Grégoire, P. Eng

Canadian Coast Guard

From: Mitch Underhay [mailto:munderhay@scotianwindfields.ca]
Sent: May 6, 2015 1:55 PM
To: XNCR, Windfarm Coordinator

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Aerospace and Telecommunications Engineering Support Squadron
Canadian Forces Base Trenton
PO Box 1000, Stn Forces
Astra, ON K0K 3W0

Escadron de soutien technique des télécommunications et des moyens aérospatiaux
Base des Forces canadiennes Trenton
CP 1000, succ Forces
Astra, ON K0K 3W0

3045-1(CO)

10 Jun 2015

Mr. Mitch Underhay
Project Planner
Scotian WindFields Inc
108F Trider Crescent
Dartmouth, NS B3B 1R6

Dear Mr. Underhay,

Thank you for your patience on this matter and for considering DND radar and airport facilities in your project development process.

We have completed the revised detailed analysis of your proposed site, Hardwood Lands Wind Farm, located near Milford, NS (WTA-3043). The results of the revised detailed analysis and subsequent technical and operational impact assessments have confirmed there is likely to be minimal interference with DND radar and flight operations.

Therefore, as a result of these findings we have no objections with your project as submitted (attached).

If however, the layout were to change/move, please re-submit that proposal for another assessment using the assigned WTA number listed above. The concurrence for this site is valid for 24 months from date of this correspondence. If the project should be cancelled or delayed during this timeframe please advise my point of contact.

It should be noted that each submission is assessed on a case by case basis and as such, concurrence on this submission in no way constitutes a concurrence for similar projects in the same area, nor does it indicate that similar concurrence might be offered in another region.

The issuance of this Letter of Non-Objection shall not constitute a waiver or alienation of any existing or future legal rights of the DND/CF nor shall it be construed to create any exemptions, indemnification, approvals, rights, acceptances in favour of Scotian WindFields Inc. The DND/CF expressly reserves its rights to take legal action or seek remedy for any and all liability, loss, harm, degradation of services or equipment, mitigation costs, damages, judgments or expenses that arise from the adverse effects, whether incidental, indirect or causal, of the Scotian WindFields Inc Hardwood Lands Wind Farm upon the DND/CF radars, equipment and its provision of Air Traffic Services.

I trust that you will find this satisfactory. If you have any technical questions or concerns regarding any aspect of this investigation, please contact the ATESS Liaison Officer at (613) 392-2811 extension 7494, or at +windturbines@forces.gc.ca.

Sincerely,

Marie-Claude Gaumond

M.C. Gaumond, CD
Lieutenant-Colonel
Commanding Officer

National Defence Défense nationale

Canada

Wind turbine submission form

Turbine information

Turbine Number	LAT dd mm ss.ss	LONG -ddd mm ss.ss	Ground Elevation (meters)	Nacelle Height (meters)	Rotor Diameter (meters)	Total Height (meters)
Example 1	60 39 16.59	-110 36 14.01	126.00	100.00	96	274
1	45 5 36.645	63 31 21.023	85	100	100	235
2	45 5 21.073	63 31 3.929	72	100	100	222
3	45 5 37.061	63 31 19.108	75	100	100	225
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Mitch Underhay <munderhay@scotianwindfields.ca>

Potential Wind Turbine Impact, Hardwood Lands, NS

Weather Radars Contact,National Radar Program [Ontario] <weatherradars@ec.gc.ca> Mon, Dec 1, 2014 at 10:43 AM
To: Mitch Underhay <munderhay@scotianwindfields.ca>, "Weather Radars Contact,National Radar Program [Ontario]" <weatherradars@ec.gc.ca>
Cc: "Deaudelin,Gaetan [Montreal]" <Gaetan.Deaudelin@ec.gc.ca>, "Palfreeman,Anne-Marie [Wpg]" <Anne-Marie.Palfreeman@ec.gc.ca>

Dear Mr. Mitch Underhay,

Thank you for contacting the Meteorological Service of Canada, a branch of Environment Canada, regarding your wind energy intentions.

Our preliminary assessment of the updated information provided to us via e-mail on November 27, 2014 indicates that any potential interference that may be created by the wind turbine near Hardwood Lands in the District of East Hants, NS will not be severe. Although we would prefer our radar view to be interference free, this is not always reasonable. As a consequence, we do not have strong objections to the current proposal.

If your plans are modified in any manner (e.g. number of turbines, height, placement or materials) this analysis would no longer be valid. An updated analysis must be conducted.

Please contact us at: weatherradars@ec.gc.ca.

Thank you for your ongoing cooperation and we wish you success.

