A vascular plant inventory of the proposed wind turbine array, Glen Dhu, Nova Scotia with notes on plant communities and breeding birds

View from ridge crest looking northeast from proposed turbine site 5.

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Methods

This report compiles information from 2007 and 2008 survey work. The proposed turbine locations had changed extensively between 2007 and 2008 with proposed turbine locations in 2007 covering a much more extensive area, including substantial land south of Highway 104. 2007 results from areas no longer proposed for turbine impacts (the area south of Highway 104 and in the vicinity of Beaver and Bear Brooks south and west of Avondale and Barney River Station) are not described in this report.

Screening pre-existing records for rare vascular plants

Lisa Fulton consulted the Atlantic Canada Conservation Data Centre (AC CDC) in February 2007 to determine what rare species were known from the area of the study site and what other rare species might be found there. As recommended by the Nova Scotia Department of Natural Resources, the AC CDC provided a list of all rare species records found within 100 km of the site, along with distance of each record from a central point in the proposed development area. I summarized the vascular plant results by species, listing the closest known record to the Dalhousie Mountain site. I then evaluated the habitat requirements of each species to produce a list of potential rare species for the site.

Vascular Plant Inventory

Fieldwork in 2007 was conducted by Sean Blaney and David Mazerolle over June 20, 21, 22 and July 1. Sean Blaney conducted 2008 fieldwork on his own on June 24 and 25, visiting all currently proposed turbine sites and covering the proposed development corridors mapped in Figure 1. In each year, we recorded our tracks in the field with GPS units set to record position approximately every 15 seconds while moving (the "more often" track recording setting on a Garmin GPS 76Cx unit).

We had pre-programmed the proposed turbine sites into our GPS units before fieldwork and we visited each turbine site, taking photographs, recording notes on species composition, stand age of forested sites and any obvious disturbance history of the plant community present. We concentrated search effort on the turbine sites and the noted development corridors but also covered different or interesting habitats when these were noted.

We compiled a full vascular plant list for the site as a whole, with estimates of species' relative abundance as follows: rare – seen in small numbers in 4 or fewer locations; uncommon – seen in small numbers in approximately 5 to 8 locations, potentially in larger numbers at one or two of the locations; fairly common – seen in small numbers in approximately 8 to 12 locations, potentially in larger numbers at several of the locations; common – seen at more than 12 (estimated) locations. These categories are not intended to represent precise descriptions of abundance but do provide some measure of relative abundance.

For plant species tracked by the Atlantic Canada Conservation Data Centre (those ranked S1, S2, S3 or S3S4 in Nova Scotia, for which all locations are databased), we recorded GPS locations along with habitat descriptions and more detailed estimates of local abundance.

Definitions for S-ranks and for Nova Scotia National General Status ranks (the primary ranks by which species' significance is determined by Nova Scotia Department of Natural Resources) are given below. Both sets of ranks for Nova Scotia were developed through the consensus of the NS Flora Ranking Committee, led through the cooperation of NS Department of Natural Resources (NS DNR) and Atlantic Canada Conservation Data Centre. The ranks reflect the best understanding of plant status at the time of ranking, but are subject to revision as new information becomes available.

Definitions of provincial (subnational) ranks (S-ranks):

S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.

S2 Rare throughout its range in the province (usually 6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.

S3 Uncommon throughout its range in the province (usually 21 to 100 occurrences), or found only in a restricted range, even if abundant in at some locations.

S4 Usually widespread, fairly common throughout its range in the province (usually 100+ occurrences), and apparently secure, but the element is of long-term concern.

S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions (100+ occurrences).

S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).

SE Exotic: An exotic species established in the province (e.g., Purple Loosestrife or Coltsfoot); may be native in nearby regions.

? Is used as a qualifier indicating uncertainty: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK).

Definitions of National General Status Ranks (from *Wild Species: the General Status Program in Canada, Lisa Twolan and Simon Nadeau, 2004, Canadian Wildlife Service, Ottawa)*

- *Extirpated*: species that have disappeared from (or are no longer present in) a given geographic area but which occur in other areas
- *Extinct:* species that are extirpated worldwide (i.e., they no longer exist anywhere)
- *At Risk*: species for which a formal detailed risk assessment (COSEWIC assessment or provincial or territorial equivalent) has been completed, and which have been determined to be at risk of extirpation or extinction (i.e., Endangered) or are likely

to become at risk of extirpation or extinction if limiting factors are not reversed (i.e., Threatened)
- *May Be At Risk*: species that may be at risk of extirpation or extinction and are, therefore, candidates for a detailed risk assessment by COSEWIC or the provincial or territorial equivalent
- *Sensitive*: species that are believed to not be at risk of extirpation or extinction but which may require special attention or protection to prevent them from becoming at risk
- *Secure*: species that are believed to not belong in the categories At Risk, May Be At Risk, Extirpated, Extinct, Accidental, or Exotic. This category includes some species that show a declining trend in numbers in Canada but which remain relatively widespread or abundant.
- *Undetermined*: species for which insufficient data, information, or knowledge is available with which to reliably evaluate their general status
- *Not Assessed*: species that are known or believed to be present in the geographic area in Canada to which the general status rank applies but which have not yet been assessed
- *Exotic*: species that have been moved beyond their natural range as a result of human activity. In the *Wild Species 2005* report, exotic species have been purposefully excluded from all other categories.
- *Accidental*: species occurring infrequently and unpredictably outside their usual range

Breeding Bird Inventory

Although not part of the work I was hired to complete, I made some effort to record bird species by listening for birds and occasionally attempting to attract birds into view using pishing. I recorded breeding evidence using the codes of the Maritimes Breeding Bird Atlas (http://www.mba-aom.ca/english/mbbaguide.pdf, and listed below). Bird breeding evidence from 2007 has been entered online into the Maritimes Breeding Bird Atlas, and 2008 evidence will be entered.

Results and Discussion

I. Site Coverage

In 2007, we covered 42.7 km on foot within the 2008 project area (including 6.3km along the access road between Vameys Lake and Marshy Hope). During 2008 fieldwork, I (see covered 42.0 km on foot. GPS tracks from each year relative to proposed development sites are mapped in Figure 2.

No site inventory is ever entirely complete, but fieldwork for this project was unusually extensive because of the multiple site visits in 2007 and 2008. We covered all habitat types present and are confident that the turbine sites are relatively thoroughly covered for vascular plants, especially for native species, and that there is a low probability of

significant numbers of additional rare vascular plant species occurring within the proposed turbine development footprints.

II. Plant Communities

Descriptions of the plant communities at the proposed turbine sites, along with notes on how turbine placement could be improved relative to impacts on the site's natural heritage values, are given in Table 1. Turbine site numbers correspond to those mapped in Figure 1, and geocoordinates and significant communities are given in Table 3 and mapped in Figure 2.

In cases where forest may be impacted by turbine construction, one has to consider the potential impacts of turbine construction in the context of a working landscape in which substantial clearcutting and other forest harvesting is already taking place, meaning that mature forest may not remain as such into the future, independent of the addition of wind turbines. That said, however, there are many forest areas on site that are high quality examples of their community types where avoiding impacts would be beneficial.

The development footprints for the following 18 turbine sites present very little concern relative to natural heritage values because they were entirely within old fields (including those regenerating to forest) or recent clearcuts (20 years ago or less): Turbines 2, 3,5, 6, 8, 9, 10, 15, 19, 21, 22, 23, 24, 28, 29, 32, 33, 36.

The turbine sites having the highest priority for revised siting or careful restriction of impacts within the 75m radius development footprint are those where the development footprint is entirely within mature forest, especially cases where rows of turbines are within larger, contiguous blocks of mature forest. The development footprints of five turbine sites (turbines 7, 13, 14, 18, 20, 25, 27) are entirely within mature forest (estimated age 75+ years). Footprints for turbines 4 and 34 were also largely within mature forest, but included some disturbed area – a large road at turbine 4 and a 5m wide cut line at turbine 34. Three long development corridors run through larger contiguous blocks of fairly mature to mature deciduous forest: 1) the line between turbines 18, 25, 14 and 4 (~1140m), 2) the line between turbines 34, 20, 27 and 10 (~1070m) and 3) the line between turbines 36 and 32 (~1050m, also crossing a seasonal stream and seepage area as noted below). Shorter corridors through fairly mature to mature forest occur along the lines between turbines 16 and 30 (~475m), between turbines 11 and 5 (~400m) and between 32 and 26 (~400m).

In all the above cases these are deciduous, sugar maple-dominated stands of a type that is typical of the Cobequid Mountain region of northern mainland Nova Scotia. These areas do not represent a rare community, but do provide some high quality examples of the community type. If the turbines can be placed in less mature stands, project impacts on natural heritage values would be significantly reduced. In many cases tracks taken between turbine sites also went through extensive, high quality examples of sugar maple-dominated uplands. As with the turbine sites, limiting the extent of new powerline and access road construction in mature forest will help reduce overall impacts on the natural heritage value of the site.

The development footprints for turbines 4, 7, 11, 12, 14, 16, 17, 18, 26, 30, 31, 35 (12 turbines) are situated entirely or almost entirely within intermediate aged forest (estimated at 50-75 years old). Although reducing impacts in these sites would be a slightly lower priority than in the mature forest sites, shifting turbine footprints into sites entirely within less-mature communities would also be desirable from the perspective of maintaining natural heritage values.

I found several groundwater seepage communities. The most significant of these were outside proposed development impacts. These were along the stream between turbines 10, 27 and 20 and turbines 12, 24 and 30. I crossed this stream at three different places over 800m and rich deciduous forest seepage areas were found at each crossing, suggesting they occur through the whole distance of the stream. The area between turbine sites 24 and 27 was the richest site, having an extensive rich seepage area under sugar maple and yellow birch forest. This community type is uncommon but not rare provincially and the examples on this stream were good ones, being mature and containing the uncommon species Broad-Lipped Twayblade (*Listera convallarioides* – S3, Secure), Braun's Holly-Fern *(Polystichum braunii* – S3S4, Secure) and Red Trillium (*Trillium erectum* – S3, Secure). The full length of this stream should remain outside the development footprint as it is at present. Another similar rich deciduous forest seepage community was present within the potential footprint of the proposed road between turbines 36 and 32. The presence of this seepage community and stream within a relatively extensive area of fairly mature to mature forest that also supports the rare species Dwarf Ginseng (*Panax trifolius* – S3, Secure) and Tall Millet-Grass (*Milium effusum* var. *cisatlanticum* – S3, Secure) perhaps warrants a movement of the access road to the vicinity of turbines 31 and 26 if a route through less mature forest can be found. A final rich deciduous forest seepage community was between turbines 5 and 11. It also contained Red Trillium but was outside the footprint of the proposed road.

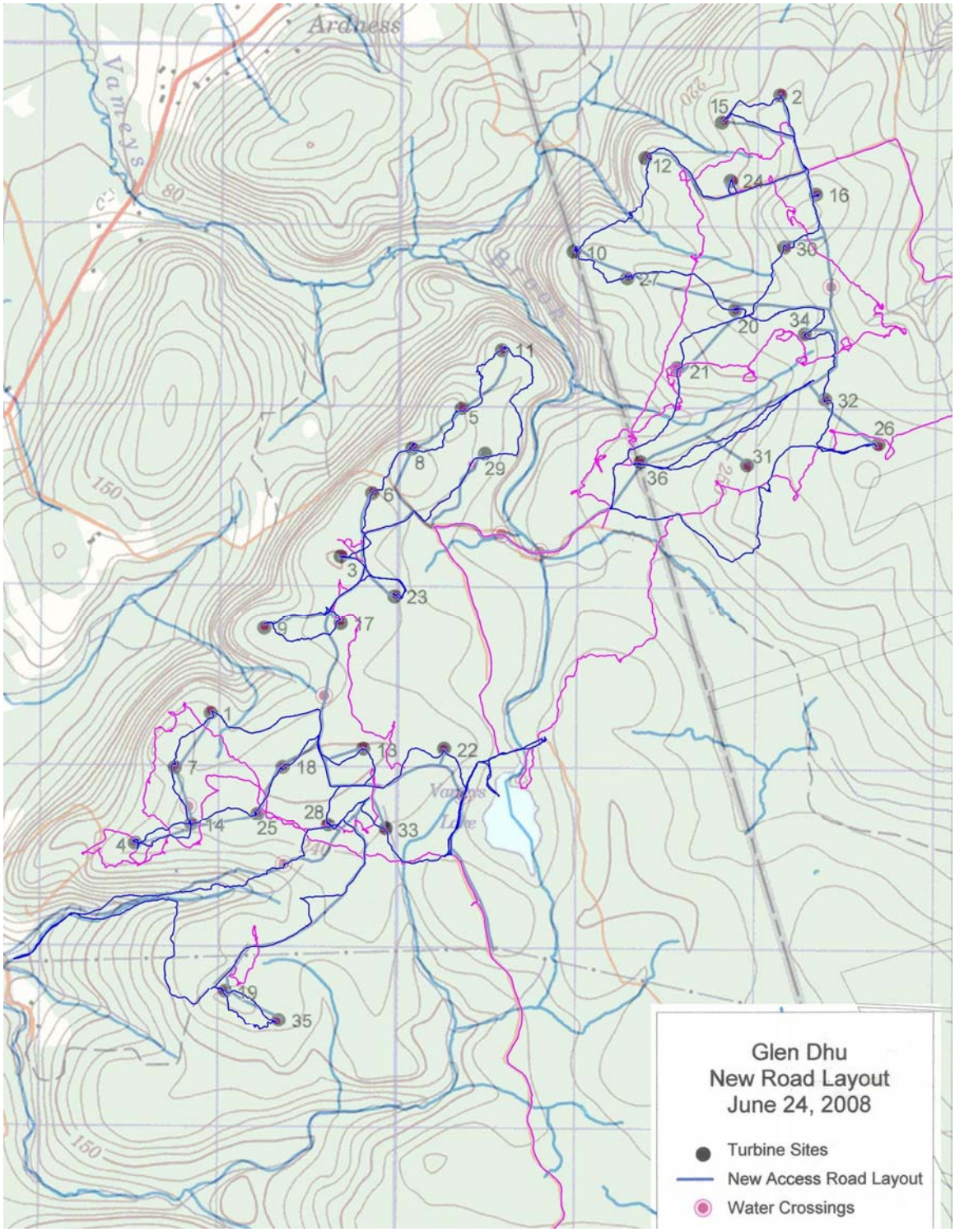

Figure 1. Map of on-foot site coverage as recorded by GPS. Magenta lines are 2007 tracks, dark blue lines are 2008 tracks. The site layout map is overlain upon a topographic map with different watercourse layer so that some streams appear twice in slightly different locations.

