day as a limit to reduce nuisance complaints. Calculations of shadow flicker for all nearby residences, given a worst-case scenario as described above, determined that no receptors could experience shadow flicker for up to 30 hours per year or up to 30 minutes per day (Figure 6.16 and 6.17). Shadow flicker modeling was conducted for two turbines. Based on site visits to the receptors following modeling results, it is believed that the model has overestimated visual exposure of the turbines to the receptors. Nevertheless, if shadow flicker becomes an issue (>30 hours/year) the Proponent has agreed to implement mitigation which may include shutdown of applicable turbines during times and conditions where shadow flicker may peak.

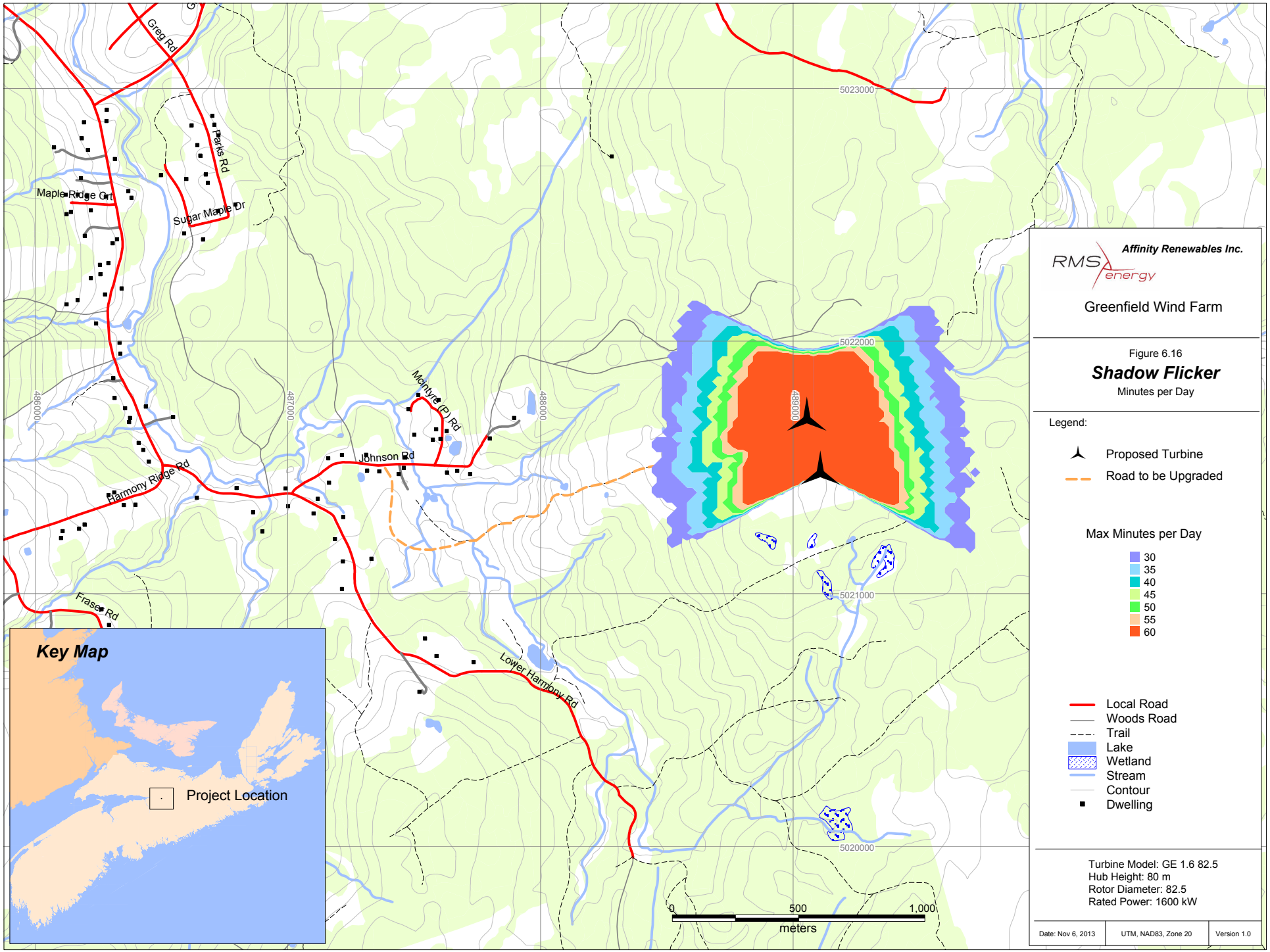
In summary, even considering the "worst-case scenario" model conditions are extremely unlikely to exceed recommended shadow flicker limits. The shadow flicker from turbine blades will only extend as far as the sun and angles will allow. The model demonstrates that it will not be possible to experience shadow flicker at homes in the project surroundings.

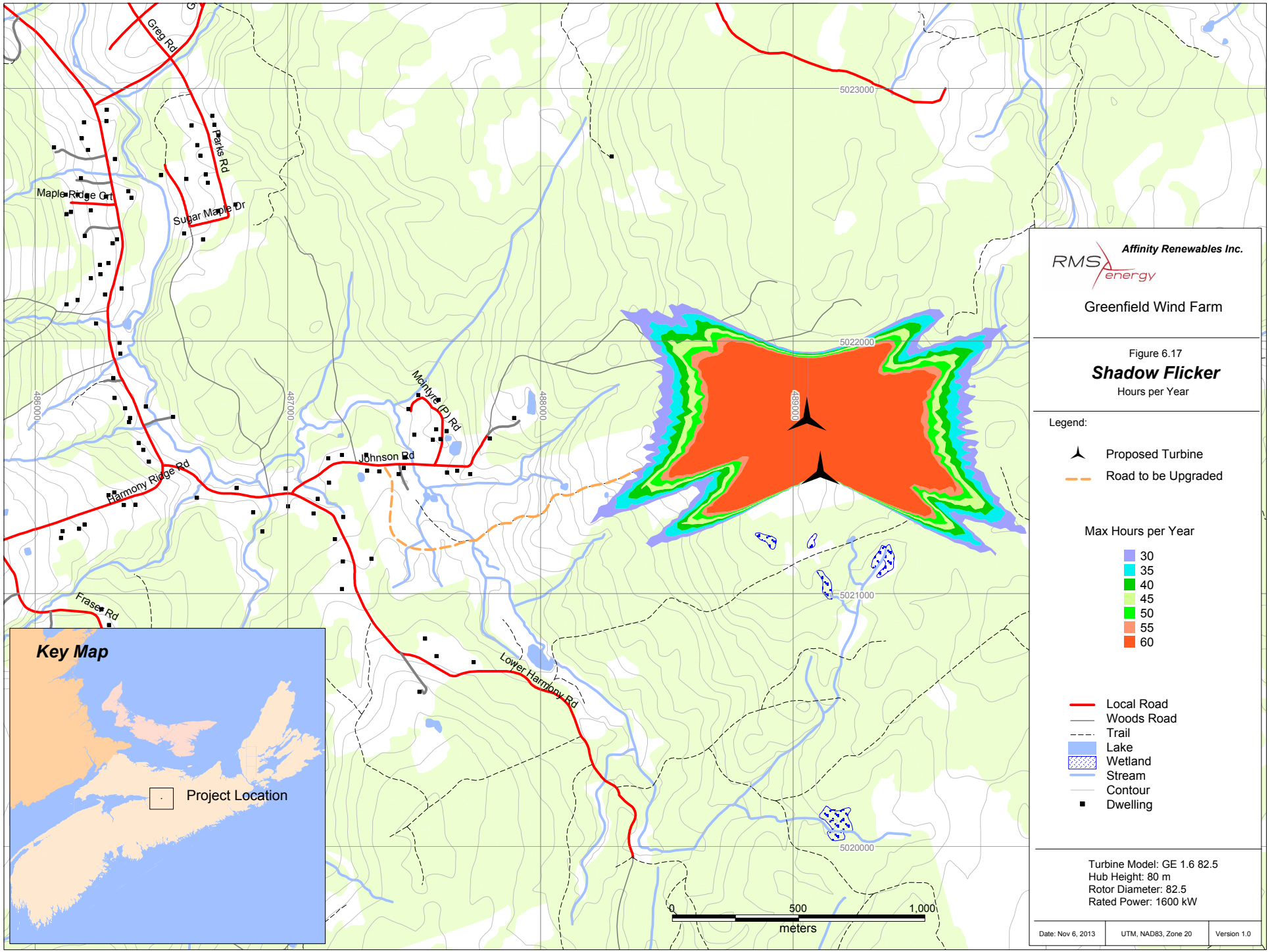
A registry will be created to document complaints of possible shadow flicker. If a complaint or complaints of shadow flicker are received from a receptor, shadow flicker will be reassessed from that receptor. Information collected from the shadow flicker monitoring (if applicable) will be used will be used to develop further mitigation, if warranted. Times of operation for certain turbines causing higher levels of shadow flicker on certain residences can be varied to help reduce the level of shadow flicker on that residence.

No mitigation measures are required for the residential receptors evaluated for the visual impact assessment. The residual effect of the Project on the area's visual aesthetics is considered to be **low** but **not significant**.

6.2.1.7 Sound Impacts

Noise can be simply defined as "unwanted sound". Sound level limits are identified on an A-weighted decibel scale (abbreviated as dBA), which is generally accepted to reflect how humans perceive sound. Conversation in close quarters is usually at a sound level of 50 to 60 dBA and an alarm clock may emit sound to levels of approximately 80 dBA. Currently, the province of Nova Scotia does not have set sound level limits specific to wind turbine operations however Nova Scotia Environment considers anything above 40 dBA to be unacceptable. The municipality of Colchester revised their wind turbine bylaw in October 2013 to include a stipulation of sound not exceeding 36 dBA outside of a residence. This guidance was considered during the development of a sound impact assessment for the Greenfield Project, completed by Nortek Resources (see Appendix D).


Greg Rd
Parks Rd
Maple Ridge Crt
Sugar Maple Dr
McIntyre (P) Rd
Johnson Rd
Harmony Ridge Rd
Fraser Rd
Lower Harmony Rd
5023000
5022000
5021000
5020000
486000
487000
488000
489000
Key Map
Project Location
0
500
1,000
meters
Affinity Renewables Inc.
RMS energy
Greenfield Wind Farm
Figure 6.16
Shadow Flicker
Minutes per Day
Legend:
Proposed Turbine
Road to be Upgraded
Max Minutes per Day
30
35
40
45
50
55
60
Local Road
Woods Road
Trail
Lake
Wetland
Stream
Contour
Dwelling
Turbine Model: GE 1.6 82.5
Hub Height: 80 m
Rotor Diameter: 82.5
Rated Power: 1600 kW
Date: Nov 6, 2013
UTM, NAD83, Zone 20
Version 1.0


Greg Rd
Parks Rd
Maple Ridge Crt
Sugar Maple Dr
McIntyre (P) Rd
Johnson Rd
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Key Map
Project Location
0
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meters
Affinity Renewables Inc.
RMS energy
Greenfield Wind Farm
Figure 6.17
Shadow Flicker
Hours per Year
Legend:
Proposed Turbine
Road to be Upgraded
Max Hours per Year
30
35
40
45
50
55
60
Local Road
Woods Road
Trail
Lake
Wetland
Stream
Contour
Dwelling
Turbine Model: GE 1.6 82.5
Hub Height: 80 m
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Wind turbine generators produce sound through a number of different mechanisms which can be categorized into mechanical and aerodynamic sound sources. The major mechanical components, including the gearbox, generator and yaw motors, each produce their own characteristic sounds, including sound with tonal components. Other mechanical systems such as fans and hydraulic motors can also contribute to the overall sound emissions. Mechanical sound is radiated at the surfaces of the turbine, and by openings in the nacelle casing. Mechanical issues involving yaw motor supports or power train design can result in anomalous sounds such as periodic booming or tonal sounds.

The interaction of air and the turbine blades produces aerodynamic sound through a variety of processes as air passes over and past the blades. The sound produced by air interacting with the turbine blades tends to be broadband sound, but its amplitude is modulated as the blades pass the tower, resulting in a characteristic 'swoosh'. Generally, wind turbines radiate more sound as the wind speed increases.

The predicted sound levels resulting from the proposed Project are an accurate representation of the potential sound levels at the selected receptor locations. Sound modelling was conducted using Wind Pro 2.8.579 which includes the calculation methodology of the International Organization for Standardization (ISO) *Standard 9613-2 – Attenuation of Sound during Propagation Outdoors Part 2*. This international standard provides a conservative estimate of sound propagation and subsequent environmental attenuation as a result of ground porosity, atmospheric attenuation and geometric spreading. Local terrain was considered in modelling. Sound power level data provided by the manufacturer were used to model operational sound at the selected receptors.

The study results presented in Appendix D show that the predicted sound levels at the receptor locations are below the guidance adopted for this Project (36 dBA) (Figure 6.18). It is not expected that the Project will have a significant impact, with respect to sound, on nearby receptors.

Ground attenuation is considered and uses the alternative case described in the ISO-9613-2 standard. This method uses the surface shape of the terrain to determine the sound dampening characteristic between the turbine hub and the receiver. The terrain is considered to be a bare earth model with no forest, vegetation or buildings. The terrain model was developed from 5 m contour data obtained from the Nova Scotia Geomatics Center and originated from stereo interpretation of 1:10,000 aerial photography.

The A-weighted sound pressure levels are modeled and represent the range of frequencies that are audible to the human ear. Noise emission data were obtained from the turbine manufacturer specifications and are based on calculated sound pressure levels for a variety of wind speeds. The following turbine models and hub heights were modeled:

Table 6.10-a: Turbine Specifications Used for Sound Modeling.

Description	Specification
Manufacturer	General Electric
Model	GE 1.6, 82.5
Hub Height	80 m
Rotor Diameter	82.5 m
Rated Power Output	1,600 kW
Maximum Sound Level (nacelle)	106.0 dBA

A conservative and standardized approach has been incorporated into the analysis which is based on modeling the representative sound levels at the mean wind speed of 7.0 m/s at hub height. The sound pressure levels where calculated and mapped to determine the impacts of the turbines on surrounding receptors. The threshold levels are currently used by the Ontario Ministry of the Environment and specified in *"Noise Guidelines for Wind Farms – Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities, October 2008"* and are summarized in Table 6.10-b.

Table 6.10-b Sound Level Thresholds for Wind Turbines for Class 3 Areas (Rural).

Wind Speed (m/s) at 10 m height	Sound Level Limits (dBA)
4	40
5	40
6	40
7	43
8	45
9	49
10	51

The results presented in Figure 6.18 show that the sound pressure threshold levels for the range of wind speeds analyzed meet the current MOE standards. Existing dwellings on adjacent properties are located below the threshold limits shown in Table 6.10-b. In addition to this, the sound modeling includes the 36 dBA threshold imposed by the Municipality of Colchester. Existing dwellings on adjacent properties are located below the threshold limit of 36 dBA.

The nearest receptor is no closer than 1300m from either turbine. In addition, routine maintenance of the wind turbines and associated equipment will be conducted as recommended by the manufacturer to ensure the turbines operate efficiently and do not produce additional sounds.

In response to noise complaints, if any occur, the Municipality of Colchester Wind Turbine Bylaw and the Proponent would measure ambient sound levels and wind speed at selected residential receptors. The sound and wind data will then be combined to produce a plot of background ambient sound pressure levels versus wind speed. If the ambient sound levels at any residential receptors are higher than permitted noise levels, a report shall be filed with NSE with the particulars of the concern, the suspected source, and any remedial actions taken or to be taken to resolve the concern. In addition to this, a contravention of enacted bylaw pursuant to Section 172 of the *Municipal Government Act,* SNS, 1998 is punishable pursuant to clause 10.3 in the 'Wind Turbine Development Bylaw.

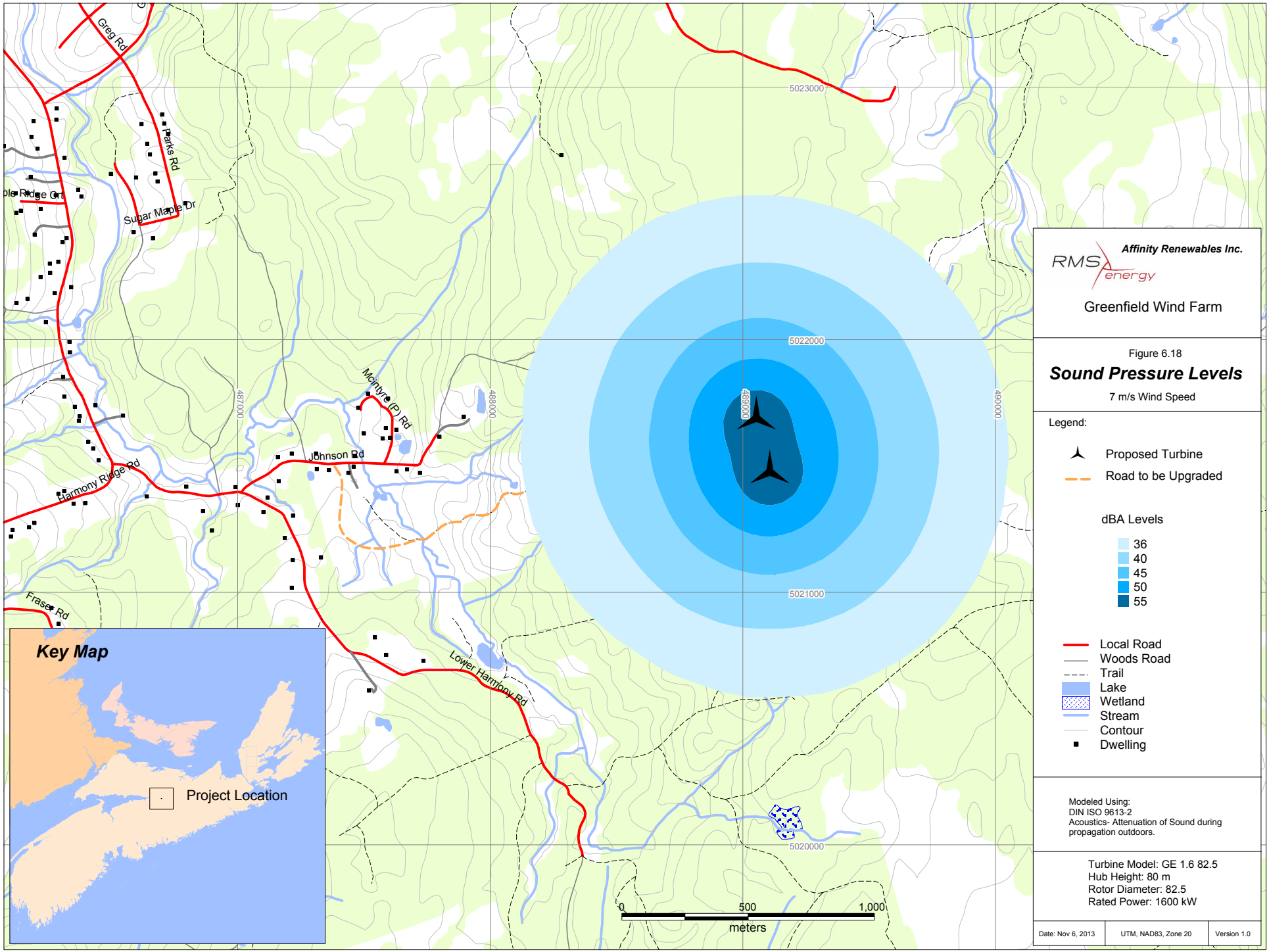
Up to date data for the GE 1.6 MW series 82.5m turbine is used for the sound modelling, as well as assumptions that there is no tree cover/ obstructions. The loudest output on the 1.6 MW turbine occurs at 7.0 m/sec: this wind speed sound rating is used for the modelling.

Provided these mitigation measures are followed, the potential residual effect of the Project on noise is considered to be **not significant**.

6.2.1.8 Recreation and Tourism

As indicated in Section 5, the Project area is located in a rural residential area. The Greenfield Project is not anticipated to have an adverse effect on the tourism industry in the area. There is not any perceived tourism industry in the area.

Located approximately 4km to the east of the Greenfield site is the Greenfield Golf Course. It is an executive 18-hole golf course with RV parking and a licensed club-house. The elevation of the land where the turbines are proposed is roughly 190 m. The elevation of the grounds on the golf course average 160 m. The turbines will be along the very back edge of the high ground when looking from the golf course. The golfers at Greenfield Golf may see turbine blades at some vantage points. The golf course in Kemptown, roughly 11km away will have visibility of the two turbines in Greenfield from the club house (Figure 6.15).



Affinity Renewables Inc.

RMS energy

Greenfield Wind Farm

Figure 6.18

Sound Pressure Levels

7 m/s Wind Speed

Legend:

- Proposed Turbine
- Road to be Upgraded

dBA Levels

- 36
- 40
- 45
- 50
- 55

- Local Road
- Woods Road
- Trail
- Lake
- Wetland
- Stream
- Contour
- Dwelling

Modeled Using:
DIN ISO 9613-2
Acoustics- Attenuation of Sound during propagation outdoors.

Turbine Model: GE 1.6 82.5
Hub Height: 80 m
Rotor Diameter: 82.5
Rated Power: 1600 kW

Date: Nov 6, 2013	UTM, NAD83, Zone 20	Version 1.0

The existing road entrance to the site is a driveway to the landowner's home which leads through pastures and into the proposed project. Trails and paths used by ATVs or snow mobiles will not be affected by the construction and operation of the two turbines at Greenfield., therefore the Project is not expected to increase recreational vehicle use in the area and/ or trespassing on private lands.

Visual and sound effects that could be experienced by tourists and recreational users in the area are discussed Sections 6.2.1.5 and 6.2.1.7, respectively.

The potential residual effect of the Project on recreation and tourism is considered to be **minimal** and **not significant**.

6.2.1.9 Health and Safety Issues

In recent years there has been considerable interest in potential health issues associated with the operation of wind farms. Public interest groups, government stakeholders, and industry have commissioned various studies to explore alleged health effects associated with a variety of issues, of which the most commonly discussed include turbine noise, shadow flicker, and electromagnetic fields (EMFs). Additional safety concerns include potential turbine blade and structural failure, and icing issues.

The debate over potential health issues has been waged in scientific, peer-reviewed studies published in scientific journals and popular literature and internet. Popular literature and internet sources are often based on anecdotal evidence, yet they are usually the most accessible sources to the general public. In many cases, this type of literature has been generated to support or oppose wind development. Knopper and Ollson (2011) reviewed both types of literature (peer-reviewed and popular) and found that both agree that wind turbines can be a source of annoyance for some people, although the difference between both types of literature is the reason for annoyance. In general, peer-reviewed literature finds that reported health effects are attributable to a number of environmental stressors that result in an annoyed/stressed state, but popular literature attributes reported health effects directly to turbine-specific variables like audible noise, infrasound or EMF (Knopper and Ollson 2011).

To address real and perceived health and safety issues, minimum setback distances and exposure levels have been established to reduce or avoid potential effects for people living in proximity to wind turbines. As referenced in Section 3.3, the Municipality of the County of Colchester established wind development bylaws in 2009 with setback distances from residences of 700m. In 2013, the updated bylaw is now 1000m setback from residences. At a provincial level, there are no legislated setback distances although based on recent experience from the latest reviewed wind farms in the province and discussions with NSE staff, it would appear that the minimum setback distance should be in the range of 550 m and/or a received sound level 40 dBA. The Colchester municipal bylaw limits the sound level to 36 dBA outside at night, the provincial recommendation is exceeded and therefore, the Proponent will not exceed 36 dBA sound level at any residence. See Appendix D – Sound Modeling Study and as discussed below, these setback distances should effectively address any potential concerns

associated with health and safety issues associated with wind farm operations. It may be necessary to retain both minima to account for the fact that the setback distance itself does not prevent the situation where multiple turbines are at or near the setback, all contributing to the received sound level. The added criterion of sound level allows for this.

6.2.1.9.1 Sound (Audible, Low Frequency, and Infrasound)

Section 6.2.1.7 discusses the predicted sound levels from the operation of the two windmills.

Several studies have been undertaken to explore the possible relationship between proximity to wind turbines and health effects. A review of peer-reviewed literature indicates that some people living near wind turbines experience annoyance and that some people are also disturbed in their sleep by wind turbines. Scientific literature does not dispute that health effects may occur due to stress associated with annoyance and sleep deprivation and suggests that most anecdotal reports of health effects attributed to wind turbines are likely associated with these stressors.

In April 2012, Health Canada announced that it would be conducting an assessment of all available data to address complaints of health issues and their relation to exposure to wind turbine noise. The results of this research will support decision makers by contributing to the evidence base of peer-reviewed scientific research that ultimately supports decisions, advice and policies regarding wind power development proposals, installations and operations. *The data obtained will contribute to the global knowledge of the relationship between wind turbine noise and health. It is important to note that this research is being conducted to provide additional insight into an emerging issue; however, the results will not provide a definitive answer on their own* (Health Canada 2012). Health Canada goes on to state that *there is currently insufficient scientific evidence to conclude whether there is a relationship between exposure to wind turbine noise and harm to human health. However, the most rigorous studies available to date do not show a link between exposure to wind turbine noise and harm to human health. Health Canada continues to review emerging scientific evidence. Should new evidence become available that supports a direct link between wind turbine noise and adverse health effects, the Department will review the research and, if necessary, work with the responsible authorities to address these emerging concerns* (Health Canada, 2012).

The World Health Organization (WHO) Europe recommends a night-time noise guideline (not specifically for wind) of 40 dBA for the protection of public health from community noise (WHO 2009). According to WHO, this guideline is below the level at which effects on sleep and health occur. This value of 40 dBA is considered to be the lowest observed adverse effect level for night noise based on expert evaluation of scientific evidence in Europe. This guideline is intended to protect the public including the most vulnerable groups such as children, the chronically ill and the elderly (WHO 2009). The United States Environmental Protection Agency (EPA) document titled Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (1974) recommends that indoor-day-night-level (DNL) not exceed 45 dBA. DNL is a 24-hour average that gives 10 dB extra weight

to sounds occurring between 10 pm and 7 am, assuming that during these sleep hours, levels above 35 dBA indoors may be disruptive. Based on the proposed setbacks and predicted noise modeling, there are no receptors who will be exposed to sound levels greater than 35 dBA (outdoor noise level). Indoor sound levels are about 10 to 20 dBA lower than those outdoor, depending on the structure of the home.