Best Regards,

Jim M.C. Young
Environment Canada Environnement Canada

Meteorological Service of Canada | Service météorologique du Canada
Environment Canada | Environnement Canada
4905 Dufferin Street | 4905, rue Dufferin
Toronto, Ontario M3H 5T4 | Toronto (Ontario) M3H 5T4
Email | Courriel : Jim.Young@ec.gc.ca
Phone | Téléphone : +1-416-514-2643
Cell | Cellulaire : +1-647-298-5396

From: Mitch Underhay [mailto:munderhay@scotianwindfields.ca]
Sent: November 27, 2014 9:29 AM

To: Weather Radars Contact,National Radar Program [Ontario]
Subject: Re: Potential Wind Turbine Impact, Hardwood Lands, NS

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[Quoted text hidden]
[Quoted text hidden]

[Quoted text hidden]

Mitchell Underhay
Scotian WindFields Inc.
Dartmouth, Nova Scotia
Office: 1-877-798-5085

Direct: 1-902-468-3132

Fax: 1-902-468-3002

http://www.scotianwindfields.ca

--

Mitchell Underhay
Project Planner

Scotian WindFields Inc.
Dartmouth, Nova Scotia
Office: 1-877-798-5085

Direct: 1-902-468-3132

Fax: 1-902-468-3002

http://www.scotianwindfields.ca

Transport Canada / Transports Canada

AERONAUTICAL ASSESSMENT FORM FOR OBSTRUCTION MARKING AND LIGHTING

TC File No/Ref No: 2015-105

Applicant File No/Ref No:

General Information

1. Owner's Name: Scotian Windfields
Contact Person: Mitchell Underhay
Address: 108F Trider Crescent
City: Darmouth
Province: Nova Scotia
Postal Code: B3B 1R6
Telephone No: 902-468-3132
Fax No.: 902-468-3002
Email Address: munderhay@scotianwindfields.ca

2. Applicant's Name: Same as above
Contact Person:
Address:
City:
Province:
Postal Code:
Telephone No:
Fax No.:
Email Address:

3. Description of Proposal (or as attached)
3 turbine, 6 MW wind farm located near Hardwood Lands, NS.

4. Geographic Coordinates ☑ NAD83 ☐ NAD27 ☐ WGS84
N Latitude deg See Attached. min sec W Latitude deg min sec

5. Nearest
Community: Hardwood Lands
Province: Nova Scotia

6. Nearest Aerodrome
Halifax

7. Have you contacted the aerodrome?
○ Yes ◉ No

8. Notice of
◉ New Construction ○ Change to existing structure

9. Duration
◉ Permanent ○ Temporary

10. Proposed Construction Date Beginning (yyyy-mm-dd)
2016-05-15

11. Temporary Structure
From (yyyy-mm-dd) To (yyyy-mm-dd)

Canada

TC File No/Ref No: 2015-105

12. Marking and Lighting Proposed (refer to Standard 621)

- [x] Red lights and paint
- [ ] Red and M.I. white lights
- [ ] White M.I. lights
- [ ] Red and H.I. white lights
- [ ] White H.I. lights
- [ ] No painting
- [ ] No lighting
- [ ] Paint marking only
- [ ] Other (provide description)

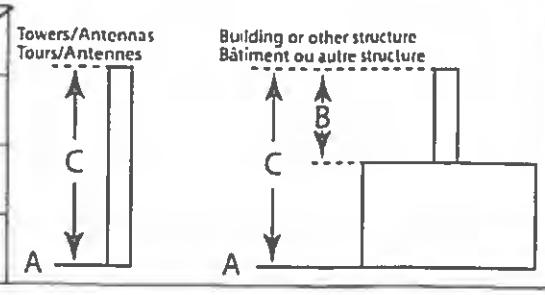
13. Monitoring to Standard 621, article 4.7

- [ ] Visual Inspection per 24 hours
- [ ] Automatic remote monitoring

14. Catenary/Cable Crossing

- [ ] Paint supporting structures
- [ ] Cable marker spheres
- [ ] Shore markers
- [ ] Support structure lighting
- [ ] Cable marker lights

		Feet	Metres
15 A	Ground Elevation (AMSL)		
16 B	Height of an addition to an existing structure		
17. C	Total structure height including #16 (AGL)	see Attached	
18.	Overall height (#15 plus #17) (AMSL)		



19. Does the proposal comply with Airport Zoning Regulations?

- [x] Yes
- ○ No
- ○ N/A

I hereby certify that all the above statements made by me are true, complete and correct to the best of my knowledge. Also, I agree to mark and/or light and maintain the structure with established marking and lighting standards as necessary

Date (yyyy-mm-dd)	Name of person filing notice	Signature
2015-05-06	Mitchell Underhay	

Transport Canada Assessment

Marking and lighting required (as per Standard 621)

- [x] Lighting Required
- [x] Paint Required
- [ ] Temporary Lighting Required
- [ ] No Lighting or Painting required

Comments (Transport Canada use Only)

As per attachment, new location ok.

Civil Aviation Inspector	Signature	Date (yyyy-mm-dd)
André Vautour		2015/08/06

Note 1: This assessment is only valid for one year from the date of assessment and applicable to the proposal as submitted

Note 2: If there is a change to the intended installation, a new submittal is required.

