

			low flow.	
	Installation of impervious surfaces.	<ul style="list-style-type: none"> <li>• Increase surface run-off,</li> <li>• Changes in surface water drainage.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain vegetative buffers around water bodies,</li> <li>• Control quantity and quality of stormwater discharge using best management practices,</li> <li>• Minimize grading activities to maintain existing drainage patterns as much as possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit disturbances to surface water drainage patterns</li> </ul>
Temporary Access Roads, Crane Paths, and Turnaround Areas	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>• Increased erosion and sedimentation into woodlands, wetlands, and other natural features,</li> <li>• Soil compaction</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and implement an erosion and sediment control plan,</li> <li>• Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body,</li> <li>• Maintain erosion control measures for the duration of construction or decommissioning activities,</li> <li>• Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body,</li> <li>• Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes,</li> <li>• Re-vegetate temporary roads that are in non-agricultural habitat, to pre-construction conditions as soon as possible after construction activities are complete.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize direct impacts on vegetation communities and protect rare/sensitive habitats,</li> <li>• Maintain vegetated buffers, particularly within riparian zones,</li> <li>• Minimize the impacts of sedimentation on nearby natural features</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>• Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid construction or decommissioning activities within non-agricultural habitats during sensitive time periods (i.e. breeding bird season), wherever possible,</li> <li>• Conduct nest searches if vegetation removal must occur during the breeding bird season (May 1-July 31)</li> <li>• Clearly post construction speed limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit potential wildlife road mortalities</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>• Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>• Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing,</li> <li>• Damaged trees should be pruned through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural vegetation</li> </ul>
	Chemical spills or accidental fluid release (i.e. oil,	<ul style="list-style-type: none"> <li>• Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a spill response plan and train staff on appropriate procedures,</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural features and wildlife habitats,</li> </ul>

	gasoline, grease, etc.).		<ul style="list-style-type: none"> <li>• Keep emergency spill kits on site,</li> <li>• Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies,</li> <li>• Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid contamination of water or wetland features</li> </ul>
	Installation of impervious surfaces.	<ul style="list-style-type: none"> <li>• Increase surface run-off,</li> <li>• Changes in surface water drainage.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain vegetative buffers around water bodies,</li> <li>• Control quantity and quality of stormwater discharge using best management practices,</li> <li>• Minimize grading activities to maintain existing drainage patterns as much as possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit disturbances to surface water drainage patterns</li> </ul>
Permanent Access Roads	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>• Increased erosion and sedimentation into woodlands, wetlands, and other natural features,</li> <li>• Soil compaction</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and implement an erosion and sediment control plan,</li> <li>• Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body,</li> <li>• Maintain erosion control measures for the duration of construction or decommissioning activities,</li> <li>• Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body,</li> <li>• Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize direct impacts on vegetation communities and protect rare/sensitive habitats,</li> <li>• Maintain vegetated buffers, particularly within riparian zones,</li> <li>• Minimize the impacts of sedimentation on nearby natural features</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>• Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid construction or decommissioning activities within non-agricultural habitats during sensitive time periods (i.e. breeding bird season), wherever possible,</li> <li>• Conduct nest searches if vegetation removal must occur during the breeding bird season (May 1-July 31)</li> <li>• Clearly post construction speed limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit potential wildlife road mortalities</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>• Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>• Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing,</li> <li>• Damaged trees should be pruned through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural vegetation</li> </ul>
	Chemical spills or	<ul style="list-style-type: none"> <li>• Soil or water</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a spill response plan and train staff on</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural features</li> </ul>

	accidental fluid release (i.e. oil, gasoline, grease, etc.).	contamination.	appropriate procedures, <ul style="list-style-type: none"> <li>• Keep emergency spill kits on site,</li> <li>• Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies,</li> <li>• Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	and wildlife habitats, <ul style="list-style-type: none"> <li>• Avoid contamination of water or wetland features</li> </ul>
	Installation of impervious surfaces.	<ul style="list-style-type: none"> <li>• Increase surface run-off,</li> <li>• Changes in surface water drainage.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain vegetative buffers around water bodies,</li> <li>• Control quantity and quality of stormwater discharge using best management practices,</li> <li>• Minimize grading activities to maintain existing drainage patterns as much as possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit disturbances to surface water drainage patterns</li> </ul>
Overhead Cabling	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>• Increased erosion and sedimentation into woodlands, wetlands, and other natural features,</li> <li>• Soil compaction,</li> <li>• Removal of vegetation within the road right-of-way.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and implement an erosion and sediment control plan,</li> <li>• Utilize erosion blankets, silt fencing, straw bales, etc. to delineate construction activities within 30m of a wetland, woodland, or water body,</li> <li>• Maintain erosion control measures for the duration of construction or decommissioning activities,</li> <li>• Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body,</li> <li>• Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes,</li> <li>• For roadside collector routes, vegetation removal (if any) will be kept to a minimum and will be limited to the road right-of-way.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize direct impacts on vegetation communities and protect rare/sensitive habitats,</li> <li>• Maintain vegetated buffers, particularly within riparian zones,</li> <li>• Minimize the impacts of sedimentation on nearby natural features</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>• Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid construction or decommissioning activities within non-agricultural habitats during sensitive time periods (i.e. breeding bird season), wherever possible</li> </ul>	<ul style="list-style-type: none"> <li>• Limit potential wildlife road mortalities</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>• Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>• Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing,</li> <li>• Damaged trees should be pruned through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural vegetation</li> </ul>
	Chemical spills or	<ul style="list-style-type: none"> <li>• Soil or water</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a spill response plan and train staff on</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural features</li> </ul>