Various studies have explored the relationship amongst annoyance and wind turbine noise (Pederson and Persson Waye 2004, 2007, 2008; Pederson 2010). Knopper and Ollsen (2011) synopsize these studies into three key conclusions:

1. people tend to notice sound from wind turbines almost linearly with increasing sound pressure level;

2. a proportion of people that notice sound from wind turbine find it annoying; and

3. annoyance is not only related to wind turbine noise but also to subjective factors like attitude to visual impact, attitude to persons or companies involved, attitude to wind turbines and sensitivity to noise (refer to citations above for details on individual studies).

Recognizing that annoyance can result in a heightened sense of anxiety and potentially affect the physical, mental and social well-being of individuals, the mitigation to reduce potential effects is implemented to establish appropriate setback distances and sound level limits. Based on peer-reviewed literature, the limits proposed for this Project are considered appropriate mitigation.

The Proponent lives within 200m of a GE 1.5 MW turbine, with 33 others at various distances from the home. This has been the primary place of residence since March 2013. At no time has one of the family of 4 been unable to sleep due to noise, EMF, infrasound, vibrations or anything that could possibly be attributed to the wind turbines (*pers. Obs.). (*Figure 6.19)

Low frequency sound is generally defined as sound at a frequency of less than 200 Hz. Infrasound is considered to be sound frequencies below human's audible range (less than 20 Hz) and is usually measured in terms of dB or dBG instead of A-weighted decibels (dBA). The A-weighting network is commonly used to adjust sound levels to approximate the sensitivity of human hearing whereas the G-weighting network was defined specifically by the International Standards Organization to deal with infrasound (HGC Engineering 2006). In the 1980s, low frequency sound was considered an associated problem with wind turbines. However, this has been attributed to earlier designs of turbines where turbine blades were placed downwind of the tower resulting in a sound output that generated high levels of energy in the infrasound range. Since then, turbine design has progressed, resulting in modern turbines with blades placed upwind of the tower, generally negating the problem (National Research Council 2007; Leventhall 2004). Research on low frequency sound and modern turbines confirms that levels of low frequency sound have been below accepted thresholds and therefore should not be considered a problem (BWEA 2005; Leventhall 2004).

Infrasound is produced by physiological processes like respiration, heartbeat and coughing, as well as man-made sources like air conditioning systems, vehicles, some industrial process and wind turbines (Knopper and Ollsen 2011). Although infrasound cannot be "heard", there is some degree of auditory perception below frequencies of 20 Hz (*e.g.*, stimulation of outer hair cells of the cochlea) and there are non-auditory mechanisms such as the vestibular balance system and resonant excitation of body cavities by which humans can sense infrasound (HGC Engineering 2006; Salt and Hullar 2010).

Infrasonic levels created by wind turbines are often similar to the ambient levels prevalent in the natural environment due to wind. Under many conditions, low frequency sound below 40 Hz from wind turbines cannot be distinguished from environmental background noise from the wind itself (Leventhall 2006; Colby *et al* 2009, cited in CMOH 2010). There is no evidence of adverse health effects caused by infrasound below the sound pressure level of 90 dB (Leventhall *et al.* 2003).

In 2013, the Environment Protection Authority of Australia presented the findings of a study into the level 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 turbines. Through various controlled measurements at homes located both near and far from wind turbines. The study concluded that the level of infrasound at houses near the wind turbines assessed is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with the background level of infrasound in the environment (Evans *et al, 2013).* Infrasound that was detected at houses near wind turbines had the turbines shut down completely and measurements were taken again. The results were the same indicating that the infrasound that was detected was not produced by the wind turbines. Furthermore, the levels are significantly below the human perception threshold (Evans *et al, 2013).*

Figure 6.19 View from Second Floor Window of Proponent's Home, Turbine #15 is at a Distance of 175m, Dalhousie Mountain

International standards have been established to define acceptable thresholds for infrasound exposure based on human sensitivity at 85 dBG. Therefore it is reasonable to assume that someone may be annoyed if they can perceive infrasound in the range of 85 dBG. O'Neal *et al*. (2011; cited in Knopper and Ollson 2011) conducted a study to measure wind turbine noise outside and within nearby residences of turbines (nearest turbines 305 m and 467 m from residences) at a wind farm in Texas and measured low frequency sound and infrasound at both distances. The turbine models included in the study were the GE 1.5sle (1.5 MW) and Siemens SWT-2.3-93 (2.3 MW) wind turbines. The authors concluded that the results of their study suggest there should be no adverse public health effects from infrasound or low frequency noise at distances greater than 305 m from the two wind turbine types measured (O'Neal *et al*. 2011). The Greenfield Project is over 1000m further from receptors than suggested in this study. There is no evidence for direct physiological effects from either infrasound or low frequency sound at the levels generated from wind turbines (indoors or outside) (Colby *et al*. 2009).

6.2.1.9.2 Shadow Flicker

A shadow flicker study of Greenfield demonstrates that shadow flicker cannot and will not extend to homes therefore; no residences will receive shadow flicker effects from the turbines in Greenfield.

Concerns have been raised about the potential for wind turbines to cause epileptic seizures as a result of shadow flicker. As discussed in Section 6.2.1, shadow flicker is caused by the rotating blades of the turbines interrupting sunlight causing flicker. Individuals diagnosed with photosensitive epilepsy (approximately 0.03% of the population) are at risk for seizures caused by flickering light at certain frequencies. Photosensitive epileptic patients are most sensitive to flickering light at 5-30 Hz, although some report sensitivity as low as 3 Hz or as high as 60 Hz (Epilepsy Action 2007). At 3 Hz or below, the cumulative risk of inducing a seizure is about 1.7 per 100,000 of the photosensitive population (Harding *et al.* 2008). At maximum rotational speeds, most turbines flicker at a frequency below 3 Hz. It is therefore concluded that shadow flicker effects would represent, at worst, a visual annoyance, rather than a health impact (refer to Section 6.2.1.6 for a discussion of shadow flicker visual effects).

6.2.1.9.3 Electromagnetic Fields

An electromagnetic field (EMF) is a physical field containing electric and magnetic aspects which is caused due to the movement of an electrical charge. All electronic devices, power-lines and generating stations produce EMFs (Sierra Club Canada 2011).

Wind turbines are not considered a significant course of EMF exposure since emission levels around wind farms are low (CMOH 2010). Previous studies have shown that magnetic field levels as a result of the cable distribution system are a fraction of those found in the vicinity of household appliances such as hairdryers, blenders or televisions (National Institute of Environmental Health Sciences 2002). At present, there are no Canadian government guidelines for exposure to EMFs at ELF. Health Canada does not consider guidelines for the Canadian public necessary because the scientific evidence is not strong enough to conclude that exposures cause health problems for the public (Health Canada 2010).

EMFs created by the two operating wind turbines will be localized and become weaker with distance. The EMF produced by the equipment within the turbines will be very weak, reduced not just by distance, but also by objects such as trees and other objects that conduct electricity. As a result, there is no evidence that the proposed Project will present any human health effects related to EMFs.

6.2.1.9.4 Additional Safety Issues

Additional safety issues that have been raised include potential turbine blade and structural failure, and icing issues.

Turbine Blade and Structural Failure

Wind turbine safety standards have improved considerably since they were first introduced on a commercial scale, with wind turbine safety standards meeting wind strengths equivalent to hurricane forces (Chatham-Kent 2008). The probability of a tower collapse and/or blade detachment from the turbine structure is highly improbable. However, should either of these events occur there is potential that the collapse zone and/or landing area would be damaged by the impact. The structural integrity of the turbines is designed to withstand wind speeds of about 200 km/hour (equivalent to a Level 2 tornado). However, during high wind events (>25 m/s or 90 km/h) the turbines will cease operations. The blade of a turbine weighs several tonnes, therefore in the unlikely event where a blade detaches from the rotor, it would drop to the ground rather than be flung a large distance. Maintenance technicians who work on the Proponent's existing Dalhousie will also maintain the two GE turbines at Greenfield. The redundancy mechanisms in place for this type of failure include a factory installed alignment indicator (checked and calibrated minimum two times per year), as well as after-market installation of vibration sensors. Visual blade inspections are done officially during semi-annual maintenance, and also with each visit to the individual turbines. Given the built-in safety features as well as ongoing maintenance of equipment, the likelihood of tower collapse and/or blade detachment is extremely remote and is not predicted to result in a significant adverse residual effect on public health and safety.

Icing Issues

Under certain weather conditions (*e.g.*, based on the right combination of air temperature, wind speed and moisture in the air), ice can form on the turbine blades. Falling ice and the throwing of ice therefore present a hazard to on-site personnel during maintenance and operation of the wind turbines.

Falling ice from an immobile turbine does not differ from other tall structures. Ice throw distance depends on a variety of factors including turbine specifications, wind speed and geometry and mass of the ice fragment itself. Several studies conducted under the Wind Energy in Cold Climates (WECO) project in Europe have analyzed the risk to public health associated with turbine icing. Morgan *et al.* (1998) report results of a survey of turbine operators on the occurrence of icing including mass and location of any observed ice debris flung off the rotor. Results showed most fragments on the ground were estimated to be in the range of 0.1 to 1 kg in mass and were found approximately 15 to 100 m from the turbines. Simulations and risk assessments have been developed to project ice throw trajectories and predict probability of events and risk to public safety. Initial work on risk assessment methodology demonstrates 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).

Monitoring at an existing Tacke TW600 wind turbine near Kincardine, Ontario between its installation in December 1995 until March 2011 revealed ice build-up on the wind turbine on 13

occasions out of 1000 inspections conducted during this time. In most cases, only a few pieces of ice were found on the ground. During one monitoring event in February 1996, about 1 tonne of ice in approximately 1000 pieces was estimated on the ground, with the largest pieces 5 inches long, 2 inches thick and 2 inches wide (12.5x5x5 cm). The pieces were scattered up to 100 m from the base of the turbine in the same direction as the blade arms were pointing. Most pieces were found within 50 m of the tower base. There was no event recorded by the operator in which the ice that was thrown from the turbine struck any property or person (LeBlanc 2007).

A computer modeling study used to estimate the number of potential residential, vehicle and person ice strikes within a typical wind farm in Southern Ontario calculated that, assuming a building setback of 300 m, the potential number of ice strikes to buildings would be one in every 500,000 years. Predicted number of ice strikes to vehicles, with a setback of 200 m would be one in every 260,000 years and number of ice strikes to individuals on the ground (assuming a setback of 300 m) would be one in every 137,500,000 years (LeBlanc 2007). Given the large setbacks used for this Project, the risk to the public from ice drop or ice throw is very small in comparison with average risk levels. The impact of turbine icing would be greatest for construction or maintenance workers when the blade is at rest and not rotating.

There are no trail systems or paths used by ATVs, snowmobiles or recreational hiking on or around the lands used for the Greenfield project. During construction and operation activities, access to the wind turbine facilities will be restricted to authorized personnel wearing proper personal protective equipment and who have had appropriate safety training.

6.2.2 Maintenance Activities

The wind turbines will be visited for routine servicing and inspections. Furthermore, the facility will include a sophisticated wind energy oriented Supervisory Control and Data Acquisition (SCADA) data analysis program, as well as alarm and notification protocols. With such a system, faults can be instantly detected and addressed, operations can be monitored, equipment performance can be analyzed, trend analyses can be performed and long-term records maintained. For service-oriented visits the site will be accessed via light trucks. Although sensory disturbance to wildlife is possible, it will be short in duration, infrequent, in a small geographic area and will not be noticeable above the existing disturbance created by existing and ongoing forestry activities.

6.3 DECOMMISSIONING ACTIVITIES

Well-designed and constructed wind energy facilities may be operated for decades. The Proponent expects individual wind turbines to perform for up to 25 years without significant repair or replacement. Transformer facilities and electrical cabling facilities are designed for at least a 50 year life span. Individual wind turbines may be replaced or repaired as their useful life comes to an end, or if more efficient and cost-effective technology becomes available. The Proponent makes legally binding commitments regarding decommissioning to the landowners on whose land the equipment is placed.

6.3.1 Removal of Turbine and Ancillary Equipment

Upon a decision to decommission a single wind turbine or both machines at Greenfield, all equipment above ground, including towers, nacelles, transformers and controllers will be removed. Wind turbines that are operational and have market value would be carefully removed using a crane, essentially in a reverse process to assembly and installation. The resale value of such equipment would cover the cost of removal in such a case. A market for good, used wind turbines has developed in North America, and a number of wind turbines installed in Alberta in the early 1990s originated from the U.S. used wind turbine market.

Wind turbines that are no longer operational may also be removed by crane, but with less attention to preserving individual components, labelling them and storing them. Inoperative wind turbines have high salvage value. Steel and copper components are easily recycled, and there is a ready market for such materials. The remaining materials are primarily fibreglass and plastic. These may be sold to recycling facilities, or crushed and deposited in landfill sites.

Other above-ground equipment in the wind farm, including transformers and wiring, has a ready market in either used equipment sales or in salvage. Transformers will be simply removed and sold. Wiring will be removed and sold to metal salvage companies.

Figure 6.20 Wind Turbine Recycled into a Children's Playground

Environmental components that potentially could be impacted as a result of turbine and ancillary equipment removal include soils, water quality/aquatic environment, birds and other wildlife, land use, and noise. Table 6.11 summarizes the potential environmental effects of activities associated with removal of turbine and ancillary equipment.

Table 6.11 Potential Effects of Turbine and Ancillary Equipment Removal

Potential Interaction	Potential Effect	Mitigation	Significance Criteria for Adverse Effect[1]					Residual Effect
			Geographic Extent	Magnitude	Duration/ Frequency	Reversibility	Ecological Context	
Birds and Other Wildlife	Sensory disturbance	• Overall disturbance will be limited to designated workspaces, and performed in compliance with the *Migratory Birds Convention Act.* • onsite personnel will be trained regarding how to identify and properly deal with any species at risk or other special considerations at the time that may enter a work site	2	1	1/2	R	2	Sensory disturbance may cause habitat avoidance but it is likely to be temporary in nature, small in magnitude and restricted to the Project footprint.
Soils	Soil disturbance and erosion	• Soils around the excavation will be disturbed but will be managed to minimize erosion and runoff.	1	1	1/2	R	2	By implementing these standard mitigation measures, the residual effect on soils will not be significant and will have a minimal level of impact.
Wetlands /Water Quality/ Aquatic Environ ment	Surface water contamination	• Wetlands and watercourses will be avoided to the extent possible. • All activities, including equipment maintenance and refueling, will be controlled, or will be done off-site, to prevent entry of		1	1/1	R	2	No residual effects are predicted.

Table 6.11 Potential Effects of Turbine and Ancillary Equipment Removal

Potential Interaction	Potential Effect	Mitigation	Significance Criteria for Adverse Effect[1]					Residual Effect
			Geographic Extent	Magnitude	Duration/ Frequency	Reversibility	Ecological Context	
		petroleum products or other deleterious substances, including any debris, waste, rubble or concrete material, into a watercourse or wetland. • Construction material, excess material, construction debris, and empty containers will be stored away from watercourses and watercourse banks or wetlands. • A contingency plan for accidental spills will be developed for the Project.						
	Sediment Loading	• General mitigation measures from the NSE Erosion and Sediment Control Handbook and other applicable guidelines will be utilized to control water, reduce erosion and limit sedimentation. • Decommissioning will not take place in the immediate vicinity of a watercourse.	1	1	1/1	R	2	No residual effects are predicted.

Table 6.11 Potential Effects of Turbine and Ancillary Equipment Removal

Potential Interaction	Potential Effect	Mitigation	Significance Criteria for Adverse Effect[1]					Residual Effect
			Geographic Extent	Magnitude	Duration/ Frequency	Reversibility	Ecological Context	
		• Temporary erosion and sediment control measures, silt fence, straw bales (etc.) will be used and maintained until 100% of all work within or near a watercourse has been completed and stabilized. • Temporary sediment control measures will be removed at the completion of the work but not until permanent erosion control measures, if required, have been established.						
Land Use	Remediation of land	• A small footprint will be disturbed but remediated in accordance with landowner agreements.	1	2	1/2	R	2	Due to the small proportion of land to be directly impacted by foundation construction/ decommissioning and its reversibility after decommissioning, the residual effect is expected to be minimal. The landowner fully intends to turn the entire land parcel to farm land. The area disturbed directly by the turbines is less than ½ acre.

Table 6.11 Potential Effects of Turbine and Ancillary Equipment Removal

Potential Interaction	Potential Effect	Mitigation	Significance Criteria for Adverse Effect[1]					Residual Effect
			Geographic Extent	Magnitude	Duration/ Frequency	Reversibility	Ecological Context	
Sound	Increases to sound levels due to operation of equipment required for decommissioning	• All internal combustion engines will be fitted with appropriate muffler systems. • Noise abatement equipment, in good working order, will be used on all heavy machinery used on the Project.	1	1	1/2	R	2	Increased sound levels caused by decommissioning will be temporary in nature and will be conducted during working, daylight hours. Due to the short nature of this disturbance, the residual effect is considered negligible and the level of impact will be minimal.

1 Note	Geographic Extent	1 = <500 m^2, 2 = 500 m^2 – 1 km^2, 3 = 1 –10 km^2, 4 = 11 – 100 km^2, 5 = 101 – 1000 km^2, 6 = >1000 km^2
	Magnitude	1 = Low: *e.g.,* specific group or habitat, localized one generation or less, within natural variation, 2 = Medium: *e.g.,* portion of a population or habitat, one or two generations, rapid and unpredictable change, temporarily outside range of natural variability, 3 = High: *e.g.,* affecting a whole stock, population or habitat outside the range of natural variation.
	Duration	1 = <1 month, 2 = 1-12 months, 3 = 13-36 months, 4 = 37-72 months, 5 = >72 months.
	Frequency	1 = <11 events/year, 2 = 11-50 events/year, 3 = 51-100 events/year, 4 = 101-200 events/year, 5 = >200 events/year, 6 = continuous.
	Reversibility	R = reversible, I = irreversible.
	Ecological Context	1 = Pristine area or area not adversely affected by human activity, 2 = evidence of adverse effects.

6.3.2 Removal of Power Line

Power poles and cabling will be removed and recycled/disposed of as required. Environmental components that potentially could be impacted as a result include soils, water quality/aquatic environment, birds and other wildlife, land use, and noise. Refer to Table 6.11 for a summary of the potential environmental effects of activities.

6.3.3 Site Remediation/Reclamation

Wind energy facilities do not use or produce harmful waste products. There is no need for concern about residual toxic chemicals or exhaust products. Aside from normal recovery of lubricants from the gearbox and yaw mechanism, decommissioning activities do not produce waste. Lubricants will not contain any PCBs. Site remediation/reclamation will be conducted in accordance with landowner agreements and in accordance with the applicable regulations at

the time. Environmental components that potentially could be impacted as a result include soils, water quality/aquatic environment, birds and other wildlife, land use, and noise. Refer to Table 6.11 for a summary of the potential environmental effects of activities.

6.4 ACCIDENTS AND MALFUNCTIONS

The largest risks associated with all phases of any operations involving vehicles and machinery in forested areas include contamination by petroleum products and waste, if spilled, migrating into the surroundings; and in extreme situations a risk of fire, causing damage if not controlled immediately.

A spill of hydrocarbons associated with equipment involved in construction and maintenance of the Project could cause a variety of adverse effects on the environment, in particular to the watercourses within the Project Study Area. Spill prevention is the most important step in preventing these potential effects; prevention is based on effective and well-planned procedures and maintenance of equipment. These strategies will be outlined in a Project-specific EPP, which will be developed prior to the commencement of construction activities. Spills that could reasonably be expected to occur would be limited to relatively small quantities.

The Salmon River Fire Department will be provided with a procedure upon commissioning to deal with logistics of fires and spills and would outline the appropriate measures for responding. A site map will be provided to the chief and to the Proponent's employees. Setbacks from sensitive areas will be in place as will radio communications to the control center to provide lockout confirmation and procedures for safe contact with electrical components. NSE will be notified at the time of any applicable emergencies. Notification will be given to the department upon making the decision to decommission and any necessary amendments to the existing emergency measures will be added.

The plans described below are expected to mitigate any potential accidents and malfunctions that may occur. Therefore, the level of impact is considered **low** and **not significant**.

6.4.1 Corporate Environmental, Safety & Health Management Plan

An Environmental, Safety & Health (ESH) Management Plan has been developed and implemented for the existing Dalhousie and will be expanded and updated where necessary to include activities and operations at the Greenfield Project to ensure that environmental, safety and health requirements are consistently met throughout the Project, specifically throughout the construction and operating phases. The ESH Management Plan has been developed in conjunction with Project contractors, and shall be at all times in strict compliance with all applicable Provincial and local requirements.

The Proponent will ensure that the construction and operation contractors will be duly certified by the appropriate safety associations. As part of the ESH Management Plan, the elements of an Environmental, Safety & Health Management System (ESH-MS) for the Project will include:

- Safety Management Statement, which shall clearly articulate the health and safety objectives and commitment to continually improve the effectiveness of the ESH-MS;

- Safety System Manual, which shall define the scope of the ESH-MS and describe the structure of the ESH-MS;
- Safety Project Plans, which shall explain the strategy and approach to be used in managing activities critical to delivery of work, containing as a minimum:
  - Worksite Hazard Assessment Plan;
  - Fall Protection Plan;
  - Safety Emergency Response Plan, and
  - Safety Orientation and Education Plan;
- Safety Project Procedures, which shall contain where necessary documented procedures to ensure specific tasks will be successfully completed to a consistent level satisfying all the requirements of the agreements;
- Safety Records, which will be established and maintained to provide evidence of conformity to agreements, applicable certification requirements and ESH-MS requirements;
- Accident and Incident Investigation, which shall contain a documented process to investigate, document and report all accidents and incidents, to be carried out by suitably trained personnel, and where corrective or preventative action is required, such action will be fully documented and completed;
- Joint Environmental, Safety & Health Committee, which shall consist of one or more members from each of various work groups to ensure all personnel have representation, members of which will receive appropriate training and meet monthly;
- Personal Protective Equipment, which shall assess worksites for hazards and establish the requirements for appropriate personal protective equipment, communicate such requirements to involved personnel and worksite visitors;
- Internal Auditing, which shall contain documented processes to confirm compliance with ESH-MS processes, and identify necessary corrective/preventative actions; and
- Continual Improvement, which will initiate measures to continually monitor the ESH-MS and the delivery of the work, to be implemented by a designated Environmental, Safety & Health Manager.

6.4.2 Emergency Response Planning

The Proponent will update the current emergency response plan for the unlikely event of a site emergency during any phase of the Project. The emergency response plan will include a report form and a map of the Project site, showing the most direct route from the site to an emergency resource such as a hospital. All on-site personnel and contractors will be required to complete a site safety and emergency response orientation prior to the start of pre-construction and construction activities. Prior to operation, the Proponent will provide specialized training to local fire department for aid to workers during high rescue and suspension trauma prevention.

In locating wind projects, the balance between proximity to load capacity and proximity to residents is a delicate one. The Greenfield Project is not accessible by vehicles not properly equipped to deal with mud, large rocks, steep slope and possibly a significant amount of

precipitation. The Proponent is equipped to get in and out of the Project site during an emergency, especially in the winter months. (Figure 6.21)

Figure 6.21 Maintenance Vehicle

6.4.3 Project Environmental Protection Plan

The Proponent will prepare a Project-specific Environmental Protection Plan (EPP) that will be used on-site during all construction, operation and maintenance activities. The EPP will be written in construction specification format and will include the recommended mitigation measures in this EA report, as well as industry-accepted construction practices. The EPP will be used by the construction contractor and by all operations and maintenance workers during the life of the Project.

6.5 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The following section outlines the effects of the environment on the Project, which includes climatic fluctuations and extreme events that could potentially occur over the life of the Project.

6.5.1 Climatic Fluctuations

Several aspects of the potentially changing climate have been considered, and must continue to be monitored during the lifetime of the Project. The turbines are designed to have a safe upper working limit for wind speeds. As the frequency of storms increases, particularly the strong late summer hurricanes that are anticipated to retain strong wind speeds as tropical depressions as they move up the coast, there would be an associated increase in the frequency of conditions exceeding the safe operating envelope for the turbines. During such conditions, the turbines are halted and generation suspended until safe working conditions occur again. The lost generation due to the marginal increase in storm frequency is a relatively small quantity of generation time; that is, it is not anticipated to significantly negatively affect the economic viability of the Project. Similarly, any change in the frequency of freezing rain, or blade-icing conditions, is not anticipated to significantly affect operating times, and the monitoring instruments in place will allow the physical risk to the turbines to be managed effectively.

6.5.2 Extreme Events

Weather events that put wind turbines at risk include icing conditions, particularly freezing rain, lightning, and extreme winds. Although Nova Scotia has fewer lightning storms than, for example, central Canada, the lightning protection must, and will, be designed to cope with accepted industry standards. Freezing rain is an operations issue. Blade specifications are sufficient to cope with foreseeable icing loads, but it is possible that an event that exceeds this level could be encountered. In such an event, the turbine would have been halted, and the damage would be confined to the immediate vicinity of the turbine base, should ice falling, or structural damage occur.

The wind turbines will be the highest features in the surrounding landscape, and therefore it is necessary that a lightning protection system be incorporated into each turbine. For the Project, each turbine blade material is fibreglass-reinforced epoxy resin with integral lightning protection supply. Each blade and each turbine tower are grounded to prevent adverse effects from lightning strikes. Additional grounding rods can be installed at each turbine site. Most effects from a lightning strike would be dissipated. If lightning struck the generator at the top of the tower, serious damage could occur and the generator may be damaged.