Table 1. Community descriptions of proposed turbine sites. Sites match those mapped in Figure 1. Cover value percentages in are absolute values, whereas tree species composition percentages are relative to the total tree cover (i.e. 85% of the 35% tree cover at turbine 1 was balsam fir). Composition and percentage cover values for the shrub and herbaceous layers were recorded but are not given here.

	Turbine#	Estimated Stand Age	Tree Composition	% Tree Cover	Community Description	Notes on Turbine Placement
34	1	60	Sugar maple, white spruce, red maple, balsam fir, yellow birch	60%	Intermediate-aged mixed forest, likely regenerated from old field	
20	2	20	Balsam fir, white birch, white spruce, red maple	60%	Old field regenerating to young, mixed forest	
6	3	30	White spruce, balsam fir, sugar maple, white birch, yellow birch, red maple	25%	Open old field with patchy tree cover	
32	4	100	Sugar maple – 100%	60%	Mature sugar maple forest with history of selective cutting and large road ~30m from turbine site	
3	5	~7, remnant mature trees 50-70	Sugar maple – 100%	15%	Young cut over sugar maple forest at margin of regenerating old field	Tall Millet-Grass (*Milium effusum* var. *cisatlanticum* , S3-Secure) common within turbine area
5	6	10-20	Sugar maple – 60%, beech – 30%, (balsam fir, white spruce, yellow birch) 10%	75% (tall saplings, low trees)	Regenerating deciduous forest cut over	
33	7	65	Sugar maple, white spruce, beech, (yellow birch, white ash, ironwood)	65%	Intermediate aged deciduous forest at boundary of 15 year old regenerating cut-over	
4	8	20-40	Sugar maple – 80%, beech – 20%; subcanopy – striped & mountain maple, alternate-leaved dogwood, sugar maple	80%	Young sugar maple-dominated deciduous forest	
8	9	30 (a few large, old trees of 80+)	Yellow birch, red maple, balsam fir, white birch, sugar maple	60-85%	Young mixed forest stand, perhaps with history as pasture	
16	10	90	Sugar maple – 95+%, beech - <5%	85%	Mature sugar maple forest	
2	11	65, a few trees 100+	Sugar maple – 100%	85	Intermediate-mature sugar maple forest	
17	12	50	White birch – 40%, red maple – 30%, sugar maple – 20%, (yellow birch, dead balsam fir)	80%	Young-intermediate aged mixed forest regenerated from old field	
28	13	75	Sugar maple, beech	80%	Intermediate-aged deciduous forest	
31	14	60	Sugar maple – 60%, white spruce – 30%, balsam fir – 10%, (yellow birch)	60	Intermediate-aged mixed forest	
19	15	20	Balsam fir, white birch, red maple, white spruce	45%	Old field regenerating to young, mixed forest	
21	16	65	Sugar maple – 70%, beech – 30%	85%	Intermediate-mature deciduous forest	
7	17	55 (partially clearcut this year)	Balsam fir, red spruce, yellow birch, red maple, white birch	60% (within uncut portion)	Margin of this year's cut in young stand regenerated from old field	

	Turbine#	Estimated Stand Age	Tree Composition	% Tree Cover	Community Description	Notes on Turbine Placement
29	18	75	Sugar maple – 60%, beech – 30%, white spruce – 10%, (yellow birch)	80%	Mature deciduous forest	Turbine would be better placed in larch plantation 80m east.
26	19	35	Trembling aspen, balsam fir, white spruce, red maple, largetooth aspen, yellow birch	65%	Young mixed forest regenerated from old field	
14	20	80	Sugar maple – 80%, yellow birch – 10%, beech – 10%	95%	Mature sugar maple forest	There is a cutover area to the south & east of this site that would be a better location for the access road and turbine.
23	21	1	None	0%	Large, recent deciduous forest clearcut	
35	22	12	Sugar maple, balsam fir, red maple, beech, (white ash, gray birch)	60%	Young deciduous forest regenerating from clearcut	
9	23	20	Balsam fir, white spruce, white birch	10%	Open old field with a sparse tree cover	
18	24	30	Balsam fir – 60%, white birch – 20%, red maple – 10%, white spruce – 10%, (yellow birch)	55%	Old field regenerating to young, mixed forest	
30	25	75	Sugar maple – 80%, beech – 20%	85%	Mature deciduous forest	
11	26	30-60	Sugar maple – 40%, beech – 40%, yellow birch – 10%, balsam fir – 10%	95%	Margin of young and intermediate-aged deciduous forest	
15	27	100	Sugar maple – 90%, (yellow birch, beech) – 10%; subcanopy - beech, striped maple	85% + 45% subcanopy	Very mature sugar maple forest	
25	28	25	Balsam fir, yellow birch, sugar maple, white spruce	60%	Old field regenerating to young, mixed forest	
1	29	~7, remnant mature trees – 70	Sugar maple – 95%, red maple + beech – 5%	10	Cut over sugar maple forest with 10% mature tree cover remaining	
22	30	65	Sugar maple – 90%, (beech, yellow birch) – 10%	50% to 85%	Intermediate-aged sugar maple forest, with small selectively-cut opening at centre of proposed turbine area	
10	31	50-60	Red spruce, yellow birch, sugar maple, white birch, balsam fir	50%	Open, intermediate-aged, conifer-dominated mixed forest stand with extensive dead balsam fir blowdown	
12	32	<5	Sugar maple – yellow birch	10%	Recently cut over deciduous forest, a few large trees left standing	
24	33	20	White spruce, balsam fir, yellow birch, sugar maple, white birch, red maple	40%	Old field regenerating to young, mixed forest	
13	34	75-90 (excluding 5m wide cut line)	Sugar maple – 90%, beech – 10%	95% (excl. area of cut line)	Mature sugar maple forest with 5m-wide cut line through proposed turbine location	
27	35	50	White spruce, balsam fir (largely dead), red maple	50%	Young mixed forest regenerated from old field	
36	36	1	None	0%	Recently clear-cut deciduous forest, with mature sugar maple forest 30m from turbine centre	

III. Vascular Plants

Table 2 lists the 395 vascular plant taxa (325 native or potentially native, 70 exotic) identified during fieldwork, with estimates of their abundance within the site and their provincial status under both the S-rank system used continent-wide by all conservation data centres and the National General Status ranks, which have been developed by each province and territory. Both sets of ranks for Nova Scotia were developed through the consensus of the NS Flora Ranking Committee, led through the cooperation of NS Department of Natural Resources (NS DNR) and Atlantic Canada Conservation Data Centre. The ranks reflect the best understanding of plant status at the time of ranking, but are subject to revision as new information becomes available.

III. Rare vascular plants

a) Screening pre-existing records for rare vascular plants

Appendix 1 lists the 104 rare species identified as having some potential for occurrence on the site. These species were considered species to watch for during field survey efforts. Appendix 2 lists the 178 species considered very unlikely to occur based on habitat. Seven of the eight rare species found on the site were identified as potentially occurring during the screening of pre-existing records. Pennsylvania Sedge (*Carex pensylvanica*) was not identified because there were no previous records within 100 km of the site.

b) Rare plants observed in the field

Seven rare plant species tracked by the Atlantic Canada Conservation Data Centre (S-ranks of S1 to S3S4) were found on the site. Only a few rare plant records and none of major concern to NS DNR were found immediately within the proposed development footprint as given to me at the time of fieldwork. Details of each rare species location (with notes on distance to nearest portion of the proposed development footprint) are given in Table 3 and descriptions of rare species' provincial and site status are given below. None of these rare species have General Status ranks of *May be at Risk* or *Sensitive* but one (Hickey's Clubmoss, *Lycopodium hickeyi*) has a General Status rank of *Undetermined*, which makes it of concern to NS DNR. The remaining species are ranked *Secure* in Nova Scotia under the National General Status of Wildlife process and are thus of limited concern to NS DNR. Figure 2 maps rare species locations in relation to the proposed development footprint. Note that one species (Pennsylvania Sedge, *Carex pensylvanica* – S1?, Undetermined) was reported during 2007 fieldwork well outside the area now under consideration for development and as such is excluded from listing in Table 3 and below.

i) Species of concern to Nova Scotia Department of Natural Resources, mapped in Figure 2.

Hickey's Clubmoss - *Lycopodium hickeyi* (S2?, Undetermined)
This species was only recently separated from similar clubmosses in the tree-like Clubmoss group and as such is still poorly known in the province. It is likely widespread

but uncommon and may prove to be too common to be tracked by the AC CDC when its status is more fully understood. A good population was found in young conifer forest regenerated from old field about 90m northeast of turbine 19.

ii) Marginally rare species, tracked by Atlantic Canada Conservation Data Centre but of limited concern to Nova Scotia Department of Natural Resources.

Dry-Spike Sedge - *Carex foenea* (S3?, Secure)
One clump of this species occurred on the recently disturbed margin of a gravelly roadway 120m from turbine 4. It is far more common to find Dry-Spike Sedge in human-disturbed habitats such as logging roads and clearcuts than in natural habitats, and as such the species is minimally threatened province-wide. The species is uncommon in Nova Scotia but occurs throughout the province. The number of records of the species is undoubtedly somewhat limited because of its similarity to other relatives in *Carex* section *Ovales*.

Broad-Leaved Twayblade - *Listera convallarioides* (S3, Secure)
This species was seen in a single spot, with large numbers of plants present in a rich, seepage depression within sugar maple forest where Silvery Glade-Fern (*Deparia acrostichoides*) was dominant and the only locations on site for the uncommon Rattlesnake Fern (*Botrychium virginianum*) and Daisy-Leaved Grape-Fern (*Botrychium matricariifolium*). Broad-lipped Twayblade is locally quite common in seepy, shaded sites along Cape Breton Highland rivers but is rare on the mainland of Nova Scotia where it is known primarily from rich, seepy sites in sugar maple forest. No turbines are proposed near this site but it should be avoided in placing powerline and access road corridors.

Tall Millet-Grass - *Milium effusum* var. *cisatlanticum* (S3, Secure)
Plants were seen in many locations, sometimes in large numbers, widely scattered around the site in richer, moist deciduous forest and in disturbed forest edges. This grass species is uncommon to locally common in richer, higher elevation sugar maple forests in the Cape Split area, the Cobequid Mountains and in Cape Breton but is very rare in lowland deciduous forests in Nova Scotia.

Dwarf Ginseng - *Panax trifolius* (S3, Secure)
Dwarf Ginseng was widely but uncommonly scattered around the site, with most sites having relatively small numbers of individuals. Recent 2007 fieldwork by Sean Blaney and the AC CDC in Cobequid Mountain sites between Portapique and Marshy Hope has found this species to be widespread and locally abundant in deciduous forests. If this level of abundance (which is not known in other regions of the Maritimes) is general across the eastern part of the Cobequid Mountains, this species' S-rank should be revised to S4. Dwarf Ginseng occurrences mapped in Figure 2 undoubtedly under-represent the total distribution of the species in the study area.

Braun's Holly-Fern - *Polystichum braunii* (S3S4, Secure)
A single, very large plant was found 290m west of turbine site 60 in a seepy opening in rich sugar maple – yellow birch – ironwood – spruce forest on a ridge top. This species

is locally common in Cape Breton and the Blomidon area and widespread but uncommon in cool ravines and steep slopes throughout the northern mainland of Nova Scotia, and may also warrant rank revision to S4.

Red Trillium - *Trillium erectum* (S3, Secure)
This species was found in four locations in 2008 around richer, seepy areas within deciduous forest. It has a relatively limited distribution in Nova Scotia, being restricted to the Annapolis Valley and Cobequid Mountains north to about Antigonish but it can be locally abundant in that area to the point where it is a candidate for ranking revision to S4, which would remove it from the AC CDC tracking list.

Table 2. Full list of vascular plants observed during 2007 and 2008 fieldwork. Some species observed in 2007 fieldwork were not observed within the area covered during 2008 fieldwork, but except for rare species where locations were noted, these cannot be easily separated. Thus all species are listed.

