

June 30, 2017



Horizon Management Ltd.
479 Rothesay Avenue
Saint John, New Brunswick
E2L 4G7

Attention: Bill Borland
Project Manager

Wetland Delineation and Functional Assessment – The Crossing, Ashburn Road Development, Saint John, New Brunswick

Executive Summary

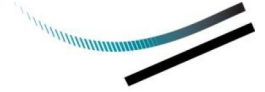
Dillon Consulting Limited (Dillon) was retained by Horizon Management Ltd. (Horizon) to conduct a wetland delineation and a functional assessment using the Wetland Ecosystem Services Protocol for Atlantic Canada (WESP-AC), at the proposed development site: “The Crossing”, located between Ashburn Road and New Brunswick Department of Transportation and Infrastructure (NBDTI) Highway 1, in Saint John, New Brunswick.

For the purpose of the wetland delineation and functional assessment, both the Ashburn Road and Greenspace properties have been separated into three assessment areas (AAs) based on site characteristics and connectivity / dis-connectivity of the identified wetlands.

Approximately 29.3 ha and 13.6 ha of wetland was delineated by Dillon for the Ashburn Road (AA1 and AA2), respectively and 8.4 ha for the Greenspace (AA3) properties. The results of the assessment indicate that each assessed wetland provides ecological value specifically with regard to water quality maintenance and aquatic habitat for the Marsh Creek Watershed, and that each wetland is at risk based on ecological sensitivity and surrounding stressors (development).

According to the WESP-AC, the Greenspace (AA3) was ranked highest with a score of “Moderate” ecological condition, among the wetlands assessed for this project as it provides ecological refuge within the comparatively highly developed area of Rothesay Avenue. Additionally, both AA1 and AA2 have been ranked as having a respectively lower ecological condition and function.

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Introduction

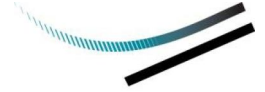
Dillon Consulting Limited (Dillon) is pleased to provide Horizon Management Ltd. (Horizon) the following letter report for a wetland delineation and a functional assessment conducted at the proposed development site: “The Crossing”, located between Ashburn Road and New Brunswick Department of Transportation and Infrastructure (NBDTI) Highway 1, in Saint John, New Brunswick. Refer to **Figures 1** and **2**, in **Attachment 1**.

Project Description

The proposed development area along Ashburn Road comprises approximately 49 hectares (ha) of land (various parcels) located in the Little Marsh Creek watershed. The planned development will also integrate another 17.3 ha property (“Greenspace”) adjacent to Rothesay Avenue. Little Marsh Creek (tributary to Marsh Creek) flows through the Ashburn Road property and Marsh Creek flows through the Greenspace. Refer to site photos provided in **Attachment 2**.

The proposed development will potentially include: highway services; food and hospitality; commercial businesses; retail; residential and recreation along Ashburn Road as well as an Eco-Park and potential wetland compensation within the Greenspace. The initiation of this mixed-use commercial and residential development is anticipated to potentially affect over 10 hectares of New Brunswick regulated wetland as well as over 30 ha of unmapped wetlands located at the Ashburn Road property.

The preliminary assessment detailed in this report is intended to assist Horizon with future planning of potential wetland compensation requirements for the proposed development of the properties surrounding Little Marsh Creek. For the purpose of the wetland delineation and functional assessment, both the Ashburn Road and Greenspace properties have been separated into three assessment areas (AAs) based on site characteristics and connectivity / dis-connectivity of the identified wetlands.



Scope of Work and Methodology

Dillon was retained by Horizon to conduct a two-parameter (hydrophytic vegetation and hydrology) wetland delineation and functional assessment using the Wetland Ecosystem Services Protocol for Atlantic Canada (WESP-AC) for non-tidal wetlands in New Brunswick.

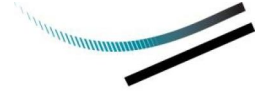
As per the protocol, the WESP-AC assessment was completed for identified wetlands in three steps: the desktop assessment, the field assessment and the wetland stressors assessment (**Attachment 3**).

In addition to the WESP-AC desktop assessment, a review of the following documents was completed prior to the field delineation, to determine expected habitat and the potential occurrence of species of conservation concern:

- Environmental Impact Assessment Registration document (Horizon, 2008);
- Rare Plant Survey (WSP Group, 2016);
- GeoNB Wetland Mapping;
- Draft Beta Wetland Mapping (unpublished New Brunswick Department of Environment and Local Government (NBDELG) wetland mapping); and,
- Atlantic Canada Conservation Data Center (ACCDC) report (**Attachment 4**).

The field assessment was completed on May 24, 2017 and June 14, 2017. Dillon personnel, including a rare plant specialist and biologists certified in wetland delineation and trained in the WESP-AC functional assessment protocol utilized a two parameter delineation method, including the identification of hydrophytic vegetation and hydrologic indicators within representative areas of each AA. The wetland boundary was tracked during the field assessment using a handheld GPS.

Due to the size of the AAs, a conservative approach to the wetland delineation was undertaken at selected wetland habitats identified on the Draft Beta Wetlands Mapping. The mapping was used to identify areas with a high potential for unmapped wetland as well as areas that may exhibit variability in wetland habitats (i.e., forest wetlands vs intermediate wetlands). Areas that were not field delineated were interpreted using high resolution aerial photography and New Brunswick LiDar mapping projections.



Results and Observations

Assessment Area No. 1 – “The Crossing” Ashburn Road Development

Wetland Characterization

Assessment Area No. 1 (AA1) is identified by Parcel Identification (PID) Nos. 00052720, 55069074, 55003222, 00053025, 55100325, 00432203, and 55155378. According to the GeoNB wetland mapping, AA1 is comprised of over 10 ha of regulated mapped wetland. The Draft Beta Wetland Mapping also identified additional wetlands within the area. During the desktop mapping interpretation and field assessment, a total of 29.2 ha of wetland was delineated (including the regulated mapped wetland) which is consistent with the Draft Beta Wetland boundaries (**Figure 2**). During the field assessments, the wetland within AA1 was characterized as complex, consisting of disturbed shrub wetland with pockets of forest wetland habitats.

Flora

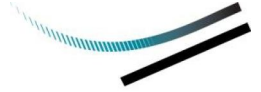
The predominant vegetation species of the shrub wetland on the AA1 property consisted of willow (*Salix* spp.), alder (*Alnus incana*) and white meadowsweet (*Spiraea alba*) as well as sedges (*Carex*), grasses (*Gramineae*) and flowering herbaceous plants (*Forbs*) making up the understory. Refer to **Attachment 4** for a detailed vegetation summary.

At the time of the field assessment, no plant species of conservation concern were identified within AA1. Based on the habitat and vegetation observed during the field assessment, it is unlikely that the identified ACCDC plants would occur in this location due to infilling, and previous disturbance of the wetland.

Fauna

The AA1 property may provide refuge habitat for both large and small mammals that frequent the developed area on Ashburn Road. During the wetland assessment, potential fish and wildlife habitat was identified visually, including observations of wildlife in the form of sightings of individuals, dens, scat, tracks, and browse within the general area.

Little Marsh Creek provides habitat for fish, as well as amphibians and aquatic invertebrates within the riparian shrub wetland. During the field assessment, minnow (*Cyprinidea spp.*) species, as well as Stickleback (*Gasterosteidae spp.*) and juvenile American eel (*Anguilla rostrata* elvers) were observed within Little Marsh Creek.



Fauna observed on the AA1 property during the field assessment included:

- Nesting American Robins (*Turdus migratorius*);
- Common Yellowthroat (*Geothlypis trichas*);
- Alder Flycatcher (*Empidonax alnorum*);
- Common Raven (*Corvus corax*);
- Turkey Vulture (*Cathartes aura*);
- White Tailed Deer (*Odocoileus virginianus*);
- Snowshoe Hare (*Lepus americanus*);
- Muskrat (*Ondatra zibethicus*);
- Red Fox (*Vulpes vulpes*); and,
- North American Beaver (*Castor Canadensis*).

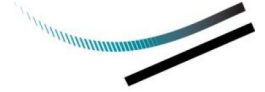
Anthropogenic Activities

The wetland associated with AA1 has been previously disturbed and stressed by anthropogenic activities. Apparent infilling / mounds were observed on the northern portion of the wetland and manmade depressions / ponds were present in the middle of the property. The species diversity of the wetland was observed in the field to be relatively low within the disturbed sections and included several exotic plant species. Refer to **Attachment 4**, for a species list. The wetland is bordered entirely by Ashburn Road and NBDTI Highway 1. The wetland would have likely been contiguous with wetlands in the immediate area (including AA2) prior to surrounding commercial / residential development.

Assessment Area No. 2 – Ashburn Road (West)

Wetland Characterization

Assessment Area No. 2 (AA2) is identified by PID Nos. 00052985, 00053017 and 00296673. According to Draft Beta wetland mapping, AA2 is comprised of over 6 ha of identified wetland. Based on the assessment (field and desktop), approximately 13.6 ha of wetland was delineated (**Figure 2**). During the field assessment, the wetland was characterized as complex, consisting of undisturbed calcareous forest wetland (Fen) and disturbed shrub wetland (swamp) (primarily along Ashburn and Drury Cove Roads).



Flora

The predominant wetland vegetation species on the AA2 property consisted of white meadowsweet (*Spirea alba*), Eastern white cedar (*Thuja occidentalis*), tamarack (*Larix laricina*) and black spruce (*Picea mariana*) with a moss laden understory. Refer to **Attachment 4** for a detailed vegetation summary.

The boreal aster (*Symphyotrichum boreal*), a species of conservation concern, was identified on the AA2 property during a rare plant survey conducted in September 2016 (WSP Group, 2016). However, at the time of the 2017 field assessment (conducted early in the blooming season), no plant species of conservation concern were identified within AA2. Based on the habitat and vegetation observed, as well as the documented occurrence of a plant species of conservation concern, there is a high potential for other rare and sensitive plants (as identified by the ACCDC) which may be present on the property.

Fauna

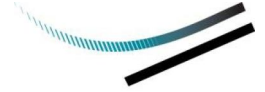
The property may provide a diverse habitat / refuge area for both large and small mammals that frequent the developed area on Ashburn Road. At the time of the wetland assessments, potential fish and wildlife habitat was identified visually, including observations of wildlife in the form of sightings of individuals, dens, scat, tracks, and browse within the general area.

During the assessment, deep isolated pools (approximately 3m x 3m) (identified as karst depressions) were observed within the calcareous forest wetland (fen). Unidentified minnow (*Cyprinidae spp.*) were observed within the pools. Fauna observed on the property during the assessment also included:

- Turkey Vulture (*Cathartes aura*);
- White Tailed Deer (*Odocoileus virginianus*);
- Snowshoe Hare (*Lepus americanus*); and,
- Muskrat (*Ondatra zibethicus*).

Anthropogenic Activities

Based on general features of the land, it is suspected that AA2 would have likely been contiguous with other wetlands in the immediate area (including AA1) prior to the road and surrounding commercial / residential development. Although the property is fragmented due to development, the calcareous forest wetland located on the



southern portion of the property currently remains as undisturbed natural habitat with a diverse and rich plant community.

Assessment Area No. 3 – Greenspace (Rothesay Avenue)

Wetland Characterization

Assessment Area No. 3 (AA3) is identified by PID No. 55189385. According to the Draft Beta Wetland Mapping, AA3 is comprised of more than 3.5 ha of mapped wetland. During the desktop and field assessments, approximately 8.4 ha of wetland was delineated. During the field assessment, the property was characterized as having pockets of disturbed shrub wetland and gramanoid dominated riparian floodplain.

Flora

The predominant wetland vegetation species consisted of white meadowsweet (*Spirea alba*) and speckled alder (*Alnus incana*) within the shrub wetland and blue-joint reedgrass (*Calamagrostis canadensis*) within the riparian floodplain. Refer to **Attachment 4** for a detailed vegetation summary.

During the assessment, no plant species of conservation concern were identified within AA3. Based on the habitat and vegetation observed during the field assessment, it is unlikely that the identified ACCDC plants would occur in this location due to infilling, and previous disturbance of the wetland.

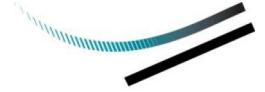
Fauna

The AA3 property may provide a diverse habitat / refuge area for both large and small mammals that frequent the developed area of Rothesay Avenue. During the wetland delineation survey, potential fish and wildlife habitat was identified visually, including observations of wildlife in the form of sightings of individuals, dens, scat, tracks, and browse within the general area.

Marsh Creek provides habitat for fish, as well as amphibians and aquatic invertebrates within the riparian wetland. During the field assessment, unidentified minnows (*Cyprinidae spp.*) were observed within the back channel of the Creek.

Fauna observed on the AA3 property during the field assessment also included:

- American Yellow Warbler (*Setophaga petechia*);
- Common Yellowthroat (*Geothlypis trichas*);



- Northern Cardinal (*Cardinalis cardinalis*);
- Hairy Woodpecker (*Leuconotopicus villosus*); and,
- White Tailed Deer (*Odocoileus virginianus*).

Anthropogenic Activities

Prior to the development of Rothesay Avenue for commercial purposes, the wetland associated with AA3 would have likely been contiguous with other wetlands in the immediate area related to Marsh Creek.

Previous commercial activity related to the adjacent railroad has disturbed the area on the eastern portion of property. Former rail tracks and fill was observed in this area, as well as depressions related to former excavations / infilling.

Wetland Ecosystem Services Protocol – Atlantic Canada

WESP-AC is a standardized method for rapidly assessing some of the important natural functions of non-tidal wetlands in Atlantic Canada (Adamus, 2016). For the purpose of assessing wetland functionality, the AAs are ranked based on scores of functions and benefits. The benefit score describes the context within which the associated wetland function is being performed. This is largely influenced by current land uses (which can change) and other factors not intrinsic to the particular AA (Adamus, 2016). The thresholds used to separate the Low, Moderate and High scoring categories are based on natural breaks in the statistical distribution of scores of 98 calibration wetlands assessed in New Brunswick for each function or benefit, determined objectively using a statistical procedure known as Jenks Optimisation (Adamus, 2016).

The functional assessment completed for each AA is summarized in **Table 1** as follows:

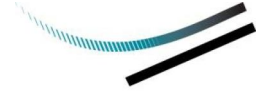
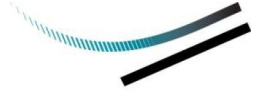


TABLE 1: WESP-AC SCORING FOR IDENTIFIED WETLANDS WITHIN THE PROPOSED ASHBURN ROAD DEVELOPMENT AND GREENSPACE PROPERTIES

Wetland Function	AA1		AA2		AA3	
	Function Rating	Benefit Rating	Function Rating	Benefit Rating	Function Rating	Benefit Rating
Hydrologic <i>Water Storage and Delay</i>	Lower	Higher	Moderate	Moderate	Lower	Moderate
Water Quality Support <i>Sediment Retention & Stabilization, Phosphorous / Nitrate Retention & Carbon Sequestration</i>	- ¹	Higher	-	Higher	-	Higher
Aquatic Support <i>Stream Flow, Aquatic Invertebrate Habitat, Organic Nutrient Export & Water Cooling</i>	-	Higher	-	Higher	Higher	Higher
Aquatic Habitat <i>Anadromous Fish, Resident Fish, Amphibian, Turtle & Waterbird (Breeding + Feeding) Habitat</i>	-	Higher	-	Higher	-	Higher
Transition Habitat <i>Songbird, raptor, mammal, native plant and pollinator habitat</i>	-	Higher	Higher	Higher	-	Higher
Wetland Condition <i>Wetland Ecological Condition</i>	-	Lower	-	Lower	-	Moderate
Wetland Risk <i>Sensitivity & Stressors</i>	-	Higher	-	Higher	-	Higher

Note 1: A score of “-” does not mean the function or benefit is absent from the wetland. However, it implies that this wetland has a capacity that is equal to or less than the lowest-scoring from among the 98 NB calibration wetlands for that particular function or benefit.

Refer to **Attachment 3** for the detailed WESP-AC assessment sheets.

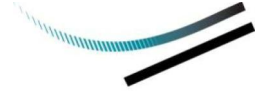


Conclusion

Approximately 29.3 ha and 13.6 ha of wetland was delineated for the Ashburn Road (AA1 and AA2), respectively and 8.4 ha for the Greenspace (AA3) properties. The results of the field assessment and the WESP-AC functional assessment indicate that each assessed wetland provides ecological value specifically with regard to water quality maintenance and aquatic habitat for the Marsh Creek Watershed and that each wetland is at risk based on ecological sensitivity and surrounding stressors (development).

In some instances, a WESP-AC score was not generated for each of the AA's functions or benefits. This does not indicate that the function or benefit is absent from that AA; however it implies that the AA has been ranked equal to or less than the lowest-scoring wetlands among the 98 sites calibrated in the Province.

According to the WESP-AC, the Greenspace (AA3) was ranked highest with a score of "Moderate" ecological condition, among the wetlands assessed for this project as it provides ecological refuge within the comparatively highly developed area of Rothesay Avenue. Additionally, both AA1 and AA2 have been ranked as having a respectively lower ecological condition and function.



Closure

Dillon has prepared this report for the exclusive use of Horizon Management Ltd, for specific application to the site. The Dillon investigation was conducted in accordance with Dillon's scope of work and accepted environmental practices. Limitations to this report are included in the attached disclaimer. No other warranty, expressed or implied, is made.