The generator is designed to automatically shut down at wind speeds that exceed 25 m/s. The turbine tower is designed to withstand excessive wind speeds. Comprehensive geotechnical work at each site will enable for proper design of wind turbine foundation. Extreme wind conditions are used as a parameter in this design.

In the event of a lightning strike that hits a wind turbine generator, severe damage could occur and a new generator may need to be installed. However, it is highly unlikely that lightning would hit a wind turbine generator accurately enough to severely damage it. Taking into consideration the design features that will be used in the Project, a significant effect is unlikely to occur as a result of extreme weather events.

6.6 CUMULATIVE EFFECTS

The assessment of cumulative effects is based on methodology developed to satisfy cumulative effects analysis requirements under *CEAA*. Although a CEAA screening assessment is not required for this Project, CEAA guidance and methodology for cumulative effects assessment is used for good practice. The evaluation of cumulative environmental effects follows five steps:

- Step 1- Identify environmental effects resulting from Project-related activities.
- Step 2- Identify other projects or activities that could interact with Project-related environmental effects.
- Step 3- Exclude environmental effects of other projects or activities that are not likely to act in combination with the environmental effects of the Project.
- Step 4- Identify the likely cumulative environmental effects that could result from the interaction of Project-related environmental effects with other past and future projects and activities.
- Step 5- Evaluate the significance of likely cumulative environmental effects.

Under *CEAA*, an EA must determine whether the project under review adds to the combined adverse effects of past, existing and imminent projects and activities. Specifically, the assessment determines the degree to which a single project is contributing to the total cumulative effects of human activities and developments in the region. For this study, "The Proponent's Guide to Wind Power Projects: Guide to Preparing an Environmental Assessment Registration Document" (NSE 2007, updated 2012) was also used to ensure provincial requirements for registration are met for describing other undertakings in the area.

A critical step in any EA is determining what other projects or activities have reached a level of certainty (*i.e.,* will be carried out) such that they are required to be considered.

It is helpful to consider the clarification provided by the Joint Review Panel for the Express Pipeline Project in Alberta. Following an analysis of subsection 16(1)(a) of *CEAA*, the Joint Review Panel determined that certain requirements must be met for the Panel to consider cumulative environmental effects:

- there must be a measurable environmental effect of the project being proposed;
- that environmental effect must be demonstrated to interact cumulatively with the environmental effects from other projects or activities; and
- it must be known that the other projects or activities have been, or will be, carried out and are not hypothetical (NEB and CEA Agency 1996).

Furthermore, the Joint Review Panel indicated that it is an additional requirement that the cumulative environmental effect is *likely* to occur, that is, there must be some *probability*, rather than a mere possibility, that the cumulative environmental effect will occur. These criteria were used to guide the assessment of cumulative environmental effects of the proposed Project.

Environmental effects resulting from Project-related activities were identified and assessed in Sections 6.1 to 6.4. The evaluation of cumulative environmental effects is warranted for several environmental components discussed in these sections, namely birds and other wildlife, visual impact, noise and economic development. This section outlines cumulative environmental effects that may result from the Project in combination with other projects or activities that have been or will be carried out, within the regional area. For the purposes of this cumulative effects assessment, the regional area is defined as Eastern Colchester County.

6.6.1 Past, Present and Future Projects/Activities in the Regional Area

There is no significant industrial development within or surrounding the Study Area other than local beef farmers and a large wood mill in Salmon River. The Proponent is proposing the Kemptown Wind Project; a three turbine (5 MW) wind energy facility. This facility is about 10 km north of Greenfield. As well, the 50.6 MW Nuttby Mountain Wind Farm is located approximately 25 km north of the proposed Project. There are other COMFIT projects approved by NS Department of Energy including Affinity's projects. Other COMFIT projects include Millbrook and Truro Heights (10 MW, 5 turbines) and no other proposed projects within 25km of the Greenfield Wind Project.

Other activities that would be expected to potentially interact cumulatively with the Project include the land use activities in and around the Study Area, including farming, forestry and residential. These activities have occurred in the past thereby influencing the current landscape and will continue to occur in the future (thereby overlapping temporally with the Project) and would have effects on bird and other wildlife, visual impact, noise and economic development that could potentially interact cumulatively with the effects predicted for the Greenfield Project.

6.6.2 Interactions between Projects/Activities and Description of Cumulative Environmental Effects

Identifying potential cumulative effects is considered through a comparison of the temporal and spatial scope of the additional projects identified in the regional area. Spatially, those projects that are within the regional area are considered to be relevant. Temporally, those projects that have existed in the past, exist presently, or are likely to exist in the near future are considered relevant.

6.6.2.1 Birds and Other Wildlife

Past and ongoing forestry and residential development activities in the regional area has resulted in a loss of forest and wetland habitat and reduced the area of contiguous mature forest habitat. The Project is not expected to result in additional loss of high quality habitat or expected to contribute significantly to the cumulative environmental effects of human activities on wildlife habitat, given the limited amount of forest that will be affected by the Project.

With respect to this Project and other projects in the area, birds and other wildlife could be affected on a regional scale. Wildlife mortality, specifically bird and bat mortality, is a residual environmental effect associated with the proposed Project. Bird and bat mortality may also occur as a result of collisions with overhead power lines, vehicles, communication towers and

buildings resulting in a cumulative effect. Historical evidence (see Section 6.2.1.1 and Appendix G) as well as the post-construction monitoring reports prepared for the existing Dalhousie, have shown that the wind turbines do not likely kill large numbers of birds and bats compared with other structures. It is therefore unlikely that the incremental contribution of the two turbines at the Greenfield Project to bird and bat mortality will affect these species on a population basis causing adverse cumulative effects. Bird surveys did not reveal extensive use of the site by species of conservation concern making it also unlikely that rare species would experience significant cumulative effects. A post-construction bird and bat monitoring program will confirm these predictions. As a result, the cumulative effects of this Project with other activities on birds and other wildlife is deemed to be **not significant.**

6.6.2.2 Visual Impact

The development of the Project, taken into consideration with farmland creation, forest harvesting activities, existing and future power lines and communication towers, could be considered a further visual obstruction. However, since the landscape has already been influenced by human activities, the visual effect of the Project is incremental. As a result, the cumulative effect of this Project with the other existing structures in the landscape is deemed to be **not significant**.

6.6.2.3 Sound

Acceptable sound levels are expected to be produced by the Greenfield Project (Appendix D). The two turbines at Greenfield will not cumulatively affect the noise produced in the area as a result of the 1300 m setback from the nearest receptor. The Project is expected to only result in an incremental increase in sound and is considered to be **not significant**.

6.6.2.4 Economic Development

This Project will continue to contribute to the community through job creation for local contractors. It is estimated that the Project will provide 15 to 20 new or existing jobs during the construction phase, two new or existing jobs during the operation and maintenance phase. In addition, the Project will provide significant municipal tax revenues and income for landowners. Through the fund-raising partnership with the SPCA, the Proponent is also committed to local community benefits. Some examples of recipients include the Hockeyville Rink, Salmon River Fire Hall, rodeo at the Provincial Exhibition, 4-H Club, Greenfield localized fundraising, local baseball field repair and upkeep, and other local charitable organizations such as the Special Olympics, food bank, Cancer fundraising and local benefit scenarios that occur in small communities for families in need. These increases in employment and economy will have a positive cumulative benefit for economic development in the region.

6.6.2.5 Summary

With the adherence to mitigation presented in this report, in addition to compliance with regulatory requirements (including terms and conditions of approval), the residual environmental effects of the Project, including cumulative effects, are predicted to be **not significant**.

6.7 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

A summary of recommended measures for managing and mitigating effects of the Project, based on the preceding analysis, is provided in Table 6.12.

Table 6.12 Summary of Impact Management and Proposed Mitigation Measures

Environmental Component	Project Activity	Potential Effects	Mitigation Measures
Birds and Other Wildlife	Construction & Decommissioning	Sensory disturbance	• Visitors will remain within relevant areas, both in-vehicle and on- foot and will aim to preserve the site's natural areas. • Overall disturbance will be limited to designated workspaces and performed in compliance with the *Migratory Birds Convention Act*. • Delivery vehicles will remain on designated roads.
		Habitat loss/alteration	• Habitat loss will be mitigated by only clearing the land necessary for construction and for decommissioning; only using the land previously cleared for construction activities and by limiting the overall land disturbance to within designated workspaces. • Upon completion of construction and/or decommissioning, habitat will be restored to the extent possible. • Areas of significance (*e.g.,* wetlands) will be avoided, to the extent possible.
		Mortality	• In order to reduce the potential of bird mortality, construction and/or decommissioning activities will be performed in compliance with the *Migratory Birds Convention Act (e.g.,* clearing (if necessary) outside the critical time periods for breeding birds). • Onsite personnel were trained in June 2012 regarding how to identify and properly deal with any wood turtles that may enter a work site. Proponent and workers will continue to receive training for specific species as needed.
	Operation	Sensory disturbance	• A pre- and post-construction Mainland Moose Monitoring PGI Survey will be conducted. • A moose monitoring program (pellet group counts) will be implemented to determine the degree to which moose use the Project Study Area.

Table 6.12 Summary of Impact Management and Proposed Mitigation Measures

Environmental Component	Project Activity	Potential Effects	Mitigation Measures
			• Winter track surveys will be conducted to determine if moose and other mammal species avoid turbine sites. This study will help to determine if the turbines and associated infrastructure are an impediment to free movement of mammals. • Overall, the Proponent is also committed to working with NSDNR and landowners to protect the mainland moose population, e.g., through initiatives in the Mainland Moose Recovery Program.
		Mortality	• To reduce the potential for increased bird fatalities due to collision with wind turbines, several decisions were made in the planning of the wind farm. The turbines to be used extend no higher than 150m above the ground thus avoiding the flight height of nocturnally migrating landbirds. Lighting will be the minimum allowed by Transport Canada for aeronautical safety, and red lights (CL-865) may be used with the minimum intensity and flashes per minute allowable. Non-flashing red lights are also still an option, depending on the recommendations of NavCanada, Transport Canada, and CWS combined. The turbines for this Project will be built using tubular steel towers, as some data indicate that lattice towers encourage perching by birds which are hunted by raptors which can cause collisions of blades and raptors, also that lattice towers encourage perching by raptors during hunting and, as a result, may put these birds at risk of collisions. Post-construction monitoring will direct the need and form of further post-construction mitigation measures. • A bird and bat monitoring program will be developed in consultation with NSDNR and CWS. Based on the results of the program, necessary modifications to mitigation plans and/or wind farm operations will be undertaken.
Soils and Vegetation	Construction & Decommissioning	Soil erosion and compaction	• Access to the turbine sites will be limited to established access road, where possible. • Size of access road will be kept to the minimum required for the safe construction, operation and decommissioning of the equipment. • Whenever possible, clearing activities will be timed to periods when the ground surface is best able to support construction equipment (winter or dry season). • Compacted soil will be reclaimed as required.

Table 6.12 Summary of Impact Management and Proposed Mitigation Measures

Environmental Component	Project Activity	Potential Effects	Mitigation Measures
			• Standard erosion and sediment control measures will be implemented as required. • Topsoil and subsurface soils will be separated and stored on-site to be replaced appropriately after the pouring of the concrete foundation. When the soils are stored they will be protected from erosion and runoff.
		Loss of plant species	• Rare plant surveys have been conducted to assist with micro-siting of turbines and access roads. • Where Plant Species of Conservation Concern are encountered, avoidance to the extent possible will be considered, especially where there maybe be a threat to the regional population. • Prior to construction, digital way-point files revealing the precise locations of all "Sensitive", "May be at Risk", "At Risk" and "Undetermined" listed species identified during field work within the area proposed for development will be provided to NSDNR.
Wetlands	Construction & Decommissioning	Loss of wetland area and/or function	• Wetlands will be avoided. • All activities, including equipment maintenance and refuelling, will be controlled, and/or will be done off-site, to prevent entry of petroleum products or other deleterious substances, including any debris, waste, rubble, stockpiled soils, or concrete material, into a wetland. • Construction material, excess material, construction debris, and empty containers will be stored away from wetlands. • Erosion and sediment control measures will be implemented to minimize interactions with wetlands. • Functional analyses will be conducted for wetlands that cannot be avoided. • Regulatory approval will be obtained (including compensation for no net loss of function) from NSE for wetland alteration as required. • Turbines will not be constructed within 30 m of a wetland unless approved by NSE.
Water Quality/ Aquatic Environment	Construction & Decommissioning	Surface water contamination	• Watercourses will be avoided to the extent possible. • If alteration of a watercourse is required, regulatory approval from NSE of the proposed alteration will be obtained prior to construction. • All activities, including equipment maintenance and refuelling, will be controlled, and/or will be done off-site, to prevent entry of petroleum products or other deleterious substances, including any debris, waste, rubble, stockpiled soils, or concrete material, into a watercourse. • Construction material, excess material, construction debris, and empty containers will be stored away from

Table 6.12 Summary of Impact Management and Proposed Mitigation Measures

Environmental Component	Project Activity	Potential Effects	Mitigation Measures
			watercourses and watercourse banks. • A contingency plan for accidental spills will be developed for the Project. • Turbines will not be constructed within 30 m of a watercourse unless approved by NSE.
		Sediment loading	• Watercourses will be avoided to the extent possible • General mitigation measures from the NSE Erosion and Sediment Control Handbook will be utilized to control surface water, reduce erosion and limit sedimentation. • If watercourse alterations are required, they will be done in consultation with NSE/DFO in accordance with regulatory requirements. • Land clearing near watercourses (including crossing structure construction) will occur between June 1 and September 30. • Temporary erosion and sediment control measures, silt fence, straw bales (*etc.*) will be used and maintained until 100% of all work within or near a watercourse has been completed and stabilized. • Visual assessments will be completed bi-weekly and after severe storm events to ensure the effectiveness of erosion and sedimentation controls. • Temporary sediment control measures will be removed at the completion of the work but not until permanent erosion control measures, if required, have been established.
		Surface water flow	• Watercourses will be avoided to the extent possible. • The access road constructed across an existing watercourse that requires a culvert will follow standard industry practice, installing a culvert of sufficient size to accommodate expected maximum flows within the watercourse. • A Water Approval will be obtained for all required watercourse crossings and the conditions of approvals will be followed.
		Loss of fish habitat	• In-water work will be avoided. • New and replacement culverts will be of an open-bottom design. • Existing stream flows will be maintained downstream of the de-watered work area during all stages of work. • All sediment and erosion control measures will be inspected quarterly as well as immediately following rainfall events.
		Fish mortality	• Watercourses will be avoided to the extent possible. • Watercourse crossings, where required, will be constructed from June 1 to September 30, unless otherwise approved by NSE. • Where possible, culverts will be installed during low flow periods. If water is present, watercourses will be dammed and flow will be preserved through water pumps

Table 6.12 Summary of Impact Management and Proposed Mitigation Measures

Environmental Component	Project Activity	Potential Effects	Mitigation Measures
			with a properly sized fish screen on the intake end of the hose. In this case, personnel would be on site to facilitate fish rescue within the dammed area.
Sound	Construction & Decommissioning	Increases in sound levels due to the transportation and operation of clearing equipment	• Nearby residents will be advised of significant sound generating activities and these will be scheduled to create the least disruption to receptors. • Heavy equipment will be operated between 7:00 a.m. and 10:00 p.m., avoiding Sundays and holidays unless absolutely necessary. • Construction equipment will have mufflers. • Noise abatement equipment, in good working order, will be used on all heavy machinery used on the Project.
	Operation	Increase sound levels	• None required.
Tourism	Construction & Decommissioning	Effect on tourism and recreation	• None required.
	Operation	Effect on tourism and recreation	• None required.
Visual	Operation	Change to visual landscape	• Turbines will be all of the same type and model, and will be painted light grey to reduce reflection. • Screening opportunities for adjacent residences through tree planting or other measures may be considered where post-construction evaluation indicates a legitimate concern.
		Lighting	• Lighting will be the minimum allowed by Transport Canada to ensure the appropriate level of aeronautical safety.
		Shadow flicker	• None required
Archaeological and Cultural Resources	Construction	Disturbance	• An archaeological field survey has been conducted and an Archaeological Contingency Plan developed. • Upon discovery of an artifact, work will be stopped in the area and the appropriate authorities will be contacted.
Land Use	Construction	Reduction of forested land	• Existing right-of-ways (RoWs) (*e.g.*, driveway to pasture) will be used to the greatest extent possible to minimize the Project footprint. • Turbines, with their relatively small footprint on the land, have been sited with consideration for the potential impact to existing land uses.

Table 6.12 Summary of Impact Management and Proposed Mitigation Measures

Environmental Component	Project Activity	Potential Effects	Mitigation Measures
			• Existing logging and access roads built earlier in the construction schedule will be used to install the collection system.
	Operation	Disruption to undeveloped woodlands or infrastructure	• The Project has been designed to minimize impacts to the local land use. No mitigation, therefore, is required as no significant impacts are predicted.
Health and Safety	Operation	Electromagnetic Fields (EMFs)	• None required.
		Infrasound energy	• None required.
		Ice throw	• During construction and operation activities, access to the wind turbine facility will be restricted to authorized personnel wearing proper personal protective equipment and who have had appropriate safety training. • During site visits, vehicles will be parked up-wind of the turbines. • Warning signs will be posted at the perimeter of the Project Study Area, discouraging trespassing on private lands. • During operation, access to the wind turbine sites will be restricted to authorized personnel only.
Local Community	Construction	Hazards and/or inconveniences to day-to-day traffic flow	• No modification to existing roads expected. • A Special Move Permit and any associated approvals will be obtained through the Department of Transportation and Infrastructure Renewal for heavy load transport.
	Operation	Effect on local economy	• Local residents will be employed to the extent possible during the construction, operation and decommissioning of the Project. • Financial benefits will be extended to the Salmon River Fire Department and other local organizations annually. • The SPCA will receive a significant annual donation from the production at this site. • Municipal taxes will be remunerated, thus increasing the local tax base, which could be used to increase funding of local municipal initiatives.
		Effect on property values	• None required.

7.0 FOLLOW-UP AND MONITORING

The Proponent is committed to conducting monitoring activities to address residual environmental effects with a high level of concern or uncertainty. While it is anticipated that the residual environmental effects of the Greenfield Project will not be significant, an Environmental Management Plan (EMP) and corresponding Environmental Protection, Monitoring, and Contingency Plans will be developed to address potential issues and concerns. In addition, there are site-specific pre-construction follow-up measures which the Proponent is committed to, in order to assist with micro-siting of turbine and access road locations, refine mitigation as required, and support environmental regulatory approvals as required (*e.g.*, Water Approvals). The level of information contained in this EA Registration is considered sufficient to confidently predict the significance of residual Project-related environmental effects (including cumulative effects).

7.1 PRE-CONSTRUCTION SURVEYS AND APPROVALS

Watercourses and wetlands will be avoided to the greatest extent practical. Where these features are unavoidable, approval will be sought from NSE and DFO as appropriate for alteration. Follow-up watercourse and/or wetland functional analyses will be conducted as required to complete applications for approval. Habitat compensation planning, if required, will be done in consultation with NSE and/or DFO to ensure no net loss of function/habitat.

A post-construction Mainland Moose Monitoring Program will be conducted (see Table 7.1). The monitoring program will be confirmed with NSDNR. The area does not contain habitat typical for supporting Mainland Moose. Overall, the Proponent is also committed to working with NSDNR and landowners to protect the mainland moose population, e.g., through initiatives in the Mainland Moose Recovery Program.

An archaeological field survey was conducted based on final design and layout of Project infrastructure and proximity to areas deemed to have potential for First Nations and historical archaeological resources. The results were submitted to Nova Scotia Department of Communities, Culture and Heritage for their review and comment. The ARIA process is not considered complete until the CCH has completed their review and accepted the recommendations of the archaeologists. This information will be given to NSE as an addendum upon receipt.

An MEKS was conducted for specific land use history and to provide guidance on archaeological follow-up. This report has not been received to date, but will be made available as an addendum to this document upon the Proponent receiving the results.

7.2 FOLLOW-UP AND MONITORING PROGRAMS

The following section provides a brief overview of the Project follow-up and monitoring measures to be implemented to support construction and operations activities.

The EMP is generally overseen by the Operations Manager, but all Project personnel will be trained in their specific requirements towards its implementation. Training will include the safe handling of hazardous materials and petroleum products, compliance with WHMIS, proper use of on-site firefighting equipment, and an environmental orientation prior to initiating on-site work. Currently, all employees of the Proponent are required to be trained and audited from time to time and annually to ensure safe operations and management of any unforeseen spill/ accident/ etc.

The Environmental Protection Plan (EPP) is a key component of the EMP, and has been developed for both the Construction and Operations phases of the Project. The EPP for the construction period aims to reduce the environmental impact during construction activities and consists of environmental protection measures for routine activities associated with the construction of the Project. This will be accomplished through: contingency procedures in the event of an erosion control failure, fuel and hazardous material spill, fire and/or encounter of archaeological and heritage resources; environmental monitoring, inspection and reporting requirements; a list of applicable permits, approvals and authorizations; and a key contact list. The EPP for the operating period aims to reduce the environmental impact of the operation activities and consists of guidelines for: equipment maintenance activities; the safe storage, handling, and disposal of petroleum, oils and lubricants (POL); and the safe storage, handling and disposal of hazardous materials.

Environmental Monitoring is a key component of the EMP. Table 7.1 outlines the Environmental Monitoring Programs that will be in place for the Greenfield Project.

The last aspect of the EMP is the Contingency Procedure Plan, which consists of a detailed response system in the event of the accidental release of POLs or other hazardous materials. Aspects of the plan include environmental concerns, personnel training, prevention measures, response-action plan, and a spill clean-up resource list.

Table 7.1 Environmental Monitoring Programs (Operations)

Component	Method	Timing	Response-Action Plan
Sound	In response to noise complaints, if any occur, Proponent would measure ambient sound levels and wind speed at selected residential receptors.	In response to noise complaints, if any occur.	If the ambient sound levels at any residential receptors are higher than permitted noise levels, a report shall be filed with the NSE with the particulars of the concern, the suspected source, and any remedial actions taken or to be taken to resolve the

Table 7.1 Environmental Monitoring Programs (Operations)

Component	Method	Timing	Response-Action Plan
	The sound and wind data will then be combined to produce a plot of background ambient sound pressure levels versus wind speed.		concern. If the sound exceedance is related to equipment wear, the maintenance schedule will be adjusted to account for this and minimize the potential for a reoccurrence.
Shadow Flicker	A registry will be created to document complaints of shadow flicker. In the event of a complaint, shadow flicker will be reviewed from that receptor using photographs, and/or video recording at the appropriate time of day and year. Anecdotal information about shadow flicker will be collected from nearby residences.	Shadow flicker will be monitored as required during operation of the Project. If required, it will be conducted once during the summer and once during the winter.	If a complaint or complaints of shadow flicker are received from a receptor located within 1,500 m of the turbine, shadow flicker will be reviewed from that receptor. Information collected from the shadow flicker monitoring will be used will be used to develop further mitigation, if warranted.
Bird and Bat Mortality	Bird and bat carcass monitoring will be performed within a 75 m radius of each selected turbine. The fatality rate will require correction for scavenger removal of carcasses and field observation abilities of surveyors. The monitoring program will be confirmed with Environment Canada (CWS) and NSDNR.	It is expected that monitoring of bird and bat mortality surveys will be conducted during the two years following wind farm commissioning, with emphasis placed on surveying during peak spring and fall migration of birds and fall migration of bats.	It is likely that two years of monitoring will be conducted for bats and birds, to be determined in consultation with NSDNR and CWS
Moose	A post-construction Mainland Moose Monitoring Program will be conducted. The monitoring program will be	A moose monitoring program (pellet group counts) will be implemented to determine the degree to which moose	The information can then be used as baseline or reference material for the Provincial Moose Recovery

Table 7.1 Environmental Monitoring Programs (Operations)

Component	Method	Timing	Response-Action Plan
	confirmed with NSDNR.	use the Project Study Area. Winter track surveys will be conducted to determine if moose and other mammal species avoid turbine sites. This study will help to determine if the turbines and associated infrastructure are an impediment to free movement of mammals where turbines are not present.	Program.
Aesthetics and Visual Impacts	A registry will be established to record both negative and positive comments on the aesthetics and visual impact of the wind turbines. Media comment on the wind turbines will also be collected and documented. If required, photographs will be taken of the turbine locations from a minimum of two vantage points.	Photographs will be taken at least once after the turbines become operational. The comment registry will be maintained and media comment will be collected throughout the operation of the Project.	Information collected from the aesthetics and visual impact monitoring will be used to develop further mitigation, if required.
Electromagnetic Interference	A complaint resolution system will be in place to record and investigate complaints regarding telecommunications interference.	In response to interference complaints, if any occur.	Mitigation will be conducted on a case by case basis pending results of the investigation.

8.0 CONCLUSION

The Greenfield COMFIT Wind Project is expected to provide clean energy sufficient for 1,200 homes annually in Nova Scotia. The Project will result in displacement of burning fossil fuel with an expected avoidance of greenhouse gas emissions of approximately 12,000 tonnes of carbon dioxide, as well as tonnes of sulphur dioxide and nitrogen oxide. The Greenfield Project will therefore be a component of Nova Scotia's commitment to renewable energy and reduction of air emissions from energy combustion.

Based on the results of this EA, the study team has concluded that the Greenfield Project is not predicted to result in any significant adverse residual environmental effects. The following section summarizes key points from the EA in justification of this conclusion.

The Project Study Area comprises approximately 20 ha in total. However the actual footprint of the tower structures and ancillary facilities for the proposed wind farm will occupy only a small fraction of the land base within the Project Study Area (cleared turbine area and area for the right-of-way between turbines). The Project is predicted to result in physical disturbance of approximately 2 ha of land (including development of access roads and turbine foundations).It is believed that this prediction is an overestimate and that Project development will result in a much smaller footprint.