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S-rank
LYCOPODIACEAE	**Clubmoss Family**						
Huperzia lucidula	Shining Fir-Clubmoss	x	x	c		Secure	S5
Lycopodiella inundata	Bog Clubmoss	x		r		Secure	S5
Lycopodium annotinum	Stiff Clubmoss	x	x	u		Secure	S5
Lycopodium clavatum	Running Pine	x	x	f		Secure	S5
Lycopodium dendroideum	Treelike Clubmoss	x	x	c		Secure	S4?
Lycopodium digitatum	Fan Club-Moss	x		u		Secure	S5
Lycopodium hickeyi	Hickey's Clubmoss	x		r		Undetermined	S2?
Lycopodium lagopus	One-Cone Gound-Pine	x	x	r		Secure	S4
Lycopodium obscurum	Tree Clubmoss	x	x	r		Secure	S5
EQUISETACEAE	**Horsetail Family**						
Equisetum arvense	Field Horsetail	x	x	c		Secure	S5
Equisetum sylvaticum	Woodland Horsetail	x	x	c		Secure	S5
OPHIOGLOSSACEAE	**Adder's-Tongue Family**						
Botrychium matricariifolium	Chamomile Grape-Fern	x		r		Secure	S4
Botrychium virginianum	Rattlesnake Fern	x		r		Secure	S4
OSMUNDACEAE	**Flowering Fern Family**						
Osmunda cinnamomea	Cinnamon Fern	x	x	c		Secure	S5
Osmunda claytoniana	Interrupted Fern	x	x	c		Secure	S5
Osmunda regalis var. spectabilis	Royal Fern	x	x	r		Secure	S5
DENNSTAEDTIACEAE	**Hay-Scented Fern Family**						
Dennstaedtia punctilobula	Eastern Hay-Scented Fern	x	x	c		Secure	S5
Pteridium aquilinum var. latiusculum	Bracken Fern	x	x	c		Secure	S5
THELYPTERIDACEAE	**Marsh-Fern Family**						
Phegopteris connectilis	Northern Beech Fern	x	x	c		Secure	S5
Thelypteris noveboracensis	New York Fern	x	x	c		Secure	S5
Thelypteris palustris var. pubescens	Marsh Fern	x		u		Secure	S5
DRYOPTERIDACEAE	**Wood-Fern Family**						

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S-rank
Athyrium filix-femina ssp. angustum	Lady-Fern	x	x	c		Secure	S5
Deparia acrostichoides	Silvery Spleenwort	x	x	f		Secure	S4
Dryopteris campyloptera	Mountain Wood-Fern	x	x	c		Secure	S5
Dryopteris carthusiana	Spinulose Shield Fern	x		u		Secure	S5
Dryopteris cristata	Crested Shield-Fern	x	x	u		Secure	S5
Dryopteris intermedia	Evergreen Woodfern	x	x	c		Secure	S5
Dryopteris marginalis	Marginal Wood-Fern	x		r		Secure	S5
Gymnocarpium dryopteris	Northern Oak Fern	x	x	c		Secure	S5
Matteuccia struthiopteris	Ostrich Fern	x	x	f		Secure	S5
Onoclea sensibilis	Sensitive Fern	x	x	c		Secure	S5
Polystichum acrostichoides	Christmas Fern	x	x	f		Secure	S5
Polystichum braunii	Braun's Holly-Fern	x	x	r		Secure	S3S4
TAXACEAE	**Yew Family**						
Taxus canadensis	Canadian Yew	x		r		Secure	S5
PINACEAE	**Pine Family**						
Abies balsamea	Balsam Fir	x	x	c		Secure	S5
Larix laricina	American Larch	x		f		Secure	S5
Picea abies	Norway Spruce	x		c	planted	Exotic	SE
Picea glauca	White Spruce	x	x	c		Secure	S5
Picea mariana	Black Spruce	x		u		Secure	S5
Picea rubens	Red Spruce	x	x	f		Secure	S5
Pinus resinosa	Red Pine	x		r	planted	Secure	S4S5
Pinus strobus	Eastern White Pine	x		r		Secure	S5
Tsuga canadensis	Eastern Hemlock	x	x	u		Secure	S5
RANUNCULACEAE	**Buttercup Family**						
Actaea pachypoda	White Baneberry	x	x	r		Secure	S4
Actaea rubra	Red Baneberry	x	x	u		Secure	S5
Coptis trifolia	Goldthread	x	x	c		Secure	S5
Ranunculus abortivus	Kidney-Leaved Buttercup	x	x	u		Secure	S4S5
Ranunculus acris	Tall Butter-Cup	x	x	f		Exotic	SE
Ranunculus recurvatus	Hooked Crowfoot	x	x	u		Secure	S4
Ranunculus repens	Creeping Butter-Cup	x	x	c		Exotic	SE
Thalictrum pubescens	Tall Meadow-Rue	x	x	c		Secure	S5
FUMARIACEAE	**Fumitory Family**						
Dicentra cucullaria	Dutchman's Breeches	x		u		Secure	S4
CANNABACEAE	**Cannabis Family**						
Cannabis sativa	Marijuana	x		r	planted	[Not ranked]	SE
MYRICACEAE	**Bayberry Family**						
Morella pensylvanica	Northern Bayberry	x	x	r		Secure	S5
Myrica gale	Sweet Bayberry	x		r		Secure	S5
FAGACEAE	**Beech Family**						
Fagus grandifolia	American Beech	x	x	c		Secure	S5
Quercus rubra	Northern Red Oak	x		r		Secure	S5
BETULACEAE	**Birch Family**						
Alnus incana ssp. rugosa	Speckled Alder	x	x	f		Secure	S5
Alnus viridis ssp. crispa	Green Alder	x	x	f		Secure	S5
Betula alleghaniensis	Yellow Birch	x	x	c		Secure	S5
Betula papyrifera var. cordifolia	Heart-Leaved Paper Birch	x	x	f		Secure	S5

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Betula papyrifera var. papyrifera	Paper Birch	x	x	c		Secure	S5
Betula populifolia	Gray Birch	x	x	c		Secure	S5
Betula x caerulea	a hybrid Birch [papyrifera X populifolia]	x	x	r		[Not ranked]	HYB
Corylus cornuta	Beaked Hazelnut	x	x	c		Secure	S5
Ostrya virginiana	Eastern Hop-Hornbeam	x	x	r		Secure	S5
CHENOPODIACEAE	**Goosefoot Family**						
Chenopodium album	White Goosefoot	x		r		Exotic	SE
PORTULACACEAE	**Purslane Family**						
Claytonia caroliniana	Carolina Spring-Beauty	x	x	f		Secure	S4
CARYOPHYLLACEAE	**Pink Family**						
Cerastium fontanum ssp. vulgare	Common Mouse-Ear Chickweed	x	x	f		Exotic	SE
Moehringia lateriflora	Grove Sandwort	x	x	r		Secure	S5
Stellaria borealis	Northern Stitchwort	x	x	r		Secure	S4
Stellaria graminea	Little Starwort	x	x	f		Exotic	SE
POLYGONACEAE	**Smartweed Family**						
Polygonum cilinode	Fringed Black Bindweed	x	x	c		Secure	S5
Polygonum hydropiper	Marshpepper Smartweed	x	x	r		Exotic	SE
Polygonum sagittatum	Arrow-Leaved Tearthumb	x	x	f		Secure	S5
Rumex acetosa	Garden Sorrel	x		r		Exotic	SE
Rumex acetosella	Sheep Sorrel	x	x	f		Exotic	SE
Rumex crispus	Curly Dock	x	x	r	ID probable only	Exotic	SE
Rumex obtusifolius	Bitter Dock	x		r		Exotic	SE
ELATINACEAE	**Waterwort Family**						
Elatine minima	Small Water-Wort	x		r		Secure	S4S5
CLUSIACEAE	**St. John's-wort Family**						
Hypericum boreale	Northern St. John's-Wort	x	x	u	ID probable only	Secure	S5
Hypericum canadense	Canadian St. John's-Wort	x		r		Secure	S5
Hypericum ellipticum	Pale St. John's-Wort	x		r		Secure	S5
Hypericum perforatum	A St. John's-Wort	x	x	c		Exotic	SE
Triadenum fraseri	Marsh St. John's-Wort	x		r		Secure	S5
DROSERACEAE	**Sundew Family**						
Drosera rotundifolia	Roundleaf Sundew	x	x	r		Secure	S5
CISTACEAE	**Rockrose Family**						
Lechea intermedia	Narrowleaf Pinweed	x		r		Secure	S4
VIOLACEAE	**Violet Family**						
Viola blanda var. palustriformis	Smooth White Violet	x	x	c		Secure	S5
Viola cucullata	Marsh Blue Violet	x	x	c		Secure	S5
Viola lanceolata	Lance-Leaf Violet	x		r		Secure	S5
Viola macloskeyi ssp. pallens	Smooth White Violet	x	x	c		Secure	S5
Viola pubescens	Downy Yellow Violet		x	r		Secure	S4
Viola renifolia	Kidney-Leaf White Violet	x		r		Secure	S4
Viola sororia	Woolly Blue Violet	x	x	u		Secure	S5
SALICACEAE	**Willow Family**						
Populus grandidentata	Large-Tooth Aspen	x	x	f		Secure	S5
Populus tremuloides	Quaking Aspen	x	x	c		Secure	S5
Salix bebbiana	Bebb's Willow	x	x	c		Secure	S5

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Salix discolor	Pussy Willow	x	x	c		Secure	S5
Salix eriocephala	Heart-Leaved Willow	x	x	f		Secure	S5
Salix humilis	Prairie Willow	x	x	f		Secure	S5
Salix lucida	Shining Willow	x		u		Secure	S5
Salix pyrifolia	Balsam Willow	x		u		Secure	S5
BRASSICACEAE	**Mustard Family**						
Barbarea vulgaris	Yellow Rocket	x		r		Exotic	SE
Cardamine diphylla	Two-Leaf Toothwort	x		u		Secure	S4
Cardamine pensylvanica	Pennsylvania Bitter-Cress	x	x	u		Secure	S5
ERICACEAE	**Heath Family**						
Chamaedaphne calyculata	Leatherleaf	x		r		Secure	S5
Gaultheria hispidula	Creeping Snowberry	x		u		Secure	S5
Kalmia angustifolia	Sheep-Laurel	x	x	f		Secure	S5
Ledum groenlandicum	Common Labrador Tea	x		u		Secure	S5
Rhododendron canadense	Rhodora	x		u		Secure	S5
Vaccinium angustifolium	Late Lowbush Blueberry	x	x	c		Secure	S5
Vaccinium macrocarpon	Large Cranberry	x		r		Secure	S5
Vaccinium myrtilloides	Velvetleaf Blueberry	x	x	f		Secure	S5
PYROLACEAE	**Pyrola Family**						
Moneses uniflora	One-Flower Wintergreen	x		r		Secure	S5
Orthilia secunda	One-Side Wintergreen	x		r		Secure	S5
Pyrola americana	American Wintergreen	x		r		Secure	S5
Pyrola elliptica	Shinleaf	x		f		Secure	S5
MONOTROPACEAE	**Indian Pipe Family**						
Monotropa uniflora	Indian-Pipe	x		u		Secure	S5
PRIMULACEAE	**Primrose Family**						
Lysimachia terrestris	Swamp Loosestrife	x		f		Secure	S5
Trientalis borealis	Northern Starflower	x	x	c		Secure	S5
GROSSULARIACEAE	**Gooseberry Family**						
Ribes glandulosum	Skunk Currant	x	x	f		Secure	S5
Ribes hirtellum	Smooth Gooseberry	x	x	u		Secure	S5
Ribes lacustre	Bristly Black Currant	x	x	r		Secure	S5
Ribes triste	Swamp Red Currant	x		r		Secure	S4
CRASSULACEAE	**Stonecrop Family**						
Hylotelephium telephium	Witch's-Moneybags	x		r		Exotic	SE
SAXIFRAGACEAE	**Saxifrage Family**						
Chrysosplenium americanum	American Golden-Saxifrage	x	x	f		Secure	S5
ROSACEAE	**Rose Family**						
Agrimonia striata	Woodland Agrimony	x	x	u	ID probable only	Secure	S5
Amelanchier sp.	Serviceberry species	x	x	c	coppery leaves - *A. interior* &/or *laevis*	[Secure]	
Comarum palustre	Marsh Cinquefoil	x		r		Secure	S5
Fragaria virginiana	Virginia Strawberry	x	x	c		Secure	S5
Geum aleppicum	Yellow Avens		x	r		Secure	S4
Geum laciniatum	Rough Avens		x	r		Secure	S4S5
Geum macrophyllum	Large-Leaved Avens	x	x	c		Secure	S5
Geum rivale	Purple Avens	x		u	ID probable only	Secure	S5

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Malus pumila	Common Apple	x	x	r		Exotic	SE
Potentilla argentea	Silvery Cinquefoil	x		r		Exotic	SE
Potentilla norvegica ssp. monspeliensis	Norwegian Cinquefoil	x	x	c		Secure	S5
Potentilla recta	Sulphur Cinquefoil	x		r		Exotic	SE
Potentilla simplex	Old-Field Cinquefoil	x	x	c		Secure	S5
Prunus pensylvanica	Fire Cherry	x	x	f		Secure	S5
Prunus virginiana	Choke Cherry	x	x	f		Secure	S5
Rosa virginiana	Virginia Rose	x	x	u		Secure	S5
Rubus allegheniensis	Allegheny Blackberry	x	x	u		Secure	S5
Rubus canadensis	Smooth Blackberry	x	x	c		Secure	S5
Rubus idaeus	Red Raspberry	x	x	c		Secure	S5
Rubus pubescens	Dwarf Red Raspberry	x	x	c		Secure	S5
Rubus setosus	Small Bristleberry	x	x	r		Secure	S4?
Rubus vermontanus	Green Mountain Blackberry	x		r	ID probable only	Undetermined	SR
Sibbaldiopsis tridentata	Three-Toothed Cinquefoil	x	x	r		Secure	S5
Sorbus americana	American Mountain-Ash	x	x	f		Secure	S5
Sorbus decora	Northern Mountain-Ash		x			Secure	S4
Spiraea alba var. latifolia	Northern Meadow-Sweet	x	x	c		Secure	S5
Spiraea tomentosa	Hardhack Spiraea	x	x	f		Secure	S5
FABACEAE	**Bean Family**						
Lathyrus palustris	Vetchling Peavine	x		r		Secure	S5
Lotus corniculatus	Birds-Foot Trefoil	x	x	r		Exotic	SE
Medicago lupulina	Black Medic	x	x	r		Exotic	SE
Melilotus albus	White Sweet Clover	x		r		Exotic	SE
Trifolium aureum	Yellow Clover	x	x	r		Exotic	SE
Trifolium campestre	Low Hop Clover	x		u		Exotic	SE
Trifolium hybridum	Alsike Clover	x		f		Exotic	SE
Trifolium pratense	Red Clover	x	x	c		Exotic	SE
Trifolium repens	White Clover	x	x	c		Exotic	SE
Vicia cracca	Tufted Vetch	x	x	c		Exotic	SE
Vicia tetrasperma	Lentil Vetch	x		r		Exotic	SE
ONAGRACEAE	**Evening-Primrose Family**						
Chamerion angustifolium	Fireweed	x	x	c		Secure	S5
Circaea alpina	Small Enchanter's Nightshade	x	x	u		Secure	S5
Epilobium ciliatum	Hairy Willow-Herb	x	x	c		Secure	S5
Epilobium palustre	Marsh Willow-Herb	x		r		Secure	S5
Oenothera perennis	Small Sundrops	x	x	f		Secure	S5
Oenothera sp.	Evening-Primrose species	x	x	c	*O. biennis* or *parviflora*	[Secure]	
CORNACEAE	**Dogwood Family**						
Cornus alternifolia	Alternate-Leaf Dogwood	x	x	f		Secure	S5
Cornus canadensis	Dwarf Dogwood	x	x	c		Secure	S5
AQUIFOLIACEAE	**Holly Family**						
Ilex verticillata	Black Holly	x	x	r		Secure	S5
Nemopanthus mucronatus	Mountain Holly	x	x	r		Secure	S5
ACERACEAE	**Maple Family**						
Acer pensylvanicum	Striped Maple	x	x	c		Secure	S5
Acer rubrum	Red Maple	x	x	c		Secure	S5