Respectfully submitted,

DILLON CONSULTING LIMITED

Rhonda Dana
Project Manager

RMD:acs

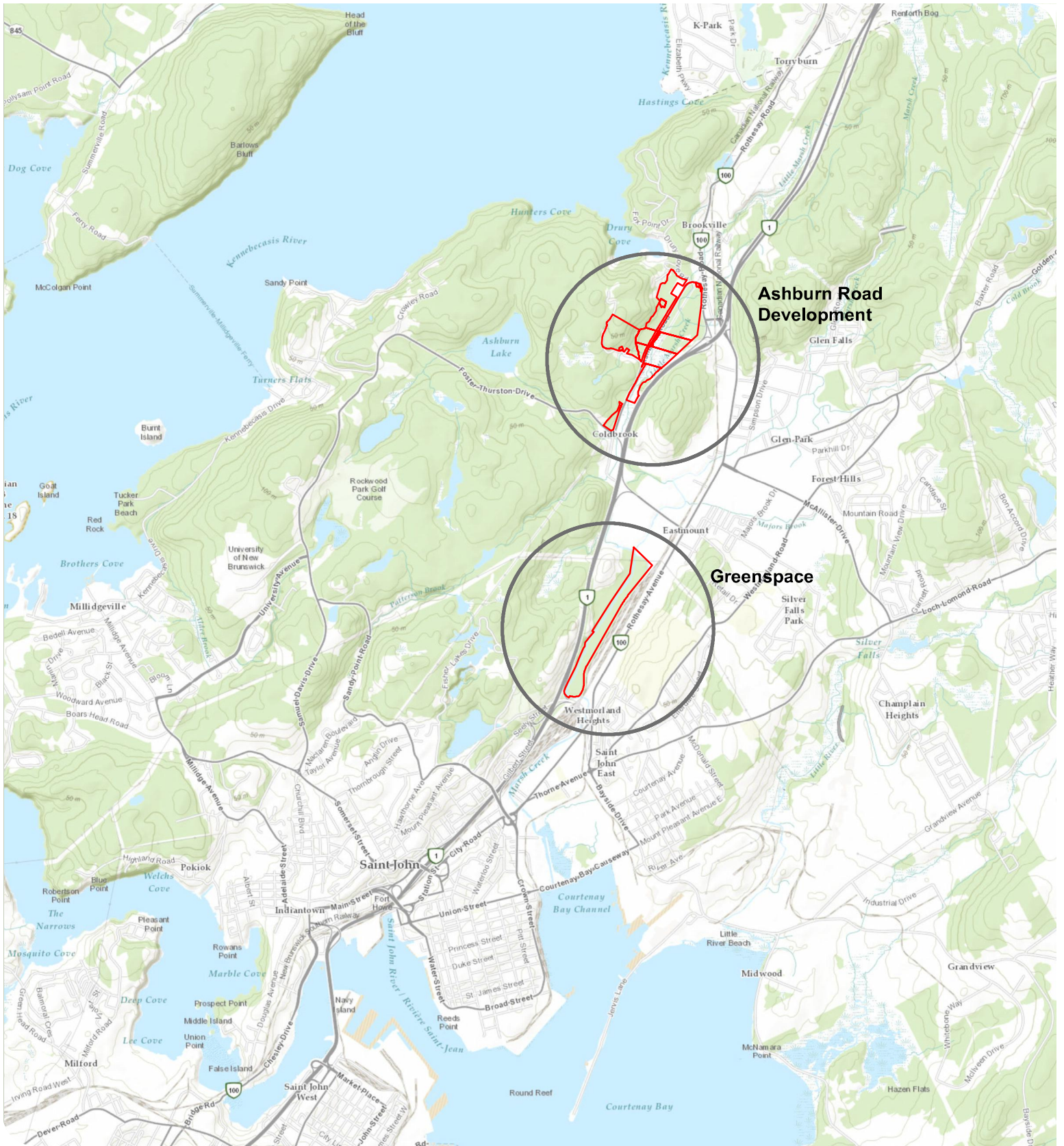
Encl.: Attachment 1 – Figures
Attachment 2 – Site Photographs
Attachment 3 – WESP-AC Functional Assessment
Attachment 4 – Vegetation Summary and ACCDC Reports
Disclaimer


Our file: 17-5767

References:

Adamus, Paul. 2016. WESP-AC training Manual
Horizon Management Ltd. 2016. Environmental Impact Assessment Registration Document
WSP Group Inc. 2016. Rare Plant Survey at the Crossing, Saint John, New Brunswick

Attachment 1: Figures

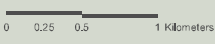


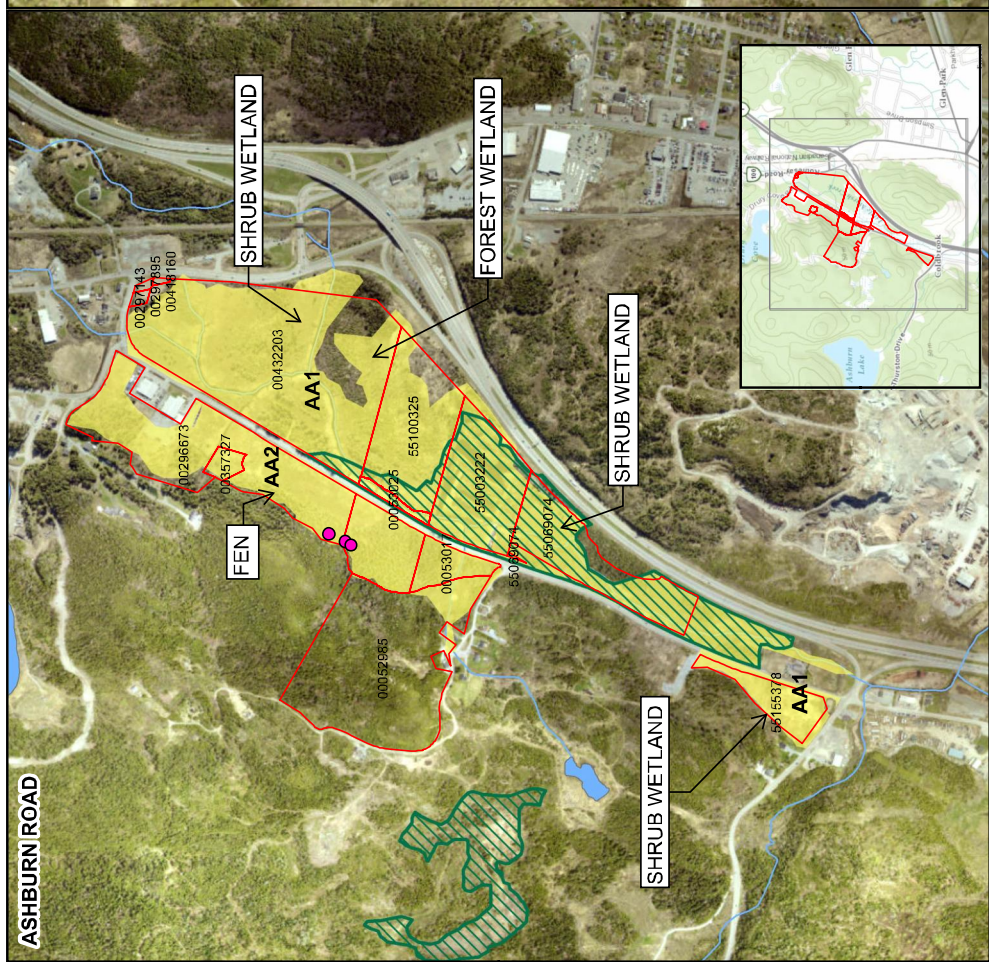
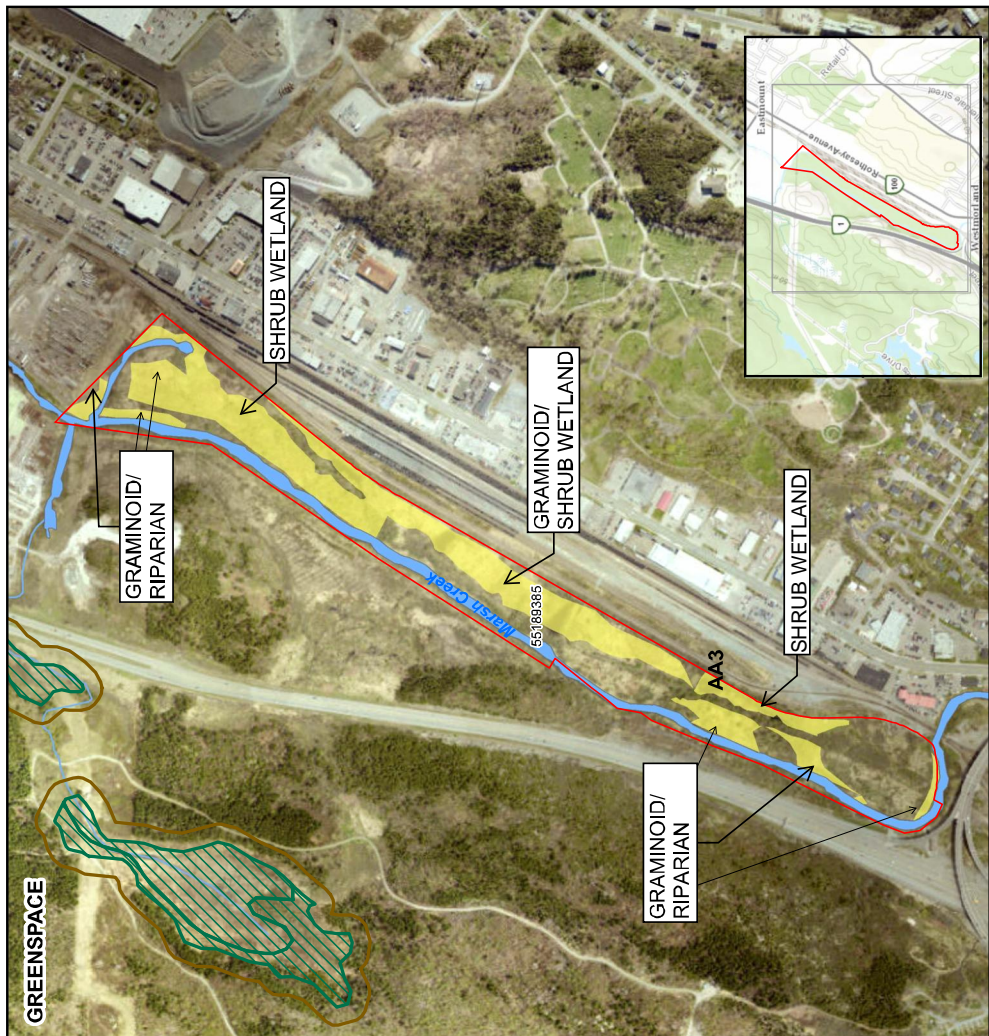
 AREAS OF INTEREST

HORIZON MANAGEMENT LTD.
Wetland Delineation /Functional Assessment

Areas of Interest
FIGURE 1

MAP DRAWING INFORMATION:
DATA PROVIDED BY Horizon Management Ltd., SNB, ESRI
MAP CREATED BY: SCM
MAP CHECKED BY: RMD
MAP PROJECTION: NAD 1983 CSRS New Brunswick Stereographic





HORIZON MANAGEMENT LTD.
WETLAND DELINEATION / FUNCTIONAL ASSESSMENT

ASHBURN ROAD WETLAND ASSESSMENTS/
GREENSPACE
FIGURE 2

● WPA/SPERM/UM/FOREX
 SA SPECIES OF CONSERVATION CONCERN
 ■ REGULATED WETLAND (GEONB)
 ■ PROPERTY (PID) BOUNDARIES
 ■ WATERCOURSE
 ■ UNMAPPED WETLAND
 ■ WATERBODY

MAP TRAINING INFORMATION
 DATA PROVIDED BY: Horizon Management Ltd., GEONB, ESRI
 MAP CREATED BY: SCM
 MAP CHECKED BY: RMD
 MAP PROJECTION: NAD 1983 CSRS New Brunswick Spheroidal

0 100 200 300 400 500 600 700 800 900 1000
 SCALE = 50:000 2:MM

PROJECT: 7-5167 STATUS: DRAFT Date: June 29, 7

DILLON CONSULTING

Attachment 2: Site Photographs



Photo 1: AA1 – Little Marsh Creek Mid – West Boundary



Photo 2: AA1 – North Boundary



Photo 3: AA1 – Forest Wetland Habitat – South Boundary



Photo 4: AA1 – South Boundary – open water area



Photo 5: AA1 – East Boundary



Photo 6: AA2 – Calcareous Forested Wetland



Photo 7: AA2 – Karst Depression



Photo 8: AA2 – Looking from Ashburn Road to west



Photo 9: AA3 – South Boundary



Photo 10: AA3 - North Boundary



Photo 11: AA3 – South Boundary

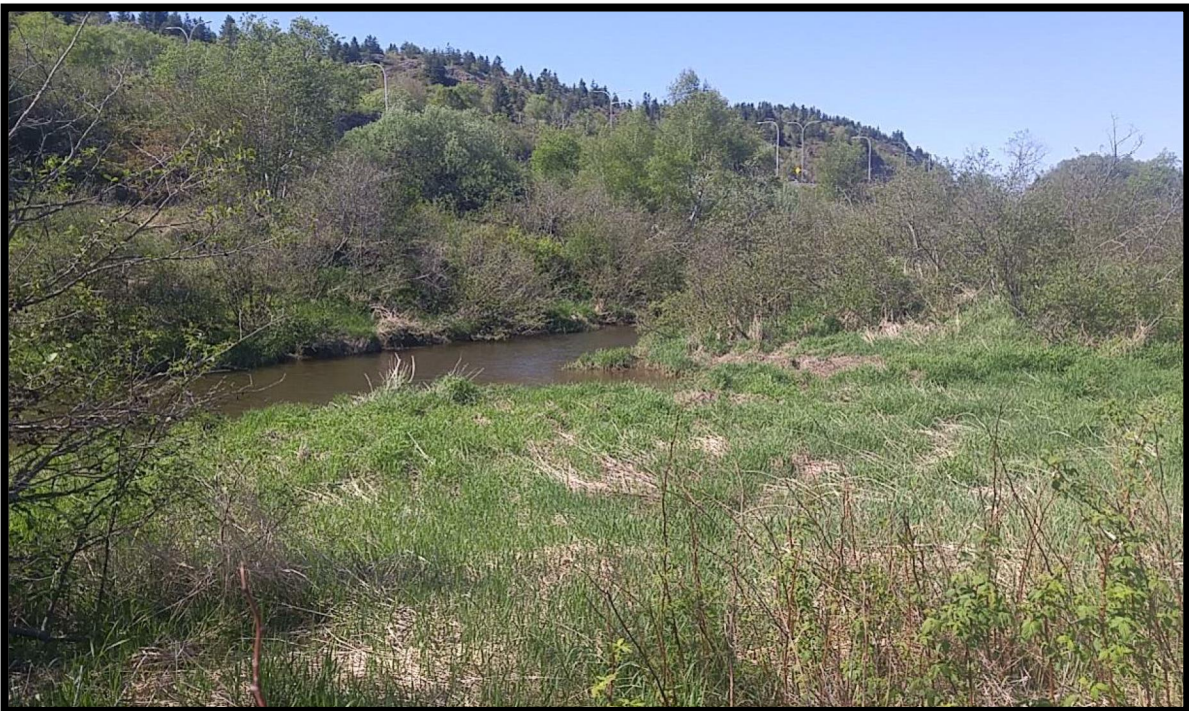
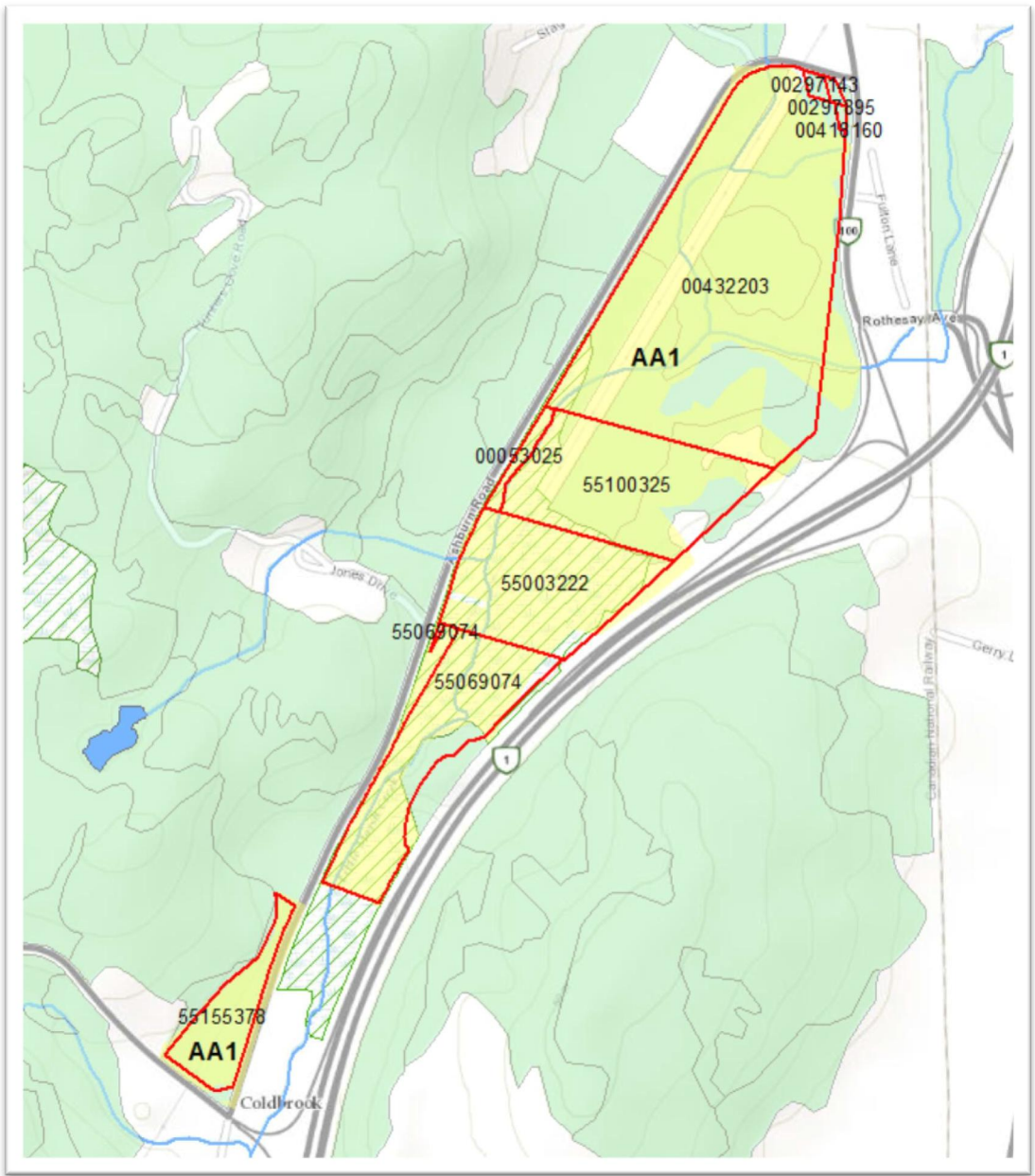


Photo 12: AA3 – South Boundary

Attachment 3: WESP-AC

Cover Page: Basic Description of Assessment	WESP-AC version 1.2
Site Name:	ASHBURN ROAD - AA1
Investigator Name:	Dillon Consulting Limited - Rhonda Dana/Alison Smith/ Tom Neily
Date of Field Assessment:	3/30/2017
Nearest Town:	Saint John
Latitude (decimal degrees):	45.324426°
Longitude (decimal degrees):	-66.032990°
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in acres):	31 ha
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	89%
What percent (approx.) of the wetland were you able to visit?	50%
What percent (approx.) of the AA were you able to visit?	80%
Were you able to ask the site owner/manager about any of the questions?	Yes
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	Yes (A. Smith: June 2017, R. Dana September 2017)
How many wetlands have you assessed previously using WESP-AC? (approx.)	3
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