Existing farm road/ driveway access will be upgraded and used for turbine access. Sensitive features including watercourses, wetlands, plant species of conservation of concern, and areas of high archaeological potential will be avoided to the greatest extent practical or possible. Where avoidance is not practical nor possible, detailed mitigation will be developed and all required permits will be obtained prior to construction. Follow-up surveys will be conducted if necessary at areas to be disturbed based on final design which will allow for precise mitigation planning to minimize localized environmental effects on sensitive habitats.

Installation of the proposed Project will be completed in approximately four months of on-site work limiting the period of potential disturbance to residents and wildlife associated with increased vehicle traffic and human activity. Construction activities will be scheduled where practical to minimize environmental effects (*i.e.,* to prevent rutting and to avoid significant life history events such as breeding season for most bird species). Remediation of disturbed surface areas will be undertaken as soon as possible after construction is complete, and the conditions of affected land will be remediated to approximate pre-construction conditions in accordance with landowner agreements. The residual environmental effects associated with Project construction are therefore predicted to be **minimal** and **not significant**.

Effects associated with operations are also predicted to be **minimal** and **not significant**. Operation of the two wind mills will result in minimal adverse effects to birds and other wildlife. While turbines present a potential collision hazard to birds and bats, this hazard is fairly low relative to other tall structures. Bird and bat collisions are expected to be infrequent considering the topography of the area, observed flying patterns, distribution of habitat, and low collision

rates documented at Dalhousie Mountain (25 km away) and other wind farms in Nova Scotia, the United States and Canada. Post-construction monitoring will be conducted in consultation with Environment Canada and NSDNR. This information will be used for future planning and develop mitigation if required. Any other disturbances to birds and other wildlife (*e.g.,* sensory disturbance) will be minimal, of short duration, reversible and on a local scale.

Operation of the facility will not result in production of air emissions. Sound levels and visual effects (*e.g.,* shadow flicker) will be within acceptable standards. The visual landscape of the region will be altered by the presence of two wind turbines; while some receptors will have a clear view of the turbines, many of the homes close to the viewshed will be unable to see the wind farm due to topography and forest cover. Screening opportunities through tree planting or other measures will not likely be warranted but may be considered where post-construction assessment indicates a legitimate concern.

Existing land use (*i.e.,* residential, recreational, resource use) can continue during operation of the Project. A number of positive effects will also be realized. Landowners who are leasing their land for the Project will receive direct financial benefits from facility installation and operation, and the county will receive revenue through property taxes, which will benefit county residents in turn. The power produced will provide large annual donations to the SPCA as well as annual donations on a lesser scale to the local fire department, and other community groups. The Project will offer employment and revenue to local workers, and tourism may actually increase as a result of the operation of the wind farm.

Appropriate and effective mitigation measures have been recommended for the proposed Greenfield Project to eliminate or minimize effects that may have been associated with the development. Any residual net adverse environmental effects are predicted to be **not significant** based on the results and conclusions of this EA.

9.0 SIGNATURE

This report presents details on the EA of the proposed Greenfield COMFIT Wind Project , conducted in accordance with "The Proponent's Guide to Wind Power Projects: Guide to Preparing an Environmental Assessment Registration Document" (NSEL 2007, updated 2012). The *"*Environmental Impact Statement Guidelines for Screenings of Inland Wind Farms Under the *Canadian Environmental Assessment Act"* (NRCan 2003) was also used for guidance in reporting as applicable. Overall, the residual effects of the Project are not significant and are acceptable, based on a balanced assessment against all of the screening criteria and the results and conclusions of the EA.

This EA was completed internally for Affinity Wind. Specifically, and on behalf of Affinity Wind, the report was prepared and reviewed by the following:

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APPENDICES

Appendix A

Electromagnetic Interference Study Results

NAV CANADA

April 30, 2012

Your file
Greenfield Wind Project
Our file
12-0116

Ms. Lisa Fulton
Affinity Renewables Inc.
796 Dan Fraser Rd.
Westville, NS
B0K 2A0

RE: Wind Farm: 3 turbines - Truro, NS
(398' AGL / 1034.4829' AMSL)

Ms Fulton,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted. Analysis shows 3 turbines could potentially be visible to the Halifax radar These turbines have the potential to be a constant source of false targets and could mask real aircraft in the vicinity of the wind farm. Any changes to this proposal would need to be re-assessed for possible impact.

While this proposed wind structure is acceptable, it does not constitute NAV CANADA's approval for any additional structures at this location. 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,

Aleksandar Trandafilovski
for
David Legault
Manager, Data Collection
Aeronautical Information Services

cc ATLR - Atlantic Region, Transport Canada (2011-543)

NAV CANADA

July 3, 2013

Your file
Greenfield Wind Project
Our file
13-2173

Ms. Lisa Fulton
Affinity Renewables Inc.
1383 Mt Thom Road
Salt Springs, NS
B0K 1P0

RE: Wind Farm: 3 Wind turbines - Truro, NS
(See attached spreadsheet)

Ms. Fulton,

We have evaluated the captioned proposal and NAV CANADA has no objection to the project as submitted. Analysis shows that 3 turbines could potentially be visible to the Halifax Radar and none to the Moncton Radar. The turbines have the potential to be a constant source of false targets and could mask real aircraft in the vicinity of the wind farm Any changes to this proposal would need to be re-assessed for possible impact.

While these proposed wind turbines are acceptable, it does not constitute NAV CANADA's approval for any additional wind turbines at this location.

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,

Aleksandar Trandafilovski
for
David Legault
Manager, Data Collection
Aeronautical Information Services

cc ATLR - Atlantic Region, Transport Canada (2011-543)

Lisa Fulton

From: "Mazerolle, Jean-Marc" <jean-marc.mazerolle@tc.gc.ca>
Date: June 27, 2013 8:55 AM
To: "'Lisa Fulton'" <lisa@rmsenergy.ca>
Subject: RE: Lighting Plan question

Yes, the original assessments are still valid. There were just some small changes to the lighting plan.

Jean-Marc

From: Lisa Fulton [mailto:lisa@rmsenergy.ca]
Sent: June 27, 2013 8:54 AM
To: Mazerolle, Jean-Marc
Subject: Re: Lighting Plan question

Thank you Jean-Marc.

To be clear, does this mean that the original approvals are valid for these projects currently? I just want to make sure I am not misunderstanding.

Thank you,

Lisa

From: Mazerolle, Jean-Marc
Sent: Thursday, June 27, 2013 8:32 AM
To: 'Lisa Fulton'
Subject: RE: Lighting Plan question

Hi Lisa,
I reviewed the changes.
For the Greenfield project, Turbines 1 & 3 can be lighted. I believe the middle turbine does not require lighting.
For the Limerock project, all 4 turbines should be lighted.
For the Kemptown project, Turbine 1 and 3 should be lighted.

Let me know if you have any question,

Jean-Marc

From: Lisa Fulton [mailto:lisa@rmsenergy.ca]
Sent: June 24, 2013 12:44 PM
To: Mazerolle, Jean-Marc
Subject: Re: Lighting Plan question

Hi Jean-Marc,

I have attached a file with three files for adjustments. The turbine model has not changed, nor have any other project details except for some layout adjustments. The largest movements are found at the Greenfield project. If they are too large (approximately 800m) then I will submit a new obstruction

clearance form. Please let me know what you would prefer for this particular location.

Thank you very much,

Lisa Fulton

From: Mazerolle, Jean-Marc
Sent: Monday, June 17, 2013 10:50 AM
To: 'Lisa Fulton'
Subject: RE: Lighting Plan question

Hi Lisa,
If the adjustments are minor, and wouldn't affect the overall lighting plan, there is no need to resubmit an aeronautical obstruction clearance form.
You can just send me an email with the updated coordinates, and I'll update our internal systems with the new info.

If the adjustments are significant (hundreds of meters), a new form should be submitted.

Hope this helps,

Jean-Marc

From: Lisa Fulton [mailto:lisa@rmsenergy.ca]
Sent: June 14, 2013 3:44 PM
To: Mazerolle, Jean-Marc
Subject: Re: Lighting Plan question

Hi Jean-Marc,

Thanks for getting back to me. I currently have 9 forms approved for not-yet-built wind projects. Some of the projects have adjusted turbine locations. Should I submit new obstruction forms for your review or is there an alteration form for situations where coordinates change slightly?

Thank you,

Lisa Fulton
902-759-6626

From: Mazerolle, Jean-Marc
Sent: Friday, June 14, 2013 2:03 PM
To: 'Lisa Fulton'
Subject: Lighting Plan question

Hello Lisa,
I received a note from one of our Technical Team Leads that you had questions relating to lighting plans or the aeronautical obstruction clearance forms.
Let me know if there is anything I can help you with. I'm still looking after obstructions for the Atlantic Region.

Cheers,

Jean-Marc Mazerolle
Civil Aviation Safety Inspector, Aerodromes and Air Navigation
Inspecteur/inspectrice de la sécurité de l'aviation civile, Aérodromes et navigation aérienne
Atlantic Region/Région de l'Atlantique
Jean-Marc.Mazerolle@tc.gc.ca

Transport Canada / Transports Canada

APPENDIX C TO CAR 621.19 - ANNEXE C RAC 621.19

TC File No./Ref No. - TC n° du dossier/N° de réf.: RECEIVED NOV 22 2011 +C2011-543

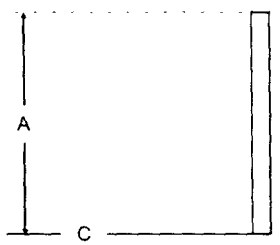
AERONAUTICAL OBSTRUCTION CLEARANCE FORM

FORMULAIRE D'AUTORISATION D'OBSTACLE AÉRIEN

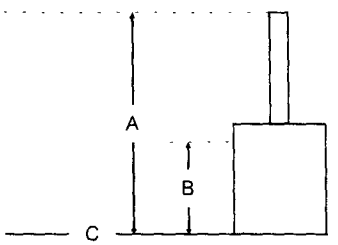
TO BE COMPLETED BY APPLICANT – À REMPLIR PAR LE REQUÉRANT

Operator's Name – Nom de l'opérateur: AFFINITY RENEWABLES INC.		
Operator's Address – Adresse de l'opérateur: 796 DAN FRASER ROAD, RR#3 WESTVILLE, NS B0K 2A0		
Operator's Contact – Agent de liaison de l'opérateur: LISA FULTON		
Contact's Telephone No. – N° de téléphone de liaison: 902-759-6626	Contact's FAX No. – N° de télécopieur de liaison: 902-925-9464	Contact's Email Address – Adresse électronique de liaison: lisafulton@eastlink.ca
Applicant's Name – Nom du requérant: AFFINITY RENEWABLES INC.	Address – Adresse: 796 DAN FRASER ROAD,	
City – Ville: WESTVILLE	Province/Territory - Province/Territoire: NOVA SCOTIA	Postal – Code – postal: B0K 2A0
Applicant's Telephone No. – N° de téléphone du requérant: 902-759-6626	Applicant's FAX No. – N° de télécopieur du requérant: 902-925-9464	Applicant's Email Address – Adresse électronique du requérant: lisafulton@eastlink.ca
Nearest city / town to proposed facility – Ville la plus proche de la structure proposée: TRURO	Geographic coordinates of structure – coordonnées géographiques de la structure: ° see attachment " N Latitude / Latitude N; W Longtitude / Longtitude O	☐ NAD27 ☒ NAD83 ☐ WGS84

TOWERS / ANTENNAS – TOURS / ANTENNES



BUILDING OR OTHER STRUCTURE – BÂTIMENT OU AUTRE STRUCTURE



		Feet – Pieds	Meters – Mètres
A	Height above ground – Hauteur au-dessus du sol	397	121
B	Building height – Hauteur du bâtiment		
C	Ground elevation above sea level – Hauteur du sol au-dessus du niveau de la mer	see attached	

List any tall adjacent buildings and structures which may shield the proposed structure (Attach sketch)

Faire une liste indiquant les structures et bâtiments avoisinants plus haut que le bâtiment projeté (Inclure un diagramme)

New struc. – Nouv. struc.	Add. to exist. struc. incl. total hght. – Ajout à un bâti. exis. incl. hauteur total	Proposed Construction – Date – de construction proposée
☑ Yes – Oui ☐ No – Non		DECEMBER 31, 2014

TYPE OF STRUCTURE (narrative description and function) – GENRE DE STRUCTURE (description narrative et fonction)

WIND TURBINE GENERATOR

Signature (of applicant) – (du requérant) ▶ [signature] Date (Y/A-M-D/J): 2011-11-11

TRANSPORT CANADA USE ONLY – À L'USAGE DE TRANSPORTS CANADA

AERONAUTICAL ASSESSMENT – ÉVALUATION AÉRONAUTIQUE

Site acceptable – Emplacement acceptable
☑ Yes – Oui ☐ No – Non (if no, reason – si non, pourquoi)

Lighting as per (TP382) required – Balisage lumineux tel que demandé au (TP382)
☑ Yes – Oui ☐ No – Non or – ou

Painting as per (TP382) required – Balisage peint tel que demandé au (TP382)
☑ Yes – Oui ☐ No – Non or – ou

Temporary lighting required – Nécessité d'un balisage lumineux temporaire
☑ Yes – Oui ☐ No – Non (if yes, type – si oui, de quel genre)

Advise Transport Canada in writing 90 days before construction – Avertir Transports Canada par écrit 90 jours avant la construction ▶ ☐ when construction starts – au commencement de la construction ☐ and on completion – et à la fin des travaux ☐ Valid to – Valide jusqu'au

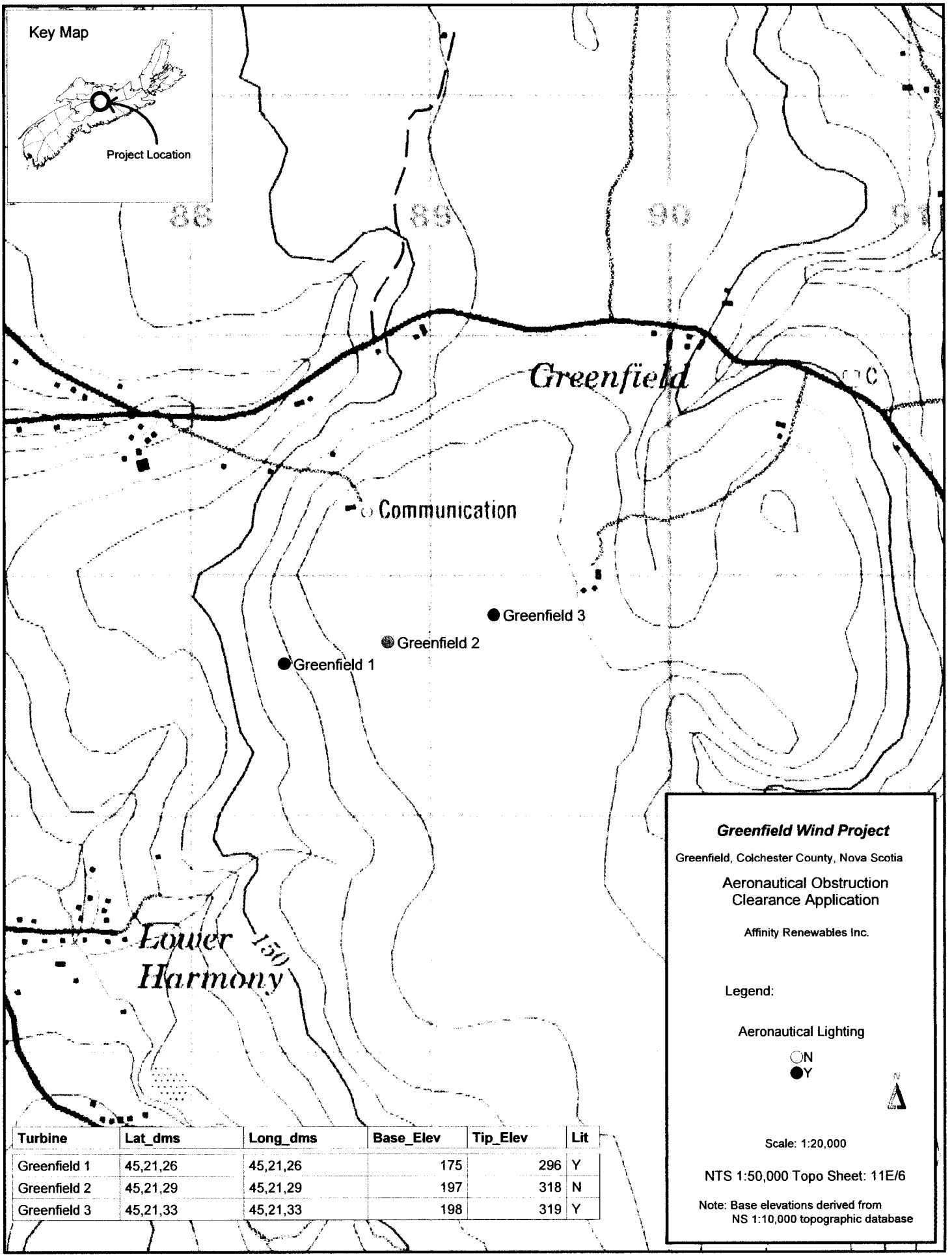
Civil Aviation Inspector (as required) – Inspecteur Aviation Civile (si nécessaire)
Comments – Commentaires

[signature] Signature (Y/A-M-D/J): 2011-12-21 Date

Regional Manager Aerodrome Safety – Gestionaire Régional Sécurité des aérodromes ▶ Signature [signature] Date (Y/A-M-D/J): 2011-12-21

26-0427 (0005-01)

Canada



Turbine	Lat_dms	Long_dms	Base_Elev	Tip_Elev	Lit
Greenfield 1	45,21,26	45,21,26	175	296	Y
Greenfield 2	45,21,29	45,21,29	197	318	N
Greenfield 3	45,21,33	45,21,33	198	319	Y

Greenfield Wind Project

Greenfield, Colchester County, Nova Scotia

Aeronautical Obstruction Clearance Application

Affinity Renewables Inc.

Legend:

Aeronautical Lighting

○N
●Y

Scale: 1:20,000

NTS 1:50,000 Topo Sheet: 11E/6

Note: Base elevations derived from NS 1:10,000 topographic database

Coordinate System: Latitude/Longitude, WGS 1984

Aeronautical Obstruction Clearance Form Attachment

Greenfield Wind Project

Greenfield, Colchester County, Nova Scotia

The table below describes: turbine by name; base elevation; tip elevation (total height of machine with blades in highest vertical position); whether or not ('N' or 'Y') the structure will be lit; the topographic map grid reference, and; the latitude and longitude in Degrees, Minutes, Seconds.

Table 1: Turbine location descriptions, Greenfield Wind Project

Turbine	Base Elevation	Tip Elevation	Lit?	Topo grid	Latitude: d, m, s	Longitude: d, m, s
Greenfield 1	175	296	Y	11E/6	45,21,26	-63,8,53
Greenfield 2	197	318	N	11E/6	45,21,29	-63,8,34
Greenfield 3	198	319	Y	11E/6	45,21,33	-63,8,13

The table below describes the elevation of the structure, in both feet and meters. Each GE 1.6mw SLE wind turbine generator has a hub height of 80m and a rotor diameter of 82.5m. Therefore, the total height of the structure in its highest vertical position is 121.25m above ground level.

H = hub height + rotor diameter/ 2

H = 80m + 82.5m/2

H = 80m + 41.25m

H = 121.25m

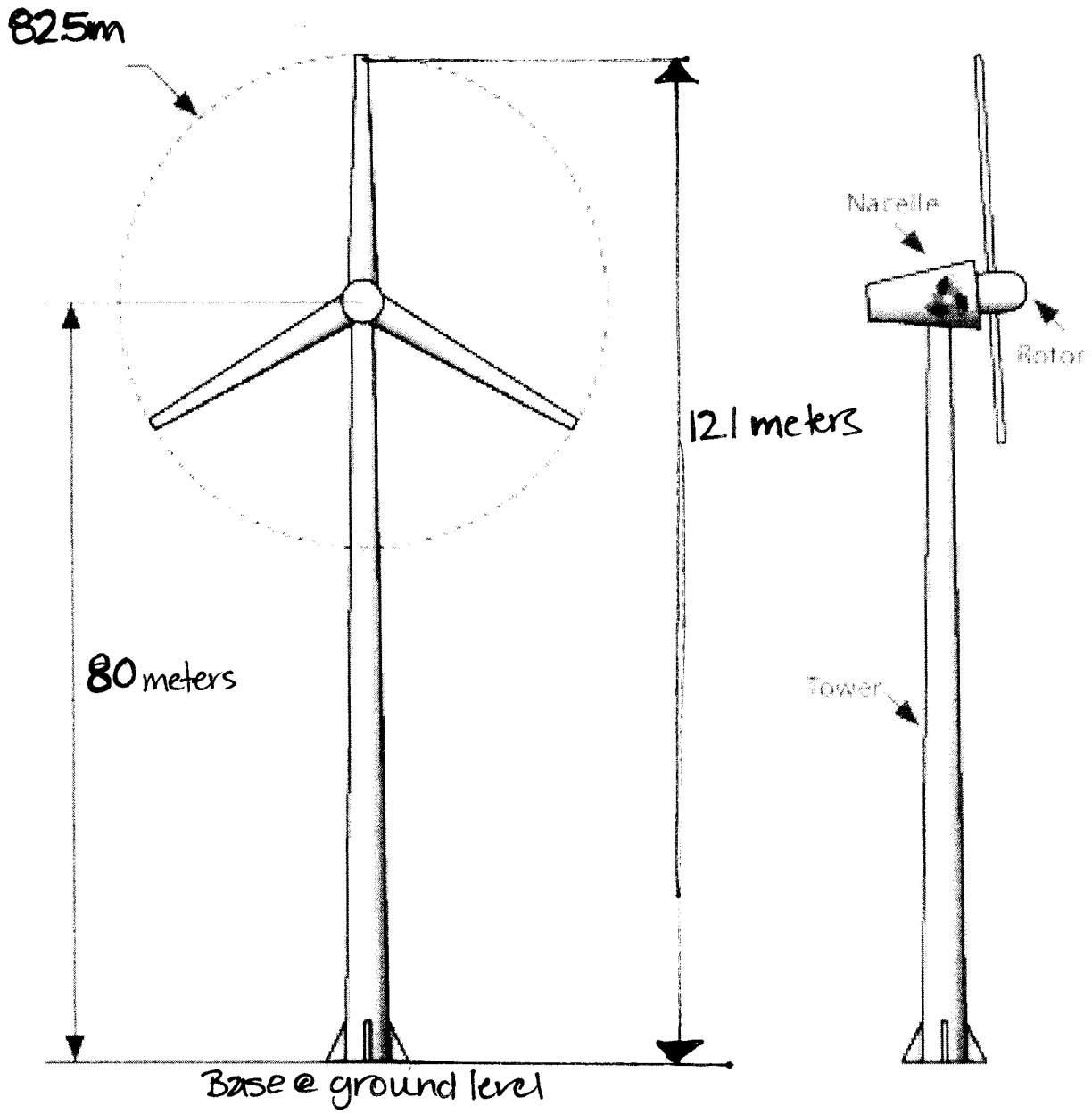
H = 262' + 270.5'/2

H = 262' + 135.25'

H = 397.25'

Table 2: Table describing elevations in imperial and metric

Turbine	Base elevation (ft)	Base elevation (m)	Total elevation (ft)	Total elevation (m)
Greenfield 1	574	175	971	296
Greenfield 2	646	197	1043	318
Greenfield 3	650	198	1047	319



Above is a diagram of the wind turbine generator with dimensions in meters. The structure's total height is 121 meters.

Structure Dimensions
GE 1.6mw SLE

03/11/2011

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

2700-1 (CCISF FC)

04 Oct 2013

Kirk Schmidt
Manager
Nortek Resource Solutions Inc
RR#1
26 Church Road,
Thorburn, NS B0K 1W0

Dear Mr. Schmidt,

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 detailed analysis of your proposed site, Greenfield Wind Farm, located in Colchester County, NS (WTA-3049). The results of the 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 Affinity Renewables 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 Affinity Renewables Inc Greenfield Wind Farm upon the DND/CF radars, equipment and its provision of Air Traffic Services.

Subject: Greenfield Notifications
From: "Kirk Schmidt" <kirk.schmidt@al-pro.ca>
Date: 21/10/2013 10:21 AM
To: <lisa@rmsenergy.ca>

ForwardedMessage.eml

Subject: RE: Greenfield Wind Farm
From: "Weather Radars Contact,National Radar Program [Ontario]" <weatherradars@ec.gc.ca>
Date: 08/10/2013 10:33 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>, "Weather Radars Contact,National Radar Program [Ontario]" <weatherradars@ec.gc.ca>
CC: "Lisa Fulton" <lisa@rmsenergy.ca>

Dear Mr. Kirk Schmidt,

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

Our preliminary assessment of the information provided to us via e-mail on October 3, 2013 indicates that any potential interference that may be created by the Greenfield Wind Farm located in Colchester County, 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,

Carolyn Wilson

Carolyn Wilson *(Rennie)*
National Radar Program
Meteorological Service of Canada
Environment Canada
4905 Dufferin Street
Toronto, Ontario M3H 5T4
Office : 3N-WS12
NEW Carolyn.Wilson@ec.gc.ca
Phone : 416-739-4931

Carolyn Wilson *(Rennie)*
Le Programme Nationale de Radar
Service météorologique du Canada

Environnement Canada
4905, rue Dufferin
Toronto, Ontario M3H 5T4
Bureau : 3N-WS12
NOUVEAU Carolyn.Wilson@ec.gc.ca
Telephone : 416-739-4931

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: Thursday, October 03, 2013 3:29 PM
To: Weather Radars Contact,National Radar Program [Ontario]
Cc: 'Lisa Fulton'
Subject: Greenfield Wind Farm

To Whom it May Concern:
I am forwarding this message on behalf of Affinity Renewable's Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing radar systems.
Please let me know if you have any questions or require any additional data.
Regards
Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

ForwardedMessage.eml

Subject: RE: Greenfield Wind Farm
From: "Cook, Norman" <COOKNB@gov.ns.ca>
Date: 08/10/2013 7:58 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>
CC: "'Lisa Fulton'" <lisa@rmsenergy.ca>, "Brown, Todd A" <BROWNTA@gov.ns.ca>

Hi, Kirk,

There is insignificant interference into the Province's Sites from the Greenfield Wind Farm data as presented to us.