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Acer saccharum	Sugar Maple	x	x	c		Secure	S5
Acer spicatum	Mountain Maple	x	x	c		Secure	S5
OXALIDACEAE	**Wood-Sorrel Family**						
Oxalis montana	White Wood-Sorrel	x	x	c		Secure	S5
Oxalis stricta	Upright Yellow Wood-Sorrel	x	x	c		Secure	S5
GERANIACEAE	**Geranium Family**						
Geranium robertianum	Herb-Robert	x	x	r		Secure	S4S5
BALSAMINACEAE	**Touch-Me-Not Family**						
Impatiens capensis	Spotted Jewel-Weed	x	x	c		Secure	S5
ARALIACEAE	**Sarsaparilla Family**						
Aralia hispida	Bristly Sarsaparilla	x	x	r		Secure	S5
Aralia nudicaulis	Wild Sarsaparilla	x	x	c		Secure	S5
Aralia racemosa	American Spikenard		x	r		Secure	S4
Panax trifolius	Dwarf Ginseng	x	x	f		Secure	S3
APIACEAE	**Carrot Family**						
Cicuta maculata	Spotted Water-Hemlock		x	r		Secure	S5
Daucus carota	Wild Carrot	x	x	u		Exotic	SE
Hydrocotyle americana	American Water-Pennywort	x		r		Secure	S5
Osmorhiza berteroi	Chilean Sweet Cicely	x	x	r	ID probable only	Secure	S4
Osmorhiza claytonii	Hairy Sweet-Cicely		x	r		Secure	S4S5
Sium suave	Hemlock Water-Parsnip	x		r		Secure	S5
APOCYNACEAE	**Dogbane Family**						
Apocynum androsaemifolium	Spreading Dogbane	x		u		Secure	S5
BORAGINACEAE	**Borage Family**						
Myosotis laxa	Small Forget-Me-Not	x	x	r		Secure	S5
LAMIACEAE	**Mint Family**						
Galeopsis tetrahit	Brittle-Stem Hempnettle	x	x	c	ID refers to the species in the broad sense	Exotic	SE
Lycopus americanus	American Bugleweed	x		r		Secure	S5
Lycopus uniflorus	Northern Bugleweed	x	x	c		Secure	S5
Mentha arvensis	Corn Mint	x		r		Secure	S5
Prunella vulgaris	Self-Heal	x	x	c		Secure	S5
Scutellaria galericulata	Hooded Skullcap	x		r		Secure	S5
Scutellaria lateriflora	Mad Dog Skullcap	x	x	u		Secure	S5
PLANTAGINACEAE	**Plantain Family**						
Plantago lanceolata	English Plantain	x	x	r		Exotic	SE
Plantago major	Nipple-Seed Plantain	x	x	c		Exotic	SE
OLEACEAE	**Olive Family**						
Fraxinus americana	White Ash	x	x	f		Secure	S5
SCROPHULARIACEAE	**Snapdragon Family**						
Chelone glabra	White Turtlehead	x	x	f		Secure	S5
Linaria vulgaris	Butter-And-Eggs	x		r		Exotic	SE
Mimulus ringens	Square-Stem Monkeyflower	x		r		Secure	S4S5
Rhinanthus minor	Little Yellow-Rattle		x	r		Secure	S5
Verbascum thapsus	Great Mullein	x		r		Exotic	SE
Veronica americana	American Speedwell	x		u		Secure	S5

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Veronica officinalis	Gypsy-Weed	x	x	c		Exotic	S5SE
Veronica peregrina	Purslane Speedwell	x		r		Exotic	SE?
Veronica scutellata	Marsh-Speedwell	x		r		Secure	S5
Veronica serpyllifolia ssp. serpyllifolia	Thyme-Leaved Speedwell	x		f		Exotic	SE
CAMPANULACEAE	**Bellflower Family**						
Lobelia dortmanna	Water Lobelia	x		r		Secure	S5
RUBIACEAE	**Bedstraw Family**						
Galium asprellum	Rough Bedstraw	x	x	c		Secure	S5
Galium mollugo	Great Hedge Bedstraw	x		c		Exotic	SE
Galium palustre	Marsh Bedstraw	x	x	c		Secure	S5
Galium trifidum	Small Bedstraw	x		u		Secure	S5
Galium triflorum	Sweet-Scent Bedstraw	x	x	c		Secure	S5
Mitchella repens	Partridge-Berry	x	x	f		Secure	S5
CAPRIFOLIACEAE	**Honeysuckle Family**						
Diervilla lonicera	Northern Bush-Honeysuckle	x	x	f		Secure	S5
Linnaea borealis ssp. americana	Twinflower	x	x	f		Secure	S5
Lonicera canadensis	American Fly-Honeysuckle	x	x	c		Secure	S5
Sambucus racemosa	Red Elderberry	x	x	c		Secure	S5
Viburnum lantanoides	Alderleaf Viburnum	x	x	f		Secure	S5
Viburnum nudum var. cassinoides	Wild Raisin Possum-Haw Viburnum	x	x	f		Secure	S5
ASTERACEAE	**Aster Family**						
Achillea millefolium	Common Yarrow	x	x	f		Secure	S5
Anaphalis margaritacea	Pearly Everlasting	x	x	c		Secure	S5
Antennaria sp.	Pussytoes species	x	x	f	*A. neglecta / howellii*	[Secure]	
Arctium minus	Lesser Burdock	x	x	r		Exotic	SE
Artemisia vulgaris	Common Wormwood	x		r		Exotic	SE
Bidens frondosa	Devil's Beggar-Ticks	x	x	u		Secure	S5
Centaurea nigra	Black Starthistle	x		u		Exotic	SE
Cirsium arvense	Creeping Thistle	x	x	r		Exotic	SE
Conyza canadensis	Canada Horseweed	x		f		Secure	S5
Doellingeria umbellata	Parasol White-Top	x	x	c		Secure	S5
Erigeron strigosus	Daisy Fleabane	x	x	c		Secure	S5
Eupatorium maculatum	Spotted Joe-Pye Weed	x	x	f		Secure	S5
Eupatorium perfoliatum	Common Boneset	x	x	u		Secure	S5
Euthamia graminifolia	Flat-Top Fragrant-Golden-Rod	x	x	c		Secure	S5
Gnaphalium uliginosum	Low Cudweed	x	x	u		Exotic	SE
Hieracium x floribundum	Smoothish Hawkweed	x	x	f		[Exotic]	SE
Hieracium aurantiacum	Orange Hawkweed	x	x	c		Exotic	SE
Hieracium caespitosum	Meadow Hawkweed	x		c	ID probable only	Exotic	SE
Hieracium canadense	Canada Hawkweed	x	x	r		Secure	S4S5
Hieracium lachenalii	Common Hawkweed	x	x	c		Exotic	SE
Hieracium pilosella	Mouseear	x	x	f		Exotic	SE
Hieracium piloselloides	Tall Hawkweed	x		u		Exotic	SE
Hieracium scabrum	Rough Hawkweed	x	x	u		Secure	S5

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Hieracium tridentatum	Three-Tooth Hawkweed	x		r	An introduced European species, sometimes classified within *H. umbellatum*	[Exotic]	SE
Hieracium x flagellare	Whiplash Hawkweed	x		c	ID probable only	Exotic	SE
Hieracium x floribundum	Smoothish Hawkweed	x		c		Exotic	SE
Lactuca biennis	Tall Blue Lettuce	x	x	f		Secure	S5
Lactuca canadensis	Canada Lettuce	x	x	r		Secure	S5
Leontodon autumnalis	Autumn Hawkbit	x	x	f		Exotic	SE
Leucanthemum vulgare	Oxeye Daisy	x	x	c		Exotic	SE
Matricaria discoidea	Pineapple-Weed Chamomile	x	x	f		Exotic	SE
Oclemena acuminata	Whorled Aster	x	x	c		Secure	S5
Packera schweinitziana	Robbins Squaw-Weed	x		u		Secure	S4S5
Prenanthes altissima	Tall Rattlesnake-root	x	x	c		Secure	S4S5
Prenanthes trifoliolata	Three-Leaved Rattlesnake-root	x		r		Secure	S5
Senecio jacobaea	Tansy Ragwort	x	x	u		Exotic	SE
Solidago bicolor	White Goldenrod	x	x	f		Secure	S5
Solidago canadensis	Canada Goldenrod	x	x	c		Secure	S5
Solidago flexicaulis	Broad-Leaved Goldenrod	x	x	f		Secure	S5
Solidago gigantea	Smooth Goldenrod	x		r		Secure	S5
Solidago juncea	Early Goldenrod	x	x	u		Secure	S5
Solidago puberula	Downy Goldenrod	x	x	c		Secure	S5
Solidago rugosa	Rough-Leaf Goldenrod	x	x	c		Secure	S5
Solidago uliginosa	Bog Goldenrod	x		u		Secure	S5
Sonchus arvensis	Field Sowthistle	x		r		Exotic	SE
Symphyotrichum cordifolium	Heart-Leaf Aster	x	x	u		Secure	S4S5
Symphyotrichum lanceolatum	White Panicled American-Aster	x		r		Secure	S4S5
Symphyotrichum lateriflorum	Farewell-Summer	x	x	c		Secure	S5
Symphyotrichum novi-belgii	New Belgium American-Aster	x	x	r		Secure	S5
Symphyotrichum puniceum	Swamp Aster	x	x	c		Secure	S5
Taraxacum officinale	Common Dandelion	x	x	c		Exotic	SE
Tussilago farfara	Colt's Foot	x		f		Exotic	SE
Alisma triviale	Broad-Leaved Water-Plantain		x	r		Secure	S5
ARACEAE	**Arum Family**						
Arisaema triphyllum	Swamp Jack-In-The-Pulpit	x	x	r		Secure	S4S5
Calla palustris	Wild Calla	x		r		Secure	S4
ERIOCAULACEAE	**Pipewort Family**						
Eriocaulon aquaticum	Seven-Angled Pipewort	x	x	r		Secure	S5
JUNCACEAE	**Rush Family**						
Juncus articulatus	Jointed Rush	x		r		Secure	S5
Juncus brevicaudatus	Narrow-Panicled Rush		x	r	ID probable only	Secure	S5
Juncus bufonius	Toad Rush	x		u		Secure	S5
Juncus effusus	Soft Rush	x	x	c		Secure	S5
Juncus filiformis	Thread Rush	x		r		Secure	S5
Juncus militaris	Bayonet Rush	x	x	r		Secure	S5
Juncus tenuis	Slender Rush	x	x	c		Secure	S5

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Luzula acuminata	Hairy Woodrush	x		u		Secure	S5
Luzula multiflora	Common Woodrush	x	x	c		Secure	S5
CYPERACEAE	**Sedge Family**						
Carex arctata	Black Sedge	x	x	c		Secure	S5
Carex bromoides	Brome-Like Sedge	x		f		Secure	S3
Carex brunnescens ssp. sphaerostachya	Brownish Sedge	x	x	c		Secure	S5
Carex canescens	Hoary Sedge	x	x	u		Secure	S5
Carex communis	Fibrous-Root Sedge	x	x	c		Secure	S5
Carex crawfordii	Crawford Sedge	x	x	f		Secure	S5
Carex crinita	Fringed Sedge	x	x	r		Secure	S4S5
Carex debilis var. rudgei	White-Edge Sedge	x	x	c		Secure	S5
Carex deflexa	Short-Stemmed Sedge	x		r	ID questionable - may have been *C. novae-angliae*	Secure	S4
Carex deweyana	Short-Scale Sedge	x	x	f		Secure	S4
Carex disperma	Softleaf Sedge	x	x	u		Secure	S5
Carex echinata	Little Prickly Sedge	x	x	f		Secure	S5
Carex flava	Yellow Sedge	x		u		Secure	S5
Carex foenea	Dry-Spike Sedge	x		r		Secure	S3?
Carex gracillima	Graceful Sedge	x	x	u		Secure	S4S5
Carex gynandra	A Sedge	x	x	c		Secure	S5
Carex interior	Inland Sedge	x		u		Secure	S4S5
Carex intumescens	Bladder Sedge	x	x	c		Secure	S5
Carex lasiocarpa var. americana	Slender Sedge	x		r		Secure	S5
Carex leptalea	Bristly-Stalk Sedge	x	x	c		Secure	S5
Carex leptonervia	Finely-Nerved Sedge	x	x	c		Secure	S5
Carex lucorum	A Sedge	x		r	or possibly *C. pensylvanicum*	Secure	S4
Carex lurida	Shallow Sedge	x		r		Secure	S5
Carex magellanica ssp. irrigua	A Sedge	x		r		Secure	S5
Carex nigra	Black Sedge	x	x	u		Secure	S5
Carex novae-angliae	New England Sedge	x	x	c		Secure	S5
Carex pallescens	Pale Sedge	x	x	f		Secure	S5
Carex panicea	A Sedge	x		r		Exotic	SE
Carex pedunculata	Longstalk Sedge	x		r		Secure	S4
Carex projecta	Necklace Sedge	x	x	c		Secure	S4S5
Carex scabrata	Rough Sedge	x	x	f		Secure	S5
Carex scoparia	Pointed Broom Sedge	x	x	c		Secure	S5
Carex stipata	Stalk-Grain Sedge	x	x	c		Secure	S5
Carex stricta	Tussock Sedge	x		r		Secure	S5
Carex tonsa	Shaved Sedge	x		r	probably var. *rugosperma*	Secure	S5
Carex torta	Twisted Sedge	x		u		Secure	S5
Carex trisperma var. trisperma	Three-Seed Sedge	x	x	u		Secure	S5
Carex utriculata	Bear Sedge	x		r		Secure	S5
Carex vesicaria	Inflated Sedge	x		r		Secure	S4S5
Dulichium arundinaceum	Three-Way Sedge	x		r		Secure	S5
Eleocharis obtusa	Blunt Spike-Rush	x		r		Secure	S4S5
Eleocharis palustris	Creeping Spike-Rush	x		r		Secure	S5