Assessment Area 1



	A	B	C	D	E	
1	Date: 05/27/2017		Site Identifier: Ashburn Road - AA1		Investigator: R.Dana/A.Smith (Dillon Consulting Limited)	
2	#	Indicators	Condition Choices	Data	Definitions/Explanations	
3	OF1	Province	Mark the province in which the AA is located by changing the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalized. It also triggers the automatic exclusion in the function models of indicators for which no spatial data exists in a particular province.	
4			New Brunswick	1		
5			Nova Scotia	0		
6			Prince Edward Island	0		
7			Newfoundland-Labrador	0		
8	OF2	Wetland Herbaceous Area	From "duck's eye" (aerial) view, the area of woody vegetation (grasslike plants, excluding moss & ferns) in the Assessment Area (AA) plus in any contiguous woody wetland is:			Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu), or by going to the online GeoNB viewer, enabling the aerial Basemap and the Wetlands layer, then using the Draw & Measure tool. However, do not rely entirely on wetland boundaries shown in the Wetlands layer. GeoNB is at: http://geonb.snb.ca/geonb/ [PH, SBM, WBN]
9			<0.01 hectare (about 10 m x 10 m)	0		
10			0.01 - 0.1 hectare	0		
11			0.1 - 1 hectare	0		
12			1 to 10 hectares	1		
13			10 to 100 hectares	0		
14			>100 hectares	0		
15	OF3	Wetland + Water Total Area	The total area of the AA including ponded water within or adjacent to it is:		See above. [Sens, WBF]	
16			<0.01 hectare (about 10 m x 10 m)	0		
17			0.01 - 0.1 hectare	0		
18			0.1 - 1 hectare	1		
19			1 to 10 hectares	0		
20			10 to 100 hectares	0		
21			>100 hectares	0		
22	OF4	Size of Largest Nearby Vegetated Tract or Corridor	Including the AA's vegetated area, the largest patch or corridor that is unmanaged vegetation cover (excluding lawn, row crops, heavily grazed lands, conifer plantation) and is contiguous with vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 50 m), occupies:		Use Google Earth Pro (as above) or, if you have GIS, you may go to the GeoNB web site and download layers for Forest and Roads to assist this measurement, but be aware that many non-forest areas should also be included as unmanaged vegetation cover, and many areas classified as Forest are actually conifer plantations and should be excluded if it is obvious that trees have been planted in rows. Layers (shapefiles) can be downloaded at: http://w.snb.ca/geonb1/e/DC/catalogue-E.asp [AM, PH, SBM, Sens]	
23			<0.01 hectare (about 10 m x 10 m)	0		
24			0.01 - 0.1 hectare	0		
25			0.1 - 1 hectare	0		
26			1 to 10 hectares	0		
27			10 to 100 hectares	1		
28			100 to 1000 hectares	0		
29			>1000 hectares [<i>This is nearly always the answer in relatively undeveloped landscapes.</i>]	0		
30	OF5	Distance to Large Vegetated Tract	The minimum distance from the AA edge to the edge of the closest patch or corridor of unmanaged vegetated land (excluding row crops, lawn, conifer plantation) larger than 375 hectares, is:		To measure distance, use Google Earth Pro (Ruler > Line tool) or use Draw & Measure tool at GeoNB. 375 ha is about 2 km on a side, if square. The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]	
31			<50 m, and not separated from the 375-ha vegetated area by any width of roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [<i>This is often the answer in relatively undeveloped landscapes.</i>]	0		
32			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of vegetation.	0		
33			50-500 m, and not separated.	0		
34			50-500 m, but separated by those features.	0		
35			0.5 - 5 km, and not separated.	0		
36			0.5 - 5 km, but separated by those features.	1		
37			none of the above (the closest patches or corridors which are that large are >5 km away).	0		
38	OF6	Herbaceous Uniqueness	The AA's vegetation is mostly herbaceous but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation is mostly herbaceous but uplands within 1 km have <10% herbaceous cover. If so enter "2" and continue to OF7. If not, consider: The AA's vegetation is mostly herbaceous but uplands within 100 m have <10% herbaceous cover. If so, enter "1" [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss as well as grasslike plants in this use of "herbaceous vegetation"]	0	Determine this by viewing aerial imagery in Google Earth or GeoNB, after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMv, PHv, POLv, SBMv, WBFv, WBNv]	
39	OF7	Woody Uniqueness	The AA's vegetation is mostly woody but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is mostly woody but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider: The AA's vegetation is mostly woody but uplands within 100 m have <10% woody cover. If so, enter "1" [*NOTE: woody = Shrubland and forest, but exclude conifer plantations.]	0	See above. [AMv, PHv, POLv, SBMv]	
40	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed land, clearcuts, or conifer plantations) is:		Determine this by viewing aerial imagery after first drawing or estimating the approximate boundary of the 5 km buffer, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]	
41			<5% of the land.	0		
42			5 to 20% of the land.	0		
43			20 to 60% of the land.	1		
44			60 to 90% of the land.	0		
45			>90% of the land. SKIP to OF9.	0		

	A	B	C	D	E
46	OF9	Type of Land Cover Alteration	Within the 5-km radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly:		[AM, SBM]
47			impervious surface, e.g., paved road, parking lot, building, exposed rock.	1	
48			bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	0	
49	OF10	Distance by Road to Nearest Population Center	Measured along the maintained road nearest the AA, the distance to the nearest population center is:		"Population center" means a settled area with more than about 5 regularly- inhabited structures per square kilometer. In the GeoNB viewer, it includes most but not all areas close to settlements (click on Place Names in menu) plus many areas not close to settlements. In GeoNB, use Freehand Line in Draw
50			<100 m	0	
51			100 - 500 m	0	
52			0.5- 1 km	1	
53			1 - 5 km	0	
54	>5 km	0			
55	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is:		Determine this by viewing aerial imagery in Google Earth and measuring with the Ruler>Line tool or in GeoNB, the Draw Line tool. [AM, FAv, FRv, NRv, PH, PU, SBM, STR, WBN]
56			<10 m	0	
57			10 - 25 m	0	
58			25 - 50 m	0	
59			50 - 100 m	1	
60			100 - 500 m	0	
61	>500 m	0			
62	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank if there are no other wetlands within 5 km.	0	Enable the Wetlands layer in GeoNB (despite its omissions) to show surrounding wetlands and roads, while estimating the location of the 5 km circle (or draw the 5 km circle in Google Earth Pro using the Circle tool and compare). [AM, SBM, STR]
63	OF13	Distance to Ponded Water	The distance from the AA edge to the closest (but separate) pond or lake larger than 0.01 ha (about 10 x 10 m) is:		In Google Earth, zoom in closely to examine the surrounding landscape for ponds or lakes (not wetlands unless persistently flooded). This can include beaver flowages and seasonal floodplain ponds. They may or may not have a surface connection to this wetland. [AM, PH, SBM, Sens, WBF, WBN]
64			<50 m, and not separated by any width of roads, stretches of open water, row crops, lawn, bare ground, or impervious surface.	0	
65			<50 m, but completely separated by those features.	0	
66			50-500 m, and not separated.	0	
67			50-500 m, but separated by those features.	1	
68			0.5 - 1 km, and not separated.	0	
69	0.5 - 1 km, but separated by those features.	0			
70			none of the above (the closest patches or corridors that large are >1 km away).	0	
71	OF14	Distance to Lake	The distance from the AA edge to the closest (but separate) lake (a non-tidal body of water that is ponded during most of the year and is larger than 8 hectares) during most of a normal year is:		Determine this by viewing aerial imagery in Google Earth or GeoNB. [Sens, WBF, WBN]
72			<100 m	0	
73			100 m - 1 km	0	
74			1 - 2 km	1	
75			2-5 km	0	
76			5-10 km	0	
77	>10 km	0			
78	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		See Table A-1 in Appendix A of the Manual for a partial list of the inland limits of tidal influence, or consult local information sources. [FA, WBF]
79			<100 m	0	
80			100 m - 1 km	1	
81			1 - 5 km	0	
82			5-10 km	0	
83			10-40 km	0	
84	>40 km	0			
85	OF16	Upland Edge Contact	Select one:		[NR, SBM, Sens]
86			The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other wetlands or water.	0	
87			1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
88			25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
89			50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA.	0	
90	More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.	1			
91	OF17	Flood Zone	The AA is within a mapped Flood Zone or Flood Risk area, or an area in which river- or stream-associated floods within the past 20 years have damaged bridges, roads, buildings, or other infrastructure (not farmlands) within 5 km downslope from the AA. The floods must not be related to tidal influence or waves. If true, enter "1" in next column. If neither are true and AA is not in a river floodplain, enter "0" and SKIP to OF18. Otherwise, change to blank before skipping to OF18.	0	In NB: In the GeoNB map viewer: click on "More" in upper right, then "Flood Information". Expand the menu under it by clicking on the arrow to its left and the slider to its right. Uncheck the first (Limits of Data) box. [PH, WSV]
92	OF18	Flood Damage	Within the mapped Flood Zone, Flood Risk area, or area with known flood damage, ALL the following are true (if all true, enter "1" in next column. If false, enter "0") (a) there are bridges, roads, buildings, or other infrastructure (not just farmlands) within 5 km downslope from the AA that are vulnerable to damaging floods; (b) the damages would be caused mainly by rising river levels associated with precipitation and/or snowmelt, not primarily by high tides, hillslope runoff, or river ice jams, AND (c) between the AA and the damage area, peak flow in a connecting channel (if any) is NOT regulated by dams.	0	[WSV]

	A	B	C	D	E
	OF19	Relative Elevation in Watershed	To view watersheds, open Google Earth and then the NB_Watersheds.kmz file that accompanies this calculator. Determine the AA's position in its watershed as follows: 1) If the AA is on a channel wider than 10 m, or has both inlet & outlet and is closer to the watershed's outlet than to its upper end, check "lower 1/3." 2) If the AA is the source of a headwater stream, or lacks an outlet and is close to the watershed's outer margin, then check "upper 1/3." For all other conditions, check "middle 1/3".		[NR, Sens, SFSv, WCv, WSv]
93					
94			in the upper one-third of its watershed.	1	
95			in the middle one-third of its watershed.	0	
96			in the lower one-third of its watershed.	0	
	OF20	Water Quality Sensitivity	The AA is in an area: (a) legally protected from most land uses because it feeds an aquifer, a well that serves many users, or a reservoir or other surface water source that provides drinking water to multiple domestic users, OR (b) where research or map analysis has indicated groundwater may be at higher risk of contamination due to geological conditions. Enter 1= yes, 0= no. Change to blank if no information.	0	In Google Earth, view the KMZ overlay of these areas that accompanies this calculator, or follow the links given here to download shapefiles if you have GIS. [NRv]
97					
98	OF21	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, high temperatures) being present at levels harmful to aquatic life or humans, and:		[AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
99			The condition is present within the AA.	0	
100			The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself.	0	
101			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
102			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
103	OF22	Degraded Water Downstream	The problem described above is downslope from the AA, and:		[NRv, PRv, SRv]
104			The condition is present within 1 km downslope and connected to the AA by a channel.	0	
105			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
106			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
107			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at >1 km upstream). This is the situation for nearly all wetlands in this region.	1	
	OF23	Wetland as a % of Its Contributing Area (Catchment)	Estimate the approximate boundaries of the wetland's catchment (CA) from a topographic map. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. The result is:		[NR, PR, Sens, SR, WS]
108					
109			<0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	0	
110			0.01 to 0.1	1	
111			0.1 to 1	0	
112			>1 (wetland is larger than its catchment (e.g., wetland is isolated by dikes with no input channels, is fed entirely by groundwater, or is a raised bog).	0	
113	OF24	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about :		[FA, INV, NRv, PRv, SRv, STR, WCv, WSv,]
114			<10%	0	
115			10 to 25%	1	
116			>25%	0	
	OF25	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:		[NRv, PRv, SRv, WSv]
117					
118			Mostly true	0	
119			Somewhat true	0	
120			Mostly untrue	1	
121	OF26	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS,]
122			Northward (N, NE). north-facing contributing area.	0	
123			Southward (S, SW). south-facing contributing area.	1	
124			other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	0	
125	OF27	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:		In GeoNB, use Freehand Line in Draw & Measure tool to draw and measure the approximate flow path. In Google Earth, click on the Ruler icon, then Path, and draw and measure the path. [NR, OE, PR, SR, WS]
126			<10 m	0	
127			10 - 50 m	0	
128			50 - 100 m	0	
129			100 - 1000 m	1	
130			1- 2 km	0	
131			>2 km, or wetland lacks an inlet and outlet.	0	

	A	B	C	D	E
132	OF28	Growing Degree Days	According to Figure A-1 in Appendix A of the Manual, the mean annual Growing Degree Days (GDD) in the vicinity of the AA is approximately:		[AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCV, WS]
133			800-1000 days	0	
134			1000-1200	0	
135			1200-1400	0	
136			1400-1600	0	
137			1600-1800	1	
138			>1800 days	0	
139	OF29	Fish Access or Use	According to agency biologists and/or your own observations, the AA: <i>[mark just the first choice that is true]</i> :		[AM, FA, FR, INV, WBF, WBN]
140			is known to support Atlantic salmon rearing and/or spawning. <u>In NB</u> , consult Figure A-2 in Appendix A of the Manual, or local fishery biologists.	0	
141			has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters containing Atlantic salmon and is probably salmon-accessible during some conditions.	0	
142			is not accessible to any anadromous fish species but is known or likely to have other fish at least seasonally.	1	
143			is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily).	0	
144	OF30	Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented <i>[mark all applicable]</i> :		[AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
145			Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying SupplInfo file, <u>or</u> (in NS only) the AA is within a mapped Atlantic Coastal Plain Flora Buffer as shown in Special Management Practice Zones at: https://nsgi.novascotia.ca/plv/	0	
146			Presence of one or more of the amphibian or reptile species of conservation concern (AM) as listed in the Wildlife_Rare worksheet of the accompanying SupplInfo file.	0	
147			Presence of one or more of the waterbird species of conservation concern (WBF, WBN) as listed in the Wildlife_Rare worksheet of the accompanying SupplInfo file, during their nesting season (May-July for most species).	0	
148			Presence of one or more of the nesting songbird or raptor species of conservation concern (SBM) as listed in the Wildlife_Rare worksheet of the accompanying SupplInfo file, during their nesting season (May-July for most species).	0	
149			none of the above, or no data	1	
150	OF31	Important Bird Area (IBA)	The AA is all or part of the West Shepody Bay or St. Johns River Important Bird Area, or other designated IBA. See Figures A-3 & A-4 in Appendix A of the Manual. Enter 1= yes, 0= no.	0	[SBMv, WBFv, WBNv]
151	OF32	Black Duck Nesting Area	The AA is within an area mapped as generally high suitability (>20 pairs/25 sq km) for nesting American Black Duck. See Figure A-5 in Appendix A of the Manual. Enter 1= yes, 0= no. If outside of region shown in map, change to blank.	0	[WBNv]
152	OF33	Wintering Deer or Mainland Moose Concentration Area	The AA is all or part of a Deer Wintering Area or (in NS only) a Mainland Moose Concentration Area. If AA is on private land with no information, change to blank. Otherwise, <u>In NB</u> : In Google Earth, view the KMZ overlay that accompanies this calculator, or download the shapefile (Crown Lands Conservation Areas) at http://www.snb.ca/geonb1/e/DC/catalogue-E.asp <u>In NS</u> : go to https://nsgi.novascotia.ca/plv/ and view Special Management Practice Zones> Mainland Moose Concentration Areas).	0	[SBM,]
153	OF34	Other Conservation Designation	The AA is all or part of an area designated by the provincial government for its exceptional ecological features or highly intact natural conditions. Enter: yes= 1, no= 0. <u>In NB</u> : Provincially Significant Wetland, Environmentally Significant Area, Protected Natural Area (go to http://www.snb.ca/geonb1/e/apps/apps-E.asp and see Candidate PNA Map Viewer) <u>In NS</u> : go to https://nsgi.novascotia.ca/plv/ and view Protected Areas).	0	For NB, also see the KMZ overlay that accompanies this calculator and displays Protected Natural Areas of NB. [PU]
154	OF35	Conservation Investment	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
155	OF36	Mitigation Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
156	OF37	Sustained Scientific Use	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
157	OF38	Calcareous Region	The AA is in an area that is at least partly underlain by soil, sediment, or bedrock that is highly calcareous (enter 3 in next column), moderately calcareous (enter 2), or slightly calcareous (enter 1), none= 0. Limestone is typically a major component (karst geology) and water is not acidic (pH is usually >8). If no map coverage, change to blank. <u>In NB</u> : see Figure A-6 in Appendix A of the Manual, or use GIS with Bedrock Geology shapefile at http://www.snb.ca/geonb1/e/DC/catalogue-E.asp	0	[AM, FA, FR, INV, OE, PH]
158	OF39	Ownership	In most of the AA:		"Private lands" may include those owned or leased by non-governmental organizations, e.g., DUC, TNC. [PU, STR]
159			New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes most publicly-owned Protected Lands and private lands under long-term (30+ year) legal agreements to maintain nearly-unaltered conditions.	0	
160			ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
161			ownership is private but public access is allowed and/or a shorter-term conservation easement (whether renewable or not) is in place.	0	
162			ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement..	1	

A		B		C		D	E	
1	Date:06/30/2017	Site Identifier: Ashburn Road Development - AA1				Investigator: R. Dana, A. Smith		
2	#	Indicators	Condition Choices			Data	Definitions/Explanations	
3	F1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA:				Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (Myrica gale, bayberry) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]	
4			A. Moss and/or lichen cover more than 25% of the ground. Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below.					
5			A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is <100 µS/cm (about 64 ppm TDS). Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew). Sedge cover usually sparse or absent. Trees, if present, are mainly limited to black spruce. Surrounding landscape is mostly flat and wetland surface is never sloping, except sometimes from wetland center towards outer edges (convex). Inlet and outlet channels are usually absent..			0		
6			A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is >100 µS/cm. Sedges and/or cottongrass often dominate the ground cover, while ericaceous shrubs and black spruce may also be present. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1, often with many small persistent pools.			0		
7			B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column:					
8			B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain).			1		
9			B2. Not B1. Tree & tall shrubs comprise less than than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horsetail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.			0		
10	<i>Reminder: For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (-283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent lakes larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "adjacent" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered</i>							
11	F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.				[AM, INV, SBM, WBF]	
12			A1			0		
13			A2			1		
14			B1			0		
15			B2			1		
16	F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the of the living vegetation in the AA is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 5-25%, 1 if <5%, 0 if none):				[CS, INV, NR, PH, POL, SBM, Sens]	
17			coniferous trees (may include tamarack) taller than 3 m.			2		
18			deciduous trees taller than 3 m.			2		
19			coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees.			3		
20			deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees.			2		
21			coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation.			1		
22			deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.			1		
23	<i>Note: If you marked ALL of the F3 rows 0 or 1, SKIP to F9 (N fixers).</i>							
24	F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species (<3 m tall) comprise the greatest portion of the woody cover (<3 m tall). Then choose one:				[PH, POL, SBM, Sens]	
25			those species together comprise > 50% of such cover.			0		
26			those species together do not comprise > 50% of such cover.			1		
27	F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA.				Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dth trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]	
28			coniferous, 1-9 cm diameter and >1 m tall.			1		
29			broad-leaved deciduous 1-9 cm diameter and >1 m tall.			1		
30			coniferous, 10-19 cm diameter.			0		
31			broad-leaved deciduous 10-19 cm diameter.			1		
32			coniferous, 20-40 cm diameter.			1		
33			broad-leaved deciduous 20-40 cm diameter.			1		
34			coniferous, >40 cm diameter.			0		
35			broad-leaved deciduous >40 cm diameter.			0		
36	F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA:				[AM, INV, NR, PH, SBM, Sens]	
37			A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.					
38			A1. The two height classes are mostly scattered and intermixed throughout the AA.			0		
39			A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.			1		
40			B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column:					
41			B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.			0		
42			B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely			1		
43	F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:				Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]	
44			None, or fewer than 8/ hectare which exceed this diameter.			1		
45			Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.			0		
46			Several (>8/hectare) but above not true.			0		
47	F8	Downed Wood	The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is:				Exclude temporary "burn piles." [AM, INV, POL, SBM]	
48			Few or none that meet these criteria.			1		
49			Several (>5 if AA is >5 hectares, less for smaller AAs) meet these criteria.			0		