	accidental fluid release (i.e. oil, gasoline, grease, etc.).	contamination.	appropriate procedures, <ul style="list-style-type: none"> <li>• Keep emergency spill kits on site,</li> <li>• Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies,</li> <li>• Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	and wildlife habitats, <ul style="list-style-type: none"> <li>• Avoid contamination of water or wetland features</li> </ul>
Underground Cabling	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>• Increased erosion and sedimentation into woodlands, wetlands, and other natural features.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and implement an erosion and sediment control plan,</li> <li>• Locate all entry and exit pits at least 30m from natural features (i.e. woodlands, wetlands) or water bodies,</li> <li>• Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal,</li> <li>• Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize direct impacts on vegetation communities and protect rare/sensitive habitats,</li> <li>• Maintain vegetated buffers, particularly within riparian zones,</li> <li>• Minimize the impacts of sedimentation on nearby natural features</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>• Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Restore and re-vegetate entry and exit pits that occur in non-agricultural habitat to pre-construction conditions as soon as possible after construction.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit potential wildlife road mortalities</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>• Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>• Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing,</li> <li>• Damaged trees should be pruned through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural vegetation</li> </ul>
	Chemical spills or accidental fluid release (i.e. oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> <li>• Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a spill response plan and train staff on appropriate procedures,</li> <li>• Keep emergency spill kits on site,</li> <li>• Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies,</li> <li>• Ensure drill depth is at an appropriate level below the watercourse to prevent 'frac-out',</li> <li>• Drill entry and exit pits should be at least 30m from natural features (i.e. woodlands, wetlands, etc.) or water bodies,</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural features and wildlife habitats,</li> <li>• Avoid contamination of water or wetland features</li> </ul>

			<ul style="list-style-type: none"> <li>• Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	
Operation and Maintenance Building, Transformer Station, and Substation	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>• Increased erosion and sedimentation into woodlands, wetlands, and other natural features,</li> <li>• Soil compaction</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and implement an erosion and sediment control plan,</li> <li>• Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body,</li> <li>• Maintain erosion control measures for the duration of construction or decommissioning activities,</li> <li>• Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body,</li> <li>• Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize direct impacts on vegetation communities and protect rare/sensitive habitats,</li> <li>• Maintain vegetated buffers, particularly within riparian zones,</li> <li>• Minimize the impacts of sedimentation on nearby natural features</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>• Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid construction or decommissioning activities within non-agricultural habitats during sensitive time periods (i.e. breeding bird season), wherever possible,</li> <li>• Clearly post construction speed limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit potential wildlife road mortalities</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>• Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>• Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing,</li> <li>• Damaged trees should be pruned through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural vegetation</li> </ul>
	Chemical spills or accidental fluid release (i.e. oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> <li>• Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a spill response plan and train staff on appropriate procedures,</li> <li>• Keep emergency spill kits on site,</li> <li>• Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies,</li> <li>• Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize impacts to natural features and wildlife habitats,</li> <li>• Avoid contamination of water or wetland features</li> </ul>

## 8.0 Summary of Commitments

For each natural feature or wildlife habitat that has been determined to be significant, or presumed significant, NRSI biologists have identified potential negative impacts, mitigation measures, and contingency plans associated with the construction, operation, and decommissioning phases of this project.

To assist in the summary of the potential impacts and mitigation measures associated with the Bornish Wind Energy Centre, NRSI has summarized the full extent of pre-construction monitoring commitments, mitigation measures, and post-construction monitoring commitments in the following sections.

### 8.1 Pre-Construction Monitoring Commitments

In accordance with the Natural Heritage Assessment process, NRSI biologists have identified several natural features that have been treated as significant for the purposes of this report. These features have been treated as significant until additional pre-construction surveys can be completed to confirm (or deny) the significance based on provincially accepted evaluation criteria. The pre-construction surveys that will be conducted as part of the commitments made in this EIS are summarized in Table 12 below.

The survey methods described below have assumed that site access will be granted. In the event that specific site access is not available for all, or part, of a specific feature, a potential alternative survey method will be discussed with appropriate MNR staff.

**Table 12. Summary of Pre-construction Monitoring Commitments for the Bornish Wind Energy Centre**

Wildlife Habitat Type	Generalized Methods	Location/Feature(s)
Raptor Wintering Area	Thirty minute visual raptor surveys focused on identifying raptors along woodland/update edge habitat. Surveys will be conducted on 3 visits in January 2012, with another 3 visits occurring in February 2012 (depending on January results). See Appendix I for detailed survey methods.	RWA-002
Bat Maternity Colony	A series of single 1.5hr visual point count surveys at potential roosts within each habitat.  Visual surveys will occur at a minimum of 10 snags/cavity trees for areas <10ha with one snag/cavity trees for each hectare for areas	BMA-008 BMA-009 BMA-010 BMA-011 BMA-013 BMA-016

	<p>&lt;30ha and a maximum of 30 snags/cavity trees for areas &gt;30ha. Surveys will be conducted from 30min before dusk and end 1hr after dusk, and will include a combination of both visual and acoustic documentation of bat activity.</p> <p>Surveys will be in accordance with Bats and Bat Habitats (OMNR 2011).</p> <p>Specific surveys, following the methods described above may not be conducted if site access cannot be secured for specific habitats. If site access is not available, alternative methods (if applicable) will be discussed with the MNR.</p> <p>See Appendix II for detailed survey methods</p>	BMA-017
Amphibian Breeding Habitat - Woodland	<p>Two daytime visits to conduct salamander egg mass surveys throughout candidate amphibian breeding habitats with standing water. The first visit will occur after the first warm rain when ice break up is occurring (mid to late March) and the second will occur in conjunction with the first calling amphibian survey in April (see below).</p> <p>Three evening amphibian call surveys will occur once in each of April, May, and June. Each survey will last 3 minutes, following accepted Marsh Monitoring Program protocol.</p> <p>During each survey, biologists will record species and calling abundance codes, along with other appropriate information (date, time, weather, etc.), as well as amphibian movement corridors.</p> <p>Specific surveys, following the methods described above may not be conducted if site access cannot be secured for specific habitats. If site access is not available, alternative methods (if applicable) will be discussed with the MNR.</p> <p>See Appendix III for detailed survey methods.</p>	AWO-001 AWO-002 AWO-003