Regards,

Norm Cook, P.Eng.

From: Kirk Schmidt [kirk@nortekresources.com]
Sent: October-03-13 4:30 PM
To: Cook, Norman

Cc: 'Lisa Fulton'
Subject: Greenfield Wind Farm

Hi Norm:
I am forwarding this message on behalf of Affinity Renewable's Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing communication systems.
Please let me know if you have any questions or require any additional data.
Regards
Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

--ForwardedMessage.eml

Subject: RE: Greenfield Wind Farm
From: "XNCR, Windfarm Coordinator" <Windfarm.Coordinator@DFO-MPO.GC.CA>
Date: 04/10/2013 10:34 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>

Hello,

The proposed wind farm (Greenfield) is located 84 km away from the Shannon Hill radar site. Therefore no interference issues are anticipated.

Regards,

Martin Grégoire, P. Eng
Canadian Coast Guard

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: October 3, 2013 3:28 PM
To: XNCR, Windfarm Coordinator
Cc: 'Lisa Fulton'
Subject: Greenfield Wind Farm

To Whom it May Concern:
I am forwarding this message on behalf of Affinity Renewable's Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing radar systems.
Please let me know if you have any questions or require any additional data.
Regards

Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

ForwardedMessage.eml

Subject: Detailed Analysis Results - Greenfield Wind Farm - Colchester County, NS - WTA-3049
From: <ADIN.SWITZER@forces.gc.ca>
Date: 04/10/2013 10:15 AM
To: <kirk@nortekresources.com>
CC: <vinceph@navcanada.ca>

Kirk,

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 detailed analysis of your proposed site, Greenfield Wind Farm, located in Colchester County, NS (WTA-3049). The results of the 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 Affinity Renewables 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, judgements or expenses that arise from the adverse effects, whether incidental, indirect or causal, of the Affinity Renewables Inc Greenfield 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 4834, or at +windturbines@forces.gc.ca.
A hard-copy of this response will be mailed separately.
<<Layout_Greenfield.xls>>
Sincerely,

Adin Switzer
Capt
AEC Liaison Officer
CCISF/ESICC
ATESS/ESTTMA
Défense nationale | National Defence
8 Wing Trenton, Astra, ON K0K 3W0
TEL: 613 392-2811 Ext4834 (CSN: 827-4834)
FAX: 613 965-3200
Gouvernement du Canada | Government of Canada
ü Please consider the environment before printing this email | S'il vous plaît pensez à l'environnement a

ForwardedMessage.eml

Subject: RE: Greenfield Wind Farm
From: "Land Use" <LandUse@navcanada.ca>
Date: 04/10/2013 10:01 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>

Kirk,

Thanks for the information. Could you confirm that the previously-received 3-turbine layout can be cancelled and totally replaced by this new 2-turbine layout? Or is there still a possibility that the original layout would be constructed (in which case we'll leave that file open)?

Thanks,

Christopher Csatlos
Supervisor - Land Use Office
Aeronautical Information Services, NAV CANADA
tel +1 613 248 4162
fax +1 613 248 4094
e-mail chris.csatlos@navcanada.ca

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: October-04-13 8:34 AM
To: Land Use
Cc: 'Lisa Fulton'
Subject: RE: Greenfield Wind Farm

Hi Chris:

My mistake, this is the same project but with an updated layout. Can you update the file and verify that the new layout will not create any interference issues?
Thank you for the help and I apologize for the confusion.

Regards

Kirk Schmidt
General Manager
Nortek Resource Solutions Inc.
RR # 1
Thorburn, NS
B0K 1W0
Tel (902) 922-3607
Fax (902) 922-3274
www.nortekresources.com

From: Land Use [mailto:LandUse@navcanada.ca]
Sent: Friday, October 04, 2013 9:16 AM
To: Kirk Schmidt
Subject: RE: Greenfield Wind Farm

Good morning Mr. Schmidt,

In June of 2013, we received a Land Use Proposal Submission from Ms. Fulton for a 3-turbine wind farm just north of this location (also called the Greenfield Wind Farm). Could you confirm if you submission is related to or replaces the previous submission by the same name?

Thank you,

Christopher Csatlos
Supervisor - Land Use Office
Aeronautical Information Services, NAV CANADA
tel +1 613 248 4162
fax +1 613 248 4094
e-mail chris.csatlos@navcanada.ca

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: October-03-13 4:18 PM
To: Land Use
Cc: 'Lisa Fulton'
Subject: Greenfield Wind Farm

To Whom it May Concern:
I am forwarding this message on behalf of Affinity Renewables Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing radar systems.
Please let me know if you have any questions or require any additional data.
Regards
Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274

Web: nortekresources.com
Email: kirk@nortekresources.com

-- ForwardedMessage.eml

Subject: RE: Greenfield Wind Farm
From: "Land Use" <LandUse@navcanada.ca>
Date: 04/10/2013 9:16 AM
To: "Kirk Schmidt" <kirk@nortekresources.com>

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Thank you,

Christopher Csatlos
Supervisor - Land Use Office
Aeronautical Information Services, NAV CANADA
tel +1 613 248 4162
fax +1 613 248 4094
e-mail chris.csatlos@navcanada.ca

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: October-03-13 4:18 PM
To: Land Use
Cc: 'Lisa Fulton'
Subject: Greenfield Wind Farm

To Whom it May Concern:
I am forwarding this message on behalf of Affinity Renewables Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing radar systems.
Please let me know if you have any questions or require any additional data.
Regards
Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

-- ForwardedMessage.eml

Subject: FW:
From: <MARIO.LAVOIE2@forces.gc.ca>

Date: 04/10/2013 9:01 AM
To: <kirk@nortekresources.com>
CC: <+WindTurbines@forces.gc.ca>

Hello,

I have reviewed your proposal in respect to DND's radio communication systems, and I have no objections or concerns.

Thank you for coordinating with DND.

Have a good Day.

Mr. Mario Lavoie
Spectrum Engineering Technician
National Defence | Défense nationale
Ottawa, Canada K1A 0K2
mario.lavoie2@forces.gc.ca
Telephone | Téléphone 613-992-3479
Facsimile | Télécopieur 613-991-3961
Government of Canada | Gouvernement du Canada

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: Thursday, 3, October, 2013 15:09 PM
To: Lavoie MJ@ADM(IM) J6 Coord@Ottawa-Hull
Cc: 'Lisa Fulton'
Subject:

Hi Mario:
I am forwarding this message on behalf of Affinity Renewable's Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing communication systems.
Please let me know if you have any questions or require any additional data.
Regards

Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

---ForwardedMessage.eml---

Subject: RE: Greenfield Wind Farm
From: "Cook, Norman" <COOKNB@gov.ns.ca>
Date: 04/10/2013 8:13 AM

To: "'Kirk Schmidt'" <kirk@nortekresources.com>
CC: "'Lisa Fulton'" <lisa@rmsenergy.ca>, "Brown, Todd A" <BROWNTA@gov.ns.ca>

Receipt acknowledged, Kirk,

Regards,

Norm

From: Kirk Schmidt [mailto:kirk@nortekresources.com]
Sent: Thursday, October 03, 2013 4:30 PM
To: Cook, Norman
Cc: 'Lisa Fulton'
Subject: Greenfield Wind Farm

Hi Norm:
I am forwarding this message on behalf of Affinity Renewable's Inc.which is currently developing the Greenfield Wind Farm which is located in Colchester County, Nova Scotia. I have attached the proposed turbine coordinates and pertinent data, as well as a general location map for your perusal. Can I ask you to open a file for this wind turbine project and complete your internal review to determine if you anticipate any interference issues with your existing communication systems.
Please let me know if you have any questions or require any additional data.
Regards
Kirk Schmidt, M.Sc.F., RPF
Manager
Nortek Resource Solutions Inc.
Nova Scotia, Canada
Tel: 902.922.3607
Fax: 902.922.3274
Web: nortekresources.com
Email: kirk@nortekresources.com

Attachments:

Greenfield Wind Farm.eml	13.9 KB
Greenfield Wind Farm.eml	6.6 KB
Greenfield Wind Farm.eml	9.9 KB
ForwardedMessage.eml	25.3 KB
Layout_Greenfield.xls	15.5 KB
RE: Greenfield Wind Farm.eml	20.7 KB
Greenfield Wind Farm.eml	11.1 KB
ForwardedMessage.eml	2.4 MB
Layout_Greenfield.xls	15.5 KB

Greenfield Location Map.pdf	1.7 MB
Greenfield Wind Farm.eml	9.7 KB

Appendix B

Mi'kmaq Ecological Knowledge Study

Appendix C

ACCDC and Heritage Screening Results

NOVA SCOTIA
Communities, Culture & Heritage
Heritage Division
1747 Summer Street
Halifax, Nova Scotia
B3H 3A6
Tel: (902) 424-6475
Fax: (902) 424-0560

November 21st, 2011

Lisa Fulton
c/o Affinity Renewables Inc.
796 Dan Fraser Road
RR# # Greenhill, NS B0K 2A0

Dear Ms. Fulton:

RE: **Environment Screening 11-09-07d**
Greenfield Wind Project
Affinity Renewables Inc.

Further to your request of September 7th, 2011, staff of the Heritage Division have reviewed their files for reference to the presence of heritage resources in the study area. Please be aware that our information is not comprehensive, in that it is incomplete and of varying degrees of accuracy with respect to the precise location and condition of heritage resources.

Archaeological and Historical Site Remains

Staff notes that there are no recorded archaeology sites on file for the study area. The potential for pre-contact archaeological resources for the study area can be considered moderate. The study area is within approximately 20 kilometers of the Debert and Belmont Palaeo-Indian archaeology sites. The potential for historic archaeological resources for the study area can be considered moderate to high as historic maps indicate settlement.

Staff recommends that an assessment for archaeological resources takes place.

Botany

Staff have reviewed the records for plant species-at-risk and report that the following species-at-risk are found, or may be expected, within the footprint as outlined in the request in the Greenfield, Colchester Co. area:

Allium tricoccum (provincially Red-listed)
Alopecurus aequalis (provincially Yellow-listed)
Anenome virginiana, var. alba (provincially Yellow-listed)
Botrychium lanceolatum, var. angustsegmentum (provincially Yellow-listed)
Carex garberi (provincially Red-listed)
Carex hirtifolia (provincially Red-listed)
Carex plantaginea (provincially Red-listed)
Caulophyllum thalictroides (provincially Red-listed)
Cinna arundinacea (provincially Red-listed)

Dryopteris fragrans (provincially Yellow-listed)
Equisetum pratense (provincially Yellow-listed)
Floerkea prserpinacoides (provincially Yellow-listed)
Laportea canadensis (provincially Yellow-listed)
Lilium canadense (provincially Yellow-listed)
Megalodonta beckii (provincially Yellow-listed)
Platanthera flava, var. flava (provincially Yellow-listed)
Polygala sanguinea (provincially Yellow-listed)
Rudbeckia laciniata var. gaspereauensis (provincially Yellow-listed)
Stellaria longifolia (provincially Yellow-listed)
Triosteum aurantiacum (provincially Yellow-listed)
Viola nephrophylla (provincially Yellow-listed)
Zizia aurea (provincially Yellow-listed)

The presence/absence of these species should be determined during field assessment and reported in any submission. Staff recommendation is that field assessment be conducted during the growing season or when the identity can be determined to species or variety.

Zoology

Staff do not have records for the footprint outlined. However, staff do have records for species of significance within the general area:

Grooved Fingernail Clam *(Sphaerium similie)*
Blue-spotted Salamander *(Ambystoma laterale)* - popyploid populations
Eastern Red-back Salamander *(Plethodon cinereus) erethrystic forma*

The adjacent Salmon River watershed supports records for Atlantic Salmon *(Salmo salar)* - COSEWIC Endangered, and easternmost population of Blacknose Dace *(Rhynichthys atratulus)*.

There are nesting records for the following bird species of concern:

Boblink *(Dolichonyx oryzivorus)* - provincially Yellow-listed
Canada Warbler *(Wilsonia canadensis)* - provincially Yellow-listed
Boreal Chickadee *(Parus hudsonicus)* - provincially Yellow-listed
Barn Swallow *(Hirundo rustica)* - provincially Yellow-listed
Olive-sided Flycatcher *(Contopus borealis)* - provincially Yellow-listed
Chimney Swift *(Chaetura pelagica)* - provincially Yellow-listed

Staff notes that there are potential bat hibernation sites in the general area of the footprint, associated with abandoned mine sites.

Palaeontology

This project will disrupt rocks from the Horton Group. The Horton Group may contain vertebrate and invertebrate traces, possible vertebrate and invertebrate fossils, as well as possible plant fossils.

In the event that fossils are found during construction, work should stop and contact be made with the Heritage Division.

If you have any questions, please contact me at 424-6475.

Sincerely,

Laura Bennett,
Coordinator, Special Places

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada Atlantique

DATA REPORT 4643: Greenfield 1-3, NS

Prepared 23 November, 2011
by S.H. Gerriets

CONTENTS OF REPORT

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of circa 85 NatureServe data centres and heritage programs in 50 states, 10 provinces and 1 territory, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The ACCDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies, plus 4 provincial governments, outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC reports known observations of rare and endangered flora and fauna, in and near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and also known sites of ecological interest. Data summarised in each report is attached as DBF files which may be opened from within data software (Excel, Access) or mapped in GIS (ArcView, MapInfo, AutoCAD).

1.1 RESTRICTIONS

The ACCDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By receiving ACCDC data, recipients assent to the following limits of use:

a.) Data is restricted to use by trained personnel who are sensitive to its potential threat to rare and endangered taxa.
b.) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
c.) The ACCDC requires Data Users to cease using and delete data 12 months after receipt.
d.) ACCDC data responses are restricted to that data in our Data System at the time of the data request.
e.) Data is qualified as to location (Precision) and time (SurveyDate); cf Data Dictionary for details.
f.) ACCDC data reports are not to be construed as exhaustive inventories of taxa in an area.
g.) The non-occurrence of a taxon cannot be inferred by its absence in an ACCDC data report.

1.2 ADDITIONAL INFORMATION

Please direct biological questions about ACCDC data to: Sean Blaney, ACCDC: (506) 364-2658, and technical data queries to: Stefen Gerriets, ACCDC: (506) 364-2657.
For provincial information on rare taxa and protected areas, or information on game animals, deer yards, old growth forest, archeological sites, fish habitat etc, please contact Sherman Boates, NSDNR: (902) 679-6146.

2.0 RARE AND ENDANGERED TAXA

A 100km buffer around the study area contains 3294 records of 445 taxa from 99 sources, a relatively low-to-moderate density of records (quintile 2): 0.10 rec/km2.

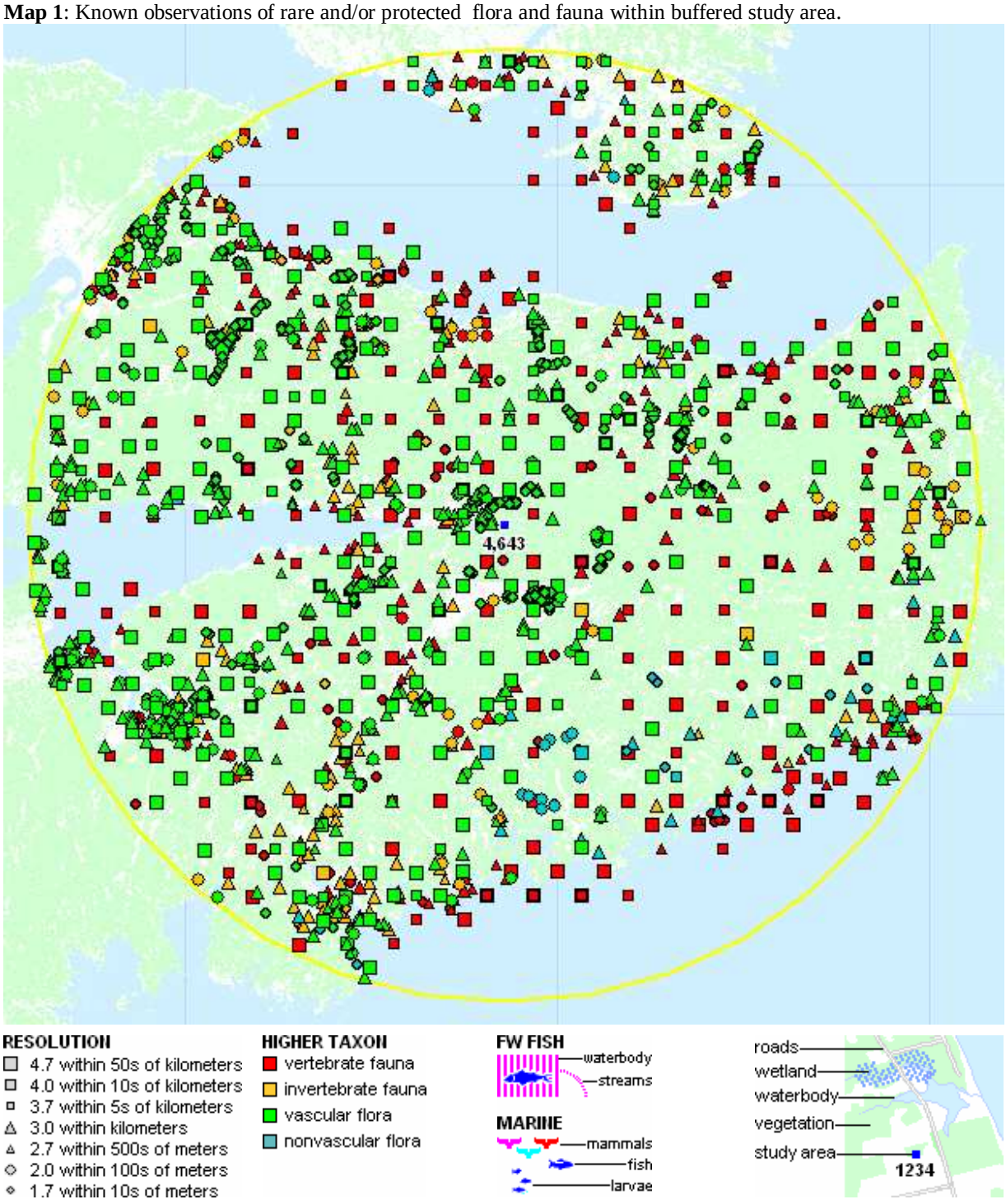
2.1 FLORA

A 100km buffer around the study area contains 1593 records of 279 vascular, 60 records of 15 nonvascular flora (see attached *ob.dbf).

2.2 FAUNA

A 100km buffer around the study area contains 1233 records of 71 vertebrate, 408 records of 80 invertebrate fauna (cf attached *ob.dbf). Sensitive data: Wood Turtles are POTENTIALLY present in the study area (cf attached WOTU.rtf).

Map 1: Known observations of rare and/or protected flora and fauna within buffered study area.

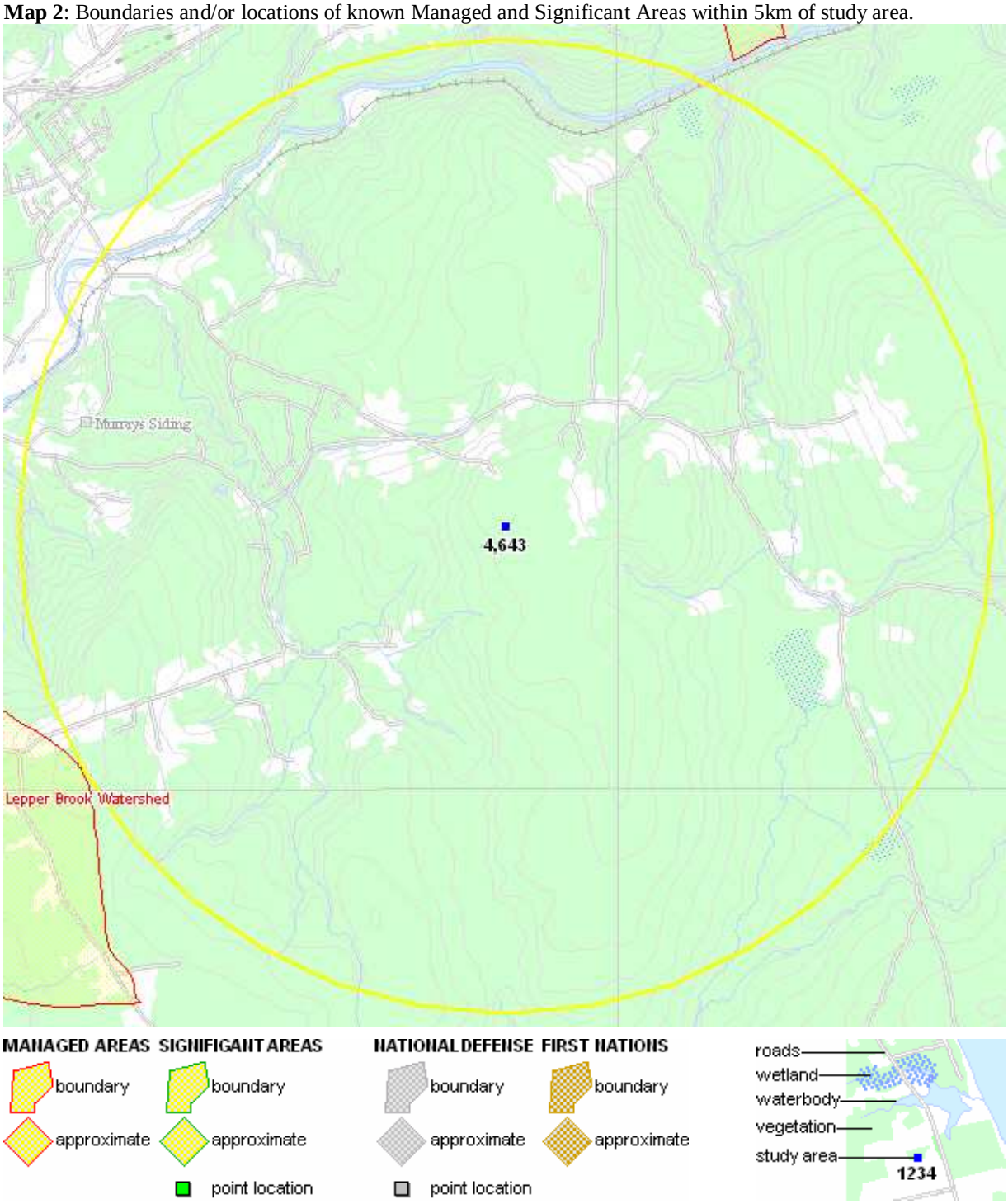


3.0 SPECIAL AREAS

3.1 MANAGED AREAS
No Managed Areas identified.

3.2 SIGNIFICANT AREAS
No biologically significant sites were identified.

Map 2: Boundaries and/or locations of known Managed and Significant Areas within 5km of study area.



4.0 TAXON LISTS

Rare and/or endangered taxa within the buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation. [p] = vascular plant, [n] = nonvascular plant, [a] = vertebrate animal, [i] = invertebrate animal, [c] = community.