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S-rank
Eleocharis tenuis	Slender Spike-Rush	x	x	u		Secure	S5
Eriophorum vaginatum var. spissum	Sheathed Cottongrass	x		r		Secure	S5
Scirpus atrocinctus	Black-Girdle Bulrush	x		f		Secure	S5
Scirpus cyperinus	Cottongrass Bulrush	x	x	c		Secure	S5
Scirpus hattorianus	Bulrush	x	x	f		Secure	S5
Scirpus microcarpus	Small-Fruit Bulrush	x	x	c		Secure	S5
POACEAE	**Grass Family**						
Agrostis capillaris	Colonial Bentgrass	x		c	ID probable only	Exotic	SE
Agrostis gigantea	Black Bentgrass	x	x	u		Exotic	SE
Agrostis scabra	Rough Bentgrass	x	x	c		Secure	S5
Anthoxanthum odoratum	Sweet Vernal Grass	x	x	c		Exotic	SE
Brachyelytrum septentrionale	Bearded Short-Husk	x	x	c		Secure	S4S5
Bromus ciliatus	Fringed Brome	x	x	u		Secure	S4S5
Calamagrostis canadensis	Blue-Joint Reedgrass	x	x	c		Secure	S5
Cinna latifolia	Slender Wood Reedgrass	x	x	c		Secure	S5
Dactylis glomerata	Orchard Grass	x	x	r		Exotic	SE
Danthonia compressa	Flattened Oatgrass	x		c		Secure	S4
Danthonia spicata	Poverty Oat-Grass	x	x	c		Secure	S5
Dichanthelium acuminatum	Panic Grass	x	x	c		Secure	S5
Dichanthelium boreale	Northern Witchgrass	x	x	r		Secure	S5
Elymus repens	Quackgrass	x		r		Exotic	SE
Festuca filiformis	Hair Fescue	x	x	f		Exotic	SE
Festuca heteromalla	Spreading Fescue	x	x	r	ID probable only vs. other spp. in *F. rubra* complex	Exotic	SE
Glyceria borealis	Small Floating Manna-Grass	x		r		Secure	S5
Glyceria canadensis	Canada Manna-Grass	x		r	ID probable only	Secure	S5
Glyceria laxa	Northern Mannagrass	x		r	possibly just *G. canadensis*	Secure	S4?
Glyceria melicaria	Slender Manna Grass	x	x	f		Secure	S4
Glyceria striata	Fowl Manna-Grass	x	x	c		Secure	S5
Leersia oryzoides	Rice Cutgrass		x	r		Secure	S5
Milium effusum var. cisatlanticum	Tall Millet-Grass	x	x	f		Secure	S3
Muhlenbergia uniflora	Fall Dropseed Muhly	x		r		Secure	S5
Phalaris arundinacea	Reed Canary Grass	x	x	r		Secure	S5
Phleum pratense	Meadow Timothy	x	x	u		Exotic	SE
Poa alsodes	Grove Meadow Grass	x		c		Secure	S4
Poa annua	Annual Bluegrass	x	x	c		Exotic	SE
Poa compressa	Canada Bluegrass	x	x	c		Exotic	SE
Poa palustris	Fowl Bluegrass	x	x	c		Secure	S5
Poa pratensis	Kentucky Bluegrass	x	x	c		Secure	S5
Poa saltuensis	Drooping Bluegrass	x	x	c		Secure	S4S5
SPARGANIACEAE	**Bur-Reed Family**						
Sparganium americanum	American Bur-Reed	x		r		Secure	S5
Sparganium sp.	Bur-Reed species		x	r			
TYPHACEAE	**Cattail Family**						
Typha latifolia	Broad-Leaf Cattail	x	x	f		Secure	S5
LILIACEAE	**Lily Family**						

Family / Species	Family / Species Common Name	2007	2008	Site Status	Note	NS General Status Rank	S-rank
Clintonia borealis	Clinton Lily	x	x	c		Secure	S5
Erythronium americanum	Yellow Trout-Lily	x	x	c		Secure	S4S5
Maianthemum canadense	Wild Lily-of-The-Valley	x	x	c		Secure	S5
Maianthemum racemosum	Solomon's-Plume	x		f		Secure	S4S5
Maianthemum trifolium	Three-Leaf Solomon's-Plume	x		u		Secure	S4S5
Medeola virginiana	Indian Cucumber-Root	x		f		Secure	S5
Polygonatum pubescens	Downy Solomon's-Seal	x	x	f		Secure	S4S5
Streptopus amplexifolius	Clasping Twisted-Stalk	x	x	r		Secure	S4S5
Streptopus lanceolatus	Rosy Twistedstalk	x	x	c		Secure	S5
Trillium cernuum	Nodding Trillium	x	x	f		Secure	S4
Trillium erectum	Ill-Scent Trillium	x	x	r		Secure	S3
Trillium undulatum	Painted Trillium	x	x	f		Secure	S5
IRIDACEAE	**Iris Family**						
Iris versicolor	Blueflag	x	x	c		Secure	S5
Sisyrinchium montanum	Strict Blue-Eyed-Grass	x	x	f		Secure	S5
ORCHIDACEAE	**Orchid Family**						
Corallorhiza maculata	Spotted Coralroot	x	x	r		Secure	S4
Cypripedium acaule	Pink Lady's-Slipper	x	x	f		Secure	S5
Listera convallarioides	Broad-Leaved Twayblade	x		r		Secure	S3
Platanthera aquilonis	Leafy Northern Green Orchis	x	x	r	ID probable only	Secure	S4
Platanthera clavellata	Small Green Woodland Orchid	x		r		Secure	S5
Platanthera psycodes	Small Purple-Fringe Orchis	x	x	r		Secure	S4

Table 3. Rare species and significant community locations and notes. Rare plant and significant community sites are mapped in Figure 2 under the numbers given in the 'Map#' column. For the species or communities with start and end points, the end point is mapped under the number followed by an '*a*'.

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
1	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	80m from turbine 11	one patch of 13 flowering stems over 2m, plus more 10m away	mature sugar maple forest	2008	45.675304	-62.223012
2	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	130m from road	small patch	very rich seepage area in sugar maple forest	2008	45.674969	-62.224042
3	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	~0m from turbine 5	common	margins of young, cut-over hardwood forest and more mature sugar maple forest	2008	45.67292	-62.22516
4	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	240m from turbine 31	10 stems	open balsam fir - yellow birch - sugar maple	2008	45.667925	-62.203722
5	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	90m from road	1m2 patch	60 year old sugar maple - beech forest	2008	45.67073	-62.197082
6	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	25m from turbine 26	1m2 patch	60 year old sugar maple - beech forest	2008	45.670989	-62.195526
7	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	60m from road	1 small patch	very mature sugar maple forest	2008	45.679377	-62.214962
8	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	180m from turbine 10	1 patch, 1m x 1m	80 year old sugar maple forest	2008	45.681674	-62.21536
9	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	on road	11 stems over 3m radius	mature sugar maple forest	2008	45.673259	-62.202123
10	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	on road	11 stems over 3m x 1m area	mature sugar maple forest	2008	45.673558	-62.201557
11	*Panax trifolius*	Dwarf Ginseng	S3	Secure	190m from road	locally fairly common	60 year old sugar maple - beech forest	2008	45.670734	-62.199292
12	*Panax trifolius*	Dwarf Ginseng	S3	Secure	130m from road	11 stems	60 year old sugar maple - beech - yellow birch forest	2008	45.670577	-62.197641
13	*Panax trifolius*	Dwarf Ginseng	S3	Secure	160m from road	3 stems	60 year old sugar maple - beech - yellow birch forest	2008	45.670717	-62.198492
14	*Panax trifolius*	Dwarf Ginseng	S3	Secure	25m from turbine 34	uncommon	70 year old sugar maple forest	2008	45.676327	-62.200283
15	*Panax trifolius*	Dwarf Ginseng	S3	Secure	80m from turbine 12	2 immature plants	mature sugar maple forest	2008	45.684621	-62.211805
16	*Panax trifolius*	Dwarf Ginseng	S3	Secure	25m from road	small patch of seedlings	60-70 year old sugar maple, recently selectively cut	2008	45.681413	-62.200322
17	*Polystichum braunii*	Braun's Holly-Fern	S3S4	Secure	300m from road	rare	rich seepage area along small stream in mature sugar maple forest	2008	45.682328	-62.212956
18	*Trillium erectum*	Red Trillium	S3	Secure	80m from road	rare	rich, mature deciduous forest seepage area	2008	45.67445	-62.22378
19	*Trillium erectum*	Red Trillium	S3	Secure	30m from turbine 5	common	fairly rich, mature sugar maple slope	2008	45.67273	-62.22486

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
17	*Trillium erectum*	Red Trillium	S3	Secure	on road	fairly common	rich seepage area along small stream in mature sugar maple forest	2008	45.682328	-62.212956
21	*Trillium erectum*	Red Trillium	S3	Secure	140m from turbine 36	uncommon	~90 year old sugar maple forest	2008	45.669811	-62.210654
22	*Contopus borealis*	Olive-sided Flycatcher	S3	At Risk	~100m from road	1 singing male, could be the same individual as below	cutover forest with scattered standing trees	2008	45.66694	-62.21852
23	*Contopus borealis*	Olive-sided Flycatcher	S3	At Risk	~100m from road	1 singing male, could be the same individual as above	cutover forest with scattered standing trees	2008	45.66833	-62.21554
24	*Contopus borealis*	Olive-sided Flycatcher	S3	At Risk	~160m from road	1 singing male	young mixed forest near lake	2008	45.653564	-62.222737
25	*Wilsonia canadensis*	Canada Warbler	S4	At Risk	~25m from road	1 singing male	young mixed forest swamp	2008	45.65376	-62.22533
26		small stream crossing in deciduous forest			observed 190m from road, but same stream should cross road		as noted	2008	45.671914	-62.203939
27		seep and vernal pool in mature deciduous forest			30m from road		as noted	2008	45.672669	-62.203481
28		large deciduous forest seep			130m from turbine 30		as noted	2008	45.679827	-62.202877
2		rich deciduous forest seep			140m from road		as noted	2008	45.674969	-62.224042
17		rich seep and stream in mature deciduous forest			300m from road		as noted	2008	45.682328	-62.212956
31		sugar maple - white ash - ironwood forest on bedrock ridge			150m from road	extending over ~300m along ridge top	as noted	2007	45.656805 to 45.65423	-62.246341 to -62.247734
32		rich seepage area in sugar maple forest			180m from road	within ~40m radius	as noted	2007	45.680238	-62.208343
33	*Carex foenea*	Dry-Spike Sedge	S3?	Secure	120m from turbine 4	1 clump	margins of recently disturbed gravelly roadbed	2007	45.651733	-62.250109
32	*Listera convallarioides*	Broad-Leaved Twayblade	S3	Secure	180m from road	locally common - 100s of plants over 40m radius	rich seepage area in sugar maple forest	2007	45.680238	-62.208343
35	*Lycopodium hickeyi*	Hickey's Clubmoss	S2?	Undetermined	85m from road	good population; locally common	balsam fir-dominated regeneration from old field	2007	45.644211	-62.241378

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
36	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	130m from road	150+	sugar maple forest	2007	45.674869	-62.206578
14	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	280m from road	50	deciduous forest	2007	45.676346	-62.194692
38	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	270m from road	70+	sugar maple forest	2007	45.677078	-62.194856
39	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	30m from road	one patch	sugar maple forest	2007	45.65437	-62.231612
40	*Milium effusum var. cisatlanticum*	Tall Millet-Grass	S3	Secure	220m from road	large population in this area	sugar maple - white ash - ironwood forest on bedrock ridge	2007	45.656947	-62.247054
41	*Panax trifolius*	Dwarf Ginseng	S3	Secure	160m from turbine 34	30	recent deciduous forest clearcut	2007	45.676305	-62.202472
42	*Panax trifolius*	Dwarf Ginseng	S3	Secure	160m from turbine 34	8	recent deciduous forest clearcut	2007	45.67658	-62.202069
43	*Panax trifolius*	Dwarf Ginseng	S3	Secure	160m from turbine 34	7	intermediate-mature deciduous forest	2007	45.675229	-62.200476
44	*Panax trifolius*	Dwarf Ginseng	S3	Secure	160m from turbine 34	15	intermediate-mature deciduous forest	2007	45.675084	-62.200755
45	*Panax trifolius*	Dwarf Ginseng	S3	Secure	35m from road	200+	mature sugar maple forest	2007	45.675822	-62.197752
46	*Panax trifolius*	Dwarf Ginseng	S3	Secure	280m from road	20	deciduous forest	2007	45.676346	-62.194692
47	*Panax trifolius*	Dwarf Ginseng	S3	Secure	300m from road	50+	intermediate-mature deciduous forest	2007	45.676651	-62.19438

Map #	Species	Common Name	S-rank	General Status Rank	Dist. To Development Footprint	Numbers / Abundance	Habitat	Year	Latitude	Longitude
48	*Panax trifolius*	Dwarf Ginseng	S3	Secure	300m from road	11	sugar maple forest	2007	45.676927	-62.194389
49	*Panax trifolius*	Dwarf Ginseng	S3	Secure	280m from road	30+	mature sugar maple forest	2007	45.677831	-62.195071
50	*Panax trifolius*	Dwarf Ginseng	S3	Secure	zone crosses road twicem from road	500+ seen, probably well over 1000 present	sugar maple forest	2007	45.680076 to 45.681891	-62.198449 to -62.200559
51	*Panax trifolius*	Dwarf Ginseng	S3	Secure	180m from road	rare	mature sugar maple forest	2007	45.659869	-62.217035
52	*Panax trifolius*	Dwarf Ginseng	S3	Secure	260m from road	rare	mature sugar maple forest	2007	45.660539	-62.215972
53	*Panax trifolius*	Dwarf Ginseng	S3	Secure	450m from road	rare	mature sugar maple forest	2007	45.660397	-62.213561
31a	*Polystichum braunii*	Braun's Holly-Fern	S3S4	Secure	160m from turbine 7	rare - 1 large clump	sugar maple - white ash - ironwood - white spruce forest on bedrock ridge	2007	45.65423	-62.247734