## 8.2 Construction Mitigation Measures

The various reporting sections above identify several mitigation measures that are recommended to limit potential impacts to significant natural features or wildlife habitats for the development of the Bornish Wind Energy Centre. To assist in fully identifying all mitigation measures that are recommended for this development, a summary table of construction related mitigation measures has been provided below in Table 13, including the mitigation objective and specific location where each mitigation measure should be applied. The purpose of the table below is to consolidate the construction mitigation measures that are applicable to the natural heritage features and wildlife habitats that

have been identified through the Natural Heritage Assessment process. These mitigation measures, along with other requirements not associated with the natural heritage, have all been included in the Construction Plan Report that has been prepared under separate cover by GL-Garrad Hassan.

**Table 13. Summary of Construction Phase Mitigation Measures Recommended for the Bornish Wind Energy Centre**

Mitigation Measure	Objective(s)	Location(s)
<ul style="list-style-type: none"> <li>Any vegetation removal required along roadside collector lines or transmission lines should be minimized, and occur entirely within the road right-of-way.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize vegetation removal and impacts on wildlife habitats</li> </ul>	Transmission Line Roadside Collector Lines
<ul style="list-style-type: none"> <li>Any accidentally damaged trees should be pruned through the implementation of proper arboricultural techniques</li> </ul>	<ul style="list-style-type: none"> <li>Protect tree species from permanent damage</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Develop and implement an erosion and sedimentation control plan.</li> </ul>	<ul style="list-style-type: none"> <li>Protect natural features and wildlife habitats, where appropriate</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Clearly delineate work area using silt fencing, erosion blankets, or similar barrier</li> <li>Maintain erosion control measures for the duration of construction or decommissioning activities.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize erosion impacts on features when construction activities are proposed within 30m of significant natural features</li> </ul>	Within 30m of: WOD-001, 002, 003, 004, 006, 007, 008, 009, 010, 012/21, 013, 014, 018, 022, 023, 024, 024, 025, 027, 028, 029, 030, 031, 038, 039, 045, 046, 047, 048, 051, 052 WET-002B, 002C, 003, 010, 014 VAL-004, 047 BMA-017* AWO-001*, 002*, 003*
<ul style="list-style-type: none"> <li>Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes</li> </ul>	<ul style="list-style-type: none"> <li>Limit unnecessary risk of increased erosion or sedimentation</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Re-vegetate temporary access roads or crane paths that are found in non-agricultural habitat to pre-construction conditions as soon as possible.</li> </ul>	<ul style="list-style-type: none"> <li>Limit the potential for erosion or sedimentation due to exposed soil conditions</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Maintain vegetation buffers around water bodies</li> </ul>	<ul style="list-style-type: none"> <li>Minimize the potential for erosion, and protect wildlife habitat, within riparian areas</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body</li> </ul>	<ul style="list-style-type: none"> <li>Limit the potential for increased erosion within 30m of significance natural features</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant feature.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize the risk of contamination of chemical spill around significant natural features</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Develop a spill response plan, train staff on appropriate procedures, and keep emergency</li> </ul>	<ul style="list-style-type: none"> <li>Minimize potential long-term effects or significance</li> </ul>	Entire Project



spill kits on site.	contaminations in the event an accidental spill occurs	
<ul style="list-style-type: none"> <li>Dispose of waste material by authorized and approved offsite vendors</li> </ul>	<ul style="list-style-type: none"> <li>Limit the potential for contamination of significant natural features</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Implement infiltration techniques to the maximum extent possible.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize potential impacts to soil moisture regime and groundwater stores</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Minimize paved surfaces and design roads to promote infiltration.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize potential impacts to soil moisture regime and groundwater stores</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>No herbicides will be used within significant features or wildlife habitats.</li> </ul>	<ul style="list-style-type: none"> <li>Avoid impacts to natural vegetation species, significant features, and wildlife habitats</li> </ul>	WOD-006 WOD-008
<ul style="list-style-type: none"> <li>Keep changes in land contours to a minimum.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain existing surface water drainage patterns</li> </ul>	Within 120m of: VAL-004, 047 AWO-001*, 002*, 003*
<ul style="list-style-type: none"> <li>Maintain streams, including timing and quantity of flow.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain existing surface water drainage patterns</li> </ul>	Within 120m of: VAL-004, 047 AWO-001*, 002*, 003*
<ul style="list-style-type: none"> <li>Minimize grading activities to maintain existing drainage patterns, to the fullest extent possible.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain existing surface water drainage patterns</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Control rate and timing of water pumping, and restrict taking of water during periods of extreme low flow.</li> </ul>	<ul style="list-style-type: none"> <li>Limit potential impacts on water temperature, surface water storage, and wildlife habitat</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Pump from deep wells to infiltration galleries adjacent to water bodies or wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>Minimize impacts to ground water stores, wetlands, or water bodies</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Control quantity and quality of stormwater discharge using best management practices.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain water flow patterns similar to pre-construction conditions and avoid potential contamination of water sources</li> </ul>	Entire Project
<ul style="list-style-type: none"> <li>Post speed limits along construction access roads, and maintain signage during the operational phase of the project.</li> </ul>	<ul style="list-style-type: none"> <li>Limit the potential for wildlife road mortality</li> </ul>	AWO-001*, 002*, 003*
<ul style="list-style-type: none"> <li>Post wildlife crossing signs along construction access roads, and maintain signage during the operational phase of the project.</li> </ul>	<ul style="list-style-type: none"> <li>Limit the potential for wildlife road mortality</li> </ul>	AWO-001*, 002*, 003*
<ul style="list-style-type: none"> <li>Horizontal directional drill entry/exit pits should be located at least 30m from any significant natural feature</li> </ul>	<ul style="list-style-type: none"> <li>Minimize impacts on significant natural features, water bodies, and wildlife habitat</li> </ul>	Horizontal Directional Drilling WOD-006, WOD- 008
<ul style="list-style-type: none"> <li>Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal</li> </ul>	<ul style="list-style-type: none"> <li>Limit the potential for soil or water contamination</li> </ul>	Horizontal Directional Drilling
<ul style="list-style-type: none"> <li>Restore and re-vegetate entry/exit pits that occur in non-agricultural habitat to pre-construction conditions as soon as possible after construction</li> </ul>	<ul style="list-style-type: none"> <li>Minimize the presence of exposed soil to reduce the potential for erosion</li> </ul>	Horizontal Directional Drilling