4.1 FLORA

	scientific name	common name	prov. rarity	prov. status	COSEWIC	obs	dist.km
n	Erioderma pedicellatum (Atlantic pop.)	Boreal Felt Lichen (Atlantic pop.)	S1S2	Endangered	E	43	40 ±1
p	Clethra alnifolia	Coastal Sweet Pepperbush	S1	Vulnerable	SC	1	88 ±0.1
p	Isoetes prototypus	Prototype Quillwort	S2	Vulnerable	SC	3	46 ±0.1
p	Lilaeopsis chinensis	Eastern Lilaeopsis	S2	Vulnerable	SC	1	69 ±0
n	Pseudevernia cladonia	Ghost Antler Lichen	S2S3		SC	4	60 ±0
p	Floerkea proserpinacoides	False Mermaidweed	S2		NAR	1	7 ±10
p	Cypripedium arietinum	Ram's-Head Lady's-Slipper	S1	Endangered		12	52 ±0.1
p	Helianthemum canadense	Rockrose	S1	Endangered		1	93 ±1
p	Thuja occidentalis	Eastern White Cedar	S1S2	Vulnerable		16	9 ±0.5
n	Ditrichum rhynchostegium	a Moss	S1			1	77 ±0.1
n	Bryhnia graminicolor	a Moss	S1			1	93 ±0.5
p	Selaginella rupestris	Rock Spikemoss	S1			1	82 ±0
p	Botrychium lunaria	Common Moonwort	S1			1	80 ±5
p	Cryptogramma stelleri	Steller's Rockbrake	S1			3	4 ±0
p	Adiantum pedatum	Northern Maidenhair Fern	S1			6	13 ±1
p	Potamogeton nodosus	Long-leaved Pondweed	S1			1	99 ±5
p	Puccinellia fasciculata	Saltmarsh Alkali Grass	S1			2	95 ±1
p	Festuca subverticillata	Nodding Fescue	S1			8	40 ±1
p	Elymus hystrix var. bigeloviana	Spreading Wild Rye	S1			5	31 ±10
p	Elymus hystrix	Spreading Wild Rye	S1			1	78 ±0.1
p	Elymus wiegandii	Wiegand's Wild Rye	S1			12	16 ±0
p	Cinna arundinacea	Sweet Wood Reed Grass	S1			3	15 ±0
p	Bromus latiglumis	Broad-Glumed Brome	S1			6	15 ±0
p	Alopecurus aequalis	Short-awned Foxtail	S1			17	5 ±1
p	Malaxis brachypoda	White Adder's-Mouth	S1			4	69 ±10
p	Allium tricoccum	Wild Leek	S1			6	14 ±0.1
p	Juncus vaseyi	Vasey's Rush	S1			3	5 ±0
p	Iris prismatica	Slender Blue Flag	S1			2	87 ±10
p	Scirpus pedicellatus	Stalked Bulrush	S1			2	17 ±0
p	Cyperus lupulinus ssp. macilentus	Hop Flatsedge	S1			2	48 ±10
p	Carex wiegandii	Wiegand's Sedge	S1			2	36 ±0
p	Carex tuckermanii	Tuckerman's Sedge	S1			8	37 ±0.1
p	Carex plantaginea	Plantain-Leaved Sedge	S1			3	8 ±0.1
p	Carex livida var. radicaulis	Livid Sedge	S1			1	90 ±10
p	Carex laxiflora var. laxiflora	Loose-Flowered Sedge	S1			1	98 ±1
p	Carex pellita	Woolly Sedge	S1			5	5 ±0
p	Carex haydenii	Hayden's Sedge	S1			2	12 ±1
p	Carex garberi	Garber's Sedge	S1			3	5 ±0
p	Carex chordorrhiza	Creeping Sedge	S1			2	97 ±10
p	Carex foenea	Silvery-flowered Sedge	S1			2	88 ±5
p	Viola canadensis	Canada Violet	S1			2	7 ±10
p	Pilea pumila	Dwarf Clearweed	S1			4	12 ±0
p	Dirca palustris	Eastern Leatherwood	S1			13	30 ±10
p	Amelanchier nantucketensis	Nantucket Serviceberry	S1			1	91 ±1
p	Ranunculus pensylvanicus	Pennsylvania Buttercup	S1			3	49 ±0
p	Clematis occidentalis	Purple Clematis	S1			2	99 ±10
p	Montia fontana	Water Blinks	S1			1	88 ±1
p	Polygala polygama	Racemed Milkwort	S1			1	87 ±1
p	Fraxinus pennsylvanica	Red Ash	S1			2	72 ±10
p	Ribes americanum	Wild Black Currant	S1			3	9 ±5
p	Desmodium glutinosum	Large Tick-Trefoil	S1			3	73 ±0
p	Desmodium canadense	Canada Tick-trefoil	S1			6	5 ±0
p	Cuscuta cephalanthi	Buttonbush Dodder	S1			1	45 ±1
p	Hypericum majus	Large St. John's-wort	S1			3	68 ±0
p	Hudsonia tomentosa	Woolly Beach-heath	S1			2	63 ±10
p	Draba glabella	Rock Whitlow-Grass	S1			2	93 ±0.1
p	Cochlearia tridactylites	Limestone Scurvy-grass	S1			4	90 ±10
p	Cynoglossum virginianum var. boreale	Wild Comfrey	S1			1	82 ±1
p	Hieracium umbellatum	Umbellate Hawkweed	S1			1	79 ±5
p	Pseudognaphalium obtusifolium	Eastern Cudweed	S1			1	95 ±1
p	Bidens hyperborea	Estuary Beggarticks	S1			1	69 ±0
p	Antennaria parlinii	Parlin's Pussytoes	S1			8	36 ±0
p	Zizia aurea	Golden Alexanders	S1			8	4 ±0
p	Sanicula odorata	Clustered Sanicle	S1			6	27 ±10
p	Dichanthelium acuminatum var. lindheimeri	Woolly Panic Grass	S1?			1	48 ±0.1
p	Schoenoplectus robustus	Sturdy Bulrush	S1?			2	60 ±10
p	Viola sagittata var. ovata	Arrow-Leaved Violet	S1?			3	80 ±0
p	Rubus pensilvanicus	Pennsylvania Blackberry	S1?			1	83 ±5
p	Crataegus submollis	Quebec Hawthorn	S1?			7	44 ±5
p	Crataegus robinsonii	Robinson's Hawthorn	S1?			2	9 ±5
p	Amelanchier stolonifera	Running Serviceberry	S1?			1	84 ±1
p	Humulus lupulus var. lupuloides	Common Hop	S1?			2	83 ±5
p	Suaeda rolandii	Roland's Sea-Blite	S1?			2	82 ±10
p	Suaeda calceoliformis	Horned Sea-blite	S1?			8	50 ±1
p	Chenopodium rubrum	Red Pigweed	S1?			2	56 ±10
p	Atriplex acadiensis	Maritime Saltbush	S1?			2	59 ±10

p	Solidago hispida	Hairy Goldenrod	S1?	2	53 ±10
p	Hieracium kalmii var. fasciculatum	Kalm's Hawkweed	S1?	1	88 ±5
n	Polytrichum formosum	a Hair-Cap Moss	S1S2	1	95 ±1
n	Platydictya subtilis	a Moss	S1S2	1	95 ±1
n	Campylostelium saxicola	a Moss	S1S2	1	95 ±1
p	Calamagrostis stricta var. stricta	Slim-stemmed Reed Grass	S1S2	1	83 ±10
p	Calamagrostis stricta ssp. stricta	Slim-stemmed Reed Grass	S1S2	1	98 ±1
p	Platanthera flava var. herbiola	Tubercled Orchid	S1S2	2	39 ±0
p	Najas gracillima	Thread-Like Naiad	S1S2	1	77 ±0.1
p	Juncus greenei	Greene's Rush	S1S2	4	69 ±5
p	Carex tenera	Tender Sedge	S1S2	7	26 ±0
p	Carex pensylvanica	Pennsylvania Sedge	S1S2	3	61 ±10
p	Gratiola neglecta	Clammy Hedge-Hyssop	S1S2	3	9 ±10
p	Ranunculus sceleratus	Cursed Buttercup	S1S2	4	87 ±1
p	Hepatica nobilis var. obtusa	Round-lobed Hepatica	S1S2	18	21 ±1
p	Hepatica nobilis	Round-Lobe Hepatica	S1S2	2	83 ±0.1
p	Anemone virginiana var. alba	Virginia Anemone	S1S2	3	4 ±5
p	Arabis hirsuta var. pycnocarpa	Western Hairy Rockcress	S1S2	1	74 ±0.1
p	Huperzia selago	Northern Firmoss	S1S3	12	15 ±5
p	Equisetum pratense	Meadow Horsetail	S2	9	5 ±0
p	Woodsia glabella	Smooth Cliff Fern	S2	2	36 ±10
p	Dryopteris fragrans var. remotiuscula	Fragrant Wood Fern	S2	9	17 ±10
p	Asplenium trichomanes-ramosum	Green Spleenwort	S2	5	47 ±10
p	Asplenium trichomanes	Maidenhair Spleenwort	S2	5	94 ±5
p	Potamogeton friesii	Fries' Pondweed	S2	2	9 ±10
p	Piptatherum canadense	Canada Rice Grass	S2	4	24 ±1
p	Spiranthes lucida	Shining Ladies'-Tresses	S2	11	5 ±0
p	Platanthera macrophylla	Large Round-Leaved Orchid	S2	6	16 ±1
p	Platanthera flava var. flava	Tubercled Orchid	S2	1	92 ±10
p	Platanthera flava	Tubercled Orchid	S2	3	14 ±10
p	Listera australis	Southern Twayblade	S2	2	63 ±0.1
p	Goodyera tesselata	Checkered Rattlesnake-Plantain	S2	2	83 ±0.5
p	Goodyera pubescens	Downy Rattlesnake-Plantain	S2	4	43 ±1
p	Cypripedium reginae	Showy Lady's-Slipper	S2	13	17 ±10
p	Cypripedium parviflorum var. makasin	Yellow Lady's-slipper	S2	2	85 ±0.1
p	Cypripedium parviflorum var. pubescens	Yellow Lady's-slipper	S2	9	57 ±10
p	Allium schoenoprasum var. sibiricum	Wild Chives	S2	1	11 ±10
p	Vallisneria americana	Wild Celery	S2	4	21 ±1
p	Eriophorum gracile	Slender Cottongrass	S2	8	9 ±10
p	Carex hystericina	Porcupine Sedge	S2	6	36 ±0.1
p	Carex comosa	Bearded Sedge	S2	7	23 ±0.1
p	Carex castanea	Chestnut Sedge	S2	1	66 ±0
p	Carex capillaris	Hairlike Sedge	S2	1	95 ±0.1
p	Carex atratiformis	Scabrous Black Sedge	S2	1	87 ±1
p	Carex atlantica ssp. capillacea	Atlantic Sedge	S2	2	49 ±10
p	Viola nephrophylla	Northern Bog Violet	S2	8	8 ±0.1
p	Limosella australis	Southern Mudwort	S2	15	58 ±0
p	Tiarella cordifolia	Heart-leaved Foamflower	S2	11	5 ±0
p	Saxifraga paniculata ssp. neogaea	White Mountain Saxifrage	S2	2	90 ±10
p	Parnassia palustris var. parviflora	Marsh Grass-of-Parnassus	S2	1	88 ±1
p	Salix sericea	Silky Willow	S2	1	59 ±1
p	Salix pedicellaris	Bog Willow	S2	6	17 ±0
p	Galium labradoricum	Labrador Bedstraw	S2	3	16 ±0
p	Galium boreale	Northern Bedstraw	S2	7	52 ±5
p	Ranunculus gmelinii	Gmelin's Water Buttercup	S2	8	17 ±0
p	Ranunculus flammula var. flammula	Lesser Spearwort	S2	5	7 ±10
p	Caltha palustris	Yellow Marsh Marigold	S2	1	63 ±0.1
p	Anemone virginiana var. virginiana	Virginia Anemone	S2	2	9 ±10
p	Anemone virginiana	Virginia Anemone	S2	8	5 ±0
p	Anemone quinquefolia	Wood Anemone	S2	7	15 ±0.1
p	Anemone canadensis	Canada Anemone	S2	4	73 ±10
p	Samolus valerandi ssp. parviflorus	Seaside Brookweed	S2	4	58 ±0
p	Primula mistassinica	Mistassini Primrose	S2	5	5 ±0
p	Plantago rugelii	Rugel's Plantain	S2	8	11 ±10
p	Rumex salicifolius var. mexicanus	Triangular-valve Dock	S2	3	71 ±10
p	Polygonum arifolium	Halberd-leaved Tearthumb	S2	9	52 ±0.1
p	Oenothera fruticosa ssp. glauca	Narrow-leaved Evening Primrose	S2	6	11 ±10
p	Epilobium strictum	Downy Willowherb	S2	5	95 ±1
p	Myriophyllum verticillatum	Whorled Water Milfoil	S2	3	18 ±0
p	Myriophyllum farwellii	Farwell's Water Milfoil	S2	7	15 ±0.1
p	Chamaesyce polygonifolia	Seaside Spurge	S2	2	73 ±1
p	Vaccinium uliginosum	Alpine Bilberry	S2	1	88 ±10
p	Vaccinium caespitosum	Dwarf Bilberry	S2	6	3 ±1
p	Vaccinium boreale	Northern Blueberry	S2	4	70 ±10
p	Empetrum eamesii ssp. eamesii	Pink Crowberry	S2	2	93 ±5
p	Shepherdia canadensis	Soapberry	S2	9	73 ±10
p	Triosteum aurantiacum	Orange-fruited Tinker's Weed	S2	23	5 ±0
p	Hudsonia ericoides	Pinebarren Golden Heather	S2	3	78 ±10
p	Stellaria humifusa	Saltmarsh Starwort	S2	7	64 ±0.1
p	Minuartia groenlandica	Greenland Stitchwort	S2	10	53 ±10
p	Draba arabisans	Rock Whitlow-Grass	S2	3	89 ±1
p	Cardamine parviflora var. arenicola	Small-flowered Bittercress	S2	3	93 ±1
p	Arabis drummondii	Drummond's Rockcress	S2	8	4 ±0
p	Betula michauxii	Newfoundland Dwarf Birch	S2	14	32 ±10
p	Caulophyllum thalictroides	Blue Cohosh	S2	21	14 ±0.1
p	Impatiens pallida	Pale Jewelweed	S2	1	93 ±1

p	Symphyotrichum undulatum	Wavy-leaved Aster	S2	5	74 ±10
p	Senecio pseudoarnica	Seabeach Ragwort	S2	6	11 ±10
p	Rudbeckia laciniata var. gaspereauensis	Cut-Leaved Coneflower	S2	5	13 ±10
p	Rudbeckia laciniata	Cut-Leaved Coneflower	S2	5	9 ±0
p	Iva frutescens ssp. oraria	Big-leaved Marsh-elder	S2	6	92 ±1
p	Iva frutescens	Big-leaved Marsh-elder	S2	3	93 ±0
p	Hieracium robinsonii	Robinson's Hawkweed	S2	2	10 ±1
p	Erigeron philadelphicus	Philadelphia Fleabane	S2	5	28 ±5
p	Panax trifolius	Dwarf Ginseng	S2	3	83 ±0.5
p	Osmorhiza longistylis	Smooth Sweet Cicely	S2	13	37 ±0.1
p	Conioselinum chinense	Chinese Hemlock-parsley	S2	2	27 ±5
n	Timmia megapolitana	a Moss	S2?	1	69 ±1
n	Paludella squarrosa	a Moss	S2?	1	74 ±10
n	Buxbaumia aphylla	Bug On a Stick	S2?	1	95 ±1
n	Brachythecium albicans	a Moss	S2?	1	95 ±1
p	Dichanthelium linearifolium	Narrow-leaved Panic Grass	S2?	4	4 ±0
p	Juncus dudleyi	Dudley's Rush	S2?	5	27 ±1
p	Eleocharis ovata	Ovate Spikerush	S2?	4	22 ±0.5
p	Carex peckii	Peck's Sedge	S2?	2	12 ±0.1
p	Carex houghtoniana	Houghton's Sedge	S2?	2	23 ±5
p	Amelanchier fernaldii	Fernald's Serviceberry	S2?	1	79 ±5
p	Epilobium coloratum	Purple-veined Willowherb	S2?	2	52 ±1
p	Symphyotrichum boreale	Boreal Aster	S2?	3	11 ±10
p	Hieracium kalmii var. kalmii	Kalm's Hawkweed	S2?	4	22 ±5
p	Hieracium kalmii	Kalm's Hawkweed	S2?	2	31 ±1
n	Sphagnum wulfianum	a Peatmoss	S2S3	1	40 ±0.1
n	Fissidens bryoides	a Moss	S2S3	1	95 ±1
n	Dicranella subulata	Awl-Leaved Fork Moss	S2S3	1	92 ±0.1
n	Amblystegium varium	a Moss	S2S3	1	93 ±0.5
p	Ophioglossum pusillum	Northern Adder's-tongue	S2S3	3	66 ±10
p	Botrychium simplex	Least Moonwort	S2S3	4	50 ±0
p	Botrychium lanceolatum var. angustisegmentum	Triangle Moonwort	S2S3	5	28 ±1
p	Lycopodium hickeyi	Hickey's Tree-clubmoss	S2S3	1	79 ±0.1
p	Potamogeton zosteriformis	Flat-stemmed Pondweed	S2S3	10	18 ±0
p	Potamogeton richardsonii	Richardson's Pondweed	S2S3	2	87 ±1
p	Potamogeton obtusifolius	Blunt-leaved Pondweed	S2S3	8	61 ±0
p	Poa glauca	Glaucous Blue Grass	S2S3	3	73 ±1
p	Panicum tuckermanii	Tuckerman's Panic Grass	S2S3	7	49 ±0
p	Spiranthes romanzoffiana	Hooded Ladies'-Tresses	S2S3	2	88 ±5
p	Spiranthes ochroleuca	Yellow Ladies'-tresses	S2S3	3	58 ±1
p	Cypripedium parviflorum	Yellow Lady's-slipper	S2S3	18	42 ±10
p	Coeloglossum viride var. virescens	Long-bracted Frog Orchid	S2S3	1	47 ±0.1
p	Lilium canadense	Canada Lily	S2S3	60	8 ±1
p	Eleocharis olivacea	Yellow Spikerush	S2S3	4	15 ±0
p	Carex hirtifolia	Pubescent Sedge	S2S3	23	3 ±1
p	Carex adusta	Lesser Brown Sedge	S2S3	8	10 ±0.5
p	Rumex maritimus	Sea-Side Dock	S2S3	5	87 ±0.1
p	Polygonum ramosissimum var. ramosissimum	Bushy Knotweed	S2S3	1	97 ±5
p	Polygonum ramosissimum	Bushy Knotweed	S2S3	2	87 ±0.1
p	Polygonum buxiforme	Small's Knotweed	S2S3	5	11 ±10
p	Polygala sanguinea	Blood Milkwort	S2S3	13	7 ±10
p	Fraxinus nigra	Black Ash	S2S3	36	19 ±10
p	Hedeoma pulegioides	American False Pennyroyal	S2S3	7	39 ±5
p	Halenia deflexa	Spurred Gentian	S2S3	1	93 ±1
p	Empetrum eamesii ssp. atropurpureum	Pink Crowberry	S2S3	1	96 ±0.5
p	Hypericum dissimulatum	Disguised St John's-wort	S2S3	3	49 ±10
p	Betula pumila var. pumila	Bog Birch	S2S3	1	99 ±10
p	Symphyotrichum ciliolatum	Fringed Blue Aster	S2S3	9	29 ±1
p	Asclepias incarnata ssp. pulchra	Swamp Milkweed	S2S3	4	35 ±1
p	Schizaea pusilla	Little Curlygrass Fern	S3	4	69 ±1
p	Botrychium dissectum	Cut-leaved Moonwort	S3	6	33 ±5
p	Isoetes acadiensis	Acadian Quillwort	S3	2	38 ±1
p	Equisetum variegatum	Variegated Horsetail	S3	13	9 ±0
p	Sparganium natans	Small Burreed	S3	10	14 ±5
p	Dichanthelium clandestinum	Deer-tongue Panic Grass	S3	5	40 ±0
p	Platanthera orbiculata	Small Round-leaved Orchid	S3	15	11 ±10
p	Platanthera hookeri	Hooker's Orchid	S3	6	52 ±0.1
p	Platanthera grandiflora	Large Purple Fringed Orchid	S3	22	9 ±1
p	Goodyera repens	Lesser Rattlesnake-plantain	S3	4	74 ±0.1
p	Corallorhiza trifida	Early Coralroot	S3	14	10 ±0.5
p	Juncus subcaudatus	Woodland Rush	S3	4	32 ±10
p	Juncus marginatus	Grass-leaved Rush	S3	1	74 ±10
p	Eleocharis nitida	Quill Spikerush	S3	5	61 ±10
p	Carex rosea	Rosy Sedge	S3	13	7 ±0.5
p	Carex lupulina	Hop Sedge	S3	5	16 ±0
p	Carex eburnea	Bristle-leaved Sedge	S3	2	28 ±0.1
p	Verbena hastata	Blue Vervain	S3	44	5 ±0
p	Laportea canadensis	Canada Wood Nettle	S3	13	12 ±0
p	Geocaulon lividum	Northern Comandra	S3	4	62 ±0
p	Salix petiolaris	Meadow Willow	S3	15	10 ±0
p	Rosa palustris	Swamp Rose	S3	2	15 ±0
p	Agrimonia gryposepala	Hooked Agrimony	S3	16	5 ±0
p	Pyrola asarifolia	Pink Pyrola	S3	8	5 ±0
p	Polygonum scandens	Climbing False Buckwheat	S3	23	5 ±0
p	Polygonum pensylvanicum	Pennsylvania Smartweed	S3	15	7 ±10
p	Teucrium canadense	Canada Germander	S3	3	52 ±5

p	Proserpinaca pectinata	Comb-leaved Mermaidweed	S3	3	33 ±1
p	Proserpinaca palustris var. crebra	Marsh Mermaidweed	S3	4	16 ±0
p	Proserpinaca palustris	Marsh Mermaidweed	S3	2	16 ±0
p	Geranium bicknellii	Bicknell's Crane's-bill	S3	2	72 ±0.1
p	Bartonia virginica	Yellow Bartonia	S3	2	52 ±10
p	Empetrum eamesii	Pink Crowberry	S3	5	78 ±10
p	Viburnum edule	Squashberry	S3	1	27 ±0
p	Stellaria longifolia	Long-leaved Starwort	S3	10	12 ±0.5
p	Campanula aparinoides	Marsh Bellflower	S3	30	5 ±0
p	Packera paupercula	Balsam Groundsel	S3	10	5 ±0
p	Megalodonta beckii	Water Beggarticks	S3	7	13 ±10
p	Erigeron hyssopifolius	Hyssop-leaved Fleabane	S3	5	33 ±0.5
p	Bidens connata	Purple-stemmed Beggarticks	S3	2	94 ±5
p	Asclepias incarnata ssp. incarnata	Swamp Milkweed	S3	1	76 ±0.1
p	Asclepias incarnata	Swamp Milkweed	S3	16	16 ±0
p	Polypodium appalachianum	Appalachian Polypody	S3?	4	5 ±0
p	Lycopodium sitchense	Sitka Clubmoss	S3?	3	11 ±5
p	Lycopodium sabinifolium	Ground-Fir	S3?	4	23 ±0.1
p	Potamogeton praelongus	White-stemmed Pondweed	S3?	10	22 ±1
p	Elodea canadensis	Canada Waterweed	S3?	3	73 ±0
p	Carex tribuloides	Blunt Broom Sedge	S3?	3	35 ±0
p	Carex cryptolepis	Hidden-scaled Sedge	S3?	2	17 ±0
p	Carex bebbii	Bebb's Sedge	S3?	10	5 ±0
p	Carex foenea	Fernald's Hay Sedge	S3?	7	25 ±0.5
p	Lycopodiella appressa	Southern Bog Clubmoss	S3S4	3	10 ±1
p	Lycopodium complanatum	Northern Clubmoss	S3S4	5	19 ±0.1
p	Equisetum scirpoides	Dwarf Scouring-Rush	S3S4	14	5 ±1
p	Cystopteris bulbifera	Bulblet Bladder Fern	S3S4	10	8 ±0.1
p	Trisetum spicatum	Narrow False Oats	S3S4	7	4 ±0.1
p	Liparis loeselii	Loesel's Twayblade	S3S4	9	37 ±1
p	Luzula parviflora	Small-flowered Woodrush	S3S4	2	59 ±0
p	Juncus nodosus	Knotted Rush	S3S4	6	74 ±5
p	Sisyrinchium angustifolium	Narrow-leaved Blue-eyed-grass	S3S4	4	17 ±0
p	Eriophorum chamissonis	Russet Cotton-Grass	S3S4	2	99 ±0
p	Symplocarpus foetidus	Eastern Skunk Cabbage	S3S4	4	97 ±10
p	Lindernia dubia	Yellow-seeded False Pimperel	S3S4	16	37 ±0
p	Rhamnus alnifolia	Alder-leaved Buckthorn	S3S4	10	17 ±0
p	Polygonum robustius	Stout Smartweed	S3S4	2	16 ±0
p	Sanguinaria canadensis	Bloodroot	S3S4	19	12 ±0.1
p	Utricularia gibba	Humped Bladderwort	S3S4	4	28 ±10
p	Myriophyllum sibiricum	Siberian Water Milfoil	S3S4	1	17 ±0
p	Atriplex franktonii	Frankton's Saltbush	S3S4	1	48 ±1
p	Isoetes lacustris	Lake Quillwort	S4	4	38 ±1
p	Solidago simplex var. randii	Sticky Goldenrod	SH	1	97 ±1
p	Lactuca hirsuta var. sanguinea	Hairy Lettuce	SH	3	63 ±10
p	Lobelia spicata	Pale-Spiked Lobelia	SNR	10	30 ±10