August 20, 2014

Your file
Proj 151
Our file
14-0688

Mr. Mitchell Underhay
Scotian WindFields Inc.
108F Trider Crescent
Dartmouth, NS
B3B 1R6

RE: Wind Farm: 3 Wind Turbines - Hardwood Lands, NS
(See attached spreadsheet)

Mr. Underhay,

We have evaluated the captioned proposal and analysis shows that all of the proposed turbines are visible to the Halifax Radar. The turbines have the potential to be constant sources of false targets and could mask real aircraft in the vicinity of the turbines. NAV CANADA finds these minor impacts to be acceptable.

Any changes to this proposal would need to be re-assessed for potential impacts. Further expansion of this site may not be approved by NAV CANADA.

The nature and magnitude of electronic interference to NAV CANADA ground-based navigation aids, including RADAR, due to wind turbines depends on the location, configuration, number, and size of turbines; all turbines must be considered together for analysis. The interference of wind turbines to certain navigation aids is cumulative and while initial turbines may be approved, continued development may not always be possible.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications and issue NOTAM as required. To assist us in that end, we ask that you notify us at least 10 business days prior to the start of construction. This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at landuse@navcanada.ca or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at landuse@navcanada.ca.

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, Industry Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Industry Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

Yours truly,

David Legault
Manager, Data Collection
Aeronautical Information Services

cc ATLR - Atlantic Region, Transport Canada (2014-068)

APPENDIX J
SOUND MONITORING AND MODELING RESULTS.

Table 1: Sound Modeling Results, Hardwood Lands Community Wind Project *Project #14-5169*

Receptor ID	Easting	Northing	Predicted Noise Level (dBA)
R01	460598	4994046	28.6
R02	459929	4994753	29.8
R03	460486	4993998	29.4
R04	460428	4994137	29.4
R05	460541	4994622	27.2
R06	460145	4994860	28.2
R07	460126	4994882	28.2
R08	460805	4994218	27
R09	460525	4994085	29
R10	459990	4994681	29.9
R11	460479	4994480	28
R12	460445	4994470	28.3
R13	459879	4995022	28.5
R14	460516	4994281	28.5
R15	460598	4994279	28
R16	460502	4994659	27.3
R17	460519	4994564	27.5
R18	456478	4992857	27.3
R19	460768	4994260	27.1
R20	460616	4994042	28.5
R21	460660	4994114	28
R22	460187	4994706	28.7
R23	460129	4994805	28.5
R24	460494	4994266	28.6
R25	460569	4994238	28.3
R26	460098	4994764	28.9
R27	459237	4995608	26.6
R28	460699	4994502	26.8
R29	460484	4994076	29.2
R30	460446	4994715	27.3
R31	459523	4995146	28.9
R32	460466	4993985	29.6
R33	460527	4994203	28.6
R34	460498	4994182	28.9
R35	460408	4994509	28.3
R36	460301	4994612	28.5
R37	460400	4994004	30
R38	460311	4994760	27.8
R39	460168	4994752	28.6
R40	460590	4994518	27.3
R41	460553	4994110	28.7
R42	460213	4994641	28.9
R43	460398	4994184	29.5
R44	460422	4994017	29.8
R45	460421	4994578	28
R46	460594	4994577	27.1
R47	459936	4994986	28.4
R48	460451	4994030	29.6
R49	460147	4994722	28.8
R50	460631	4994547	27
R51	460084	4994663	29.4
R52	460152	4994649	29.1
R53	460266	4994798	27.9

Receptor ID	Easting	Northing	Predicted Noise Level (dBA)
R54	460228	4994822	28
R55	460725	4994424	26.9
R56	460242	4994633	28.7
R57	460772	4994174	27.2
R58	460328	4994591	28.4
R59	460424	4994665	27.6
R60	460578	4994148	28.5
R61	460371	4994629	28.1
R62	460568	4994594	27.2
R63	460093	4994733	29.1
R64	458498	4995587	26.8
R65	460453	4994151	29.2
R66	460544	4994312	28.2
R67	460636	4994091	28.2
R68	460052	4994670	29.6
R69	456466	4992841	27.2
R70	460698	4994449	26.9
R71	460125	4994656	29.3
R72	456739	4992260	27.8
R73	460420	4993956	30
R74	460188	4994645	29
R75	460339	4994653	28.1
R76	460297	4994849	27.5
R77	460268	4994623	28.6
R78	460568	4994044	28.8
R79	460620	4994489	27.2
R80	458478	4995611	26.7
R81	460359	4994718	27.8
R82	460468	4994613	27.6
R83	460472	4994520	27.9
R84	460444	4994549	28
R85	460361	4994564	28.4
R86	460386	4994543	28.3
R89	460384	4993983	30.2
R90	460453	4993975	29.7
R91	460515	4994028	29.2
R92	460469	4994166	29.1
R93	460288	4994696	28.2
R94	460230	4994692	28.5
R95	460178	4994782	28.4
R96	460003	4994749	29.4
R97	459346	4995619	26.4
R98	460391	4994626	28