	A	B	C	D	E
50	F9	N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NRv, OE, PH, SBM, Sens]
51			<1% or none	0	
52			1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
53			25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54			50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55			>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56	F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
57			<5% of the vegetated part of the AA.	1	
58			5-25% of the vegetated part of the AA.	0	
59			25-50% of the vegetated part of the AA.	0	
60			50-95% of the vegetated part of the AA.	0	
61			>95% of the vegetated part of the AA.	0	
62	F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is:		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
63			Little or no (<5%) bare ground is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage.	1	
64			Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unflooded parts of the AA.	0	
65			Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unflooded parts of the AA.	0	
66			Other conditions.	0	
67			Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.	0	
68	F12	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. The number of hummocks, small pits, raised mounds, upturned trees, animal burrows, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area immediately surrounding them is:		[AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
69			Few or none (minimal microtopography; <1% of the land has such features, or entire AA is always water-covered).	0	
70			Intermediate.	1	
71			Several (extensive micro-topography).	0	
72	F13	Upland Inclusions	Within the AA, inclusions of upland that individually are >100 sq.m. are:		[AM, NR, SBM]
73			Few or none.	0	
74			Intermediate (1 - 10% of vegetated part of the AA).	1	
75			Many (e.g., wetland-upland "mosaic", >10% of the vegetated AA).	0	
76	F14	Soil Texture	In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (Figure A-7 in the Manual.)]		[CS, NR, OE, PH, PR, Sens, SFS, WS]
77			Loamy: includes loam, sandy loam.	0	
78			Fines: includes silt, clay, clay loam, silty clay, silty clay loam, sandy clay, sandy clay loam.	1	
79			Peat, to 40 cm depth or greater.	0	
80			Peat or organic <40 cm deep.	0	
81			Coarse: includes sand, loamy sand, gravel, cobble, stones, boulders, fluvents, fluvaquents, riverwash.	0	
82	F15	Shorebird Feeding Habitats	During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded waters shallower than 6 cm is: [include also any area that is adjacent to the AA].		This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
83			none, or <100 sq. m.	1	
84			100-1000 sq. m.	0	
85			1000 - 10,000 sq. m.	0	
86			>10,000 sq. m.	0	
87	F16	Herbaceous % of Vegetated Wetland	In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (excluding moss but including ferns) is:		[AM, WBF, WBN]
88			<5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover).	0	
89			5-25% of the vegetated part of the AA.	0	
90			25-50% of the vegetated part of the AA.	0	
91			50-95% of the vegetated part of the AA.	1	
92			>95% of the vegetated part of the AA.	0	
93	F17	Forb Cover	Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of:		Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horsetails, or others that lack showy flowers. [POL]
94			<5% of the herbaceous part of the AA.	0	
95			5-25% of the herbaceous part of the AA.	1	
96			25-50% of the herbaceous part of the AA.	0	
97			50-95% of the herbaceous part of the AA.	0	
98			>95% of the herbaceous part of the AA.	0	
99	F18	Sedge Cover	Sedges (<i>Carex</i> spp.) and cottongrass (<i>Eriophorum</i> spp.) occupy:		[CS]
100			<5% of the vegetated area, or none.	0	
101			5-50% of the vegetated area.	1	
102			50-95% of the vegetated area.	0	
103			>95% of the vegetated area.	0	
104	F19	Dominance of Most Abundant	Determine which two native herbaceous species (excluding mosses) comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]

	A	B	C	D	E
105		Herbaceous	those species together comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
106		Species	those species together do not comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	0	
107	F20	Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_invasive worksheet in the accompanying SupplInfo file.		[EC, PH, POL, Sens]
108			invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	0	
109			invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
110			invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	1	
111			invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
112			invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	
113	F21	Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
114			none of the upland edge (invasives apparently absent), or AA has no upland edge.	0	
115			some (but <5%) of the upland edge.	0	
116			5-50% of the upland edge.	1	
117			most (>50%) of the upland edge.	0	
118	F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated AA (in a lake, stream, or river) is much wider than the vegetated wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WCv,]
119	F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a lake, i.e., a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
120	F24	% of AA Without Surface Water	The percentage of the AA that <u>never</u> contains <u>surface</u> water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		[AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC]
121			<1% AND <0.01 hectare (about 10 m on a side) never has surface water. In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
122			1-25% of the AA, or <1% but >0.01 ha, never contains surface water.	0	
123			25-50% of the AA never contains surface water.	0	
124			50-75% of the AA never contains surface water.	1	
125			75-99% of the AA never contains surface water.	0	
126			99-100%. True for many bogs, meadow marshes, swamps that lack vernal pools. Enter "1" and SKIP to F42 (Channel Connection).	0	
127	F25	% of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
128			none. The AA dries up completely (no water in channels either) or never has surface water during most years.	0	
129			1-20% of the AA.	0	
130			20-50% of the AA.	1	
131			50-95% of the AA.	0	
132			>95% of the AA. True for many fringe wetlands.	0	
133	F26	% of Summertime Water that is Shaded	At mid-day during the warmest time of year, the area of surface water <u>within</u> the AA that is shaded by vegetation and other features that are <u>within</u> the AA at that time is:		[FA, WC]
134			<5% of the water is shaded, or no surface water is present then.	0	
135			5-25% of the water is shaded.	1	
136			25-50% of the water is shaded.	0	
137			50-75% of the water is shaded.	0	
138			>75% of the water is shaded.	0	
139	F27	% of AA that is Flooded Only Seasonally	The percentage of the AA that is covered by unfrozen surface water only during the wettest time of the year during most years is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankful height and visualising where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
140			None, or <0.01 hectare and <1% of the AA.	0	
141			1-20% of the AA, or <1% but >0.01 ha.	1	
142			20-50% of the AA.	0	
143			50-95% of the AA.	0	
144			>95% of the AA.	0	
145	F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
146			<10 cm change (stable or nearly so).	0	
147			10 cm - 50 cm change.	1	
148			0.5 - 1 m change.	0	
149			1-2 m change.	0	
150			>2 m change.	0	

	A	B	C	D	E
151			Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).	0	
152	F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice. This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches.
153			<10 cm deep (but >0).	0	
154			10 - 50 cm deep.	0	
155			0.5 - 1 m deep.	1	
156			1 - 2 m deep.	0	
157			>2 m deep. True for many fringe wetlands.	0	
158	F30	Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one):		Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
159			One depth class that comprises >90% of the AA's inundated area (use the classes in the question above).	0	
160			One depth class that comprises 50-90% of the AA's inundated area.	1	
161			Neither of above. There are 3 or more depth classes and none occupy >50%.	0	
162	F31	% of Water That Is Ponded (not Flowing)	During most times when surface water is present, the percentage that is ponded (stagnant, or flows so slowly that fine sediment is not held in suspension) is:		Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
163			<5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34.	0	
164			5-30% of the water.	0	
165			30-70% of the water.	1	
166			70-95% of the water.	0	
167			>95% of the water.	0	
168	F32	Ponded Open Water - Minimum	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue. If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	1	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed
169	F33	% of Ponded Water that is Open	In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unhidden by a forest or shrub canopy) is:		[AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC,]
170			None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP to F41 (Floating Algae & Duckweed).	0	
171			1-4% of the ponded water. Enter "1" and SKIP to F40 (Floating Algae & Duckweed).	0	
172			5-30% of the ponded water.	0	
173			30-70% of the ponded water.	1	
174			70-99% of the ponded water.	0	
175		100% of the ponded water.	0		
176	F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area <u>in the AA</u> that separates adjoining uplands from open water within the AA is:		"Vegetated area" does not include underwater or floating-leaved plants, i.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
177			<1 m	0	
178			1 - 9 m	0	
179			10 - 29 m	0	
180			30 - 49 m	1	
181			50 - 100 m	0	
182		> 100 m, or open water is absent.	0		
183	F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's water edge length that is nearly flat (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
184			<1% of the water edge.	0	
185			1-25% of the water edge.	0	
186			25-50% of the water edge.	0	
187			50-75% of the water edge.	1	
188			>75% of the water edge.	0	
189	F36	Robust Emergents	The percentage of the emergent vegetation cover in the AA that is cattail (<i>Typha</i> spp.), common reed (<i>Phragmites</i>), or tall (>1m) bulrush is:		Emergent vegetation is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
190			<1% of the emergent vegetation, or emergent vegetation is absent.	0	
191			1-25% of the emergent vegetation.	0	
192			25-75% of the emergent vegetation.	1	
193		>75% of the emergent vegetation.	0		
194	F37	Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of emergent vegetation is mostly:		[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
195			Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	
196			Intermediate.	0	
197			Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	1	
198	F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	1	
199	F39	Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of dead wood and undercut banks is:		For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
200			Little or none.	1	
201			Intermediate.	0	
202			Extensive.	0	
203	F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore by water depths >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a	0	[WBN]

	A	B	C	D	E
204	F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
205	F42	Channel Connection & Outflow Duration	The most persistent outlet connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: [Note: If the AA represents only part of a wetland, answer this according to whichever is the least permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.]		The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html), or use GIS to view streams after downloading the NB Hydrographic Networkshapefiles from http://w.snb.ca/geonb1/e/DC/catalogue-E.asp [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCV, WS]
206			persistent (surface water flows out for >9 months/year, regardless of whether frozen or not).	1	
207			seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive, including times when frozen).	0	
208			temporary (surface water flows out for <14 days, not necessarily consecutive, but must be unfrozen).	0	
209			none -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH)	0	
210		no surface water flows out of the wetland except possibly during extreme events (<once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	0		
211	F43	Outflow Confinement	During major runoff events, in the places where surface water exits the AA or connected waters nearby, the water:		"Major runoff events" would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
212			mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
213			leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	1	
214			is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
215	F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	1	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRv, PH, Prv, SRv]
216	F45	Input Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1= yes, 0= no.	0	[WCv]
217	F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels: [select only the ONE encountered by most of the incoming water].		[FA, FR, INV, NR, OE, PR, SR, WS]
218			Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake.	0	
219			bumps into herbaceous vegetation but mostly remains in fairly straight channels.	1	
220			bumps into herbaceous vegetation and mostly spreads throughout, or is in widely meandering, multi-branched, or braided channels.	0	
221			bumps into tree trunks and/or shrub stems but mostly remains in fairly straight channels.	0	
222		bumps into tree trunks and/or shrub stems and follows a fairly indirect path from entrance to exit (meandering, multi-branched, or braided).	0		
223	F47	pH Measurement	The pH in most of the AA's surface water:		Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, PH, Prv, Sens, WBN]
224			was not measured because no surface water could be found during this visit. Enter "1".	0	
225			was not measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	1	
226			was measured, and is: [enter the reading in the column to the right]:		
227	F48	TDS and/or Conductivity	The Total Dissolved Solids (TDS) in most of the AA's surface water:		See above for measurement guidance. [FR, INV, NRv, PH, Prv, Sens]
228			was not measured because no surface water could be found during this visit. Enter "1".	-	
229			was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	-	
230			TDS is: [enter the reading in ppm in the column to the right, if measured, or answer next row]:		
231			Conductivity is: [enter the reading in µS/cm in the column to the right]:		
232	F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE):		[FA, FR, PH, SBM, Sens, WBF, WBN]
233			evident from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags).	1	
234			likely based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.	0	
235			unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed.	0	
236	F50	Groundwater Strength of Evidence	Select first applicable choice.		Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, Prv, SFS, WC, WS,]
237			Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater.	0	
238			The upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 100 m AND if surface water was measured, its pH (Q47) is >5.5.	0	
239			Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	1	
240	F51	Internal Gradient	The gradient along most of the flow path within the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow-distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length
241			<2% or the AA has no surface water outlet (not even seasonally)	1	
242			2-5%	0	
243			6-10%	0	
244			>10%	0	
245	Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.				
246	F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains perennial vegetation cover (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRv, PH, POL, Prv, SBM, Sens, SRv, STR, WBN]
247			<5%	0	
248			5 to 30%	0	
249			30 to 60%	0	

	A	B	C	D	E
250			60 to 90%	1	
251			>90%, or all the area within 30 m of the AA edge is other wetlands. SKIP to F55.	0	
252	F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE):		[AM, FA, INV, NRV, PH, POL, SBM, STR, WBN]
253			impervious surface, e.g., paved road, parking lot, building, exposed rock.	1	
254			bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide.	0	
255	F54	Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRv, PRv, Sens, SRv]
256			<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
257			2-5%	0	
258			5-30%	0	
259			>30%	1	
260	F55	Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	1	Do not include upturned trees as potential den sites. [POL, SBM]
261	F56	New or Expanded Wetland	Part or all of the AA resulted from human actions that persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
262			No.	0	
263			yes, and created 20 - 100 years ago.	0	
264			yes, and created 3-20 years ago.	1	
265			yes, and created within last 3 years.	0	
266			yes, but time of origin unknown.	0	
267			unknown if new within 20 years or not.	0	
268	F57	Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or stumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
269			burned within past 5 years.	0	
270			burned 6-10 years ago.	0	
271			burned 11-30 years ago.	0	
272			burned >30 years ago, or no evidence of a burn and no data.	1	
273	F58	Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBFv]
274			<25%	0	
275			25-50%	0	
276			>50%	1	
277	F59	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select ALL statements that are true of the AA as it currently exists:		[PU, STR]
278			For an average person, walking is physically possible <u>in</u> (not just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
279			Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	1	
280			Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
281	F60	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: <i>[Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail]</i>		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
282			<5% and no inhabited building is within 100 m of the AA.	0	
283			<5% and inhabited building is within 100 m of the AA.	0	
284			5-50% and no inhabited building is within 100 m of the AA.	0	
285			5-50% and inhabited building is within 100 m of the AA.	0	
286			50-95%, with or without inhabited building nearby.	1	
287			>95% of the AA with or without inhabited building nearby.	0	
288	F61	Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: <i>[see note above]</i>		[AM, PH, PU, SBM, STR, WBF, WBN]
289			<5%. If F61 was answered ">95%" (mostly never visited), SKIP to F65.	1	
290			5-50%	0	
291			50-95%	0	
292			>95% of the AA.	0	
293	F62	BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
294	F63	BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
295	F64	Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
296			low-impact commercial timber harvest (e.g., selective thinning).	0	
297			commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
298			waterfowl hunting.	0	
299			fishing.	0	
300			trapping of furbearers.	0	
301			none of the above.	0	
302	F65	Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRv]
303			Within 0-100 m of the AA.	0	
304			100-500 m away.	1	
305			>500 m away, or no information.	0	
306	F66	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying SuppInfo file for list of plant indicators (calciphiles). Enter 1 if more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those and no information, change to blank.	0	[PH, PR]

Excessive Sediment Loading from Contributing Area			
In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRV, STR]			
erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires			
erosion from construction, in-channel machinery in the CA			
erosion from off-road vehicles in the CA			
erosion from livestock or foot traffic in the CA			
stormwater or wastewater effluent			
sediment from road sanding, gravel mining, other mining, oil/gas extraction			
accelerated channel downcutting or headcutting of tributaries due to altered land use			
other human-related disturbances within the CA			
If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.			
	Severe (3 points)	Medium (2 points)	Mild (1 point)
Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence
Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago
Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly
AA proximity to actual or potential sources	0 - 15 m	15-100 m	in more distant part of contributing area
* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment			Sum=
			Final Score=
			0.42
Soil or Sediment Alteration Within the Assessment Area			
In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]			
compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods			
leveling or other grading not to the natural contour			
tillage, plowing (but excluding disking for enhancement of native plants)			
fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland			
excavation			
ditch cleaning or dredging in or adjacent to the wetland			
boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments			
artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments			
If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.			
	Severe (3 points)	Medium (2 points)	Mild (1 point)
Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)
Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago
Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense
Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	mainly during one-time or scattered events
			Sum=
			Final Score=
			0.42

S4

S5

Wetland ID: AA1
Date: May 24, 2017
Observer: T. Neily, R. Dana, A. Smith
Latitude & Longitude (decimal degrees):

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed. *Note: Benefits scores will be provided in the final calculator for WBF, WBN, SBM, and POL; their models are currently being revised.*

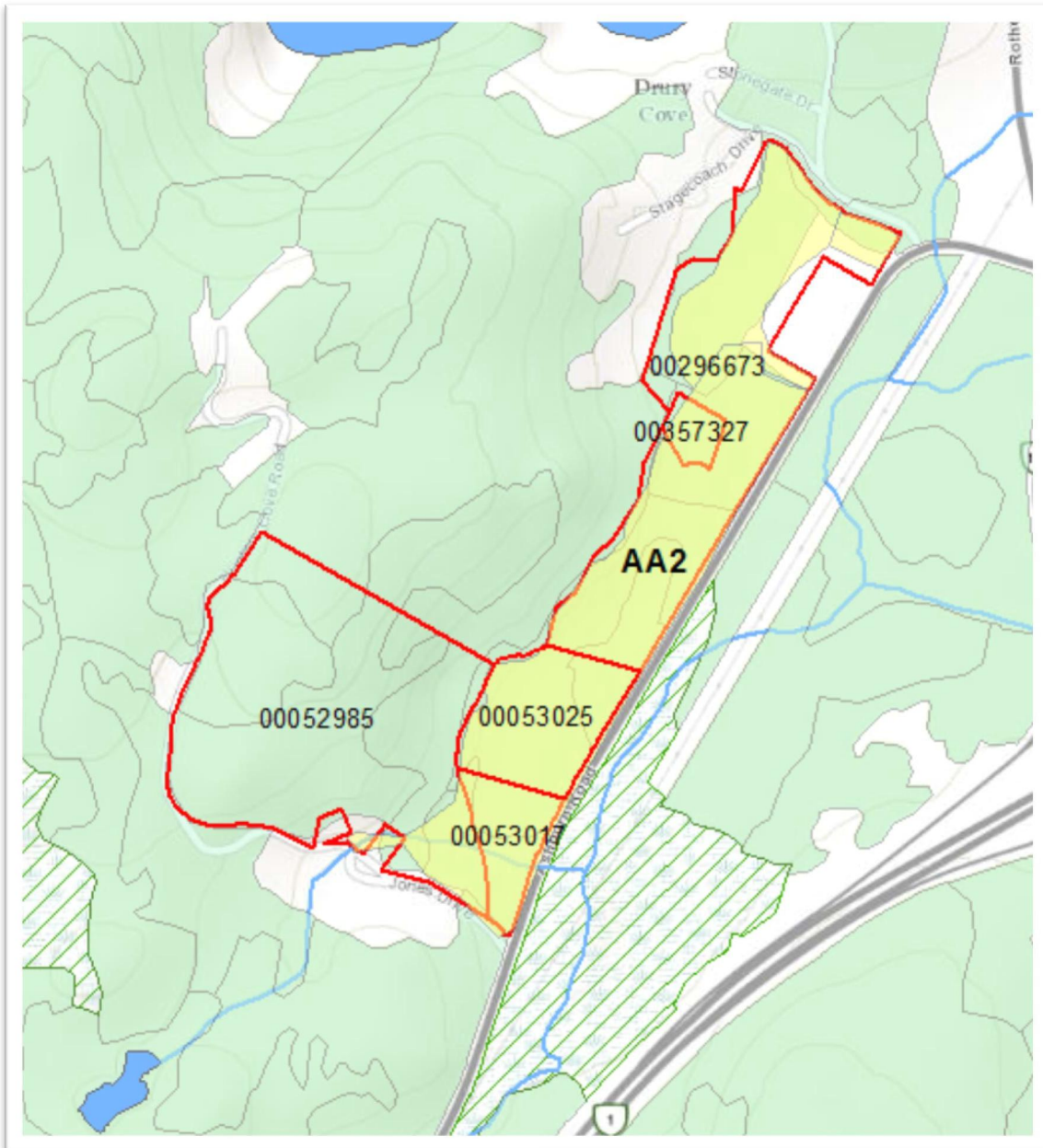
Results for this Assessment Area (AA):						
Wetland Functions or Other Attributes:	Function Score (normalized)	Function Rating	Benefits Score (normalized)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	1.65	Lower	6.07	Higher	2.82	4.38
Stream Flow Support (SFS)	4.58	Moderate	9.15	Higher	2.44	6.89
Water Cooling (WC)	5.21	Moderate	6.93	Higher	3.47	4.47
Sediment Retention & Stabilisation (SR)	2.72	Moderate	8.03	Higher	4.86	4.87
Phosphorus Retention (PR)	3.98	Higher	7.39	Higher	6.02	7.01
Nitrate Removal & Retention (NR)	3.84	Moderate	10.00	Higher	5.33	10.00
Carbon Sequestration (CS)	4.41	Moderate			6.38	
Organic Nutrient Export (OE)	6.04	Moderate			4.79	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	6.55	Higher	5.07	Higher	4.56	3.59
Aquatic Invertebrate Habitat (INV)	8.45	Higher	6.79	Higher	6.76	4.93
Amphibian & Turtle Habitat (AM)	6.18	Higher	10.00	Higher	6.73	5.19
Waterbird Feeding Habitat (WBF)	8.26	Higher			6.62	
Waterbird Nesting Habitat (WBN)	6.29	Higher			5.25	
Songbird, Raptor, & Mammal Habitat (SBM)	7.78	Higher			6.44	
Pollinator Habitat (POL)	7.15	Moderate			5.76	
Native Plant Habitat (PH)	6.68	Higher	7.15	Moderate	6.19	4.06
Public Use & Recognition (PU)			2.88	Moderate		2.12
Wetland Sensitivity (Sens)			6.80	Higher		4.39
Wetland Ecological Condition (EC)			2.76	Lower		5.63
Wetland Stressors (STR) (higher score means more)			9.26	Higher		4.58
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	1.65	Lower	6.07	Higher	2.82	4.38
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, N)	2.41	0.00	10.00	Higher	6.01	8.65
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	7.23	0.00	9.00	Higher	5.56	6.16
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, V)	6.72	0.00	6.50	Higher	5.68	4.06
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	5.25	0.00	8.25	Higher	6.28	4.06
WETLAND CONDITION (EC)			2.76	Lower		5.63
WETLAND RISK (average of Sensitivity & Stressors)			9.54	Higher		4.49

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among the 98 NB calibration wetlands that were assessed previously.