4.2 FAUNA

	scientific name	common name	prov. rarity	prov. status	COSEWIC	obs	dist.km
a	Sterna dougallii	Roseate Tern	S1B	Endangered	E	14	75 ±0.5
a	Calidris canutus rufa	Red Knot rufa ssp	S2S3M	Endangered	E	24	20 ±0.5
i	Gomphus ventricosus	Skillet Clubtail	S1		E	2	56 ±0.5
a	Salmo salar pop. 1	Atlantic Salmon - inner Bay of Fundy pops	S2		E	23	10 ±10
a	Salmo salar pop. 1	Atlantic Salmon - inner Bay of F	S2		E	1	5 ±0
a	Numenius borealis	Eskimo Curlew	SXM		E	1	95 ±0.5
a	Catharus bicknelli	Bicknell's Thrush	S1S2B	Vulnerable	T	1	82 ±5
a	Glyptemys insculpta	Wood Turtle	S3	Vulnerable	T	76	9 ±10
a	Morone saxatilis	Striped Bass	S1		T	2	45 ±10
a	Acipenser oxyrinchus	Atlantic Sturgeon	S1?		T	4	37 ±10
a	Caprimulgus vociferus	Whip-Poor-Will	S1?B		T	5	38 ±5
a	Sturnella magna	Eastern Meadowlark	S1B		T	1	88 ±5
a	Dolichonyx oryzivorus	Bobolink	S3S4B		T	196	4 ±5
a	Histrionicus histrionicus pop. 1	Harlequin Duck - Eastern pop.	S2N	Endangered	SC	5	81 ±10
a	Falco peregrinus anatum	Peregrine Falcon anatum ssp	S1B	Vulnerable	SC	1	92 ±10
a	Passerculus sandwichensis princeps	Savannah Sparrow princeps ssp	S1B		SC	1	77 ±0.1
a	Bucephala islandica (Eastern pop.)	Barrow's Goldeneye (Eastern pop.)	S1N		SC	4	56 ±0.1
a	Asio flammeus	Short-eared Owl	S1S2		SC	4	57 ±5
i	Alasmidonta varicosa	Brook Floater	S1S2		SC	8	41 ±0.1
i	Danaus plexippus	Monarch	S2B		SC	5	10 ±1
a	Euphagus carolinus	Rusty Blackbird	S2S3B		SC	87	7 ±0.1
a	Aegolius funereus	Boreal Owl	S1B		NAR	2	27 ±0.1
a	Chlidonias niger	Black Tern	S1B		NAR	2	98 ±0.1
a	Fulica americana	American Coot	S1B		NAR	4	38 ±5
a	Glaucomys volans	Southern Flying Squirrel	S2S3		NAR	1	92 ±10
a	Hemidactylium scutatum	Four-toed Salamander	S3		NAR	24	41 ±0.1
a	Sialia sialis	Eastern Bluebird	S3B		NAR	16	19 ±5
a	Sterna hirundo	Common Tern	S3B		NAR	86	40 ±0.5
a	Accipiter gentilis	Northern Goshawk	S3S4		NAR	47	18 ±10
a	Alces americanus	Moose	S1	Endangered		20	27 ±10
a	Sorex dispar	Long-tailed Shrew	S1			2	46 ±10
i	Strophitus undulatus	Creeper	S1			2	71 ±0.1
i	Leptodea ochracea	Tidewater Mucket	S1			3	85 ±10
i	Chromagrion conditum	Aurora Damsel	S1			1	78 ±1
i	Enallagma signatum	Orange Bluet	S1			2	66 ±0.1
i	Enallagma aspersum	Azure Bluet	S1			2	81 ±1
i	Coenagrion resolutum	Taiga Bluet	S1			4	33 ±0.1

i	Williamsonia fletcheri	Ebony Boghaunter	S1	1	51 ±0.5
i	Somatochlora franklini	Delicate Emerald	S1	2	55 ±1
i	Somatochlora cingulata	Lake Emerald	S1	1	100 ±0.1
i	Somatochlora brevicincta	Quebec Emerald	S1	2	72 ±0.1
i	Dorocordulia lepida	Petite Emerald	S1	1	81 ±1
i	Aeshna subarctica	Subarctic Darner	S1	1	81 ±1
i	Ophiogomphus mainensis	Maine Snaketail	S1	1	81 ±0.1
i	Ophiogomphus aspersus	Brook Snaketail	S1	4	69 ±0.1
i	Oeneis jutta ascerta	Jutta Arctic	S1	1	78 ±0.1
i	Oeneis jutta	Jutta Arctic	S1	3	70 ±10
i	Polygonia gracilis	Hoary Comma	S1	2	10 ±1
i	Polygonia satyrus	Satyr Comma	S1	2	90 ±1
i	Plebejus saepiolus	Greenish Blue	S1	1	88 ±1
i	Erora laeta	Early Hairstreak	S1	1	96 ±0.5
i	Satyrium acadica	Acadian Hairstreak	S1	2	49 ±1
i	Lycaena hyllus	Bronze Copper	S1	2	43 ±0
a	Perimyotis subflavus	Eastern Pipistrelle	S1?	5	30 ±5
a	Vireo gilvus	Warbling Vireo	S1?B	7	58 ±5
a	Toxostoma rufum	Brown Thrasher	S1?B	4	42 ±5
a	Tringa solitaria	Solitary Sandpiper	S1?B,S4S5M	6	45 ±0.5
a	Hylocichla mustelina	Wood Thrush	S1B	10	18 ±0.1
a	Cistothorus palustris	Marsh Wren	S1B	1	99 ±5
a	Progne subis	Purple Martin	S1B	5	68 ±5
a	Gallinula chloropus	Common Moorhen	S1B	7	40 ±5
a	Calidris minutilla	Least Sandpiper	S1B,S5M	6	50 ±5
a	Picoides dorsalis	American Three-toed Woodpecker	S1S2	1	94 ±5
i	Stylurus scudderi	Zebra Clubtail	S1S2	3	48 ±0.5
i	Somatochlora kennedyi	Kennedy's Emerald	S1S2	3	76 ±1
i	Ophiogomphus rupinsulensis	Rusty Snaketail	S1S2	3	48 ±0.5
i	Nymphalis vaualbum j-album	Compton Tortoiseshell	S1S2	5	10 ±1
i	Callophrys lanoraieensis	Bog Elfin	S1S2	2	64 ±1
a	Passerina cyanea	Indigo Bunting	S1S2B	2	24 ±5
a	Eremophila alpestris	Horned Lark	S1S2B,S4N	4	34 ±5
a	Charadrius semipalmatus	Semipalmated Plover	S1S2B,S5M	10	40 ±5
a	Loxia curvirostra	Red Crossbill	S1S2B,SNAN	1	92 ±5
a	Myotis septentrionalis	Northern Long-eared Bat	S2	6	35 ±10
a	Salmo salar	Atlantic Salmon	S2	44	32 ±10
a	Asio otus	Long-eared Owl	S2	9	31 ±0.1
i	Lampsilis radiata	Eastern Lampmussel	S2	36	15 ±0.1
i	Lestes eurinus	Amber-Winged Spreadwing	S2	1	81 ±1
i	Leucorrhinia glacialis	Crimson-Ringed Whiteface	S2	3	78 ±1
i	Somatochlora forcipata	Forcipate Emerald	S2	2	86 ±1
i	Epitheca princeps	Prince Baskettail	S2	5	51 ±0.5
i	Gomphus descriptus	Harpoon Clubtail	S2	2	54 ±1
i	Nymphalis milberti	Milbert's Tortoiseshell	S2	6	31 ±1
i	Nymphalis vaualbum	Compton Tortoiseshell	S2	1	98 ±1
i	Polygonia comma	Eastern Comma	S2	4	87 ±1
i	Boloria chariclea	Arctic Fritillary	S2	4	27 ±1
i	Callophrys niphon	Eastern Pine Elfin	S2	7	71 ±1
i	Callophrys henrici	Henry's Elfin	S2	5	71 ±1
i	Satyrium calanus falacer	Banded Hairstreak	S2	1	90 ±0.5
i	Satyrium calanus	Banded Hairstreak	S2	5	27 ±1
i	Pieris oleracea	Mustard White	S2	7	10 ±1
i	Amblyscirtes vialis	Common Roadside-Skipper	S2	5	49 ±1
i	Amblyscirtes hegon	Salt and Pepper Skipper	S2	8	54 ±1
i	Thorybes pylades	Northern Cloudywing	S2	3	36 ±1
a	Lasiurus cinereus	Hoary Bat	S2?	1	59 ±10
a	Vireo philadelphicus	Philadelphia Vireo	S2?B	9	16 ±0.1
a	Piranga olivacea	Scarlet Tanager	S2B	10	19 ±5
a	Myiarchus crinitus	Great Crested Flycatcher	S2B	8	30 ±5
a	Empidonax traillii	Willow Flycatcher	S2B	3	79 ±5
a	Rallus limicola	Virginia Rail	S2B	19	25 ±5
a	Anas strepera	Gadwall	S2B	6	81 ±0.1
a	Anas clypeata	Northern Shoveler	S2B	7	50 ±5
a	Bucephala clangula	Common Goldeneye	S2B,S5N	36	37 ±5
i	Alasmidonta undulata	Triangle Floater	S2S3	18	15 ±0.1
i	Erynnis juvenalis	Juvenal's Duskywing	S2S3	10	27 ±1
a	Icterus galbula	Baltimore Oriole	S2S3B	30	24 ±5
a	Pooecetes gramineus	Vesper Sparrow	S2S3B	23	23 ±5
a	Phalaropus fulicaria	Red Phalarope	S2S3M	1	95 ±0.5
a	Phalaropus lobatus	Red-necked Phalarope	S2S3M	3	31 ±0.5
i	Amphiagrion saucium	Eastern Red Damsel	S3	1	12 ±1
i	Nehalennia gracilis	Sphagnum Sprite	S3	3	78 ±1
i	Sympetrum semicinctum	Band-Winged Meadowhawk	S3	1	89 ±1
i	Sympetrum danae	Black Meadowhawk	S3	2	85 ±1
i	Nannothemis bella	Elfin Skimmer	S3	8	65 ±1
i	Somatochlora walshii	Brush-Tipped Emerald	S3	1	81 ±1
i	Somatochlora tenebrosa	Clamp-Tipped Emerald	S3	8	65 ±1
i	Somatochlora elongata	Ski-Tailed Emerald	S3	3	80 ±1
i	Dorocordulia libera	Racket-Tailed Emerald	S3	4	81 ±1
i	Gomphaeschna furcillata	Harlequin Darner	S3	6	59 ±1
i	Boyeria grafiana	Ocellated Darner	S3	4	48 ±0.1
i	Aeshna eremita	Lake Darner	S3	6	81 ±1
i	Aeshna constricta	Lance-Tipped Darner	S3	14	12 ±1
i	Aeshna clepsydra	Mottled Darner	S3	8	50 ±1
i	Ophiogomphus carolus	Riffle Snaketail	S3	19	20 ±1

i	Lanthus parvulus	Northern Pygmy Clubtail	S3	6	9 ±5
i	Cordulegaster maculata	Twin-Spotted Spiketail	S3	2	94 ±1
i	Enodia anthedon	Northern Pearly-Eye	S3	6	49 ±1
i	Polygonia faunus	Green Comma	S3	8	10 ±1
i	Euphydryas phaeton	Baltimore Checkerspot	S3	12	10 ±1
i	Satyrium liparops strigosum	Striped Hairstreak	S3	2	90 ±0.5
i	Satyrium liparops	Striped Hairstreak	S3	1	71 ±1
i	Lycaena dospassosi	Salt Marsh Copper	S3	11	43 ±0.1
i	Hesperia comma laurentina	Laurentian Skipper	S3	12	28 ±1
i	Hesperia comma	Common Branded Skipper	S3	3	28 ±1
a	Coccyzus erythropthalmus	Black-billed Cuckoo	S3?B	39	24 ±5
a	Mimus polyglottos	Northern Mockingbird	S3B	23	42 ±5
a	Sterna paradisaea	Arctic Tern	S3B	19	74 ±10
a	Anas acuta	Northern Pintail	S3B	20	19 ±5
i	Polygonia interrogationis	Question Mark	S3B	11	10 ±1
a	Tringa melanoleuca	Greater Yellowlegs	S3B,S5M	28	29 ±0.1
a	Mergus serrator	Red-breasted Merganser	S3B,S5N	33	38 ±5
a	Limosa haemastica	Hudsonian Godwit	S3M	12	27 ±0.5
a	Numenius phaeopus	Whimbrel	S3M	12	45 ±0.5
a	Pluvialis dominica	American Golden-Plover	S3M	20	32 ±0.5
a	Calidris maritima	Purple Sandpiper	S3N	12	54 ±0.5
a	Cardinalis cardinalis	Northern Cardinal	S3S4	13	8 ±0.1
a	Cepphus grylle	Black Guillemot	S3S4	18	53 ±5
i	Polygonia progne	Gray Comma	S3S4	10	10 ±1
i	Speyeria aphrodite	Aphrodite Fritillary	S3S4	9	10 ±1
i	Callophrys polios	Hoary Elfin	S3S4	10	64 ±1
i	Feniseca tarquinius	Harvester	S3S4	12	10 ±1
a	Sayornis phoebe	Eastern Phoebe	S3S4B	47	20 ±5

4.3 RANGE MAPS

The legally protected taxa listed below are linked to the study area by predictive range maps based upon expert estimates of distribution. Taxa listed here but not in the observation data above, are unknown within the study area but perhaps present. Ranges of rank 1 indicate possible occurrence, those of rank 2 and 3 increasingly less probable.

	scientific name	common name	prov. rarity	prov. status	COSEWIC	range
a	Glyptemys insculpta	Wood Turtle	S3	Vulnerable	T	1
p	Listera australis	Southern Twayblade	S2			1
p	Isoetes prototypus	Prototype Quillwort	S2	Vulnerable	SC	1
i	Danaus plexippus	Monarch	S2B		SC	1
a	Salmo salar pop. 1	Atlantic Salmon - inner Bay of Fundy	S2		E	1

5.0 SOURCE BIBLIOGRAPHY

The recipient of this data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

recs	source
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Appendix D

Sound Modeling Study

Project:
745 Greenfield

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11/13/2013 1:05 PM / 1

Licensed user:
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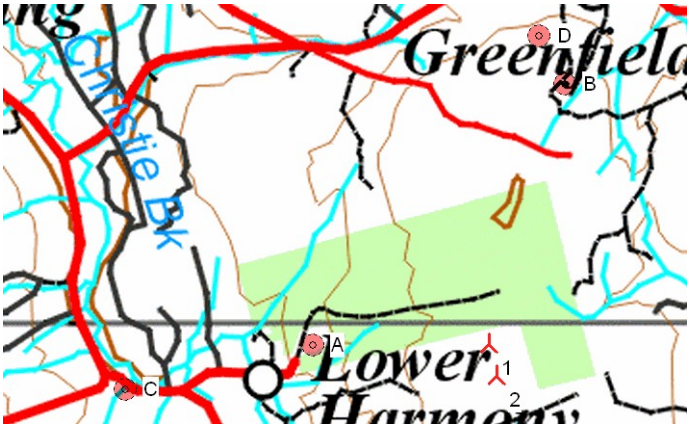
Calculated:
11/13/2013 1:00 PM/2.9.207

DECIBEL - Main Result

Calculation: GE 1.60 82.5 @ 80 m

Noise calculation model:
ISO 9613-2 General
Wind speed:
7.0 m/s
Ground attenuation:
Alternative
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
5.0 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)



Scale 1:50,000

New WTG Noise sensitive area

WTGs

	UTM (north)-NAD83 (US+CA) Zone: 20				WTG type							Noise data				
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	LwA,ref	Pure tones
			[m]					[kW]	[m]	[m]			[m/s]	[dB(A)]	
1	489,054	5,021,679	190.0	GE WIND ENERGY GE 1.6 1...	Yes	GE WIND ENERGY	GE 1.6-1,600	1,600	82.5	80.0	USER	06.2 1.6 1.68 -82.5 Prodcut Accoustic Spec	7.0	106.0	0 dB
2	489,108	5,021,467	195.0	GE WIND ENERGY GE 1.6 1...	Yes	GE WIND ENERGY	GE 1.6-1,600	1,600	82.5	80.0	USER	06.2 1.6 1.68 -82.5 Prodcut Accoustic Spec	7.0	106.0	0 dB

Calculation Results

Sound Level

Noise sensitive area		UTM (north)-NAD83 (US+CA) Zone: 20				Demands	Sound Level		Demands fulfilled ?
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
A	Noise sensitive point: (1)	487,887	5,021,677	139.6	2.0	36.0	33.3	241	Yes
B	Noise sensitive point: (2)	489,560	5,023,399	188.3	2.0	36.0	27.9	895	Yes
C	Noise sensitive point: (3)	486,645	5,021,389	103.7	2.0	36.0	24.5	1,483	Yes
D	38 Coppergate Dr	489,392	5,023,718	181.1	5.0	36.0	26.0	1,170	Yes

Distances (m)

	WTG	
NSA	1	2
A	1167	1239
B	1793	1984
C	2426	2464
D	2067	2269

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745 Greenfield

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Calculated:
11/13/2013 1:00 PM/2.9.207

DECIBEL - Detailed results

Calculation: GE 1.60 82.5 @ 80 m **Noise calculation model:** ISO 9613-2 General 7.0 m/s

Assumptions

Calculated L(DW) = LWA,ref + K + Dc - (Adiv + Aatm + Agr + Abar + Amisc) - Cmet
(when calculated with ground attenuation, then Dc = Domega)

LWA,ref:	Sound pressure level at WTG
K:	Pure tone
Dc:	Directivity correction
Adiv:	the attenuation due to geometrical divergence
Aatm:	the attenuation due to atmospheric absorption
Agr:	the attenuation due to ground effect
Abar:	the attenuation due to a barrier
Amisc:	the attenuation due to miscellaneous other effects
Cmet:	Meteorological correction

Calculation Results

Noise sensitive area: A Noise sensitive point: (1)

WTG **Wind speed: 7.0 m/s**

No.	Distance [m]	Sound distance [m]	Mean height [m]	Visible	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	1,167	1,174	36.8	Yes	**30.67**	106.0	3.01	72.39	2.23	3.72	0.00	0.00	78.34	0.00
2	1,239	1,246	36.6	Yes	**29.95**	106.0	3.01	72.91	2.37	3.79	0.00	0.00	79.06	0.00

Sum 33.33

Noise sensitive area: B Noise sensitive point: (2)

WTG **Wind speed: 7.0 m/s**

No.	Distance [m]	Sound distance [m]	Mean height [m]	Visible	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	1,793	1,795	36.7	Yes	**25.42**	106.0	3.01	76.08	3.41	4.10	0.00	0.00	83.59	0.00
2	1,984	1,986	40.3	Yes	**24.17**	106.0	3.01	76.96	3.77	4.10	0.00	0.00	84.84	0.00

Sum 27.85

Noise sensitive area: C Noise sensitive point: (3)

WTG **Wind speed: 7.0 m/s**

No.	Distance [m]	Sound distance [m]	Mean height [m]	Visible	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	2,426	2,432	48.7	Yes	**21.56**	106.0	3.01	78.72	4.62	4.11	0.00	0.00	87.45	0.00
2	2,464	2,470	50.2	Yes	**21.36**	106.0	3.01	78.85	4.69	4.10	0.00	0.00	87.65	0.00

Sum 24.47

Noise sensitive area: D 38 Coppergate Dr

WTG **Wind speed: 7.0 m/s**

No.	Distance [m]	Sound distance [m]	Mean height [m]	Visible	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]	Cmet [dB]
1	2,067	2,069	32.8	Yes	**23.51**	106.0	3.01	77.31	3.93	4.26	0.00	0.00	85.50	0.00
2	2,269	2,271	35.7	Yes	**22.31**	106.0	3.01	78.12	4.31	4.26	0.00	0.00	86.70	0.00

Sum 25.96

Project:
745 Greenfield

Printed/Page
11/13/2013 1:05 PM / 3

Licensed user:
AL-PRO GmbH & Co.KG
Dorfstraße 100
DE-26532 Großheide
+49 (0) 4936 6986-0
Kirk Schmidt / kirk.schmidt@al-pro.ca

Calculated:
11/13/2013 1:00 PM/2.9.207

DECIBEL - Assumptions for noise calculation

Calculation: GE 1.60 82.5 @ 80 m **Noise calculation model:** ISO 9613-2 General 7.0 m/s

Noise calculation model:
ISO 9613-2 General
Wind speed:
7.0 m/s
Ground attenuation:
Alternative
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure and Impulse tone penalty are added to WTG source noise
Height above ground level, when no value in NSA object:
5.0 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)
Octave data not required
Air absorption: 1.9 dB/km

WTG: GE WIND ENERGY GE 1.6 1600 82.5 !O!
Noise: 06.2 1.6 1.68 -82.5 Prodcut Accoustic Spec

Source	Source/Date	Creator	Edited
GE	11/6/2012	USER	11/6/2013 1:06 PM

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
From Windcat	80.0	7.0	106.0	No

NSA: Noise sensitive point: (1)-A
Predefined calculation standard:
Imission height(a.g.l.): 2.0 m

Noise demand: 36.0 dB(A)
Distance demand:

NSA: Noise sensitive point: (2)-B
Predefined calculation standard:
Imission height(a.g.l.): 2.0 m

Noise demand: 36.0 dB(A)
Distance demand:

NSA: Noise sensitive point: (3)-C
Predefined calculation standard:
Imission height(a.g.l.): 2.0 m

Noise demand: 36.0 dB(A)
Distance demand:

NSA: 38 Coppergate Dr-D
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 36.0 dB(A)
Distance demand:

Project:
745 Greenfield

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11/13/2013 1:05 PM / 4

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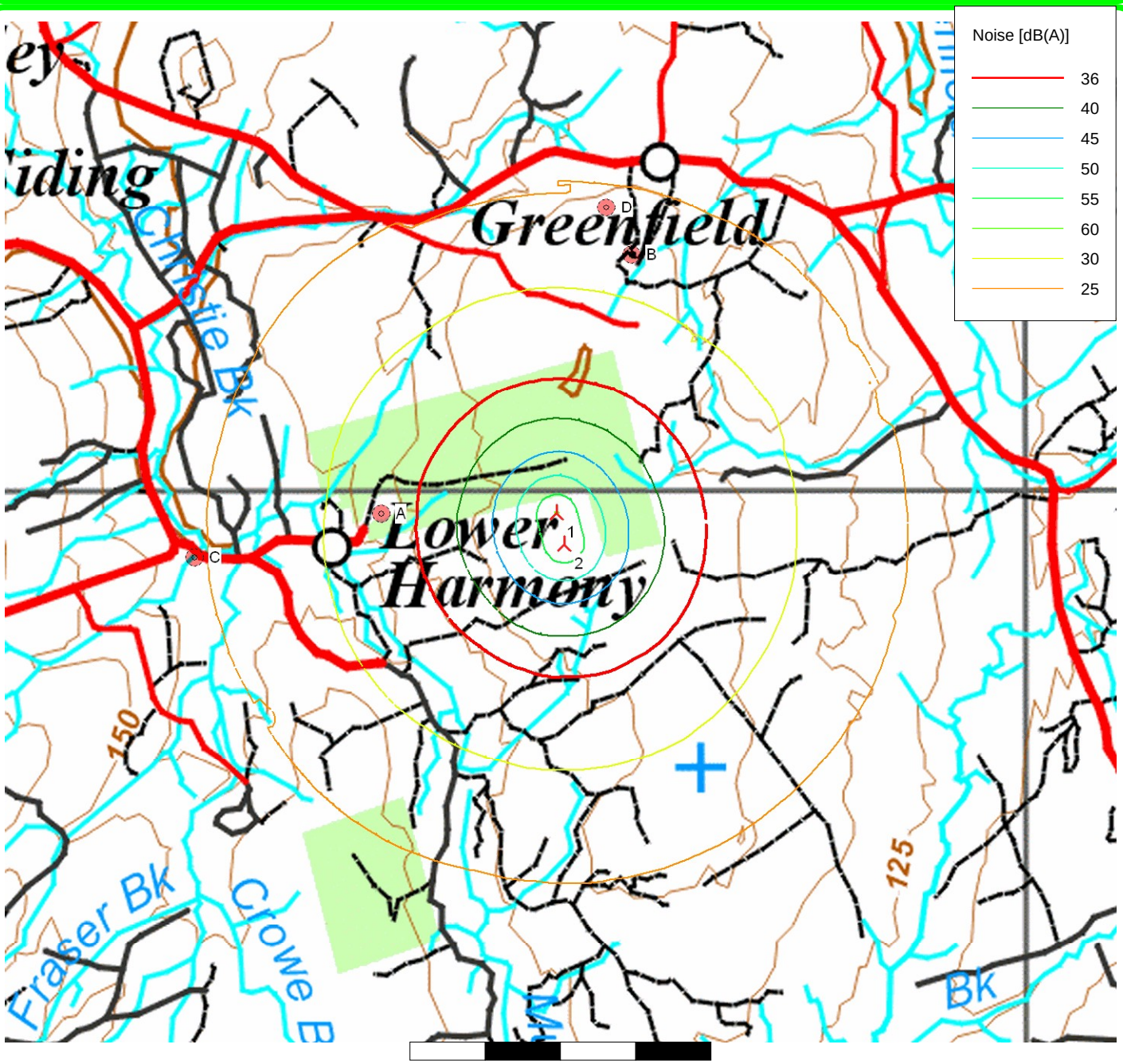
Kirk Schmidt / kirk.schmidt@al-pro.ca

Calculated:
11/13/2013 1:00 PM/2.9.207

DECIBEL - Map 7.0 m/s

Calculation: GE 1.60 82.5 @ 80 m **Noise calculation model:** ISO 9613-2 General 7.0 m/s



Map: Page 39 , Print scale 1:40,000, Map center UTM (north)-NAD83 (US+CA) Zone: 20 East: 489,081 North: 5,021,573

New WTG Noise sensitive area

Noise calculation model: ISO 9613-2 General. Wind speed: 7.0 m/s
Height above sea level from active line object

Appendix E

Public Consultation Materials

Show time

Truro Junior High School held final dress rehearsals for the musical Annie on yesterday afternoon. The musical will be presented to the community beginning tonight. Some of the students bringing the orphans to life in the musical are, from left, MacKenzie MacLellan, Grade 7; Kassie Miniotas, Grade 8; and Amber LeBlanc, Grade 9. In back, Cecelia White, Grade 6. Show times are Thursday to Saturday at 7 p.m. and Sunday at 2 p.m. at the school on Young Street. Adults will pay $6 at the door, while seniors and students will be charged $4. MONIQUE CHIASSON – TRURO DAILY NEWS

IN MEMORIAM

ALWAYS IN OUR HEARTS

WWW.TRURODAILY.COM

Maria Lenore Smith-Higgins (Lamont)

SMITH-HIGGINS (Lamont), Maria Lenore – 64, Truro, passed away peacefully, Tuesday, May 21, 2013, at Colchester East Hants Health Centre, Truro.

Born April 28, 1949, in Truro, she was a daughter of Annie (Cuppens) Lamont, Truro, and the late William Lamont.

Maria was a member of the Ladies Auxiliary of Royal Canadian Legion, Branch 26, Truro.

Along with her mother, Maria is survived by her husband, Gary Higgins, Truro; children, Randall Smith, Richard Smith, Tara Lenko, all of Nanaimo, B.C.; grandchildren, Kameron, Reid, Kobie, Georgia, Olivia, Rianna; sister, Elizabeth (Dale) Suttis, Truro; brother, James (Patricia) Lamont, Harry (Betty) Lamont, Truro; Francis (Diane) Lamont, Valley, Colchester County; half-sister, Shirley MacMillan, Prince Edward Island; half-brother, Cecil (Joan) Lamont, Truro; stepchildren, Scott Higgins, Economy; Sean Higgins, Mississauga, Ont.; Tracie Hazel, Oxford; Devin Higgins, Alberta; many nieces and nephews.

Along with her father, she was predeceased by her first husband, George Alfred Smith; half-sisters, Mary Lamont, Lois Smith.

Honouring Maria's wishes, cremation has taken place and her cremated remains will be scattered in British Columbia.

If so desired, donations in Maria's memory to Canadian Cancer Society or Palliative Care Unit (CEHHC) are welcomed. Arrangements have been entrusted to Mattatall-Varner Funeral Home, 55 Young St., Truro. Private messages of condolence may be sent to the family by viewing Maria's obituary online and selecting "Send A Condolence" at www.mattatallvarnerfh.com

Engel L. Hart

Engel L. Hart – On Tuesday, May 21, 2013, a beautiful "free spirit" left this world.