\* Only if these habitats are determined to be significant through pre-construction surveys described in Section 8.1

### 8.3 Post-Construction Monitoring Commitments

In accordance with appropriate provincial guidance and the results of pre-construction surveys, a series of post-construction surveys may be required at the Bornish Wind Energy Centre. Some of these surveys will only be required depending on the results of additional pre-construction surveys that have been committed to in Section 8.1 above. Others are already known to be required based on the results of pre-construction surveys or standard monitoring required for all wind energy developments. A summary of post-construction commitments can be found below in Table 14.

**Table 14. Summary of Post-construction Monitoring Commitments at the Bornish Wind Energy Centre**

Survey Type	Location(s)	Generalized Methods	Purpose
Mortality Monitoring	Entire Project	<p>Post-construction mortality monitoring will be conducted following both the <i>Birds and Bird Habitats</i> (OMNR 2011) and <i>Bats and Bat Habitats</i> (OMNR 2011) provincial guidelines for three (3) years after the project has become operational.</p> <p>A suitable sub-set of turbines will be searched approximately every 3 days (twice weekly) for bird and bat mortalities from May 1<sup>st</sup> to October 31<sup>st</sup>, and approximately every 7 days (weekly) throughout November.</p> <p>In addition, all turbines not part of the chosen sub-set will be searched once during each month, specifically targeting raptors.</p> <p>Searcher efficiency and carcass removal trials will be conducted in accordance with provincial guidelines.</p> <p>Bird and Bat mortality methods will be addressed in detail in the Environmental Effects Monitoring Plan</p>	<p>To assess the direct impact of this facility on bird and bat populations.</p> <p>If mortality rates surpass provincially determined thresholds, mitigation measures will be discussed with the MNR.</p>
Bat Maternity Colony Monitoring	BMA-008* BMA-009* BMA-010* BMA-011* BMA-013* BMA-016* BMA-017*	<p>Post-construction bat monitoring will be repeated at this habitat, if deemed to be significant, for three (3) years following the same methods utilized during pre-construction surveys (July 2011 <i>Bats and Bat Habitats</i> guidelines).</p> <p>These surveys are only required if habitats are evaluated to be significant based on pre-construction surveys.</p>	To assess the potential disturbance impact of operational turbines on nearby significant bat maternity roosts.
Winter Raptor Surveys	RWA-002*	Post-construction winter raptor surveys will be repeated at this habitat, if	To assess the potential disturbance impact of

		<p>deemed to be significant, for one (1) year following the same methods utilized during pre-construction surveys.</p> <p>If the first year of post-construction raptor surveys indicate that this feature is no longer significant, an additional two (2) years of post-construction monitoring will occur following the same methods utilized during pre-construction surveys. The need to conduct the additional 2 year post-construction monitoring will be determined in consultation with MNR.</p> <p>These surveys are only required if habitats are evaluated to be significant based on pre-construction surveys.</p>	<p>operational turbines and/or overhead cabling on significant raptor wintering areas.</p>
Amphibian Surveys	<p>AWO-001* AWO-002* AWO-003*</p>	<p>Post-construction amphibian surveys will be repeated at any of these habitats deemed to be significant for one (1) year following the same methods utilized during pre-construction surveys. After presenting results to the MNR, the need for additional surveys will be addressed.</p> <p>These surveys are only required if habitats are evaluated to be significant based on pre-construction surveys.</p>	<p>To assess the potential disturbance impact of access roads on significant amphibian breeding habitats (woodland).</p>

\* Only if these habitats are determined to be significant through pre-construction surveys described in Section 8.1

## **9.0 Environmental Impact Summary**

The Bornish Wind Energy Centre will result in the erection of up to 45 (up to 48) operational wind turbines as well as the installation of supporting infrastructure, such as access roads, cabling, transmission lines, and buildings. Through a comprehensive review of background material in conjunction with site-specific investigations and evaluation of significance surveys, NRSI biologists have identified several significant, or presumed significant, natural features and wildlife habitats within project area.

As part of this Environmental Impact Study, NRSI biologists have recommended a series of monitoring commitments and mitigation measures to be implemented as part of the development of this project. These recommendations have been developed in association with the specific natural features and wildlife habitats that have been identified within the project area.

Assuming the implementation of the planned mitigation measures, monitoring programs, and contingency plans (if necessary), there is unlikely to be any significant impacts to natural heritage features, including woodlands, wetlands, valleylands, or significant wildlife habitat.