Cover Page: Basic Description of Assessment	WESP-AC version 1.2
Site Name:	ASHBURN ROAD - AA2
Investigator Name:	Dillon Consulting Limited - Rhonda Dana/Alison Smith/ Tom Neily
Date of Field Assessment:	3/30/2017
Nearest Town:	Saint John
Latitude (decimal degrees):	45.326383°
Longitude (decimal degrees):	-66.033918°
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in acres): ha	18
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	58%
What percent (approx.) of the wetland were you able to visit?	60%
What percent (approx.) of the AA were you able to visit?	70%
Were you able to ask the site owner/manager about any of the questions?	Yes
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	Yes (A. Smith: June 2017, R. Dana September 2017)
How many wetlands have you assessed previously using WESP-AC? (approx.)	3
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

Assessment Area 2

UNMAPPED WETLAND PROPERTY (PID) BOUNDARIES



A		B		C		D		E	
1	Date: 05/27/2017	Site Identifier: Ashburn Road - AA2		Investigator: R.Dana/A.Smith (Dillon Consulting Limited)					
2	#	Indicators	Condition Choices	Data	Definitions/Explanations				
3	OF1	Province	Mark the province in which the AA is located by changing the column next to it to a "1". Mark only one.		This determines to which province's calibration wetlands the raw score of any wetland is normalized. It also triggers the automatic exclusion in the function models of indicators for which no spatial data exists in a particular province.				
4			New Brunswick	1					
5			Nova Scotia	0					
6			Prince Edward Island	0					
7			Newfoundland-Labrador	0					
8	OF2	Wetland Herbaceous Area	From "duck's eye" (aerial) view, the area of woody vegetation (grasslike plants, excluding moss & ferns) in the Assessment Area (AA) plus in any contiguous woody wetland is:		Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu), or by going to the online GeoNB viewer, enabling the aerial Basemap and the Wetlands layer, then using the Draw & Measure tool. However, do not rely entirely on wetland boundaries shown in the Wetlands layer. GeoNB is at: http://geomb.snb.ca/geomb/ (PH, SBM, WBN)				
9			<0.01 hectare (about 10 m x 10 m)	0					
10			0.01 - 0.1 hectare	0					
11			0.1 - 1 hectare	0					
12			1 to 10 hectares	1					
13			10 to 100 hectares	0					
14			>100 hectares	0					
15	OF3	Wetland + Water Total Area	The total area of the AA including ponded water within or adjacent to it is:		See above. [Sens, WBF]				
16			<0.01 hectare (about 10 m x 10 m)	1					
17			0.01 - 0.1 hectare	0					
18			0.1 - 1 hectare	0					
19			1 to 10 hectares	0					
20			10 to 100 hectares	0					
21			> 100 hectares	0					
22	OF4	Size of Largest Nearby Vegetated Tract or Corridor	Including the AA's vegetated area, the largest patch or corridor that is unmanaged vegetation cover (excluding lawn, row crops, heavily grazed lands, conifer plantation) and is contiguous with vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 50 m), occupies:		Use Google Earth Pro (as above) or, if you have GIS, you may go to the GeoNB web site and download layers for Forest and Roads to assist this measurement, but be aware that many non-forest areas should also be included as unmanaged vegetation cover, and it is obvious that trees are actually conifer plantations and should be excluded if downloaded at: http://w.snb.ca/geomb/1e/DC/catalogue-E.asp [AM, PH, SBM, Sens]				
23			<0.01 hectare (about 10 m x 10 m)	0					
24			0.01 - 0.1 hectare	0					
25			0.1 - 1 hectare	0					
26			1 to 10 hectares	0					
27			10 to 100 hectares	1					
28			100 to 1000 hectares	0					
29			>1000 hectares [This is nearly always the answer in relatively undeveloped landscapes.]	0					
30	OF5	Distance to Large Vegetated Tract	The minimum distance from the AA edge to the edge of the closest patch or corridor of unmanaged vegetated land (excluding row crops, lawn, conifer plantation) larger than 375 hectares, is:		To measure distance, use Google Earth Pro (Ruler > Line tool) or use Draw & Measure tool at GeoNB. 375 ha is about 2 km on a side, if square. The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]				
31			<50 m, and not separated from the 375-ha vegetated area by any width of roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively	0					
32			<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of	0					
33			50-500 m, and not separated.	0					
34			50-500 m, but separated by those features.	0					
35			0.5 - 5 km, and not separated.	1					
36			0.5 - 5 km, but separated by those features.	0					
37			none of the above (the closest patches or corridors which are that large are >5 km away).	0					
OF6	Herbaceous Uniqueness		The AA's vegetation is mostly herbaceous but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation is mostly herbaceous but uplands within 1 km have <10% herbaceous cover. If so, enter "2" and continue to OF7. If not, consider: The AA's vegetation is mostly herbaceous but uplands within 100 m have <10% herbaceous cover. If so, enter "1" [* NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss, as well as grasslike plants in this use of "herbaceous vegetation"]	0	Determine this by viewing aerial imagery in Google Earth or GeoNB, after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AMw, PHv, POLv, SBMw, WBFv, WBNw]				
38									

	A	B	C	D	E
	OF7	Woody Uniqueness	The AA's vegetation is mostly woody but uplands within 5 km have <10% woody cover. If so, enter "3" and continue to OF8. If not, consider: The AA's vegetation is mostly woody but uplands within 1 km have <10% woody cover. If so enter "2" and continue to OF8. If not, consider:	0	See above. [AM, PH, POL, SBM]
39	OF8	Local Vegetated Cover Percentage	Draw a 5-km radius circle measured from the center of the AA. Ignoring all permanent water in the circle, the percent of the remaining area that is wooded or unmanaged herbaceous vegetation (NOT lawn, row crops, bare or heavily grazed <5% of the land, 5 to 20% of the land, 20 to 60% of the land, 60 to 90% of the land, >90% of the land. SKIP to OF9.	0 0 1 0 0	Determine this by viewing aerial imagery after first drawing or estimating the approximate boundary of the 5 km buffer, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
40	OF9	Type of Land Cover Alteration	Within the 5-km radius circle, and ignoring all permanent water, the land area that is bare or non-perennial cover is mostly: Impervious surface, e.g., paved road, parking lot, building, exposed rock. bare pervious surface, e.g., lawn, recent (<5 yrs ago) clearcut, dirt or gravel road, cropland, landslide, conifer plantation.	0 1 0	[AM, SBM]
41	OF10	Distance to Nearest Road to Nearest Population Center	Measured along the maintained road nearest the AA, the distance to the nearest population center is: <100 m 100 - 500 m 0.5 - 1 km 1 - 5 km >5 km	0 0 1 0 0	"Population center" means a settled area with more than about 5 regularly-inhabited structures per square kilometer. In the GeoNB viewer, it includes most but not all areas close to settlements (click on Place Names in menu) plus many areas not close to settlements. In GeoNB, use Freehand Line in Draw & Measure tool to draw and measure the route. In Google Earth, click on the Ruler icon, then Path, and draw and measure the route. [FAV, FRV, NRV, PH, PU, SBM, WBF, WBN]
42	OF11	Distance to Nearest Maintained Road	From the center of the AA, the distance to the nearest maintained public road (dirt or paved) is: <10 m 10 - 25 m 25 - 50 m 50 - 100 m 100 - 500 m >500 m	0 0 0 1 0 0	Determine this by viewing aerial imagery in Google Earth and measuring with the Ruler> Line tool or in GeoNB, the Draw Line tool. [AM, FAV, FRV, NRV, PH, PU, SBM, STR, WBN]
43	OF12	Wildlife Access	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark "1" = yes can move to all. 0 = no. Change to blank, if there are no other wetlands	0	Enable the Wetlands layer in GeoNB (despite its omissions) to show surrounding wetlands and roads, while estimating the location of the 5 km circle (or draw the 5 km circle in Google Earth Pro using the Circle tool and compare). [AM, SBM, STR]
44	OF13	Distance to Pondered Water	The distance from the AA edge to the closest (but separate) pond or lake larger than 0.01 ha (about 10 x 10 m) is: <50 m, and not separated by any width of roads, stretches of open water, low crops, lawn, bare ground, or impervious <50 m, but completely separated by those features. 50-500 m, and not separated. 50-500 m, but separated by those features. 0.5 - 1 km, and not separated. 0.5 - 1 km, but separated by those features. none of the above (the closest patches or corridors that large are >1 km away).	0 0 0 0 1 0	In Google Earth, zoom in closely to examine the surrounding landscape for ponds or lakes (not wetlands unless persistently flooded). This can include beaver flowages and seasonal floodplain ponds. They may or may not have a surface connection to this wetland. [AM, PH, SBM, Sens, WBF, WBN]
45	OF14	Distance to Lake	The distance from the AA edge to the closest (but separate) lake (a non-tidal body of water that is ponded during most of the year and is larger than 8 hectares) during most of a normal year is: <100 m 100 m - 1 km 1 - 2 km 2 - 5 km 5 - 10 km >10 km	0 1 0 0 0 0	Determine this by viewing aerial imagery in Google Earth or GeoNB. [Sens, WBF, WBN]
46	OF15	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is: <100 m 100 m - 1 km 1 - 5 km 5 - 10 km	0 1 0 0	See Table A-1 in Appendix A of the Manual for a partial list of the inland limits of tidal influence, or consult local information sources. [FA, WBF]
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81					
82					

	A	B	C	D	E
83			10-40 km	0	
84			>40 km	0	
85	OF1	Upland Edge Contact	Select one: The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other 1-25% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly 25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA. 50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA. More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.		[NR, SBM, Sens]
86	87			0	
88	89			0	
90				1	
OF1	7	Flood Zone	The AA is within a mapped Flood Zone or Flood Risk area, or an area in which river- or stream-associated floods within the past 20 years have damaged bridges, roads, buildings, or other infrastructure (not farmlands) within 5 km downslope from the AA. The floods must not be related to tidal influence or waves. If true, enter "1" in next column. If neither are true and AA is not in a river floodplain, enter "0" and SKIP to OF18. Otherwise, change to blank before skipping to OF18.	0	In NB: In the GeoNB map viewer: click on "More" in upper right, then "Flood Information". Expand the menu under it by clicking on the arrow to its left and the slider to its right. Uncheck the first (Limits of Data) box. [PH, WSV]
91				0	
OF1	8	Flood Damage	Within the mapped Flood Zone, Flood Risk area, or area with known flood damage, ALL the following are true (If all true, enter "1" in next column. If false, enter "0") (a) there are bridges, roads, buildings, or other infrastructure (not just farmlands) within 5 km downslope from the AA that are vulnerable to damaging floods; (b) the damages would be caused mainly by rising river levels associated with precipitation and/or snowmelt, not primarily by high tides, hillslope runoff, or river ice jams, AND (c) between the AA and the damage area, peak flow in a connecting channel (if any) is NOT regulated by dams.	0	[WSV]
92					
OF1	9	Relative Elevation in Watershed	To view watersheds, open Google Earth and then the NB_Watersheds.kmz file that accompanies this calculator. Determine the AA's position in its watershed as follows: 1) If the AA is on a channel wider than 10 m, or has both inlet & outlet and is closer to the watershed's outlet than to its upper end, check "lower 1/3". 2) If the AA is the source of a headwater stream, or lacks an outlet and is close to the watershed's outer margin, then check "upper 1/3." For all other conditions, check "middle 1/3".		[NR, Sens, SFSv, WCV, WSV]
93				1	
94				0	
95				0	
96				0	
OF2	0	Water Quality Sensitivity	The AA is in an area: (a) legally protected from most land uses because it feeds an aquifer, a well that serves many users, or a reservoir or other surface water source that provides drinking water to multiple domestic users, OR (b) where research or map analysis has indicated groundwater may be at higher risk of contamination due to geological conditions. Enter 1 = yes, 0 = no.	0	In Google Earth, view the KMZ overlay of these areas that accompanies this calculator, or follow the links given here to download shapefiles if you have GIS. [NRv]
97				0	
OF2	1	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, high temperatures) being present at levels harmful to aquatic life or humans, and: The condition is present within the AA. The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself. Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters. Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at > 1 km upstream). This is the situation for nearly all wetlands in this region.	0	[AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
98				0	
99				0	
100				0	
101				0	
102				1	
OF2	2	Degraded Water Downstream	The problem described above is downslope from the AA, and: The condition is present within 1 km downslope and connected to the AA by a channel. The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel. Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters. Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at > 1 km upstream). This is the situation for nearly all wetlands in this region.	0	[NRv, PRv, SRv]
103				0	
104				0	
105				0	
106				0	
107				1	
OF2	3	Wetland as a % of Its Contributing Area (Catchment)	Estimate the approximate boundaries of the wetland's catchment (CA) from a topographic map. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. <0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	0	[NR, PR, Sens, SR, WS]
108				1	
109				0	
110				0	

	A	B	C	D	E
111		0.1 to 1		0	
112		>1 (wetland is larger than its catchment (e.g., wetland is isolated by dikes with no input channels, is fed entirely by groundwater, or is a raised bog).		0	
OF2_4	Unvegetated Surface in the Contributing Area	The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about:			[FA, INV, NRv, PRv, SRv, STR, WCV, WSV,]
114		<10%		1	
115		10 to 25%		0	
116		>25%		0	
OF2_5	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This statement is:			[NRv, PRv, SRv, WSV]
117		Mostly true		0	
118		Somewhat true		0	
119		Mostly untrue		1	
120					
OF2_6	Aspect	The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:			[AM, NR, SFS, WC, WS,]
121		Northward (N, NE), north-facing contributing area.		0	
122		Southward (S, SW), south-facing contributing area.		1	
123		Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).		0	
124					
OF2_7	Internal Flow Distance (Path Length)	The horizontal flow distance from the wetland's inlet to outlet is:			In GeoNB, use Freehand Line in Draw & Measure tool to draw and measure the approximate flow path. In Google Earth, click on the Ruler icon, then Path, and draw and measure the path. [NR, OE, PR, SR, WS]
125		<10 m		0	
126		10 - 50 m		0	
128		50 - 100 m		0	
129		100 - 1000 m		1	
130		1 - 2 km, or wetland lacks an inlet and outlet.		0	
131					
OF2_8	Growing Degree Days	According to Figure A-1 in Appendix A of the Manual, the mean annual Growing Degree Days (GDD) in the vicinity of the AA is:			[AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WCV, WS]
132		800-1000 days		0	
133		1000-1200		0	
134		1200-1400		0	
135		1400-1600		0	
136		1600-1800		1	
137		>1800 days		0	
138					
OF2_9	Fish Access or Use	According to agency biologists and/or your own observations, the AA (mark just the first choice that is true): is known to support Atlantic salmon rearing and/or spawning. In NB, consult Figure A-2 in Appendix A of the Manual, or local fishery biologists. has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters containing Atlantic salmon and is probably salmon-accessible during some conditions. is not accessible to any anadromous fish species but is known or likely to have other fish at least seasonally. is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily). Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented (mark all that apply): Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying Supplement file, or (in NS only) the AA is within a mapped Atlantic Coastal Plain Flora Buffer as shown in Special Management Practice Zones Presence of one or more of the amphibian or reptile species of conservation concern (AM) as listed in the Wildlife_Rare worksheet of the accompanying Supplement file. Presence of one or more of the waterbird species of conservation concern (WBF, WBN) as listed in the Wildlife_Rare worksheet of the accompanying Supplement file, during their nesting season (May-July for most species).			[AM, FA, FR, INV, WBF, WBN]
139				0	
140				0	
141				0	
142				1	
143				0	
OF3_0	Species of Conservation Concern				[AMv, EC, PHv, POLv, SBMv, Sens, WBFv, WBNv]
144				1	
145				0	
146				0	
147				0	

	A	B	C	D	E
148			Presence of one or more of the nestling songbird or raptor species of conservation concern (SBM) as listed in the Wildlife Rare worksheet of the accompanying Supplinfo file, during their nesting season (May-July for most species). none of the above, or no data.	0	
149			The AA is all or part of the West Shepody Bay or St. Johns River Important Bird Area, or other designated IBA. See Figures A-3 & A-4 in Appendix A of the Manual. Enter 1= yes, 0= no.	0	
150	OF3 1	Important Bird Area (IBA)	The AA is within an area mapped as generally high suitability (>20 pairs/25 sq km) for nesting American Black Duck. See Figure A-5 in Appendix A of the Manual. Enter 1= yes, 0= no. If outside of region shown in map, change to blank.	0	[SBMv, WBFv, WBNv]
151	OF3 2	Black Duck Nesting Area	The AA is all or part of a Deer Wintering Area or (in NS only) a Mainland Moose Concentration Area. If AA is on private land with no information, change to blank. Otherwise, in NB: In Google Earth, view the KMZ overlay that accompanies this calculator, or download the shapefile (Crown Lands Conservation Areas) at http://www.snb.ca/geomb1e/DC/catalogue-E.asp in NS: go to https://ns.gov.novascotia.ca/biv/ and view Special Management Practice Zones> Mainland Moose Concentration	0	[WBNv]
152	OF3 3	Wintering Deer or Mainland Moose Concentration	The AA is all or part of an area designated by the provincial government for its exceptional ecological features or highly intact natural conditions. Enter: yes= 1, no= 0. In NB: Provincially Significant Wetland, Environmentally Significant Area, Protected Natural Area (go to http://www.snb.ca/geomb1e/apps/apps-E.asp and see Candidate PNA Map Viewer) In NS: go to	0	[SBM,]
153	OF3 4	Other Conservation Designation	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	For NB, also see the KMZ overlay that accompanies this calculator and displays Protected Natural Areas of NB. [PU]
154	OF3 5	Investment	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
155	OF3 6	Mitigation Investment	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
156	OF3 7	Sustained Scientific Use	The AA is in an area that is at least partly underlain by soil, sediment, or bedrock that is highly calcareous (enter 3 in next column), moderately calcareous (enter 2), or slightly calcareous (enter 1), none= 0. Limestone is typically a major component (karst geology) and water is not acidic (pH is usually >8). If no map coverage, change to blank. In NB: see Figure A-6 in Appendix A of the Manual, or use GIS with Bedrock Geology shapefile at	1	[AM, FA, FR, INV, OE, PH]
157	OF3 8	Calcareous Region	In most of the AA: New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes most publicly-owned Protected Lands and private lands under long-term (30+ year) legal agreements to ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed. ownership is private but public access is allowed and/or a shorter-term conservation easement (whether renewable or not) is ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement..	0	"Private lands" may include those owned or leased by non-governmental organizations, e.g., DUC, TNC, [PU, STR]
158	OF3 9	Ownership		0	
159				0	
160				0	
161				0	
162				1	