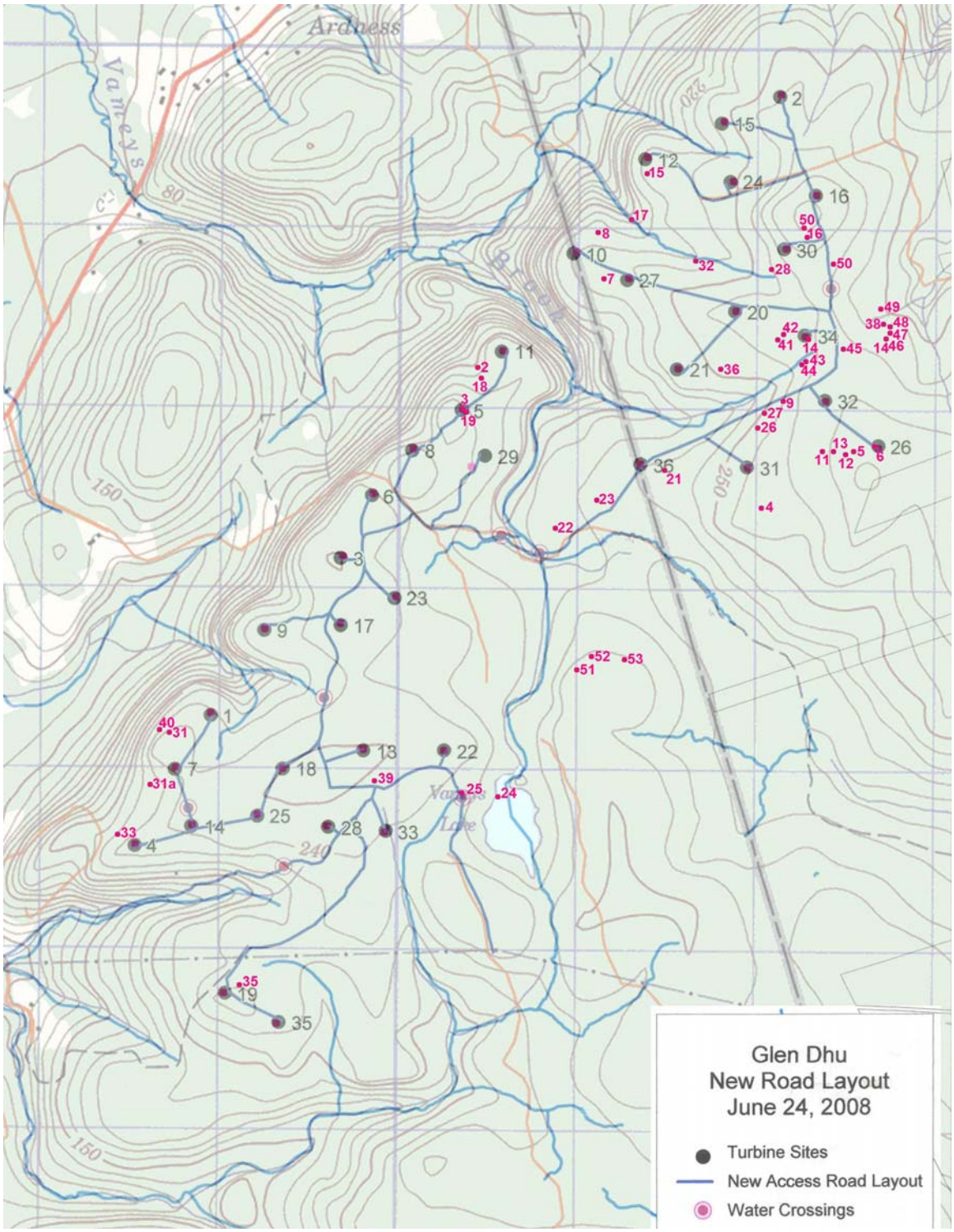

Figure 2. Map of rare species and significant communities located during 2007 and 2008 fieldwork within area covered during 2008 (numbered pink dots). Significant site numbers correspond to those in Table 2.

IV. Breeding Birds

Table 4 lists the 64 bird species recorded within or around the site in 2007 and 2008, along with the breeding evidence obtained for each in each of the four 10km breeding bird atlas topographic grid squares in which the turbine project falls. Only the Avondale and Vameys Lake squares are relevant to the current turbine layout. The list in Table 4 should not be considered a comprehensive list of the breeding birds of the site because birds were not the primary focus of the fieldwork.

Five significant species based on General Status or S-ranks were found: Canada Warbler and Olive-sided Flycatcher are both federally ranked *Threatened* because of significant recent declines and their 2008 locations are mapped in Figure 2. Gray Jay and Boreal Chickadee have provincial General Status ranks of *Sensitive* because of significant recent declines. All of these four species are still common breeding birds in Nova Scotia. Common Goldeneye is a rare breeding bird in Nova Scotia, with an S2B rank for the breeding population. I saw four Common Goldeneyes on Vameys Lake, which is a suitable breeding habitat, but saw no further evidence of breeding on site. I found three different groups of Gray Jays on the site in coniferous forest in 2007 and one in 2008, three of which were family groups with fledged young. Boreal Chickadees were widely present in coniferous forest on site and I heard single Olive-sided Flycatchers singing from near turbines 25 and 63 in 2007.

Table 4. Birds observed on or near site with breeding evidence obtained by 10km breeding bird atlas square. Species are listed alphabetically by common name. Breeding evidence codes are as follows: Possible – H = observed in suitable habitat, S = singing male in suitable habitat. Probable – P = pair observed in suitable habitat, D = territorial or breeding display between two adult birds, A = agitated behaviour observed. Confirmed - NB = nest building, AE = adult entering/leaving presumed nest site, FY = fledged young, NY = nest with young.

Species	Avondale	Vameys Lk	Marshy Hope	Barney R Stn	Maximum Breeding Evidence	S-rank	General Status Rank
Alder Flycatcher	S	S	S		S	S5B	Secure
American Goldfinch	S		H		S	S5	Secure
American Redstart	S	S	S		S	S5B	Secure
American Robin	P	A	H		A	S5B	Secure
Barred Owl	H					S5B	Secure
Belted Kingfisher	AE		H		AE	S5B	Secure
Black-and-white Warbler	S	S	S		S	S5B	Secure
Black-backed Woodpecker	NY				NY	S4	Secure
Blackburnian Warbler	S	S		S	S	S4S5B	Secure
Black-capped Chickadee	P	S	H		P	S5	Secure
Black-throated Blue Warbler	S	P			P	S4B	Secure

Species	Avondale	Vameys Lk	Marshy Hope	Barney R Stn	Maximum Breeding Evidence	S-rank	General Status Rank
Black-throated Green Warbler	P	D	D		D	S5B	Secure
Blue Jay	P	P	H		P	S5	Secure
Blue-headed Vireo	S	D	AE		AE	S5B	Secure
Boreal Chickadee	CF	P	H		CF	S4	Sensitive
Brown Creeper		S			S	S5	Secure
Canada Warbler		S			S	S4B	At Risk
Cape May Warbler		S			S	S4B	Secure
Cedar Waxwing	H	NB			NB	S5B	Secure
Chestnut-sided Warbler	S	S	S		S	S5B	Secure
Common Goldeneye		P			H	S2B,S4N	Secure
Common Grackle	FS	H			FS	S5B	Secure
Common Raven		H			H	S5	Secure
Common Yellowthroat	A	S	P		A	S5B	Secure
Dark-eyed Junco	A	S	A		A	S5	Secure
Eastern Wood-Pewee	S				S	S4B	Secure
European Starling			H		H	SE	Secure
Evening Grosbeak	H					S5B	Secure
Golden-crowned Kinglet		S	S		S	S5B	Secure
Gray Catbird	S				S	S5B	Secure
Gray Jay	FY	P	FY		FY	S4	Sensitive
Hairy Woodpecker	H		H		H	S5	Secure
Hermit Thrush	S	A	NY		NY	S5B	Secure
Least Flycatcher	D	H	S		D	S5B	Secure
Lincoln's Sparrow	S	S			S	S5B	Secure
Magnolia Warbler	S		S		S	S5B	Secure
Mourning Dove		S			S	S5B	Secure
Mourning Warbler	S	S	S		S	S5B	Secure
Nashville Warbler	S	S			S	S5B	Secure
Northern Flicker	H				H	S5B	Secure
Northern Parula	S	S	S		S	S5B	Secure
Northern Waterthrush			S		S	S5B	Secure
Olive-sided Flycatcher	S	S			S	S4B	At Risk
Osprey		H				S5B	Secure
Ovenbird	D	A	A		D	S5B	Secure
Pileated Woodpecker	S		old holes		S	S5	Secure
Pine Siskin		H				S5	Secure
Purple Finch	S	S			S	S5B	Secure
Red-breasted Nuthatch		H			H	S5	Secure
Red-eyed Vireo	P	S	S		P	S5B	Secure
Red-tailed Hawk	H	H			H	S5B	Secure
Rose-breasted Grosbeak				S	S	S4B	Secure

Species	Avondale	Vameys Lk	Marshy Hope	Barney R Stn	Maximum Breeding Evidence	S-rank	General Status Rank
Ruby-crowned Kinglet	S	S	S		S	S5B	Secure
Ruby-throated Hummingbird		H			H	S5B	Secure
Ruffed Grouse		FY	FY		FY	S5	Secure
Song Sparrow		P	A		A	S5B	Secure
Swainson's Thrush	S	S	S		S	S5B	Secure
Swamp Sparrow		A			A	S5B	Secure
White-breasted Nuthatch	S				S	S4	Secure
White-throated Sparrow	AE	CF	S		AE	S5B,SZN	Secure
Winter Wren		S			S	S5B	Secure
Yellow-bellied Flycatcher	S	S	S		S	S5B	Secure
Yellow-bellied Sapsucker	H	S			S	S5B	Secure
Yellow-rumped Warbler	S	S	D		D	S5B	Secure

Appendix 1. Plant species rare in Nova Scotia and occurring within 100 km of the proposed development in AC CDC records that were identified as potentially occurring on the site. Species are listed alphabetically, along with Nova Scotia S-rank, General Status rank and distance to the nearest known record. Distance value is distance to nearest known record.

Species	Common Name	Distance	S-rank	GS Rank
Adiantum pedatum	Northern Maidenhair-Fern	32 km +/-1	S1	May be at-risk
Ageratina altissima	White Snakeroot	82 km +/-10 km	S1	Sensitive
Agrimonia gryposepala	Tall Hairy Groovebur	9 km +/-0 km	S3?	Secure
Allium tricoccum	Small White Leek	14 km +/-0.1 km	S1	May be at-risk
Alopecurus aequalis	Short-Awn Foxtail	28 km +/-10 km	S2S3	Sensitive
Amelanchier fernaldii	Fernald Serviceberry	83 km +/-5 km	S2?	Undetermined
Amelanchier nantucketensis	Nantucket Shadbush	88 km +/-1	S1	May be at-risk
Amelanchier stolonifera	Running Serviceberry	56 km +/-1 km	S1?	Secure
Anemone quinquefolia	Wood Anemone	39 km +/-0.1 km	S2	Sensitive
Bidens connata	Purple-Stem Swamp Beggar-Ticks	51 km +/-0 km	S3?	Sensitive
Botrychium dissectum	Cutleaf Grape-Fern	10 km +/-5 km	S3	Secure
Botrychium lanceolatum var. angustisegmentum	Lance-Leaf Grape-Fern	8 km +/-1 km	S2	Sensitive
Botrychium simplex	Least Grape-Fern	78 km +/-1 km	S2	Sensitive
Caltha palustris	Marsh Marigold	40 km +/-0.1 km	S2	Sensitive
Campanula aparinoides	Marsh Bellflower	7 km +/-0 km	S3?	Sensitive
Carex adusta	Crowded Sedge	34 km +/-0.5 km	S2S3	Sensitive
Carex albicans var. emmonsii	Emmons Sedge	56 km +/-5 km	S3S4	Secure
Carex argyrantha	Hay Sedge	61 km +/-5 km	S1	Secure
Carex bebbii	Bebb's Sedge	49 km +/-0 km	S1S2	May be at-risk
Carex bromoides	Brome-Like Sedge	12 km +/-0 km	S3	Secure
Carex foenea	Dry-Spike Sedge	42 km +/-0.5 km	S3?	Secure
Carex hirtifolia	Pubescent Sedge	12 km +/-0 km	S2S3	Sensitive
Carex houghtoniana	A Sedge	50 km +/-5 km	S2?	Sensitive
Carex ormostachya	Necklace Spike Sedge	94 km +/-1 km	S2S3	May be at-risk
Carex peckii	White-Tinged Sedge	30 km +/-0.1 km	S2?	Undetermined
Carex pensylvanica	Pennsylvania Sedge	90 km +/-0.1 km	S1S2	Undetermined
Carex plantaginea	Plantain-Leaved Sedge	28 km +/-0.1 km	S1	May be at-risk
Carex rosea	Rosy Sedge	17 km +/-0 km	S3	Secure
Carex tenera	Slender Sedge	6 km +/-5 km	S1S2	Sensitive
Carex tincta	Tinged Sedge	92 km +/-1 km	S1	May be at-risk
Carex tribuloides	Blunt Broom Sedge	96 km +/-0	S3S4	Secure
Carex wiegandii	Wiegand's Sedge	56 km +/-5 km	S1S2	May be at-risk
Coeloglossum viride var. virescens	Long-Bract Green Orchis	60 km +/-0.1 km	S2	Sensitive
Corallorhiza trifida	Early Coralroot	34 km +/-0.5 km	S3	Secure
Crataegus robinsonii	A Hawthorn	18 km +/-1 km	S1?	Undetermined
Cypripedium parviflorum var. makasin	Small Yellow Lady's-Slipper	98 km +/-5	S2	Sensitive
Cypripedium parviflorum var. pubescens	Large Yellow Lady's-Slipper	22 km +/-10 km	S2	Sensitive
Cypripedium reginae	Showy Lady's-Slipper	42 km +/-10 km	S2	May be at-risk
Cystopteris bulbifera	Bulblet Fern	26 km +/-0.1 km	S3S4	Secure
Cystopteris tenuis	A Bladderfern	14 km +/-1 km	S3?	Secure
Eleocharis nitida	Slender Spike-Rush	76 km +/-1 km	S3	Secure
Eleocharis ovata	Ovate Spikerush	14 km +/-0.5 km	S2?	Sensitive
Epilobium coloratum	Purple-Leaf Willow-Herb	28 km +/-1 km	S2?	Sensitive