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**Appendix I**  
Raptor Wintering Area Methodology

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# Memo

**Project No. 1231**

**To: Amy Cameron**

**From: Andrew Ryckman**

**Date: April 1, 2012**

**Re: Bornish Wind Energy Centre  
Winter Raptor Survey Methods**

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As part of the monitoring program for the Bornish Wind Energy Centre, Natural Resource Solutions Inc. (NRSI) will be conducting winter raptor surveys to assess potential roosting, foraging, and resting habitats for wintering raptors. These surveys will be completed as part of the submission of the Natural Heritage Assessment (NHA), or alternatively as will be committed to within the Environmental Impact Study, depending on the timing of the NHA submission. Following available MNR guidelines, these surveys have been identified as being required in areas where a combination of at least 20ha of combined forest and upland habitat, with the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000) indicating a minimum of 15ha of upland habitat should be present. To ensure a standardized, and repeatable, approach between each visit as well as multiple years, all surveys will adhere to the following standardized methods.

## Monitoring Locations

Based on available guidelines, including the SWHTG, 2011 Significant Wildlife Habitat 7E Ecoregion Criteria, and Natural Heritage Assessment Guide, NRSI biologists have identified 1 location where winter raptor surveys will be conducted. This location meets the following criteria for requiring field surveys to determine level of significance:

- At least 20ha of combined forest (FOD, FOM, or FOC) and upland (low impact pasture),
- At least 15ha of upland habitat (low impact pasture),
- Suitable habitat within 120m of a wind turbine or overhead line

This candidate habitat location has been identified in Bornish Wind Energy Centre's Natural Heritage Evaluation of Significance Report in Figure 10. This candidate habitat feature is located within 120m of a proposed turbine location in the west end of the Bornish Wind Energy Centre project area.

In accordance with guidance provided in the Natural Heritage Assessment Guide, Appendix D, only suitable habitat within 120m of a wind turbine (measured from blade tip) or an overhead line have been considered for field studies. Suitable habitats within 120m of other project components will be considered as generalized wildlife habitat and addressed accordingly in the Environmental Impact Study.



### Monitoring Frequency and Timing

Through initial discussions with MNR staff, NRSI will conduct winter raptor surveys at this location approximately every 7-10 days throughout January and February 2012. Exact time spent at each habitat will largely be dependent on site access, length of woodland edge, and number of birds observed, however all surveys will occur during daylight hours, between 0900-1600hrs, when raptors are expected to be most visible at potential perching locations.

Based on the guidance provided by the MNR, NRSI proposes to conduct surveys approximately 10 days apart, totaling 3 visits in January and 3 visits in February. Approximate timing of the visits is tentatively scheduled for January 5, 17, 26, and February 7, 16, 28. Despite a tentative monitoring schedule, these dates may be shifted slightly depending on weather conditions. In the event that a survey cannot be completed as planned, all attempts will be made to re-schedule this trip as quickly as possible.

At the end of January 2012, NRSI will review the results to determine if surveys should continue for the remaining 4 week survey period in February. In the event that none of the 6 indicator species (as identified by the Draft 2011 SWH 7E Ecoregion Criteria) are observed during any of the first 3 visits, NRSI will conclude that these habitats are not significant raptor wintering areas and will discontinue surveys at these locations for the remainder of the monitoring program. In this instance, an email notification to the MNR will be provided to provide initial results and confirm the approach to discontinue studies.

### Survey Methods

The raptor wintering habitat is located on a property adjacent to those with infrastructure, without specific access granted. As a result, NRSI biologists will conduct behavioural studies from the roadside, adjacent property, or other suitable vantage point. These surveys will be conducted for at least 30 minutes to allow enough time to thoroughly scan the woodland edge and field for indication of raptor perching or foraging. All surveys will be conducted using binoculars and/or spotting scopes that are suitable for observing bird activity and identify species composition (if possible), from the survey location. Data collected will be similar to that for standardized area searches, and will include:

- Level of effort (including start and end time, date, time spent, weather conditions, etc.),
- Complete list of all wildlife species and their behaviour,
- Description of habitats or areas scanned during the survey,
- Location of any raptors observed will be recorded on field maps,
- The entire standardized route of the walking transect will be recorded using a handheld GPS in order to ensure consistency between transects and to record the length of the transect.

### Evaluation of Significance and Reporting

At the completion of the monitoring program in late February 2012, NRSI will review all data collected during the monitoring period and compare it to provincial standards for significant raptor wintering areas. These standards, as observed in the SWH 7E Ecoregion Criteria, include:

- One or more short-eared owls (*Asio flammeus*), or
- At least 10 individuals and two indicator species, and
- Used regularly for a minimum of 20 days by either of the above number of birds.

Following the review of the data collected during the winter raptor field studies, NRSI will prepare a detailed memo that describes the specific methods and presents the results of

the 2012 winter raptor surveys. This memo will be prepared in a way that is consistent with appropriate provincial guidelines and recommendations relating to renewable energy projects, including specific details relating to the evaluation of significance of each feature. For each feature, NRSI will also outline any potential impacts and appropriate mitigation measures (if necessary). Other appropriate information, including habitat descriptions, photos, and detailed mapping, will also be included as part of the memo submission. This memo will be provided to the MNR for review and comment.

These studies are expected to be completed concurrently with the completion of the Natural Heritage Assessment (NHA). In the event that these studies are completed before MNR approval of the NHA, the information may be directly incorporated into these reports rather than within a separate memo for MNR approval.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andrew Ryckman', written in a cursive style.