A		B		C		D		E	
Date: 06/30/2017		Site Identifier: Ashburn Road Development - A2		Investigator: R.Dana/A.Smith					
#	Indicators	Condition Choices		Data		Definitions/Explanations			
1	Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA: A. Moss and/or lichen cover more than 25% of the ground. Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below. A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is <100 µS/cm (about 64 ppm TDS). Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew). Sedge cover usually sparse or absent. Trees, if present, are mainly limited to black spruce. Surrounding landscape is mostly flat and wetland surface is never sloping, except sometimes from wetland center towards outer edges (convex). Inlet and outlet channels are usually absent. A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is >100 µS/cm. Sedges and/or cottongrass often dominate the ground cover, while ericaceous shrubs and black spruce may also be present. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1, often with many small persistent pools. B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column: B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain). B2. Not B1. Tree and tall shrubs comprise less than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horseail. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely.		0		Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include rhododendron, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (Myrica gale, bayberry) should be counted also. [AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN]			
2				1					
3				0					
4				1					
5				0					
6				0					
7				0					
8				0					
9				0					
10	Reminder: For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (~283 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent lakes larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "adjacent" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.								
F2	Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1.				[AM, INV, SBM, WBF]			
11				1					
12				0					
13				1					
14				0					
15				0					
F3	Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the of the living vegetation in the AA is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if <5%, 1 if <5%, 0 if none): coniferous trees (may include tamarack) taller than 3 m. deciduous trees taller than 3 m. coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees. deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees. coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation. deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.				[CS, INV, NR, PH, POL, SBM, Sens]			
16				2					
17				1					
18				3					
19				2					
20				1					
21				2					
22				2					
23	Note: If you marked ALL of the F 3 rows 0 or 1, SKIP to F9 (N fixers).								
F4	Dominance of Most Abundant Shrub Species	Determine which two woody plant species (<3 m tall) comprise the greatest portion of the woody cover (<3 m tall). Then choose one: those species together comprise > 50% of such cover. those species together do not comprise > 50% of such cover.				[PH, POL, SBM, Sens]			
24				0					
25				1					
F5	Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA. coniferous 1-9 cm diameter and >1 m tall. broad-leaved deciduous 1-9 cm diameter and >1 m tall. coniferous 10-19 cm diameter. broad-leaved deciduous 10-19 cm diameter. coniferous 20-40 cm diameter. broad-leaved deciduous 20-40 cm diameter. coniferous >40 cm diameter. broad-leaved deciduous >40 cm diameter.				Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-dbh trees, to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. [AM, CS, POL, SBM, Sens, WBN]			
27				1					
28				0					
29				1					
30				1					
31				1					
32				0					
33				0					
34				0					
35				0					
F6	Height Class Interdispersion	Follow the key below and mark the ONE row that best describes MOST of the AA: A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below.				[AM, INV, NR, PH, SBM, Sens]			
36									
37									

A	B	C	D	E
38		A1. The two height classes are mostly scattered and intermixed throughout the AA.	0	
39		A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps.	1	
40		B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column.		
41		B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one.	0	
42		B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.	1	
43	F7 Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is:		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
44		None, or fewer than 8/ hectare which exceed this diameter.	1	
45		Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km.	0	
46		Several (>8/hectare) but above not true.	0	
47	F8 Downed Wood	The number of downed wood pieces longer than 2 m and with diameter > 10 cm, and not persistently submerged, is:		Exclude temporary "burn piles." [AM, INV, POL, SBM]
48		Few or none that meet these criteria.	1	
49		Several (>5/FAA is >5 hectares, less for smaller AAs) meet these criteria.	0	
50	F9 N Fixers	The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is:		Do not include N-fixing algae or lichens. [FA, FR, INV, NR, OE, PH, SBM, Sens]
51		<1% or none	0	
52		1-25% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
53		25-50% of the vegetated cover, in the AA or along its water edge (whichever has more).	1	
54		50-75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
55		>75% of the vegetated cover, in the AA or along its water edge (whichever has more).	0	
56	F10 Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is:		Exclude moss growing on trees and rocks. [CS, PH]
57		<5% of the vegetated part of the AA.	0	
58		5-25% of the vegetated part of the AA.	0	
59		25-50% of the vegetated part of the AA.	1	
60		50-95% of the vegetated part of the AA.	0	
61		>95% of the vegetated part of the AA.	0	

A	B	C	D	E
F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is: Little or no (<5%) bare ground is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage. Slightly bare ground (6-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unfllooded parts of the AA. Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unfllooded parts of the AA. Other conditions: Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time. Consider the parts of the AA that lack surface water at some time of the year. The number of hummocks, small pits, raised mounds, upturned trees, animal burrows, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area immediately surrounding them: Few or none (minimal microtopography); <1% of the land has such features, or entire AA is always water-covered). Intermediate: Several (extensive microtopography). Within the AA, inclusions of upland that individually are >100 sq.m. are: Few or none. Intermediate (1 - 10% of vegetated part of the AA). Many (e.g., wetland-upland "mosaic"; >10% of the vegetated AA). In parts of the AA that lack persistent water, the texture of soil in the uppermost layer is mostly: [To determine this, use a trowel to check in at least 3 widely spaced locations, and use the soil texture key (Figure A-7 in the Manual.) Loamy; includes loam, sandy loam. Fines; includes silt, clay, loam, silty clay, silty clay loam, sandy clay, sandy clay loam. Peat to 40 cm depth or greater. Peat or organic <40 cm deep. Coarse; includes sand, loamy sand, gravel, cobble, stones, boulders, fluviolvents, fluviolvents, riverwash. During any 2 consecutive weeks of the growing season, the extent of mudflats, bare unshaded saturated areas not covered by thatch, and unshaded wetlands shallower than 6 cm is: [Include also any area that is adjacent to the AA]. none, or <100 sq. m. 100-1000 sq. m. 1000 - 10,000 sq. m. >10,000 sq. m. In aerial ("ducks eye") view, the maximum annual cover of herbaceous vegetation (excluding moss but including ferns) is: <5% of the vegetated part of the AA or <0.01 hectare (whichever is less). Mark "1" here and SKIP to F20 (Invasive Plant Cover). 5-25% of the vegetated part of the AA. 25-50% of the vegetated part of the AA. 50-95% of the vegetated part of the AA. >95% of the vegetated part of the AA. Within parts of the AA having herbaceous cover (excluding SAV), the areal cover of forbs reaches an annual maximum of: <5% of the herbaceous part of the AA. 5-25% of the herbaceous part of the AA. 25-50% of the herbaceous part of the AA. 50-95% of the herbaceous part of the AA. >95% of the herbaceous part of the AA. Sedges (Carex spp.) and cottongrass (Eriophorum spp.) occupy: <5% of the vegetated area, or none. 5-50% of the vegetated area. 50-95% of the vegetated area. >95% of the vegetated area.	1 0 0 0 0	Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
F12	Ground Irregularity			[AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
68			0	
69			1	
70			0	
71			0	[AM, NR, SBM]
F13	Upland Inclusions			
72			0	
73			0	
74			0	
75			1	
F14	Soil Texture			[CS, NR, OE, PH, PR, Sens, SF S, WS]
76			0	
77			0	
78			0	
79			0	
80			1	
81			0	
F15	Shorebird Feeding Habitats			This addresses needs of many but not all migratory sandpipers, plovers, and related species. [WBF]
82			1	
83			0	
84			0	
85			0	
86			0	
F16	Herbaceous % of Vegetated Wetland			[AM, WBF, WBN]
87			0	
88			0	
89			0	
90			0	
91			1	
92			0	
F17	Forb Cover			Forbs are flowering plants. Do not include grasses, sedges, cattail, other graminoids, ferns, horseails, or others that lack showy flowers. [POL]
93			0	
94			0	
95			1	
96			0	
97			0	
98			0	
F18	Sedge Cover			[CS]
99			0	
100			0	
101			1	
102			0	
103			0	
F19	Dominance of Most Abundant Herbaceous	Determine which two native herbaceous species (excluding mosses) comprise the greatest portion of the herbaceous cover that is unshaded by a woody canopy. Then choose one of the following:		For this question, include ferns as well as graminoids and forbs. [EC, INV, PH, POL, Sens]
104			0	

A	B	C	D	E
105	Species	those species together comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	1	
106		those species together do not comprise > 50% of the areal cover of native herbaceous plants at any time during the year.	0	
107	F20 Invasive Plant Cover	How extensive is the cover of invasive plant species in the AA? For species, see Plants_Invasive worksheet in the accompanying Support file.		[EC, PH, POL, Sens]
108		Invasive species appear to be absent in the AA, or are present only in trace amount (a few individuals).	0	
109		Invasive species are present in more than trace amounts, but comprise <5% of herbaceous cover (or woody cover, if the invasives are woody).	0	
110		Invasive species comprise 5-20% of the herb cover (or woody cover, if the invasives are woody).	1	
111		Invasive species comprise 20-50% of the herb cover (or woody cover, if the invasives are woody).	0	
112		Invasive species comprise >50% of the herb cover (or woody cover, if the invasives are woody).	0	
113	F21 Invasive Cover Along Upland Edge	Along the wetland-upland boundary, the percent of the upland edge (within 3 m upslope from the wetland) that is occupied by invasive plant species is:		If a plant cannot be identified to species (e.g., winter conditions) but its genus contains an exotic species, assume the unidentified plant to also be exotic. If vegetation is so senesced that exotic species cannot be identified, answer "none". [PH, STR]
114		none of the upland edge (invasives apparently absent), or AA has no upland edge.	0	
115		some (but <5% of the upland edge).	0	
116		5-50% of the upland edge.	1	
117		most (>50%) of the upland edge.	0	
118	F22 Fringe Wetland	During most of the year, open water within or adjacent to the vegetated AA (in a lake, stream, or river) is much wider than the vegetated wetland. Enter "1" if true, "0" if false.	0	[WBF, WBN, WC.v.]
119	F23 Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a lake, i.e., a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.	0	[FR, PR, PU, WBF, WBN]
120	F24 % of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:		[AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRv, WBF, WBN, WC.]
121		<1% AND <0.01 hectare (about 10 m on a side) never has surface water. In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.	0	
122		1-25% of the AA, or <1% but >0.01 ha, never contains surface water.	1	
123		25-50% of the AA never contains surface water.	0	
124		50-75% of the AA never contains surface water.	0	
125		75-99% of the AA never contains surface water.	0	
126		99-100%. True for many bogs, meadow marshes, swamps that lack vernal pools. Enter "1" and SKIP to F.42 (Channel Connection).	0	
127	F25 % of AA with Persistent Surface Water	Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:		If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat. [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
128		none. The AA dries up completely (no water in channels either) or never has surface water during most years.	0	
129		1-20% of the AA.	1	
130		20-50% of the AA.	0	
131		50-95% of the AA.	0	
132		>95% of the AA. True for many fringe wetlands.	0	[FA, WC]
133	F26 % of Summer/Time Water that is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA, at that time is:		
134		<5% of the water is shaded, or no surface water is present then.	0	
135		5-25% of the water is shaded.	0	
136		25-50% of the water is shaded.	1	
137		50-75% of the water is shaded.	0	
138		>75% of the water is shaded.	0	
139	F27 % of AA that is Flooded Only Seasonally	The percentage of the AA that is covered by unfrozen surface water only during the wettest time of the year during most years is:		Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankfull height and visualizing where that would intercept the land along the
140		None, or <0.01 hectare and <1% of the AA.	0	
141		1-20% of the AA, or <1% but >0.01 ha.	1	
142		20-50% of the AA.	0	

A	B	C	D	E
143		50-95% of the AA.	0	river [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
144		>95% of the AA.	0	
F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water is:		Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
146		<10 cm change (stable or nearly so).	0	
147		10 cm - 50 cm change.	0	
148		0.5 - 1 m change.	1	
149		1-2 m change.	0	
150		>2 m change.	0	
151	Is the AA plus adjacent ponded water smaller than 0.01 hectare (about 10m x 10m, or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).		0	
F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire inundated part of the AA, is:		If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice. This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded water. Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
152		<10 cm deep (but >0).	0	
153		10-50 cm deep.	0	
154		0.5 - 1 m deep.	0	
155		1 - 2 m deep.	1	
156		>2 m deep. True for many fringe wetlands.	0	
157		When present, surface water in most of the AA usually consists of (select one):	0	
F30	Depth Classes - Evenness of Proportions	One depth class that comprises 50-90% of the AA's inundated area. (Use the classes in the question above).	0	
159		One depth class that comprises 50-90% of the AA's inundated area.	0	
160		Neither of above. There are 3 or more depth classes and none occupy >50%.	1	
161		During most times when surface water is present, the percentage that is ponded (stagnant, or flows so slowly that the sediment is not held in suspension) is:	0	Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
162		<5% of the water, or it occupies <100 sq m cumulatively. Nearly all the surface water is flowing. SKIP TO F34.	0	
163		5-30% of the water.	0	
164		30-70% of the water.	1	
165		70-95% of the water.	0	
166		>95% of the water.	0	
167			0	
F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is >0.01 hectare (about 10 m by 10 m) and mostly deeper than 0.5 m. If true enter "1" and continue. If false, enter "0" and SKIP TO F41 (Floating Algae & Duckweed).	1	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed beneath [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC.]
169		In ducks-eye aerial view, the percentage of the ponded water that is open (lacking emergent vegetation during most of the growing season, and unshaded by a forest or shrub canopy) is:		
170		None, or <1% of the AA and largest pool occupies <0.01 hectares. Enter "1" and SKIP TO F41 (Floating Algae & Duckweed).	0	
171		1-4% of the ponded water. Enter "1" and SKIP TO F40 (Floating Algae & Duckweed).	0	
172		5-30% of the ponded water.	0	
173		30-70% of the ponded water.	0	
174		70-99% of the ponded water.	1	
175		100% of the ponded water.	0	
F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is:		Vegetated area does not include underwater or floating-leaved plants, i.e. aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SR, SBM, Sens, SR, WBN]
177		<1 m	0	
178		1 - 9 m	0	
179		10 - 29 m	0	
180		30 - 49 m	0	
181		50 - 100 m	1	
182		> 100 m, or open water is absent.	0	
F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's water edge length that is nearly flat (a slope less than about 5% measured within 5 m landward of the water) is:		If several isolated ponds are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
183		<1% of the water edge.	1	
184		1-25% of the water edge.	0	
185		25-50% of the water edge.	0	
186		50-75% of the water edge.	0	
187		>75% of the water edge.	0	
188			0	
F36	Robust Emergents	The percentage of the emergent vegetation cover in the AA that is tall (Typha spp., common reed (Phragmites), or tall (>1m) bulrush) is:		Emergent vegetation is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
189		<1% of the emergent vegetation, or emergent vegetation is absent.	0	
190		1-25% of the emergent vegetation.	1	
191		25-75% of the emergent vegetation.	0	
192		>75% of the emergent vegetation.	0	
193			0	

A	B	C	D	E
194	F37 Interspersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of emergent vegetation is mostly scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water.	0	[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
195		Intermediate.	0	
196		Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	1	
197	F38 Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42.(Connection).	1	
198	F39 Non-vegetated Aquatic Cover	During most of the growing season and in waters deeper than 0.5 m, the cover for fish, aquatic invertebrates, and/or amphibians that is provided NOT by living vegetation, but by accumulations of dead wood and undercut banks is: Little or none. Intermediate. Extensive.	1 0 0	For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
200		The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore by water depths >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a waterbird nest.	0	[WBN]
201		At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise-unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
202	F40 Isolated Island	The most persistent outlet connection (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is (note: If the AA represents only part of a wetland, answer this according to whichever is the least permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.)	0	
203	F41 Floating Algae & Duckweed	persistent (surface water flows out for >9 months/year, regardless of whether frozen or not). seasonal (surface water flows out for 14 days to 9 months/year, not necessarily consecutive, including times when frozen). temporary (surface water flows out for <14 days, not necessarily consecutive, but must be unfrozen). none -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH)	0 1 0 0	The "downslope stream network" could consist of ditches, rivers, ponds, or lakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.nrcan.gc.ca/toporama/en/index.html), or use GIS to view streams after downloading the NB Hydrographic Network shapefiles from http://w.snb.ca/geomb/leDD/catalogue-E.asp [CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WCV, WS]
204	F42 Channel Connection & Outflow Duration	no surface water flows out of the wetland except possibly during extreme events (once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	0	
205		During major runoff events, in the places where surface water exits the AA or connected waters nearby, the water:	0	Major runoff events would include biennial high water caused by storms and/or rapid snowmelt. [CS, NR, OE, PR, Sens, SR, STR, WS]
206		mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season.	0	
207		leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features.	1	
208		is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	0	
209		At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If it enters only via a pipe, that pipe must be fed by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	1	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. [NRV, PH, PRV, SRV]
210	F43 Outflow Confinement	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1 = yes, 0 = no.	0	[WCV]
211		During its travel through the AA at the time of peak annual flow, water arriving in channels (select only the ONE encountered by most of the incoming water).	0	[FA, FR, INV, NR, OE, PR, SR, WS]
212		Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an in-stream pond or lake.	0	
213		bumps into herbaceous vegetation but mostly remains in fairly straight channels.	1	
214		bumps into tree trunks and/or shrub stems but mostly remains in fairly straight channels.	0	
215		bumps into tree trunks and/or shrub stems and follows a fairly indirect path from entrance to exit (meandering, multi-branched, or braided).	0	
216	F44 Tributary Channel	The pH in most of the AA's surface water:	0	Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. [AM, FA, FR, NR, PH, PR, Sens, WBN]
217	F45 Input Water Temperature	was not measured because no surface water could be found during this visit. Enter "1".	0	
218		was not measured because no surface water is present and is darkly tea-colored. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1".	1	
219		was measured, and is: (enter the reading in the column to the right):		
220		The Total Dissolved Solids (TDS) in most of the AA's surface water:		See above for measurement guidance. [FR, INV, NRV, PH, PRV, Sens]
221		was not measured because no surface water could be found during this visit. Enter "1".	1	
222		was not measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1".	0	
223		TDS is: (enter the reading in ppm in the column to the right, if measured, or answer next row):		
224		Conductivity is: (enter the reading in µS/cm in the column to the right):		
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227	F46 Throughflow Resistance			
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231	F47 pH Measurement			
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232	F49 Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE): evident from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags) likely based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water.		[FA, FR, PH, SBM, Sens, WBF, WBN]
233			0	
234			0	
235		unlikely because site characteristics above are deficient, and/or this is a settled area or other area where beaver are routinely removed. Select first applicable choice.	1	
236	F50 Groundwater Strength of Evidence	Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater. The upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 100 m AND if surface water was measured, its pH (Q47) is >5.5. Neither of above is true, although some groundwater may discharge to or flow through the AA. Or groundwater influx is unknown.	0	Adhere to these criteria strictly -- do not use personal judgment based on fen conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. [AM, CS, FA, FR, INV, NR, OE, PH, PRV, SFS, WC, WS,]
237			0	
238			0	
239			1	
240	F51 Internal Gradient	The gradient along most of the flow path within the AA is:		This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length and
241		<2% or the AA has no surface water outlet (not even seasonally)	0	
242		2-5%	1	
243		6-10%	0	
244		>10%	0	
245		Note for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.		
246	F52 Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains perennial vegetation cover (except lawns, row crops, heavily grazed land, conifer plantations) is:		[AM, FA, FR, INV, NRV, PH, POL, PRV, SBM, Sens, SRV, STR, WBN]
247		<5%	0	
248		5 to 30%	0	
249		30 to 60%	0	
250		60 to 90%	1	
251		>90%, or all the area within 30 m of the AA edge is other wetlands. SKIP to F55.	0	
252	F53 Type of Cover In Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE): impervious surface, e.g., paved road, parking lot, building, exposed rock bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide	1	[AM, FA, INV, NRV, PH, POL, SBM, STR, WBN]
253			0	
254	F54 Buffer Slope	The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:		[NRV, PRV, Sens, SRV]
255		<1% (flat -- almost no noticeable slope) or all the area within 30 m of the AA edge is other wetlands.	0	
256		1-10%	0	
257		11-30%	0	
258		31-50%	1	
259		>50%	0	
260	F55 Cliffs or Steep Banks	In the AA or within 100 m, there are elevated terrestrial features such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m in nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (yes) or 0 (no).	1	Do not include upturned trees as potential den sites. [POL, SBM]
261	F56 New or Expanded Wetland	Part or all of the AA resulted from human actions that persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment):		Determine this using historical aerial photography, old maps, soil maps, or permit files as available [CS, NR, OE, PH, Sens]
262		No.	0	
263		yes, and created 20 - 100 years ago.	0	
264		yes, and created 3-20 years ago.	0	
265		yes, and created within last 3 years.	0	
266		yes, but time of origin unknown.	0	
267		unknown if new within 20 years or not.	1	
268	F57 Burn History	More than 1% of the AA's previously vegetated area:		Look for charred soil or slumps (in multiple widely-spaced locations) or ask landowner. [CS, PH, STR]
269		burned within past 5 years.	0	
270		burned 6-10 years ago.	0	
271		burned 11-30 years ago.	0	
272		burned >30 years ago, or no evidence of a burn and no data.	1	[PU, STR, WBFV]
273	F58 Visibility	The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		
274		<25%	0	
275		25-50%	0	
276		>50%	1	