Species	Common Name	Distance	S-rank	GS Rank
Equisetum pratense	Meadow Horsetail	25 km +/-0.1 km	S2	Sensitive
Equisetum scirpoides	Dwarf Scouring Rush	30 km +/-1 km	S3S4	Secure
Equisetum variegatum	Variegated Horsetail	23 km +/-0 km	S3	Secure
Erigeron philadelphicus	Philadelphia Fleabane	46 km +/-5 km	S2	Sensitive
Festuca subverticillata	Nodding Fescue	64 km +/-5 km	S1S2	May be at-risk
Fraxinus nigra	Black Ash	13 km +/-0 km	S3	Sensitive
Fraxinus pennsylvanica	Green Ash	97 km +/-0.5	S1	May be at-risk
Galium boreale	Northern Bedstraw	57 km +/-5 km	S2	May be at-risk
Geocaulon lividum	Northern Comandra	55 km +/-0	S2S3	Sensitive
Geranium bicknellii	Bicknell Northern Crane's-Bill	76 km +/-0.1 km	S3	Secure
Goodyera pubescens	Downy Rattlesnake-Plantain	70 km +/-1 km	S1	May be at-risk
Goodyera repens	Dwarf Rattlesnake-Plantain	47 km +/-1 km	S2	Sensitive
Goodyera tesselata	Checkered Rattlesnake-Plantain	25 km +/-0 km	S3	Secure
Gratiola neglecta	Clammy Hedge-Hyssop	41 km +/-0.1 km	S1	Sensitive
Hedeoma pulegioides	American Pennyroyal	24 km +/-5 km	S2S3	Sensitive
Hepatica nobilis var. obtusa	Round-Leaved Liverleaf	55 km +/-0.1	S1	May be at-risk
Hieracium kalmii	Kalm's Hawkweed	7 km +/-1 km	S2?	Undetermined
Hieracium umbellatum	Umbellate Hawkweed	34 km +/-5 km	S2?	Undetermined
Humulus lupulus var. lupuloides	American Hop	57 km +/-5 km	S1?	Undetermined
Hypericum dissimulatum	Disguised St. John's-Wort	82 km +/-0.5 km	S2S3	Sensitive
Hypericum majus	Larger Canadian St. John's Wort	76 km +/-0 km	S1	May be at-risk
Juncus alpinoarticulatus ssp. nodulosus	Richardson's Rush	97 km +/-0.5 km	S3S4	Undetermined
Juncus dudleyi	Dudley's Rush	23 km +/-0 km	S2?	Sensitive
Juncus nodosus	Knotted Rush	12 km +/-0 km	S3S4	Secure
Juncus subcaudatus var. planisepalus	Woods-Rush	41 km +/-10	S3	Undetermined
Lactuca hirsuta var. sanguinea	Hairy Wild Lettuce	74 km +/-5 km	SH	Sensitive
Lindernia dubia	Yellow-Seed False-Pimpernel	16 km +/-0 km	S3S4	Secure
Liparis loeselii	Loesel's Twayblade	46 km +/-1 km	S3S4	Secure
Listera convallarioides	Broad-Leaved Twayblade	60 km +/-0.1 km	S3	Secure
Lobelia spicata	Pale-Spiked Lobelia	48 km +/-10 km	S1S2SE	May be at-risk
Lycopodium complanatum	Trailing Clubmoss	76 km +/-5 km	S2S3	Secure
Lycopodium hickeyi	Hickey's Clubmoss	35 km +/-1 km	S2?	Undetermined
Lycopodium sabinifolium	Ground-Fir	42 km +/-0.1 km	S3?	Secure
Lycopodium sitchense	Alaskan Clubmoss	25 km +/-5	S3?	Secure
Lysimachia thyrsiflora	Water Loosestrife	28 km +/-0.1	S3S4	Secure
Milium effusum var. cisatlanticum	Tall Millet-Grass	58 km +/-0.5 km	S3	Secure
Oenothera fruticosa ssp. glauca	Shrubby Sundrops	14 km +/-10 km	S2SE	Undetermined
Ophioglossum pusillum	Adder's Tongue	90 km +/-0 km	S2S3	Sensitive
Panax trifolius	Dwarf Ginseng	29 km +/-1 km	S3	Secure
Pilea pumila	Canada Clearweed	43 km +/-0	S1	May be at-risk
Plantago rugelii	Black-Seed Plantain	17 km +/-0 km	S1SE	Undetermined
Platanthera grandiflora	Large Purple-Fringe Orchis	27 km +/-1 km	S3	Secure
Platanthera hookeri	Hooker Orchis	48 km +/-0.1 km	S3	Secure
Platanthera macrophylla	Large Round-Leaved Orchid	7 km +/-5 km	S2	Sensitive
Platanthera orbiculata	Large Roundleaf Orchid	7 km +/-10 km	S3	Secure
Polygala sanguinea	Field Milkwort	22 km +/-1 km	S2S3	Sensitive
Polystichum braunii	Braun's Holly-Fern	46 km +/-5 km	S3S4	Secure
Pyrola asarifolia	Pink Wintergreen	19 km +/-0 km	S3	Secure
Pyrola minor	Lesser Wintergreen	92 km +/-5 km	SH	Sensitive
Rhamnus alnifolia	Alderleaf Buckthorn	51 km +/-0 km	S3	Sensitive

Species	Common Name	Distance	S-rank	GS Rank
Rubus pensilvanicus	Pennsylvania Blackberry	56 km +/-5 km	S1?	Secure
Salix petiolaris	Meadow Willow	18 km +/-0 km	S3	Secure
Sanguinaria canadensis	Bloodroot	12 km +/-0 km	S3S4	Secure
Sphenopholis intermedia	Slender Wedge Grass	12 km +/-0 km	S3S4	Sensitive
Spiranthes ochroleuca	Yellow Nodding Ladies'-Tresses	83 km +/-1 km	S2	Sensitive
Spiranthes romanzoffiana	Hooded Ladies'-Tresses	10 km +/-0.1 km	S3S4	Secure
Symphyotrichum ciliolatum	Lindley's Aster	22 km +/-0 km	S2S3	Sensitive
Tiarella cordifolia	Heart-Leaved Foam-Flower	9 km +/-10 km	S2	Sensitive
Trillium erectum	Ill-Scent Trillium	25 km +/-0.1 km	S3	Secure
Viola sagittata var. ovata	Arrow-Leaved Violet	72 km +/-1 km	S1?	Secure

Appendix 2. Plant species rare in Nova Scotia and occurring within 100 km of the proposed development in AC CDC records but which were identified as very unlikely to occur on the site based on habitat needs. Species are listed alphabetically with Nova Scotia S-rank and General Status rank, along with preferred habitat type. Distance value is distance to nearest known record.

Species	Common Name	S-rank	GS Rank	Habitat	Distance
Adiantum pedatum	Northern Maidenhair-Fern	S1	May be at-risk	rich deciduous forest	32 km +/-1
Alisma gramineum	Narrow-Leaf Water-Plantain	S1SE	Undetermined	freshwater shoreline	12 km +/-5
Allium schoenoprasum var. sibiricum	Wild Chives	S2	Undetermined	river shore	31 km +/-10
Anemone canadensis	Canada Anemone	S2	Sensitive	calcareous river shore	97 km +/-1
Anemone virginiana var. alba	River Anemone	S1S2	Sensitive	calcareous river shore	31 km +/-1
Anemone virginiana var. virginiana	River Anemone	S2	Sensitive	calcareous river shore	41 km +/-10
Antennaria parlinii	a Pussytoes	S1	May be at-risk	dryish, open, calcareous forest	17 km +/-0
Arabis drummondii	Drummond Rockcress	S2	Sensitive	rock outcrop	11 km +/-1
Arabis hirsuta var. pycnocarpa	Hairy Rock-Cress	S1S2	May be at-risk	rock outcrop	74 km +/-0.1
Asclepias incarnata	Swamp Milkweed	S3	Secure	river & lake shores	44 km +/-1
Asclepias incarnata ssp. pulchra	Swamp Milkweed	S2S3	Undetermined	richer or southern shores and shoreline wetlands	67 km +/-1
Asplenium trichomanes	Maidenhair Spleenwort	S2	Sensitive	calcareous outcrop	88 km +/-5
Asplenium trichomanes-ramosum	Green Spleenwort	S2	Sensitive	calcareous outcrop	39 km +/-10
Atriplex acadiensis	Maritime Saltbush	S1?	Undetermined	saltmarsh	62 km +/-10
Atriplex franktonii	Frankton's Saltbush	S3S4	Secure	sea beach	18 km +/-1
Atriplex littoralis	Tropical Saltbush	S2S3SE	Exotic	saltmarsh & sea beach	52 km +/-5
Bartonia virginica	Yellow Screwstem	S3	Secure	peatland; acidic lakeshore or swamp	85 km +/-10
Betula pumila	Swamp Birch	S2	Sensitive	calcareous fen	86 km +/-0
Bidens hyperborea	Estuary Beggar-Ticks	S1	Sensitive	brackish river	47 km +/-0.1
Blysmus rufus	Red Bulrush	S1S2	May be at-risk	saltmarsh	85 km +/-5
Calamagrostis stricta	Slim-Stem Small-Reedgrass	S1S2	Sensitive	saltmarsh - upper, or circumneutral fen	79 km +/-0.1
Calamagrostis stricta ssp. inexpansa	New England Northern Reed Grass	S1	Sensitive	saltmarsh - upper, or circumneutral fen	87 km +/-1
Calamagrostis stricta var. stricta	Bentgrass	S1S2	Sensitive	saltmarsh margins	78 km +/-10

Callitriche hermaphroditica	Autumnal Water-Starwort	S1	May be at-risk	brackish river	84 km +/-0.1
Cardamine parviflora var. arenicola	Small-Flower Bitter-Cress	S2	Sensitive	dry rock outcrop	96 km +/-1
Carex atratiformis	Black Sedge	S2	Sensitive	calcareous river shore outcrop	84 km +/-1
Carex capillaris	Hair-Like Sedge	S2	Sensitive	calcareous river shore outcrop	80 km +/-0.1
Carex castanea	Chestnut-Colored Sedge	S2	May be at-risk	calcareous outcrop or forest	79 km +/-0
Carex chordorrhiza	Creeping Sedge	S1	May be at-risk	calcareous marsh or fen	77 km +/-0.1
Carex comosa	Bristly Sedge	S2	Sensitive	richer marsh	27 km +/-10
Carex cryptolepis	Northeastern Sedge	S3?	Secure	lakeshores	40 km +/-0
Carex eburnea	Ebony Sedge	S3	Sensitive	calcareous outcrop, esp. gypsum	48 km +/-0.1
Carex garberi	Elk Sedge	S1	May be at-risk	calcareous river shore	29 km +/-0
Carex haydenii	Cloud Sedge	S1	May be at-risk	wet meadow	31 km +/-1
Carex hystericina	Porcupine Sedge	S1S2	May be at-risk	calcareous river shore	60 km +/-1
Carex livida	Livid Sedge	S1	May be at-risk	calcareous fen - wet	93 km +/-5
Carex lupulina	Hop Sedge	S3	Secure	richer floodplain pools	38 km +/-0
Carex pellita	Woolly Sedge	S1	May be at-risk	calcareous river shore seep	45 km +/-0
Carex tenuiflora	Sparse-Flowered Sedge	S1	May be at-risk	calcareous fen	99 km +/-0
Carex tuckermanii	Tuckerman Sedge	S1	May be at-risk	richer floodplain pools	26 km +/-1
Caulophyllum thalictroides	Blue Cohosh	S2	May be at-risk	rich deciduous floodplain	23 km +/-0.1
Ceratophyllum demersum	Common Hornwort	S3?	Secure	lake / pond / river - aquatic	40 km +/-0
Chamaesyce polygonifolia	Seaside Spurge	S2	Secure	sea beach	50 km +/-1
Chenopodium rubrum	Coast-Blite Goosefoot	S1?	May be at-risk	saltmarsh & sea beach	42 km +/-10
Clematis occidentalis	Purple Clematis	S1	May be at-risk	calcareous outcrop or slope	84 km +/-0.5
Comandra umbellata	Umbellate Bastard Toad-Flax	S2S3	May be at-risk	coastal dune	85 km +/-5
Conioselinum chinense	Hemlock Parsley	S2S3	Sensitive	calcareous river shore	29 km +/-5
Crassula aquatica	Water Pigmy-Weed	S1	Sensitive	brackish estuary shore	84 km +/-5
Crataegus submollis	A Hawthorn	S1?	Undetermined	rich floodplain	12 km +/-5
Cryptogramma stelleri	Fragile Rockbrake	S1S2	May be at-risk	calcareous outcrop	59 km +/-0
Cuscuta cephalanthi	Button-Bush Dodder	S1	May be at-risk	saltmarsh margins	37 km +/-1
Cynoglossum virginianum var. boreale	Wild Comfrey	S1	May be at-risk	rich forest on gypsum	99 km +/-1
Cyperus lupulinus	Slender Flatsedge	SH	Extirpated	coastal dune	92 km +/-10
Cypripedium arietinum	Ram's-Head Lady's-Slipper	S1	May be at-risk	primarily forest on gypsum	28 km +/-5
Decodon verticillatus	Hairy Swamp Loosestrife	S1	Sensitive	lake or river shore	86 km +/-0
Desmodium canadense	Showy Tick-Trefoil	S1	May be at-risk	larger river shore	32 km +/-0.1
Desmodium glutinosum	Large Tick-Trefoil	S2	May be at-risk	rich deciduous forest or calcareous shore	89 km +/-0
Dichanthelium acuminatum var. lindheimeri	Panic Grass	S1?	Undetermined	freshwater shoreline	49 km +/-0.1
Dichanthelium clandestinum	Deer-Tongue Witchgrass	S3	Secure	river & lake shores	70 km +/-0
Dichanthelium linearifolium	Slim-Leaf Witchgrass	S2?	Sensitive	sand barren; sandy roadside	44 km +/-10
Dirca palustris	Eastern Leatherwood	S1	May be at-risk	rich deciduous - esp. associated with gypsum	63 km +/-10
Draba arabisans	Rock Whitlow-Grass	S2	Sensitive	calcareous outcrop	86 km +/-1
Draba glabella	Rock Whitlow-Grass	S1	May be at-risk	calcareous outcrop	96 km +/-0.1