Andrew Ryckman  
Terrestrial and Wetland Biologist

**Appendix II**  
Bat Maternity Colony Methodology

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# Memo

Project No. 1231

**To: Amy Cameron**

**From: Andrew Ryckman**

**Date: April 1, 2012**

**Re: Bornish Wind Energy Centre  
Bat Maternity Colony Habitat Survey Methods**

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As part of the monitoring commitments in the Natural Heritage Environmental Impact Study (EIS) for the Bornish Wind Energy Centre, Natural Resource Solutions Inc. (NRSI) will be conducting bat maternity colony habitat surveys to assess the use of candidate habitats by bats. These surveys will be completed for the purpose of determining significance under the Renewable Energy Approval (REA) process. These surveys are being completed as part of the EIS component of the Natural Heritage Assessment (NHA) submission for the Bornish Wind Energy Centre. The NHA submission is currently going through provincial agency review.

Following the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000) guidelines and Appendix D, bat maternity colony surveys have been identified as being required in areas where woodlands are overlapped by, or are within 120m of wind turbines, including all turbine-related structures (OMNR 2000). To ensure a standardized and repeatable approach between each visit, as well as multiple years, all surveys will adhere to the following standardized methods.

## Monitoring Locations

Based on available guidelines, including the Bats and Bat Habitats: Guidelines for Wind Power Projects (OMNR 2011), SWHTG, 2011 Significant Wildlife Habitat 7E Ecoregion Criteria, and Natural Heritage Assessment Guide, NRSI biologists have identified 7 candidate bat maternity colony habitats that require pre-construction surveys to determine significance. Field surveys will be conducted at these locations provided they meet the following criteria, as determined by suitable provincial guidance for significant wildlife habitat and/or renewable energy projects:

- Any of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM), that have >25cm diameter at breast height (dbh) wildlife trees<sup>1</sup>.
- If snag/ cavity tree density is  $\geq 10$  snags per hectare of trees  $\geq 25$  cm dbh, then the site is a candidate for maternity colony roosts.
- The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies<sup>1</sup>.

Habitat assessments for these candidate bat maternity colony habitats were conducted during the site investigation stage of the project. The assessments were conducted during leaf-off and occurred from late October to late November 2011. These

assessments resulted in the identification of 7 candidate bat maternity colony habitats. These candidate habitat locations have been mapped in the Bornish Wind Energy Centre's Natural Heritage Evaluation of Significance Report in Figures 8-12. Further information on the habitat assessment methods followed are also included in the above mentioned report.

In order to determine the significance of the identified candidate habitats, bat exit surveys will be conducted in the month of June 2012. The methods used for these surveys are discussed in the subsequent sections of this memo.

#### Monitoring Frequency and Timing

NRSI will conduct bat maternity colony exit surveys in 7 candidate bat maternity colony habitats identified in Bornish Wind Energy Centre. The exit surveys will follow the protocols outlined in the Bat and Bat Habitats: Guidelines for Wind Power Projects (OMNR 2011). These guidelines indicate that the level of effort required for each habitat is as follows:

- a minimum of 10 snags/cavity trees will be surveyed for habitats that are  $\leq 10$ ha,
- one snag/cavity tree will be surveyed for each additional hectare in habitats that are  $\leq 30$ ha,
- a maximum of 30 snags/cavity trees will be surveyed for habitats that are  $\geq 30$ ha

Each selected snag/cavity tree will be monitored from 30 minutes before dusk until 60 minutes after dusk in order to observe evidence of bats exiting the candidate snag/cavity tree. Each candidate roost tree will be monitored once. These surveys will be conducted in June 2012.

#### Exit Survey Methods

NRSI biologists will conduct exit surveys at each of the 7 identified candidate bat maternity colony habitats. The level of effort required for each habitat will be determined following the criteria outlined above and each survey will be conducted for 90 minutes (30 minutes before dusk until 60 minutes after dusk).

As outlined in the Bat and Bat Habitats: Guidelines for Wind Power Projects (OMNR 2011), the specific candidate snag/cavity trees will be selected based on the following criteria (in order of importance):

- tallest snag/cavity tree,
- exhibits cavities or crevices most often originating as cracks, scars, knot holes, or woodpecker cavities,
- has the largest diameter at breast height,
- is within the highest density of snags/cavity trees (e.g. clusters of snags),
- has a large amount of loose, peeling bark,
- cavity or crevice is positioned high up in the snag/cavity tree ( $>10$ m),
- tree species that provide good cavity habitat (e.g. white pine, maple, aspen, ash, oak),
- canopy is more open (where canopy cover can be determined by the percentage of the ground covered by a vertical projection of the outermost perimeter of the natural spread of the foliage of the trees),
- exhibits early stages of decay (decay Class 1-3; Wattt and Caceres 1999 will be used as a reference for determining stage of decay).

Each of the snag/cavity trees selected as the best representative bat maternity roost will have a single exit survey completed during the month of June 2012. Viewing stations will be positioned so they provide a clear view of the snag/cavity tree's cavity opening or crevice. When final snags/cavity trees are chosen, specific UTM monitoring locations for

each selected station will be collected. For snags/cavity trees with multiple openings, multiple viewing stations may be established.

Visual surveys will be conducted in order to collect evidence of bats exiting the candidate snags/cavity trees. These surveys will be completed with the use of either human visual observation and/or the use of a low light, night-vision, or infrared video recorders. For the use of video recorders, viewing stations will be set-up prior to the exit survey timing window and will be conducted in the same candidate habitat as where there are also human visual exit surveys being conducted. Once an evening's monitoring is completed (60 minutes after sunset), the cameras will be collected by the NRSI staff members conducting visual surveys in the same candidate habitat and the visual recordings for each video recorder will be reviewed for evidence of significant bat roosting activity. After a suitable camera model has been identified, NRSI will provide more detailed camera specifications to the Ontario Ministry of Natural Resources prior to the onset of monitoring for confirmation that it will collect the information needed.