A	B	C	D	E
277	Non-consumptive Uses - Actual or Potential	Assuming access permission was granted, select ALL statements that are true of the AA as it currently exists: For an average person, walking is physically possible in (not just near) >5% of the AA during most of the growing season, e.g. free of deep water and dense snub thickets.		[PU, STR]
278		Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	1	
279		Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
280	Unvisited Core Area	The percentage of the AA almost never visited by humans during an average growing season probably comprises: [Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail]		[AM, FAv, FRv, PH, PU, SBM, STR, WBF, WBN]
281		<5% and no inhabited building is within 100 m of the AA.	0	
282		<5% and inhabited building is within 100 m of the AA.	0	
283		5-50% and no inhabited building is within 100 m of the AA.	0	
284		5-50% and inhabited building is within 100 m of the AA.	1	
285		50-95% with or without inhabited building nearby.	0	
286		>95% of the AA with or without inhabited building nearby.	0	
287		The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [see note above].		[AM, PH, PU, SBM, STR, WBF, WBN]
288	Frequently Visited Area	<5%. If F61 was answered ">95%" (mostly never visited), SKIP to F65.	1	
289		5-50%	0	
290		50-95%	0	
291		>95% of the AA	0	
292		Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[PH, PU]
293	BMP - Soils	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	[AM, PU, WBF, WBN]
294	BMP - Wildlife Protection	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAv, FRv, WBFv]
295	Consumptive Uses (Provisioning Services)	low-impact commercial timber harvest (e.g. selective thinning).	0	
296		commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
297		waterfowl hunting.	0	
298		fishing.	0	
299		trapping of furbearers.	0	
300		none of the above.	0	
301		The closest wells or water bodies that currently provide drinking water are:		[NRv]
302	Domestic Wells	Within 0-100 m of the AA.	0	
303		100-500 m away.	0	
304		>500 m away, or no information.	1	
305	Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants_Calcar worksheet in the accompanying Supplinfo file for list of plant indicators (calciphiles). Enter 1 if more than two Strong or more than five Moderate calciphile species are present; otherwise enter 0, but if not able to identify those and no information, change to blank.	1	[PH, PR]
306				

Investigator: R.Dana/A.Smith

Site Identifier: Ashburn Road - AA1

Date: 06/30/2017

Stressor (S) Data Form for Non-Tidal Wetlands. WESP for Atlantic Canada. Version 1.2

Data

Stressor (S) Data Form for Non-Tidal Wetlands. WESP for Atlantic Canada. Version 1.2				Data
S1	Aberrant Timing of Water Inputs			
<i>In the last column, place a check mark next to any item that is likely to have caused the timing of water inputs (but not necessarily their volume) to shift by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). [FA, FR, INV, PH, STR]</i>				
stormwater from impervious surfaces that drains directly to the wetland				X
water subsidies from wastewater effluent, septic system leakage, snow storage areas, or irrigation				
regular removal of surface or groundwater for irrigation or other consumptive use				
flow regulation in tributaries or water level regulation in adjoining water body, or other control structure at water entry points that regulates inflow to the wetland				
a dam, dike, levee, weir, berm, or fill -- within or downgradient from the wetland -- that interferes with surface or subsurface flow in/out of the AA (e.g., road fill, wellpads, pipelines)				
excavation within the wetland, e.g., dugout, artificial pond, dead-end ditch				X
artificial drains or ditches in or near the wetland				
accelerated downcutting or channelization of an adjacent or internal channel (incised below the historical water table level)				
logging within the wetland				X
subsidence or compaction of the wetland's substrate as a result of machinery, livestock, fire, drainage, or off road vehicles				
straightening, ditching, dredging, and/or lining of tributary channels				X
<i>If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items had no measurable effect on the timing of water conditions in any part of the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.</i>				
		Severe (3 points)	Medium (2 points)	Mild (1 point)
Spatial extent of timing shift within the wetland	>95% of wetland	5-95% of wetland	<5% of wetland	2
When most of the timing shift began	<3 yrs ago	3-9 yrs ago	10-100 yrs ago	1
<i>Score the following 2 rows only if the altered inputs began within past 10 years, and only for the part of the wetland that experiences those.</i>				
Input timing now vs. previously	shift of weeks	shift of days	shift of hours or minutes	0
Flashiness or muting	became very flashy or controlled	intermediate	became mildly flashy or controlled	0
Sum=				3
Final Score=				0.25
S2	Accelerated Inputs of Contaminants and/or Salts			
<i>In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of contaminants or salts to the AA. [AM, FA, PH, POL, STR]</i>				
stormwater or wastewater effluent (including failing septic systems), landfills, industrial facilities				
metals & chemical wastes from mining, shooting ranges, snow storage areas, oil/ gas extraction, other sources (download many locations from National Pollutant Release Inventory and view KMZ overlay in Google Earth https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B85A1846-1)				
road salt				X
spraying of pesticides, as applied to lawns, croplands, roadsides, or other areas in the CA				
<i>If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly higher levels of contaminants and/or salts, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.</i>				
		Severe (3 points)	Medium (2 points)	Mild (1 point)
Usual toxicity of most toxic contaminants	industrial effluent, mining waste, unmanaged landfill	cropland, managed landfill, pipeline or transmission rights-of-way	low density residential	0
Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	0
AA proximity to main sources (actual or potential)	0 - 15 m	15-100 m or in groundwater	in more distant part of contributing area	0
Sum=				0
Final Score=				0.00
S3	Accelerated Inputs of Nutrients			
<i>In the last column, place a check mark next to any item -- occurring in either the wetland or its CA -- that is likely to have accelerated the inputs of nutrients to the wetland. [NRv, PRv, STR]</i>				
stormwater or wastewater effluent (including failing septic systems), landfills				
fertilizers applied to lawns, ag lands, or other areas in the CA				
livestock, dogs				
artificial drainage of upslope lands				X
<i>If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not cumulatively expose the AA to significantly more nutrients, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.</i>				
		Severe (3 points)	Medium (2 points)	Mild (1 point)
Type of loading	high density of unmaintained septic, some types of industrial sources	moderate density septic, cropland, secondary wastewater treatment plant	livestock, pets, low density residential	1
Frequency & duration of input	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	1
AA proximity to main sources (actual or potential)	0 - 15 m	15-100 m or in groundwater	in more distant part of contributing area	2
Sum=				4
Final Score=				0.44

S4	Excessive Sediment Loading from Contributing Area					
	<i>In the last column, place a check mark next to any item present in the CA that is likely to have elevated the load of waterborne or windborne sediment reaching the wetland from its CA. [FA, FR, INV, PH, SRV, STR]</i>					
	erosion from plowed fields, fill, timber harvest, dirt roads, vegetation clearing, fires					
	erosion from construction, in-channel machinery in the CA					
	erosion from off-road vehicles in the CA					
	erosion from livestock or foot traffic in the CA					
	stormwater or wastewater effluent					
	sediment from road sanding, gravel mining, other mining, oil/gas extraction					
	accelerated channel downcutting or headcutting of tributaries due to altered land use					X
	other human-related disturbances within the CA					X
	<i>If any items were checked above, then for each row of the table below, assign points (3, 2, or 1 as shown in header) in the last column. However, if you believe the checked items did not cumulatively add significantly more sediment or suspended solids to the AA, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.</i>					
		Severe (3 points)	Medium (2 points)	Mild (1 point)		
	Erosion in CA	extensive evidence, high intensity*	potentially (based on high-intensity* land use) or scattered evidence	potentially (based on low-intensity* land use) with little or no direct evidence	1	
	Recentness of significant soil disturbance in the CA	current & ongoing	1-12 months ago	>1 yr ago	1	
	Duration of sediment inputs to the wetland	frequent and year-round	frequent but mostly seasonal	infrequent & during high runoff events mainly	1	
AA proximity to actual or potential sources	0 - 15 m	15-100 m	in more distant part of contributing area	2		
* high-intensity= extensive off-road vehicle use, plowing, grading, excavation, erosion with or without veg removal; low-intensity= veg removal only with little or no apparent erosion or disturbance of soil or sediment				Sum=	5	
				Final Score=	0.42	
S5	Soil or Sediment Alteration Within the Assessment Area					
	<i>In the last column, place a check mark next to any item present in the wetland that is likely to have compacted, eroded, or otherwise altered the wetland's soil. Consider only items occurring within past 100 years or since wetland was created or restored (whichever is less). [CS, INV, NR, PH, SR, STR]</i>					
	compaction from machinery, off-road vehicles, livestock, or mountain bikes, especially during wetter periods					
	leveling or other grading not to the natural contour					X
	tillage, plowing (but excluding disking for enhancement of native plants)					
	fill or riprap, excluding small amounts of upland soils containing organic amendments (compost, etc.) or small amounts of topsoil imported from another wetland					
	excavation					X
	ditch cleaning or dredging in or adjacent to the wetland					
	boat traffic in or adjacent to the wetland and sufficient to cause shore erosion or stir bottom sediments					
	artificial water level or flow manipulations sufficient to cause erosion or stir bottom sediments					
	<i>If any items were checked above, then for each row of the table below, assign points. However, if you believe the checked items did not measurably alter the soil structure and/or topography, then leave the "0's" for the scores in the following rows. To estimate effects, contrast the current condition with the condition if the checked items never occurred or were no longer present.</i>					
		Severe (3 points)	Medium (2 points)	Mild (1 point)		
	Spatial extent of altered soil	>95% of wetland or >95% of its upland edge (if any)	5-95% of wetland or 5-95% of its upland edge (if any)	<5% of wetland and <5% of its upland edge (if any)	2	
	Recentness of significant soil alteration in wetland	current & ongoing	1-12 months ago	>1 yr ago	1	
	Duration	long-lasting, minimal veg recovery	long-lasting but mostly revegetated	short-term, revegetated, not intense	1	
Timing of soil alteration	frequent and year-round	frequent but mostly seasonal	mainly during one-time or scattered events	1		
				Sum=	5	
				Final Score=	0.42	

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed. *Note: Benefits scores will be provided in the final calculator for WBF, WBN, SBM, and POL; their models are currently being revised.*

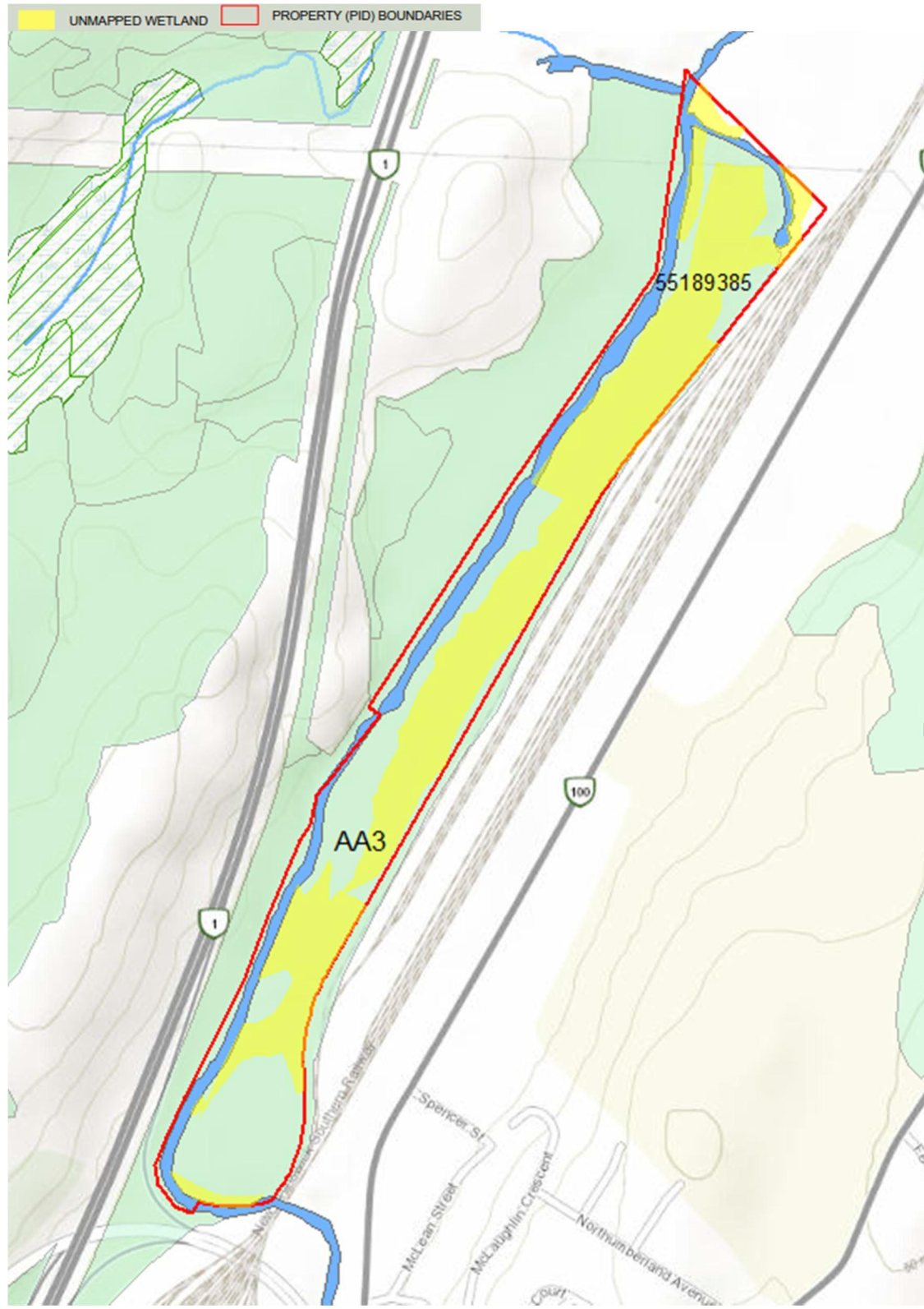
Results for this Assessment Area (AA):

Wetland Functions or Other Attributes:	Function Score (normalized)	Function Rating	Benefits Score (normalized)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	2.94	Moderate	2.86	Moderate	3.85	2.50
Stream Flow Support (SFS)	4.74	Moderate	8.92	Higher	2.53	6.71
Water Cooling (WC)	5.17	Moderate	2.36	Moderate	3.44	1.52
Sediment Retention & Stabilisation (SR)	2.46	Moderate	7.79	Moderate	4.67	4.73
Phosphorus Retention (PR)	4.55	Higher	6.93	Higher	6.40	6.60
Nitrate Removal & Retention (NR)	3.56	Moderate	10.00	Higher	5.24	10.00
Carbon Sequestration (CS)	4.41	Moderate			6.38	
Organic Nutrient Export (OE)	8.21	Higher			6.51	
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower	0.00	0.00
Resident Fish Habitat (FR)	6.72	Higher	5.99	Higher	4.68	4.25
Aquatic Invertebrate Habitat (INV)	5.64	Moderate	6.92	Higher	5.56	5.00
Amphibian & Turtle Habitat (AM)	5.50	Moderate	10.00	Higher	6.39	6.37
Waterbird Feeding Habitat (WBF)	8.18	Higher			6.56	
Waterbird Nesting Habitat (WBN)	5.81	Higher			4.85	
Songbird, Raptor, & Mammal Habitat (SBM)	9.11	Higher			7.54	
Pollinator Habitat (POL)	8.50	Higher			6.84	
Native Plant Habitat (PH)	6.79	Higher	10.00	Higher	6.24	10.00
Public Use & Recognition (PU)			3.16	Moderate		2.31
Wetland Sensitivity (Sens)			7.50	Higher		4.62
Wetland Ecological Condition (EC)			2.76	Lower		5.63
Wetland Stressors (STR) (higher score means more)			8.99	Higher		4.48
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	2.94	Moderate	2.86	Moderate	3.85	2.50
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, N	2.46	0.00	10.00	Higher	6.04	8.55
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC	7.11	0.00	7.96	Higher	5.51	5.56
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, V	6.41	0.00	8.27	Higher	5.53	4.95
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	7.45	10.00	10.00	Higher	7.21	10.00
WETLAND CONDITION (EC)			2.76	Lower		5.63
WETLAND RISK (average of Sensitivity & Stressors)			9.82	Higher		4.55

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among the 98 NB calibration wetlands that were assessed previously.