Engel Hart fought a long and difficult battle, not to be won. He was a lover of the outdoors, his passion being sailing with the wind in his face ... to set sail and leave the world behind, to be free. Engel will be forever loved and sadly missed by his wife, family, and friends. This "free spirit" is now free.

Cremation has taken place.

Arrangements have been entrusted to the Ferguson-Logan Montague Funeral Home (902) 838-2557. A memorial service will take place at a later date, from the Wood Islands Presbyterian Church.

www.fergusonlogan.com.

Jennifer Rogers-Okell (nee Luscombe)

Jennifer Rogers-Okell (nee Luscombe) "Jenny" 1931-2013 – It is with great sadness that the family of Jennifer Rogers-Okell announce her death.

She passed away after a long struggle with cancer at the age of 81, on Tuesday 21st of May, 2013.

Jennifer was born in 1931, the daughter of the late Rowland E. Luscombe and Winifred (Sturtridge). She was the last in the line of many centuries of family members to be born in Woodleigh, Kingsbridge, South Devon.

She is survived by her partner in life, John J. Okell, her son Paul M. Rogers, daughters Catherine M. Vallis and Jane L. Ross (Brian). She is also survived by her grandson's, James E. Vallis and Spencer G. Ross.

Jenny is also survived in Guernsey, by her stepdaughter Hazel Brouard (nee Rogers) (Geoff) and their children Sophia Catton (Owain) and Robin Brouard (Amy) and family.

Jenny is survived in Great Britain by her sister Mrs. Rosemary Batting, and nephew John, as well as her late sister Ann Slatter's children, Elizabeth Colston (Nigel), Victoria Daniels (Anthony), and Rowland Slatter and their families. Jennifer is also survived by her stepsons Ian, Tim, Gary Okell and their families.

Jennifer had an interesting life. In her youth she was a member of the Young Farmers Club and was recognised for her abilities in judging beef and dairy cattle, competitive flower arranging, and for her outstanding cooking.

In 1963 she married Richard Leslie Rogers and moved from Devon to Guernsey, where they farmed Guernsey dairy cattle, at La Maison De Haut, St. Saviours, while raising four children. Widowed in 1976, she continued to farm alone and successfully competed in the Island Show, winning all the top trophies that year.

Her other interests included gardening, showing Old English Game Fowl, hothouse (greenhouse) Guernsey tomatoes, and fresh flowers for export, while pursuing an active social life.

In 1979 Jennifer found true love with John J. Okell. In 1981 they emigrated the family from Guernsey to Nova Scotia, where together the family raised sheep, and beef on 600 acres of land, in Pleasant Valley, Brookfield. At this time she diversified into property development as an independent businesswoman, became a member of the Chamber of Commerce in Truro, and sat on the board of CoRDA.

In 1993, they retired to a 22-acre hobby farm in Princeport, where they continued to farm. It was here she pursued her greatest hobby which was gardening, including flowers, vegetables and fruit. She also had the time to devote to grandchildren whom she adored.

After many happy years, John and Jennifer retired together into a bungalow on Roosevelt Avenue, Truro, where she continued to garden contentedly until July 2012.

At this time the family would like to thank all the doctors and nurses involved with our mother's care – Dr. Frank Slipp, Dr. Henderson and Dr. Smith, as well as all the nurses, in the palliative care unit.

Our thanks also goes to the staff of Fergus Hall, Parkland Estates, the V.O.N. and the Earth Angels, for their devotion to making our mother as comfortable as possible, during the final phase of her life.

Visitation will take place on Friday from 6-8 p.m. in the Mattatall-Varner Funeral Home, 55 Young Street, Truro. Funeral service will take place on Saturday at 2 p.m. in the Old Barns United Church, Old Barns. The Reverend Lori Ramsey will officiate with a family burial to follow in St. John's-Clifton Anglican Cemetery, Clifton. A reception will follow the burial in the Old Barns United Church Hall.

Family flowers only please. If desired, donations to the following charities may be made, and would be appreciated: Canadian Cancer Society, Heart and Stroke Foundation, or the Palliative Care Unit of the Colchester East Hants Health Centre.

We would also like to thank the Reverend Lori Ramsey for looking after our mother's spiritual care, in the last year. Special thanks also goes to the United Church in Old Barns, for the use of their facilities, and appreciate the great work of the UCW of Old Barns, for the reception. Thank you all.

Private messages of condolence may be sent to the family by viewing Jennifer's obituary online and selecting "Send a Condolence" at www.mattatallvarnerfh.com.

IN MEMORIAM
ALWAYS IN OUR HEARTS
WWW.TRURODAILY.COM

Beatrice Mary "Mae" (Boudreau) Hall

Beatrice Mary "Mae" (Boudreau) Hall, 79, Halifax, N.S., formerly of Truro, N.S.

It is with great sorrow that we announce the peaceful passing of a woman of quiet strength and dignity, an adored mother, much-loved nanny and cherished friend on Tuesday, May 14, 2013, at Maplestone Enhanced Care, Halifax, after a thankfully brief battle with dementia.

Born in Joggins, Nova Scotia, Mae was the only daughter of the late Clovis Boudreau and Lillian (Mitchell), both of Joggins. She worked in her father's general store in Joggins until she married her beloved husband, James, in 1955. They moved to Moncton shortly after the birth of their first daughter and in 1977 the family moved to Truro.

Just a wife and mom? Never! Being a dedicated and loving mother to two devoted daughters was her hardest job and yet her biggest accomplishment. She was the best mother and grandmother, and a wife with such undying love and support for her husband that it continued for 23 years after his death, showing that opposites do attract.

Her quiet, though steadfast stubborn determination, greatly impacted the successes of her small family. She was proud of her husband, children and grandchildren and encouraged them always. Her family was her primary focus in life. A subtle sense of humour and a shy smile, she always tried to find the rainbow in a storm.

Along with her parents, Mae was predeceased by her husband, James A.F. Hall; nephews, Bruce Boudreau, Gary Hollis; sisters-in-law, Norma (Hall) Hollis, Shirley (MacAleese) Boudreau; brothers-in-law, William Hall, Dara Hoeg; many aunts and uncles. Mae is survived by her daughters, Cynthia (Richard) Belyea, Saint John, New Brunswick; Brenda (Pierre) Gagné, Halifax; grandchildren, Jordan, Vanessa (Joel), Lucas, all of Saint John, New Brunswick; brother, Wally (Maureen) Boudreau, Halifax; sister-in-law, Joyce (Hall) Hoeg, Joggins; aunt, Hazel Parsons, Amherst; several nieces and nephews.

Arrangements have been entrusted to Mattatall - Varner Funeral Home, 55 Young St., Truro, where Mae's family will receive friends from 2 to 4, 6 to 8 p.m., Friday, May 17, 2013. Funeral service will be held 1 p.m., Saturday, May 18, 2013 at Brunswick Street United Church, 250 Brunswick St., Truro, Reverend Boyd Vincent officiating. Interment in Robie Street Cemetery, 125 Robie St., Truro. Reception to follow at Mattatall - Varner Funeral Home, 55 Young St., Truro.

In lieu of flowers, donations in Mae's memory to the Alzheimer's Society or any dementia society, Canadian Cancer Society, Joggins United Church or a charity of your choice are welcomed.

The family would like to gratefully acknowledge the staff at Maplestone Enhanced Care (Ringdale Court) for their wonderful care of our mother and always treating mom with the upmost respect and allowing her to maintain her dignity. Private messages of condolences may be sent to the family by viewing Mae's obituary online and selecting Send A Condolence at www.mattatallvarnerfh.com

Mothers are not for just the here and now, we shall feel her strong embrace and loving touch for eternity.

IN MEMORIAM
PUBLISH YOUR PHOTOGRAPHS, VIDEOS AND CONDOLENCES IN MEMORY OF LOVED ONES...
ACCESS INMEMORIAM.CA VIA WWW.TRURODAILY.COM

Prince Edward Island Fisheries Minister Ron MacKinley (left) and New Brunswick Fisheries Minister Mike Olscamp look on as Nova Scotia's minister Sterling Belliveau talks to the media after a meeting in Amherst on Wednesday. The ministers agreed to appoint a panel to examine issues facing the lobster industry.
DARRELL COLE – TC MEDIA

POLITICS

Interprovincial panel to examine fishery

Fishermen say they need prices of $4.50 to $5 for lobs..

BY DARRELL COLE
TC MEDIA

AMHERST – The Maritimes three fisheries ministers have agreed to appoint an independent panel to examine factors affecting lobster prices in the region and work collectively on marketing initiatives.

The panel will consider ways to ensure the best return to all industry players and communities, recognizing the uniqueness of the various fishing areas in the region and of the live and processed products produced.

"The most we can do is show we are behind our industry. The co-operation we've shown here with the three provinces shows we care. We care about our lobster industry and we're going to make sure it's there for future generations," Nova Scotia Fisheries Minister Sterling Belliveau said after a meeting with his provincial counterparts Ron MacKinley of Prince Edward Island and Mike Olscamp of New Brunswick. "No one believes there's a simple solution that's going to happen with a snap of the fingers. These are complex issues, but we'll put the right people at the helm and come up with something that's workable."

Belliveau said senior staff from each province will take the next two weeks to assemble the panel that will address the issues facing the lobster industry across Atlantic Canada.

The ministers will also reach out to Newfoundland and Labrador, Quebec and Maine and the three ministers agreed the federal government has a key role to play in the management of the fishery and the development of international markets.

Fishermen across the region returned to the water Tuesday after refusing to land catches for several days in protest of low prices. Fishermen say they need prices similar to last year, when lobster were going from $4.50 to $5 a pound.

Belliveau said the panel will look a number of factors including allegations of price-fixing and the possibility of setting prices before fishermen set their traps at the start of the season.

"It's an issue that has been raised a number of times since I've been in office and it's a question this panel will address. I know that fishermen can literally go out and fish for a week and not have a sale price on the day's catch," Belliveau said. "It's something that has to be addressed."

P.E.I. Fisheries Minister Ron MacKinley said the P.E.I. government has already started to look at the problem with the hiring of former auditor general Colin Younker.

"This panel will look at all three Maritime provinces and we won't know what the answer is until it's completed. If we knew the answers we wouldn't need this panel," MacKinley said. "We want to make sure there is a fishery for the future and that processors and the people who work there have jobs too. It's the second most important industry on the Island."

On Monday, P.E.I. Premier Robert Ghiz announced the appointment of Younker to look at the state of the lobster industry there. Younker's review will look at the price structure, market conditions and the volumes of landings. MacKinley said that review will continue at the same time as the regional study.

New Brunswick's Fisheries Minister Mike Olscamp said he's optimistic a solution can be found.

"Will it be a final solution? We don't know Markets are very volatile and there has to be flexibility, but all of us share the opinion we don't want to have to address this again at this time next year," Olscamp said.

Case of mom charged with drunk driving in daughter's death set over

THE CANADIAN PRESS

BRIDGEWATER – The case of a Nova Scotia woman charged with impaired driving causing the death of her nine-year-old daughter has been put over to June.

Candice Roxanne Moore did not appear when her case came to provincial court in Bridgewater today.

Her lawyer says she needs more time to review the case.

Moore is charged with criminal negligence causing death, dangerous driving causing death and refusing to comply with a demand for a breath sample.

Police say the 31-year-old woman's daughter was killed on Jan. 19 after the little girl was dropped off at a home in Pleasantville.

They say Olive Moore was standing in the road when she was struck by a van as it left the driveway.

The case has been adjourned until June 19.

Municipality of the County of Colchester
Community Development Department
PO Box 697 Truro NS B2N 5E7 Tel:902-897-3170 Fax:902-895-9983

February 17, 2012

To whom it may concern:

Re: Affinity Renewables, Large Scale Wind Turbine Developments
Greenfield, East Mountain and Dean

This letter shall confirm that I as the Development Officer for the Municipality of Colchester met with Lisa Fulton of Affinity Renewables on November 24, 2011. The purpose of the meeting was to discuss the Municipal setback requirements from property lines, roads, and houses for large-scale wind turbines as provided for in the Wind Turbine Development Bylaw.

From the discussions on three projects proposed for Colchester County (Greenfield, East Mountain, and Dean) and the information provided, the location of the turbines will meet the setback distances as set out in the bylaw. Each project is planned in a manner which will exceed the minimum setback of 700 meters from a turbine to a house (dwelling).

From the meeting, it is evident that the development team at Affinity Renewables are aware and understand the requirements set out in the bylaw and the necessary paperwork required to obtain a license to construct wind turbines in Colchester County.

Please contact me at 897-3170 if you have any questions.

Sincerely,

Colin Forsyth
Development Officer

Please Join Us

We are pleased to invite you to an Information Session and Open House BBQ at the Weatherby Farm - 90 Johnson Road, anytime between 3pm and 6pm Wednesday May 29th. Affinity Renewables will be hosting this session to present project specific information about our proposal to install two 1.6 MW GE wind turbines along the west-most property line of Larry and Marsha Weatherby's farm. Affinity is a partnership between the Dalhousie Mountain Wind Farm and the Nova Scotia SPCA. Anticipated construction start is in the summer of 2014.

This meeting is intended to provide the neighbors and surrounding community of the Greenfield Wind Project an opportunity to talk with current homeowners who live near windmills, to understand where the turbines will be located, the locations in the community where the turbine will be visible from, the construction time-line, the community benefits plan and to answer questions at this early stage of project development.

The project is being developed by Affinity Renewables under the Community Feed-in-Tariff (COMFIT) program. This program is administered by the Department of Energy which instructs NSPI to purchase the power produced by wind at a set rate of 13.1 cents per kWhr for the entire 20 year-long contract. The power produced by this turbine will be used by Greenfield, Lower Harmony, and surrounding communities of Truro.

Affinity Renewables will be funding the entire project and assuming all the risk of the operation with private equity and has created a partnership to fund a special division of the Society for the Prevention of Cruelty to Animals (SPCA). In recent years lack of funding has forced the SPCA to cut programs needed to keep Nova Scotia's domestic pets safe and healthy. In March 2013, the SPCA was driven to halt the Animal Cruelty Investigations Unit until the provincial government stepped in and gave the SPCA an emergency one-time sum of $100,000. This project will generate income for the SPCA for several programs like this for the next 20 years.

Affinity Renewables will also establish a fund that can be accessed by community fundraising needs in the form of events such as 'benefit dances' to help ensure local needs are met when an unfortunate situation or a community need arises. Affinity will contribute money to a benefit in situations such as: a community member loses their home or belongings to a fire; a member of the community has a special opportunity to compete, learn or be involved in an activity that requires travel or extraordinary costs to be able to participate in; or if a member of the community has a health need that requires funds to help that person and/or their family.

The project management team is headquartered at Dalhousie Mountain Wind Farm where Rotor Mechanical Services and RMSenergy operate 34 GE 1.5 MW turbines (the same physical size machines that will be used in Greenfield). The wind farm has been operational for over 3 ½ years. There are several homes located between 1500 and 2000 metres from numerous turbines; the community has embraced the turbines and has reported no health or property value concerns.

The turbines will be located 1.3km to 1.5km from six houses on the Johnson Road and over 1.5km from all others along the Johnson Road and south end of the Lower Harmony Road. The intersection of Lower Harmony Road and Johnson Road is over 2km away and so is Thompson Road, Chagford Place and Parks' subdivision.

Please stop in and support the project and view the information while you enjoy a barbeque. If you cannot attend this meeting, we will be having more meetings later this year. Also, we would be happy to take you on a tour of our Dalhousie Mountain Wind Farm in Mt. Thom (Pictou County) or communicate through email, telephone or in person to answer your questions.

We look forward to having you attend the meeting on site near the met tower, and to becoming a cooperative member of your community.

Sincerely,
Reuben Burge and Lisa Fulton
Affinity Renewables
reuben@rmsenergy.ca or 902-771-0322
lisa@rmsenergy.ca or 902-759-6626
www.rmsenergy.ca

You Are Invited

We are pleased to invite you to an Information Session at the Greenfield United Church, 7 pm Wednesday March 27th. Affinity Renewables Inc will be hosting this session to answer questions about a proposal to install two 1.6 MW GE wind turbines along the back property line of Larry and Marsha Weatherby's farm. Anticipated construction is in the summer of 2014.

Affinity has read the signs in the neighborhood about responsible setbacks from homes and has set some goals for the project to address. The homes on Harmony Ridge Rd, Lilyvale Rd, Greenfield Rd including Chagford Place, are all beyond the 2km range. The lower Harmony Rd is 1.75 km setback and the closest home on Johnson Rd is 1.2 km with the others at 1.5 km and more. We will deliver maps to you in your mailbox when we have the final locations selected and the sound study completed.

This meeting is intended to provide the neighbors of this project an opportunity to understand where it is located, the project size, the construction time-lime, ownership structure, the community benefits plan and to answer questions at this early stage of project development.

Information will be provided on why the proposal is limited to a maximum size of only two turbines and will utilize the existing roads and Lower Harmony/Johnson road power-lines to connect the generators.

The project is being developed by Affinity Renewables Inc. under the Community Feed-In-Tariff (COMFIT) program. The COMFIT program is administered by the Department of Energy who instruct NSPI to purchase the power produced by the generators to feed the local homes at a set fixed rate of 13.1 cents per KWhr for a 20 year contract.

Affinity Renewables Inc. will be funding the entire project and assuming all the risk of the operation with private equity and has created a partnership to fund The Society for the Prevention of Cruelty to Animals (SPCA). The COMFIT opportunity allows the SPCA to generate enough income to fund a very special unit of the SPCA that was recently almost closed due to lack of funding until the provincial government stepped in and gave the SPCA an emergency one-time sum of $100,000 (March 2013). Called the Animal Cruelty Investigations Unit, this unit will now, because of the partnership with Affinity Renewables, have the funding needed to investigate and shut down puppy-mills, animal hoarding, and reports of neglect and abuse. This will allow thousands of pets to be rescued every year. To clarify this point, we chose the SPCA as a COMFIT partner in need and believe this to be a responsible and a well deserving recipient for our community projects.

This project will be overseen by Dalhousie Mountain Wind Farms, where Rotor Mechanical and RMSenergy operate 34 GE 1.5 MW turbines. The wind farm has been fully operational for over 3 years, performing at full power output 41% of the time and is available 99.1% of the time. We supply power for over 20,000 homes annually. We have many homes located between 1500 and 2000 meters and the community has had no health or property value concerns during this period also, the wind farm has become an important employer to the area.

We will host several meetings as the development proceeds and you will hear from members of four different communities that host wind farms that we have developed assuring you that the affects in the community are positive ones.

A general wind information brochure will be dropped off for you to read and please feel free to search our website and contact us at any time. If you can't attend the meeting, we will be having more formal process meetings later this year during the process of completing the Provincial Environmental Assessment for this proposal.

Sincerely, Reuben Burge

Affinity Renewables 902-771-0322 reuben@rmsenergy.ca www.rmsenergy.ca

GREENFIELD WIND PROJECT

Open House, May 29, 2013

Proposed Location for Turbine, 90 Johnson Road, Greenfield, Nova Scotia

COMMENT AND QUESTION SHEET

1. Are there any comments, suggestions, concerns or issues regarding this project that you would like to draw to our attention?

NONE WHATSOEVER

2. If you have any questions that were not answered today, please list them below along with your name, civic address and contact information. We take your questions seriously and would like the opportunity to get back to you with a response or follow up meeting.

Name: _____ **Email:** _____

Civic address: _____

Phone number: (_____) _____

For additional information, please contact:

Reuben Burge, President (902) 771-0322 reuben@rmsenergy.ca

Lisa Fulton, Environmental Lead (902) 759-6626 lisa@rmsenergy.ca

GREENFIELD WIND PROJECT

Open House, May 29, 2013

Proposed Location for Turbine, 90 Johnson Road, Greenfield, Nova Scotia

COMMENT AND QUESTION SHEET

1. Are there any comments, suggestions, concerns or issues regarding this project that you would like to draw to our attention?

your Doing a Wonderfull Thing

2. If you have any questions that were not answered today, please list them below along with your name, civic address and contact information. We take your questions seriously and would like the opportunity to get back to you with a response or follow up meeting.

Name: Kenny Merritt **Email:**

Civic address: 14 Johnson RD

Phone number: (902) 843-9037

For additional information, please contact:

Reuben Burge, President (902) 771-0322 reuben@rmsenergy.ca

Lisa Fulton, Environmental Lead (902) 759-6626 lisa@rmsenergy.ca

GREENFIELD WIND PROJECT

Open House, May 29, 2013

Proposed Location for Turbine, 90 Johnson Road, Greenfield, Nova Scotia

COMMENT AND QUESTION SHEET

1. Are there any comments, suggestions, concerns or issues regarding this project that you would like to draw to our attention?

None - In total support - Great clean energy - Rather Turbines than Smoke Stacks - - lots of Great Community support

2. If you have any questions that were not answered today, please list them below along with your name, civic address and contact information. We take your questions seriously and would like the opportunity to get back to you with a response or follow up meeting.

Name: J. RICHARDS **Email:** RICHC@EASTLINK.CA

Civic address: 164 LR. HARMON-1

Phone number: (902) 593 5264

For additional information, please contact:

Reuben Burge, President (902) 771-0322 reuben@rmsenergy.ca

Lisa Fulton, Environmental Lead (902) 759-6626 lisa@rmsenergy.ca

GREENFIELD WIND PROJECT

Open House, May 29, 2013

Proposed Location for Turbine, 90 Johnson Road, Greenfield, Nova Scotia

COMMENT AND QUESTION SHEET

1. Are there any comments, suggestions, concerns or issues regarding this project that you would like to draw to our attention?

Get r' done

2. If you have any questions that were not answered today, please list them below along with your name, civic address and contact information. We take your questions seriously and would like the opportunity to get back to you with a response or follow up meeting.

Name: Denise Deuville **Email:**

Civic address: 93 Johnson Rd.

Phone number: (902) 843-0997

For additional information, please contact:

Reuben Burge, President (902) 771-0322 reuben@rmsenergy.ca

Lisa Fulton, Environmental Lead (902) 759-6626 lisa@rmsenergy.ca

GREENFIELD WIND PROJECT

Open House, May 29, 2013

Proposed Location for Turbine, 90 Johnson Road, Greenfield, Nova Scotia

COMMENT AND QUESTION SHEET

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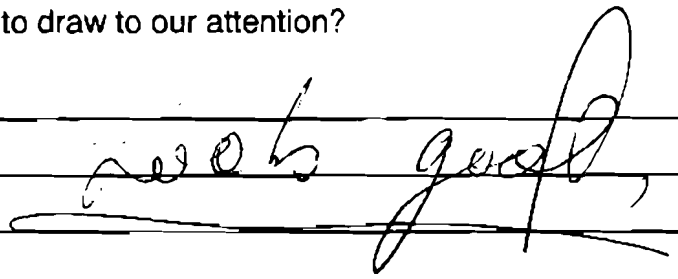

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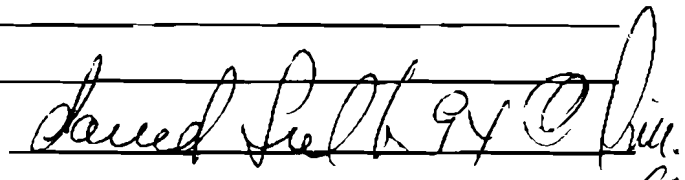
Name: _____ **Email:** 

Civic address: _____

Phone number: (_____) _____

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well backed arguments & peer reviewed studies, case for wind turbines has been well made.

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Name: _____ **Email:** _____

Civic address: _____

Phone number: (_____) _____

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I Think wind Power is a great Idea and am glad to have Turbines in my Neighborhood!

2. If you have any questions that were not answered today, please list them below along with your name, civic address and contact information. We take your questions seriously and would like the opportunity to get back to you with a response or follow up meeting.

Name: Scott GRAY **Email:** Scottgray1@live.ca

Civic address: 94 Johnson Rd. Harmony, N.S.

Phone number: (902) 843-9037

For additional information, please contact:

Reuben Burge, President (902) 771-0322 reuben@rmsenergy.ca

Lisa Fulton, Environmental Lead (902) 759-6626 lisa@rmsenergy.ca

GREENFIELD WIND PROJECT

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I would like to think it is a good idea to have them here. what I have heard Is all Good about them not harmful. when I first heard about them it did scare me because I had cancer and worried about getting again But after hearing about them I feel ok.

2. If you have any questions that were not answered today, please list them below along with your name, civic address and contact information. We take your questions seriously and would like the opportunity to get back to you with a response or follow up meeting.

Name: Angela Gray **Email:** _____

Civic address: 94 Johnson Rd.

Phone number: (902) 543-9037

For additional information, please contact:

Reuben Burge, President (902) 771-0322 reuben@rmsenergy.ca

Lisa Fulton, Environmental Lead (902) 759-6626 lisa@rmsenergy.ca

P.O Box 914
408 Industrial Ave.
Truro, N.S.
B2N 5G7

Nova Scotia SPCA Colchester Branch

Phone: 893-7968

Reuben Burge
1383 Mount Tom
Salt Springs, NS
B0K 1P0

April 6, 2013

Dear Mr. Burge;

On behalf of the Colchester Chapter SPCA, I would like to thank you for thinking of our shelter as being a potential recipient of proceeds from the wind turbines being established. Your kind support enables us to care for many animals in need in Colchester County. (Several hundred animals passed through the shelter in 2012).

Without the help of persons such as you, the shelter would not exist. Without a shelter the number of abused or neglected animals in our area would be far higher. We can't help all of the animals, but at least we can provide a warm place to sleep, good food and medical care to those which we can fit within our walls. All pets deserve a chance to have a happy, safe existence.

Please feel free to visit the animals at our shelter, located at 408 Industrial Ave. in Truro. We are open to the public 11 am to 3 pm, Tuesday through Sunday. Or perhaps you might be interested in attending a General Meeting to find out more about the work of the SPCA. Our monthly general meetings are held in the Truro Super Store Community Room at 7pm on the 1st Monday of the month.

Once again, thank you for your generosity.

Sincerely,

Jennifer Tucker-Johnston

Jennifer Tucker-Johnston
Secretary
Colchester SPCA