A broadband bat detector will be used in conjunction with the visual observations (human or video recorder) in order to determine the bat species observed. Microphones will be positioned to maximize bat detection (e.g. situated away from nearby obstacles to allow for maximum range detection, microphones angled slightly away from the prevailing wind to minimize wind noise). The same broadband detector will be used throughout the survey. Information on the equipment used will be recorded, including information on all adjustable settings (e.g. gain level) and the position of the microphone. Audio data collected will be analyzed by NRSI biologists who are experienced in bat identification and monitoring.

For each monitoring event, NRSI will record the following information:

- level of effort (including date, start and end time, time spent, weather conditions, etc.),
- name of observer(s) conducting field work and number of video recorders used,
- record of bats observed (time of observation, number of passes)
- a bat detector will be used to collect audio recordings of bat passes for species identification following the completion of the monitoring.
- description of the snag/cavity tree observed along with photographs
- GPS point of the survey location.

#### Evaluation of Significance and Reporting

At the completion of the monitoring program in late June/early July 2012, NRSI will review all data collected during the monitoring period and compare it to provincial standards for significant bat maternity colony habitats. These standards, as observed in the SWH 7E Ecoregion Criteria, include bat maternity colonies with confirmed use by:

- >20 Northern Myotis
- >10 Big Brown Bats
- >20 Little Brown Myotis
- >5 Adult Female Silver-haired Bats

Following the review of the data collected during the bat maternity colony habitat field studies, NRSI will prepare a detailed memo that describes the specific methods employed and details the results of the 2012 bat maternity colony habitat exit surveys. This memo will be prepared in a way that is consistent with appropriate provincial guidelines and recommendations relating to renewable energy projects, including specific details relating to the evaluation of significance of each candidate habitat. For each habitat surveyed, NRSI will also outline any potential impacts and appropriate mitigation measures (if necessary), as related back to the Natural Heritage EIS. Other

appropriate information, including habitat descriptions, photos, field notes, and detailed mapping, will also be included as part of the memo submission, as deemed necessary. This memo will be provided to the MNR for review and comment prior to the onset of construction activities at the Bornish Wind Energy Centre.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew Ryckman". The signature is fluid and cursive, with a prominent initial "A" and a long, sweeping tail.

Andrew Ryckman  
Terrestrial and Wetland Biologist

**Appendix III**  
Amphibian Woodland Breeding Habitat Methodology

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# Memo

**Project No. 1231**

**To: Amy Cameron**

**From: Andrew Ryckman**

**Date: April 1, 2012**

**Re: Bornish Wind Energy Centre  
Amphibian Woodland Breeding Habitat Survey Methods**

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As part of the monitoring commitments in the Natural Heritage Environmental Impact Study (EIS) for the Bornish Wind Energy Centre, Natural Resource Solutions Inc. (NRSI) will be conducting amphibian woodland breeding habitat surveys to assess the use of potential woodland breeding habitats by amphibians. These surveys will be completed for the purpose of determining significance under the Renewable Energy Approval (REA) process. These surveys are being completed as part of the EIS component of the Natural Heritage Assessment (NHA) submission for the Bornish Wind Energy Centre. The NHA submission is currently going through provincial agency review.

Following available MNR guidelines, these surveys have been identified as being required in areas where wetlands, lakes, or ponds are found within or adjacent to (within 120m) forests or treed swamps, according to the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000). To ensure a standardized and repeatable approach between each visit, as well as multiple years, all surveys will adhere to the following standardized methods.

## Monitoring Locations

Based on available guidelines, including the SWHTG, 2011 Significant Wildlife Habitat 7E Ecoregion Criteria, and Natural Heritage Assessment Guide, NRSI biologists have identified three candidate amphibian woodland breeding habitats. Field surveys will be conducted at these locations provided they meet the following criteria, as determined by suitable provincial guidance for significant wildlife habitat and/or renewable energy projects:

- Forest (FO) or treed swamp (SW)
- Wetlands, lakes, ponds or pools found within or adjacent (<120m) to a woodland
- Suitable habitat within 120m of a proposed access road

Habitat assessments for these candidate amphibian woodland breeding habitats were conducted during the site investigation stage of the project, which began in August 2011. In some cases, standing water was observed during site investigation; however, an assessment of vernal pool permanency could not be made during the site investigations since vernal pooling typically occurs mid-March to July. Instead, the potential for vernal pooling, and other suitable habitat was determined through an examination of local topography, habitat community, and vegetation species present. Prior to the first survey,

all candidate habitats will be assessed for vernal pools to determine if suitable habitat exists. If suitable habitat exists, surveys will be conducted in order to determine their level of significance by following the methods outlined below.

A total of 2 egg mass searches and 3 point count call surveys will be conducted, all from the edge of each candidate habitat. Since each of the candidate habitat locations are ponds or pools in woodlands, it is the edge of the pool or pond that will be monitored. The 3 candidate habitat locations have been identified in the Bornish Wind Energy Centre's Natural Heritage Evaluation of Significance Report in Figures 8-12.

#### Monitoring Frequency and Timing

NRSI will conduct amphibian woodland breeding habitat call surveys at the 3 candidate habitat locations on three evenings, occurring once in each of April, May, and June, following the accepted Marsh Monitoring Program protocol (Bird Studies Canada 2009). Each of these monitoring locations are >500m apart to prevent counting duplicate amphibian calls. This survey type is expected to target breeding frog and toad species that may be using this habitat.