Dryopteris fragrans var. remotiuscula	Fragrant Fern	S2	Sensitive	rock outcrop	21 km +/-10
Eleocharis erythropoda	Bald Spikerush	SH	Extirpated	calcareous river shore or fen	88 km +/-1
Eleocharis olivacea var. olivacea	Capitate Spikerush	S2	Sensitive	acidic lake or pond	96 km +/-5
Elodea canadensis	Broad Waterweed	S3?	Secure	lake / pond / river - aquatic	55 km +/-0
Elodea nuttallii	Nuttall Waterweed	S1	Undetermined	calcareous waters	83 km +/-1
Elymus hystrix var. bigeloviana	Bottlebrush Grass	S1	May be at-risk	rich deciduous floodplain	51 km +/-1
Elymus wiegandii	Wiegand's Wild Rye	S1	May be at-risk	rich deciduous floodplain	14 km +/-0
Empetrum eamesii	Rock Crowberry	S2?	Sensitive	coastal dune or outcrop	57 km +/-5
Empetrum eamesii ssp. atropurpureum	Purple Crowberry	S2?	Sensitive	coastal dune or outcrop	85 km +/-5
Epilobium strictum	Downy Willow-Herb	S2S3	Sensitive	fen or richer marsh	66 km +/-5
Erigeron hyssopifolius	Daisy Fleabane	S2S3	Sensitive	rock outcrop	37 km +/-0
Eriophorum chamissonis	Russet Cotton-Grass	S2S3	Secure	open peatland	73 km +/-0.1
Eriophorum gracile	Slender Cotton-Grass	S2	Sensitive	fen	32 km +/-10
Euthamia caroliniana	Grass-Leaved Goldenrod	S3	Sensitive	lakeshores	76 km +/-10
Euthamia galetorum	Narrow-Leaf Fragrant Golden-Rod	S3S4	Secure	lakeshores	93 km +/-10
Floerkea proserpinacoides	False Mermaid-Weed	S2S3	Sensitive	rich deciduous floodplain	31 km +/-10
Galium labradoricum	Bog Bedstraw	S2	Sensitive	calcareous peatland	73 km +/-0.1
Galium obtusum	Blunt-Leaf Bedstraw	S2?	May be at-risk	lowland swamps	73 km +/-1
Geocaulon lividum	Northern Comandra	S2S3	Sensitive	bogs & poor fens; acidic conifer forest	55 km +/-0
Hepatica nobilis var. obtusa	Round-Leaved Liverleaf	S1	May be at-risk	dryish, open, calcareous forest	55 km +/-0.1
Hieracium robinsonii	Robinson's Hawkweed	S2	Sensitive	rocky river shore	16 km +/-10
Hudsonia ericoides	Golden-Heather	S1	Sensitive	dry sand barren	85 km +/-5
Hudsonia tomentosa	Sand-Heather	S1	May be at-risk	coastal dune	52 km +/-10
Huperzia selago	Fir Clubmoss	S1S3	Undetermined	rock outcrop	13 km +/-10
Impatiens pallida	Pale Jewel-Weed	S2	Sensitive	rich deciduous floodplain	97 km +/-10
Iris prismatica	Slender Blue Flag	S1	May be at-risk	coastal meadows	101 km +/-10
Isoetes acadiensis	Acadian Quillwort	S3	Sensitive	lake / pond / river - aquatic	28 km +/-1
Isoetes lacustris	Lake Quillwort	S3?	Secure	lake / pond / river - aquatic	28 km +/-1
Isoetes prototypus	Prototype Quillwort	S2	Sensitive	oligotrophic lake	39 km +/-0
Iva frutescens ssp. oraria	Marsh Elder	S2SE	Undetermined	saltmarsh margins	98 km +/-10
Juncus greenei	Greene's Rush	S1S2	May be at-risk	dunes & coastal headland meadows	41 km +/-5
Juncus stygius ssp. americanus	Moor Rush	S1	Sensitive	calcareous fen	79 km +/-0.1
Juncus vaseyi	Vasey Rush	S1	Undetermined	dune slacks & coastal meadows	40 km +/-10
Laportea canadensis	Wood Nettle	S3	Sensitive	rich deciduous floodplain	16 km +/-0
Lilium canadense	Canada Lily	S2S3	Sensitive	rich deciduous floodplain	10 km +/-5
Limosella australis	Mudwort	S2S3	Sensitive	brackish river	47 km +/-5
Listera australis	Southern Twayblade	S1	May be at-risk	open peatland; acidic swamps	88 km +/-0
Luzula parviflora	Small-Flowered Wood-Rush	S3	Secure	river and stream shores; highland forest	59 km +/-0
Lycopodiella appressa	Southern Bog Clubmoss	S3	Secure	lake or river shore	35 km +/-1

Lycopodium sitchense	Alaskan Clubmoss	S3?	Secure	exposed headlands, highlands	25 km +/-5
Lysimachia thyrsiflora	Water Loosestrife	S3S4	Secure	swamp or marsh	28 km +/-0.1
Malaxis brachypoda	White Adder's-Mouth	S1	May be at-risk	calcareous swamp or outcrop seep	69 km +/-1
Megalodonta beckii	Beck Water-Marigold	S3	Sensitive	lake / pond / river - aquatic	20 km +/-1
Minuartia groenlandica	Mountain Sandwort	S2	Sensitive	granitic outcrop	85 km +/-0.1
Montia fontana	Fountain Miner's-Lettuce	SH	May be at-risk	coastal stream or seep	92 km +/-5
Myriophyllum farwellii	Farwell's Water-Milfoil	S2	Sensitive	acidic lake or pond	48 km +/-0.1
Myriophyllum verticillatum	Whorled Water-Milfoil	S2	Sensitive	lake / pond / river - aquatic	77 km +/-10
Najas gracillima	Thread-Like Naiad	S1S2	Undetermined	acidic lake or pond	97 km +/-0.1
Osmorhiza longistylis	Smoother Sweet-Cicely	S2	Sensitive	rich deciduous floodplain	38 km +/-0
Packera paupercula	Balsam Groundsel	S3	Secure	gypsum outcrop	45 km +/-0
Panicum philadelphicum	Philadelphia Panic Grass	S2S3SE	Sensitive	muddy river shores	28 km +/-0
Parnassia palustris var. parviflora	a Marsh Grass-of-Parnassus	S2	May be at-risk	calcareous river shore	83 km +/-1
Piptatherum canadense	Canada Mountain-Ricegrass	S2	Sensitive	sand barren	30 km +/-1
Platanthera flava var. flava	Southern Rein Orchid	S2	Sensitive	lake or river shore	24 km +/-10
Platanthera flava var. herbiola	Pale Green Orchid	S1S2	Secure	river shores	15 km +/-0
Poa glauca	White Bluegrass	S2S3	Sensitive	calcareous rock outcrop	89 km +/-1
Polygonum arifolium	Halberd-Leaf Tearthumb	S2	Sensitive	lowland swamps	26 km +/-0.1
Polygonum buxiforme	Small's Knotweed	S2S3SE	Undetermined	sea beach & waste ground	31 km +/-10
Polygonum pensylvanicum	Pennsylvania Smartweed	S3	Secure	muddy river shores	29 km +/-0
Polygonum raii	Pondshore Knotweed	S1?	Undetermined	saltmarsh & sea beach	84 km +/-5
Polygonum ramosissimum	Bushy Knotweed	S2S3	Secure	saltmarsh	98 km +/-0.1
Polygonum scandens	Climbing False-Buckwheat	S2	Sensitive	rich floodplain	27 km +/-0
Polypodium appalachianum	Appalachian Polypody	S3?	Undetermined	rock outcrop	33 km +/-0
Potamogeton confervoides	Algae-Like Pondweed	S3S4	Secure	acidic lake or pond	59 km +/-1
Potamogeton friesii	Fries' Pondweed	S2	Undetermined	calcareous waters	32 km +/-1
Potamogeton obtusifolius	Blunt-Leaf Pondweed	S2	Sensitive	calcareous waters	40 km +/-0
Potamogeton praelongus	White-Stem Pondweed	S3?	Undetermined	calcareous waters	13 km +/-1
Potamogeton pulcher	Spotted Pondweed	S1	Undetermined	acidic lake or pond	61 km +/-0.1
Potamogeton richardsonii	Redhead Grass	S1?	Undetermined	calcareous waters	86 km +/-0.1
Potamogeton zosteriformis	Flatstem Pondweed	S2S3	Sensitive	calcareous waters	49 km +/-1
Primula mistassinica	Bird's-Eye Primrose	S2	Sensitive	calcareous outcrop	31 km +/-10
Proserpinaca palustris	Marsh Mermaid-Weed	S3S4	Secure	lake / pond / river - aquatic	25 km +/-0.1
Proserpinaca pectinata	Comb-Leaved Mermaid-Weed	S3	Sensitive	acidic swamp or shore	59 km +/-1
Pseudognaphalium obtusifolium	Fragrant Cudweed	S1	Secure	dunes or dry open ground	70 km +/-1
Ranunculus flammula var. flammula	Greater Creeping Spearwort	S2	Sensitive	lake or river shore - sand or gravel	31 km +/-10
Ranunculus gmelinii	Small Yellow Water-Crowfoot	S2	Secure	basic or circumneutral wetland	51 km +/-5
Ranunculus pensylvanicus	Bristly Crowfoot	S1	May be at-risk	lake or pond shore	29 km +/-0
Ribes americanum	Wild Black Currant	S1SE	Undetermined	rich deciduous floodplain	32 km +/-5

Rosa palustris	Swamp Rose	S2	Secure	acidic lake or pond	87 km +/- 0.1
Rudbeckia laciniata	Cut-Leaved Coneflower	S2S3	Sensitive	rich deciduous floodplain	27 km +/-0
Rumex maritimus	Sea-Side Dock	S2S3	Secure	saltmarsh	61 km +/-5
Rumex salicifolius	Willow Dock	S2	Sensitive	muddy river shore; saltmarsh	99 km +/-1
Sagina nodosa ssp. borealis	Knotted Pearlwort	S1S2	Secure	dune & coastal headland	84 km +/-5
Salix pedicellaris	Bog Willow	S2	Sensitive	calcareous peatland	43 km +/- 10
Salix sericea	Silky Willow	S2	Sensitive	lake or river shore	85 km +/-1
Samolus valerandi ssp. parviflorus	Water Pimpernel	S2	Sensitive	brackish river	47 km +/- 0.1
Sanicula odorata	Black Snake-Root	S1	May be at-risk	rich deciduous floodplain	31 km +/- 10
Saxifraga paniculata ssp. neogaea	a White Mountain Saxifrage	S2	Sensitive	calcareous outcrop	95 km +/-1
Schoenoplectus robustus	Saltmarsh Bulrush	S1?	Undetermined	saltmarsh	26 km +/- 10
Scirpus pedicellatus	Stalked Bulrush	S1	Undetermined	river & lake shores	69 km +/-1
Senecio pseudoarnica	Seabeach Groundsel	S2	Sensitive	sea beach	31 km +/- 10
Shepherdia canadensis	Canada Buffalo-Berry	S2	Sensitive	gypsum outcrop	91 km +/- 10
Sisyrinchium angustifolium	Pointed Blue-Eyed-Grass	S3S4	Secure	lake or river shore	26 km +/- 0.1
Solidago hispida	Hairy Goldenrod	S1?	May be at-risk	outcrop, esp. calcareous	73 km +/- 10
Sparganium fluctuans	Floating Bur-Reed	S3?	Undetermined	lake / pond / river - aquatic	39 km +/-5
Sparganium natans	Small Bur-Reed	S3	Secure	lake / pond / river - aquatic	31 km +/-5
Spiranthes lucida	Shining Ladies'-Tresses	S2	May be at-risk	calcareous river shore seep	15 km +/-0
Stellaria crassifolia	Fleshy Stitchwort	SH	May be at-risk	saltmarsh	93 km +/-5
Stellaria humifusa	Creeping Sandwort	S2	Sensitive	saltmarsh	56 km +/-1
Stellaria longifolia	Longleaf Stitchwort	S3	Sensitive	rich floodplain	23 km +/-1
Stuckenia filiformis ssp. alpina	Northern Slender Pondweed	S2S3	Undetermined	basic waters	68 km +/- 0.5
Stuckenia vaginata	Sheathed Pondweed	S1	Undetermined	calcareous waters	83 km +/-0
Suaeda calceoliformis	American Sea-Blite	S2S3	Secure	saltmarsh & sea beach	40 km +/-1
Suaeda rolandii	Roland's Sea-Blite	S1?	May be at-risk	saltmarsh	80 km +/- 10
Symphyotrichum boreale	Boreal American-Aster	S2?	Sensitive	calcareous peatland	31 km +/- 10
Symphyotrichum undulatum	Wavy-leaf American-Aster	S2	Sensitive	sand barren - dry, southern; gypsum cliff	98 km +/-0
Symplocarpus foetidus	Skunk Cabbage	S2	Secure	lowland swamps	71 km +/-0
Teucrium canadense	American Germander	S2S3	Sensitive	saltmarsh margins	40 km +/-5
Thuja occidentalis	Northern White Cedar	S1S2	At-risk	calcareous or circumneutral lowlands	45 km +/- 0.1
Triglochin gaspensis	Gaspe Peninsula Arrow-Grass	S2S3	Undetermined	saltmarsh	91 km +/-1
Triosteum aurantiacum	Coffee Tinker's-Weed	S2	Sensitive	rich deciduous floodplain	14 km +/-0
Trisetum spicatum	Narrow False Oats	S3	Secure	rock outcrop	46 km +/-0
Utricularia gibba	Humped Bladderwort	S2	Sensitive	lake / pond / river - aquatic	71 km +/- 10
Vaccinium boreale	Northern Blueberry	S1	May be at-risk	highlands; exposed shores	87 km +/- 0.5
Vaccinium caespitosum	Dwarf Blueberry	S2	Sensitive	river shore rock outcrop	32 km +/-1
Vallisneria americana	Eel-Grass	S2	May be at-risk	calcareous waters	49 km +/-1
Verbena hastata	Blue Vervain	S3	Secure	river shores	14 km +/-0
Viola canadensis	Canada Violet	S1	Extirpated	rich deciduous forest, esp. gypsum	31 km +/- 10

Viola nephrophylla	Northern Bog Violet	S2	Sensitive	calcareous river shore or fen	14 km +/-1
Woodsia glabella	Smooth Woodsia	S2	Sensitive	calcareous outcrop	87 km +/-1
Zizia aurea	Common Alexanders	S1S2	Sensitive	river shore meadow & thicket	29 km +/-1