Amphibian egg mass searches will occur during daylight hours in the early spring, with one visit in March after the first warm rain, and the second visit on the same date as the April call survey. These egg mass surveys will target non-vocalizing amphibians (i.e. salamanders) that are laying eggs in this habitat.

#### Point Count Survey Methods

Since site access is available at each of the monitoring locations, NRSI biologists will conduct 3 amphibian call surveys at each of the point count locations, following the guidelines outlined in the Marsh Monitoring Program Protocol (Bird Studies Canada 2009). Each survey will last 3 minutes, beginning no earlier than one half hour after sunset and ending before midnight. The surveys will occur once in each of April, May, and June, with at least 15 days between visits. The night-time air temperature will be greater than 5°C for the first survey, 10°C for the second survey and 17°C for the third survey. Optimal conditions are when there is little to no wind.

Following the Marsh Monitoring Program Protocol (Bird Studies Canada 2009), NRSI will record the following information on data summary forms during each survey:

- Level of effort (including date, start and end time, time spent, weather conditions, etc.),
- Name of observer(s) conducting field work,
- Complete list of all amphibian species observed, using standard 4 letter species ID codes,
- Call abundance codes for each amphibian species detected as outlined below:
  - Code 1: Individuals can be counted and calls are not simultaneous. This code will be assigned when individual males can be counted, and when the calls of individuals of the same species do not start at the same time. In addition, the number of individual frogs of each species calling will be recorded beside the code.
  - Code 2: Calls are distinguishable, with some simultaneous calling. This code will be assigned when there are a few males of the same species calling simultaneously. In addition, an estimate of the number of individual frogs of each species calling will be recorded beside the code, based on their locations and/or by the differences in their voices.
  - Code 3. Full chorus; calls continuous and overlapping. This code will be assigned when a full chorus is encountered.

- Distance to the observer from each amphibian species detected within a 100m radius of the point location (where possible, calls heard outside of the 100m radius will be identified and indicated on the data summary forms),
- Complete list of all other wildlife species observed,
- Description of habitats or areas scanned during the survey,
- A GPS point of the survey location will be documented on the first visit to be mapped for consistency between visits.

#### Egg Mass Survey Methods

In addition to the point count surveys, 2 egg mass searches will be conducted in each of the candidate amphibian habitats. The first search will occur in mid-to-late March after the first warm rain, and the second will occur on the same day as the April call survey. The area searches will include walking within the wetland or vernal pool along the perimeter, looking for egg masses. Due to the composition and attributes of the candidate amphibian breeding habitats, it is not anticipated that special equipment will be required to identify egg masses; however, visual surveys conducted in breeding ponds with high water levels may require the use of chest waders. This approach is expected to effectively identify egg masses, while minimizing any disturbance effects caused by sampling. A minimum search effort of 30 minutes will be used on each visit, in each habitat. NRSI will record the following information during each survey:

- Level of effort (including date, start and end time, time spent, weather conditions, etc.),
- Name of observer(s) conducting field work,
- Complete list of all amphibian species observed, using standard 4 letter species ID codes,
- Complete list of all egg masses observed with identification made to the species level where possible, using amphibian scientific field guides and/or field keys,
- Complete list of all other wildlife species observed,
- Description of habitats or areas scanned during the survey,
- A GPS point and photographs of any egg masses found.

#### Evaluation of Significance and Reporting

At the completion of the monitoring program in late June 2012, NRSI will review all data collected during the monitoring period and compare it to provincial standards for significant amphibian woodland breeding habitats. These standards, as observed in the SWH 7E Ecoregion Criteria, include the presence of breeding populations of  $\geq 20$  individuals (adult, juvenile, egg/larval mass) of  $\geq 1$  of the following salamander species or  $\geq 2$  or more of the following frog or toad species:

- eastern newt,
- blue-spotted salamander,
- spotted salamander,
- gray treefrog,
- spring peeper
- western chorus frog
- wood frog

The presence of amphibian movement corridors will also be identified concurrently with these surveys in the event that habitats are considered significant. The surrounding habitats around significant breeding ponds will be assessed to determine if they meet the following candidate amphibian movement corridor criteria:

- $>60\%$  closed, native, deciduous forest canopy,
- understory with abundant downed woody debris, shrubs, or other structures that may provide cover and moist microclimates,

- does not contain bisecting gaps,
- provides access to summer and winter habitat, or
- provides dispersal link to other nearby ponds.

In addition, the surrounding habitats will also be assessed to determine if they meet the following significant amphibian movement corridor criteria as outlined in the SWH 7E Ecoregion Criteria:

- at least 200m wide, with gaps <20m, and
- in riparian areas, at least 15m of vegetation on both sides of the waterway.

In the event that amphibian movement corridors extend into areas where property access has not been granted, aerial photos of the surrounding landscape will be used, along with consultation with the MNR, to identify any linkages from significant amphibian woodland breeding habitat.

Following the review of the data collected during the amphibian woodland breeding habitat field studies, NRSI will prepare a detailed memo that describes the specific methods employed and details the results of the 2012 amphibian woodland breeding habitat surveys. This memo will be prepared in a way that is consistent with appropriate provincial guidelines and recommendations relating to renewable energy projects, including specific details relating to the evaluation of significance of each habitat. For each habitat, NRSI will also outline any potential impacts and appropriate mitigation measures (if necessary), as related back to the Natural Heritage EIS. Other appropriate information, including habitat descriptions, photos, field notes, and detailed mapping, will also be included as part of the memo submission, as deemed necessary. This memo will be provided to the MNR for review and comment prior to the onset of construction activities at the Bornish Wind Energy Centre.

Sincerely,



Andrew Ryckman  
Terrestrial and Wetland Biologist