Cover Page: Basic Description of Assessment	WESP-AC version 1.2
Site Name:	Green Space - AA3
Investigator Name:	Dillon Consulting Limited - Rhonda Dana/Alison Smith/ Tom Neily
Date of Field Assessment:	3/30/2017
Nearest Town:	Saint John
Latitude (decimal degrees):	45.301460°
Longitude (decimal degrees):	-66.039155°
Is a map based on a formal on-site wetland delineation available?	Yes
Approximate size of the Assessment Area (AA, in acres):	8 ha
AA as percent of entire wetland (approx.). Attach sketch map if AA is smaller than the entire contiguous wetland.	44%
What percent (approx.) of the wetland were you able to visit?	50%
What percent (approx.) of the AA were you able to visit?	60%
Were you able to ask the site owner/manager about any of the questions?	Yes
Indicate here if you intentionally surveyed for rare plants, calciphile plants, or rare animals:	Yes
Have you attended a WESP-AC training session? If so, indicate approximate month & year.	Yes (A. Smith: June 2017, R. Dana September 2017)
How many wetlands have you assessed previously using WESP-AC? (approx.)	3
Comments about the site or this WESP-AC assessment (attach extra page if desired):	

Assessment Area 3



A	B	C	D	E
1	Date: 06/27/2017	Site Identifier: Green Space - AA3	Investigator: R.Dana/A.Smith (Dillon Consulting Limited)	
2	# Indicators	Condition Choices	Data	Definitions/Explanations
3	OF1 Province	Mark the province in which the AA is located by changing the column next to it to a "1". Mark only one.	1	This determines to which province's calibration wetlands the raw score of any wetland is normalized. It also triggers the automatic exclusion in the function models of indicators for which no spatial data exists in a particular province.
4		New Brunswick	0	
5		Nova Scotia	0	
6		Prince Edward Island	0	
7		Newfoundland-Labrador	0	
8	OF2 Wetland Herbaceous Area	From "duck's eye" (aerial) view, the area of woody vegetation (grasslike plants, excluding moss & ferns) in the Assessment Area (AA) plus in any contiguous woody wetland is:		Measure the area from aerial imagery using Google Earth Pro (click on Ruler icon in toolbar, then Polygon in pop-up menu), or by going to the online GeoNB viewer, enabling the aerial Basemap and the Wetlands layer, then using the Draw & Measure tool. However, do not rely entirely on wetland boundaries shown in the Wetlands layer. GeoNB is at: http://geomb.snb.ca/geomb/ (PH, SBM, WBN)
9		<0.01 hectare (about 10 m x 10 m)	0	
10		0.01 - 0.1 hectare	0	
11		0.1 - 1 hectare	0	
12		1 to 10 hectares	1	
13		10 to 100 hectares	0	
14		>100 hectares	0	
15	OF3 Wetland + Water Total Area	The total area of the AA including ponded water within or adjacent to it is:		See above. [Sens, WBF]
16		<0.01 hectare (about 10 m x 10 m)	0	
17		0.01 - 0.1 hectare	0	
18		0.1 - 1 hectare	1	
19		1 to 10 hectares	0	
20		10 to 100 hectares	0	
21		> 100 hectares	0	
22	OF4 Size of Largest Nearby Vegetated Tract or Corridor	Including the AA's vegetated area, the largest patch or corridor that is unmanaged vegetation cover (excluding lawn, row crops, heavily grazed lands, conifer plantation) and is contiguous with vegetation in the AA (i.e., not completely separated by highways or channels that are uniformly wider than 50 m), occupies:		Use Google Earth Pro (as above) or, if you have GIS, you may go to the GeoNB web site and download layers for Forest and Roads to assist this measurement, but be aware that many non-forest areas should also be included as unmanaged vegetation cover, and many areas classified as Forest are actually conifer plantations and should be excluded if it is obvious that trees have been planted in rows. Layers (shapfiles) can be downloaded at: http://w.snb.ca/geomb/1e/DC/catalogue-E.asp [AM, PH, SBM, Sens]
23		<0.01 hectare (about 10 m x 10 m)	0	
24		0.01 - 0.1 hectare	0	
25		0.1 - 1 hectare	0	
26		1 to 10 hectares	1	
27		10 to 100 hectares	0	
28		100 to 1000 hectares	0	
29		>1000 hectares [This is nearly always the answer in relatively undeveloped landscapes.]	0	
30	OF5 Distance to Large Vegetated Tract	The minimum distance from the AA edge to the edge of the closest patch or corridor of unmanaged vegetated land (excluding row crops, lawn, conifer plantation) larger than 375 hectares, is:		To measure distance, use Google Earth Pro (Ruler > Line tool) or use Draw & Measure tool at GeoNB. 375 ha is about 2 km on a side, if square. The 375-ha criterion is from the Fundy Model Forest Project. [AM, PH, POL, SBM, Sens]
31		<50 m, and not separated from the 375-ha vegetated area by any width of roads, stretches of open water, row crops, bare ground, lawn, or impervious surface. Or the AA itself contains >375 ha of vegetation. [This is often the answer in relatively	0	
32		<50 m, but completely separated from the 375-ha vegetated area by those features, and AA does not contain >375 ha of	1	
33		50-500 m, and not separated.	0	
34		50-500 m, but separated by those features.	0	
35		0.5 - 5 km, and not separated.	0	
36		0.5 - 5 km, but separated by those features.	0	
37		none of the above (the closest patches or corridors which are that large are >5 km away).	0	

A	B	C	D	E
OF6	Herbaceous Uniqueness	The AA's vegetation is mostly herbaceous but uplands within 5 km have <10% herbaceous cover. If so, enter "3" and continue to OF7. If not, consider: The AA's vegetation is mostly herbaceous but uplands within 1 km have <10% herbaceous cover. If so, enter "2" and continue to OF7. If not, consider: The AA's vegetation is mostly herbaceous but uplands within 100 m have <10% herbaceous cover. If so, enter "1" [NOTE: Exclude lawns, row crops, heavily grazed lands, forest, shrublands. Include moss, as well as grasslike plants in this use of "herbaceous vegetation"]	1	Determine this by viewing aerial imagery in Google Earth or GeoNB, after successively drawing or estimating the boundaries of the buffers of 5 km, 1 km, and 100 m focused on the center of the AA. Circles of specified radius can be drawn in Google Earth Pro by clicking on the Ruler icon, then Circle in the pop-up menu. [AM, PH, POL, SBM, WBF, WBN]
38	OF7	Woody Uniqueness	0	See above. [AM, PH, POL, SBM]
39	OF8	Local Vegetated Cover Percentage	0 0 1 0 0 0	Determine this by viewing aerial imagery after first drawing or estimating the approximate boundary of the 5 km buffer, or do GIS analysis of an appropriate land cover layer. [AM, PH, POL, SBM, Sens]
40	OF9	Type of Land Cover Alteration	1	[AM, SBM]
41		Impervious surface, e.g., paved road, parking lot, building, exposed rock.	1	
42		bare pervious surface, e.g., lawn, recent (<5 yrs ago) cleared, dirt or gravel road, cropland, landslide, conifer plantation.	0	
43	OF1	Distance by Road to Nearest Population Center	1	"Population center" means a sealed area with more than about 5 regularly-inhabited structures per square kilometer. In the GeoNB viewer, it includes most but not all areas close to settlements (click on Place Names in menu) plus many areas not close to settlements. In GeoNB, use Freehand Line in Draw & Measure tool to draw and measure the route. In Google Earth, click on the Ruler icon, then Path, and draw and measure the route. [FAV, FRV, NRV, PH, PU, SBM, WBF, V]
44	51	<100 m	0	
45	52	100 - 500 m	0	
46	53	0.5 - 1 km	0	
47	54	1 - 5 km	0	
48	55	>5 km	0	
49	OF1	Distance to Nearest Maintained Road	0	Determine this by viewing aerial imagery in Google Earth and measuring with the Ruler> Line tool or in GeoNB, the Draw Line tool. [AM, FAV, FRV, NRV, PH, PU, SBM, STR, WBN]
50	56	<10 m	0	
51	57	10 - 25 m	1	
52	58	25 - 50 m	0	
53	59	50 - 100 m	0	
54	60	100 - 500 m	0	
55	61	>500 m	0	
56	OF1	Wildlife Access	0	Enable the Wetlands layer in GeoNB (despite its omissions) to show surrounding wetlands and roads, while estimating the location of the 5 km circle (or draw the 5 km circle in Google Earth Pro using the Circle tool and compare). [AM, SBM, STR]
57	62	Draw a circle of radius of 5 km from the center of the AA. If mammals and amphibians can move from the center of the AA to ALL other separate wetlands and ponds located within the circle without being forced to cross pavement (any width), lawns, bare ground, and/or marine waters, mark 1= yes can move to all, 0= no. Change to blank, if there are no other wetlands	0	In Google Earth, zoom in closely to examine the surrounding landscape for ponds or lakes (not wetlands unless persistently flooded). This can include beaver flowages and seasonal floodplain ponds. They may or may not have a surface connection to this wetland. [AM, PH, SBM, Sens, WBF, WBN]
58	63	The distance from the AA edge to the closest (but separate) pond or lake larger than 0.01 ha (about 10 x 10 m) is:	0	
59	64	<50 m, and not separated by any width of roads, stretches of open water, low crops, lawn, bare ground, or impervious	0	
60	65	<50 m, but completely separated by those features.	0	
61	66	50-500 m, and not separated.	0	
62	67	50-500 m, but separated by those features.	0	
63	68	0.5 - 1 km, and not separated.	1	
64	69	0.5 - 1 km, but separated by those features.	0	
65	70	none of the above (the closest patches or corridors that large are >1 km away).	0	
66	OF1	Distance to Lake	0	Determine this by viewing aerial imagery in Google Earth or GeoNB. [Sens, WBF, WBN]
67	71	The distance from the AA edge to the closest (but separate) lake (a non-tidal body of water that is ponded during most of the year and is larger than 8 hectares) during most of a normal year is:	0	
68	72	<100 m	0	

	A	B	C	D	E
73			100 m - 1 km	0	
74			1-2 km	1	
75			2-5 km	0	
76			5-10 km	0	
77			>10 km	0	
78	OF1	Tidal Proximity	The distance from the AA edge to the closest tidal water body (regardless of its salinity) is:		See Table A-1 in Appendix A of the Manual for a partial list of the inland limits of tidal influence, or consult local information sources. [FA, WBF]
79	5		<100 m	0	
80			100 m - 1 km	0	
81			1 - 5 km	1	
82			5-10 km	0	
83			10-40 km	0	
84			>40 km	0	
85	OF1	Upland Edge Contact	Select one: The AA has no upland edge (or upland is <1% of perimeter). The AA is entirely surrounded by (& contiguous with) other 1-25% of the AA's perimeter abuts upland (including filled areas). The rest adjoins other wetlands or water that is mostly 25-50% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA. 50-75% of the AA's perimeter abuts upland. The rest adjoins other wetlands or water that is mostly wider than the AA. More than 75% of the AA's perimeter abuts upland. Any remainder adjoins other wetlands or water that is mostly wider than the AA. This will be true for most assessments done with WESP-AC.		[NR, SBM, Sens]
86	6			0	
87				0	
88				1	
89				0	
90				0	
91	OF1	Flood Zone	The AA is within a mapped Flood Zone or Flood Risk area, or an area in which river- or stream-associated floods within the past 20 years have damaged bridges, roads, buildings, or other infrastructure (not farmlands) within 5 km downslope from the AA. The floods must not be related to tidal influence or waves. If true, enter "1" in next column. If neither are true and AA is not in a river floodplain, enter "0" and SKIP to OF18. Otherwise, change to blank before skipping to OF18.	0	In NB: In the GeoNB map viewer: click on "More" in upper right, then "Flood Information". Expand the menu under it by clicking on the arrow to its left and the slider to its right. Uncheck the first (Limits of Data) box. [PH, WSV]
92	OF1	Flood Damage	Within the mapped Flood Zone, Flood Risk area, or area with known flood damage, ALL the following are true (if all true, enter "1" in next column. If false, enter "0") (a) there are bridges, roads, buildings, or other infrastructure (not just farmlands) within 5 km downslope from the AA that are vulnerable to damaging floods; (b) the damages would be caused mainly by rising river levels associated with precipitation and/or snowmelt, not primarily by high tides, hillslope runoff, or river ice jams, AND (c) between the AA and the damage area, peak flow in a connecting channel (if any) is NOT regulated by dams.	0	[WSV]
93	OF1	Relative Elevation in Watershed	To view watersheds, open Google Earth and then the NB_Watersheds.kmz file that accompanies this calculator. Determine the AA's position in its watershed as follows: 1) If the AA is on a channel wider than 10 m, or has both inlet & outlet and is closer to the watershed's outlet than to its upper end, check "lower 1/3." 2) If the AA is the source of a headwater stream, or lacks an outlet and is close to the watershed's outer margin, then check "upper 1/3." For all other conditions, check "middle 1/3." In the upper one-third of its watershed. In the middle one-third of its watershed. In the lower one-third of its watershed.	1	[NR, Sens, SFSv, WCV, WSV]
94				0	
95				0	
96	OF2	Water Quality Sensitivity	The AA is in an area: (a) legally protected from most land uses because it feeds an aquifer, a well that serves many users, or a reservoir or other surface water source that provides drinking water to multiple domestic users, OR (b) where research or map analysis has indicated groundwater may be at higher risk of contamination due to geological conditions. Enter 1 = yes, 0 = no.	0	In Google Earth, view the KMZ overlay of these areas that accompanies this calculator, or follow the links given here to download shapefiles if you have GIS. [NRv]
97	OF2	Degraded Water Upstream	Sampling indicates a problem with concentrations of metals, hydrocarbons, nutrients, or other substances (excluding bacteria, high temperatures) being present at levels harmful to aquatic life or humans, and: The condition is present within the AA. The condition is present in waters within 1 km that flow into the AA, but has not been documented in the AA itself. Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters. Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at > 1 km upstream). This is the situation for nearly all wetlands in this region.	0	[AM, FA, FR, NRv, PRv, SRv, STR, WBF, WBN]
98				0	
99				0	
100				0	
101				0	
102	OF2	Degraded Water Downstream	The problem described above is downslope from the AA, and: The condition is present within 1 km downslope and connected to the AA by a channel.	1	[NRv, PRv, SRv]
103				0	
104				0	

	A	B	C	D	E
1105			The condition is present within 5 km downslope and connected to the AA by a channel, or within 1 km but not connected to the AA by a channel.	0	
1106			Sampling during both low water periods and times with high runoff (storms, snowmelt) indicates no problems in either the AA or inflowing waters.	0	
1107			Data are insufficient (no or inadequate sampling within 1 km, or condition exists only at > 1 km upstream). This is the situation for nearly all wetlands in this region.	1	
3	OF2	Wetland as a % of Its Contributing Area (Catchment)	Estimate the approximate boundaries of the wetland's catchment (CA) from a topographic map. Then adjust those boundaries if necessary based on your field observations of the surrounding terrain, and/or by using procedures described in the Manual. Divide the area of the wetland (not just the AA) by the approximate area of its catchment excluding the area of the wetland itself. When doing the calculation, if ponded water is adjacent to the wetland, include that in the wetland's area. <0.01, or catchment size unknown due to stormwater pipes that collect water from an indeterminate area.	1	[NR, PR, Sens, SR, WS]
1108			0.01 to 0.1	0	
1109			0.1 to 1	0	
1110			>1 (wetland is larger than its catchment (e.g., wetland is isolated by dikes with no input channels, is fed entirely by groundwater, or is a raised bog).	0	
1111			The proportion of the AA's contributing area (measured to no more than 1000 m upslope) that is comprised of buildings, roads, parking lots, other pavement, exposed bedrock, landslides, and other mostly-bare surface is about:		[FA, INV, NR, PR, SR, STR, WC, WS,]
1112			<10%	1	
			10 to 25%	0	
			>25%	0	
OF2	OF2	Transport From Upslope	A relatively large proportion of the precipitation that falls farther upslope in the CA reaches this wetland quickly as runoff (surface water), as indicated by the following: (a) input channel is present, (b) input channels have been straightened, (c) upslope wetlands have been ditched extensively, (d) land cover is mostly non-forest, (e) CA slopes are steep, and/or (f) most CA soils are shallow (bedrock near surface) and/or have high runoff coefficients. This Statement is:		[NR, PR, SR, WS]
1117			Mostly true	0	
1118			Somewhat true	0	
1119			Mostly untrue	1	
1120			The overland flow direction of most surface water (in streams, rivers, or runoff) that enters the AA is:		[AM, NR, SFS, WC, WS,]
121	OF2	Aspect	Northward (N, NE), north-facing contributing area.	0	
122			Southward (S, SW), south-facing contributing area.	0	
123			Other (E, SE, W, NW), or no detectable uphill slope or input channel (flat).	1	
124			The horizontal flow distance from the wetland's inlet to outlet is:		In GeoNB, use Freehand Line in Draw & Measure tool to draw and measure the approximate flow path. In Google Earth, click on the Ruler icon, then Path, and draw and measure the path. [NR, OE, PR, SR, WS]
125	OF2	Internal Flow Distance (Path Length)	<10 m	0	
126			10 - 50 m	0	
127			50 - 100 m	0	
128			100 - 1000 m	1	
129			1 - 2 km	0	
130			>2 km, or wetland lacks an inlet and outlet.	0	
131			According to Figure A-1 in Appendix A of the Manual, the mean annual Growing Degree Days (GDD) in the vicinity of the AA		[AM, CS, FR, INV, NR, OE, PH, PR, Sens, SR, WBF, WC, WS]
132	OF2	Growing Degree Days	800-1000 days	0	
133			1000-1200	0	
134			1200-1400	0	
135			1400-1600	0	
136			1600-1800	1	
137			>1800 days	0	
138			According to agency biologists and/or your own observations, the AA: [mark just the first choice that is true]:		[AM, FA, INV, WBF, WBN]
OF2	OF2	Fish Access or Use	is known to support Atlantic salmon rearing and/or spawning. In NB, consult Figure A-2 in Appendix A of the Manual, or local fishery biologists.	0	
139					
140					

A	B	C	D	E
141		has not been documented to support Atlantic salmon rearing and/or spawning, but is connected to nearby waters containing Atlantic salmon and is probably salmon-accessible during some conditions.	1	
142		is not accessible to any anadromous fish species but is known or likely to have other fish at least seasonally.	0	
143		is known or likely to be fishless (e.g., too small, dry, and/or not accessible even temporarily).	0	
144	OF3 Species of Conservation Concern	Within the past 10 years, in the AA (or in its adjoining waters or wetland), qualified observers have documented [mark all that apply] Presence of one or more of the plant species listed in the Plants_Rare worksheet of the accompanying Supplinfo file, or (in NS only) the AA is within a mapped Atlantic Coastal Plain Flora Buffer as shown in Special Management Practice Zones Presence of one or more of the amphibian or reptile species of conservation concern (AM) as listed in the Wildlife_Rare worksheet of the accompanying Supplinfo file. Presence of one or more of the waterbird species of conservation concern (WBF, WBN) as listed in the Wildlife_Rare worksheet of the accompanying Supplinfo file, during their nesting season (May-July for most species). Presence of one or more of the nesting songbird or raptor species of conservation concern (SBM) as listed in the Wildlife_Rare worksheet of the accompanying Supplinfo file, during their nesting season (May-July for most species). none of the above, or no data.	0	[AM, EC, PH, POL, SBM, Sens, WBF, WBN]
145		The AA is all or part of the West Shepody Bay or St. Johns River Important Bird Area, or other designated IBA. See Figures A-3 & A-4 in Appendix A of the Manual. Enter 1= yes, 0= no.	1	[SBM, WBF, WBN]
146		The AA is within an area mapped as generally high suitability (>20 pairs/25 sq km) for nesting American Black Duck. See Figure A-5 in Appendix A of the Manual. Enter 1= yes, 0= no. If outside of region shown in map, change to blank.	0	[WBN]
147		The AA is all or part of a Deer Wintering Area or (in NS only) a Mainland Moose Concentration Area. If AA is on private land with no information, change to blank. Otherwise, in NB: In Google Earth, view the KMZ overlay that accompanies this calculator, or download the shapefile (Crown Lands Conservation Areas) at http://www.snb.ca/geomb1/e/DC/catalogue-E.asp in NS: go to https://ns.gi.novascotia.ca/plv/ and view Special Management Practice Zones> Mainland Moose Concentration	0	[SBM,]
148		The AA is all or part of an area designated by the provincial government for its exceptional ecological features or highly intact natural conditions. Enter: yes= 1, no= 0. In NB: Provincially Significant Wetland, Environmentally Significant Area, Protected Natural Area (go to http://www.snb.ca/geomb1/e/apps/apps-E.asp and see Candidate PNA Map Viewer) In NS: go to	0	
149	OF3 Important Bird Area (IBA)	The AA is part of or contiguous to a wetland on which public or private organizational funds were spent to preserve, create, restore, or enhance the wetland (excluding mitigation wetlands). Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
150	OF3 Conservation Designation	The AA is all or part of a mitigation site used explicitly to offset impacts elsewhere. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
151	OF3 Nesting Area	Plants, animals, or water in the AA have been monitored for >2 years, unrelated to any regulatory requirements, and data are available to the public. Or the AA is part of an area that has been designated by an agency or institution as a benchmark, reference, or status-trends monitoring area. Enter: yes= 1, no= 0. If no information, change to blank.	0	[PU]
152	OF3 Wintering Deer or Mainland Moose Concentration	The AA is in an area that is at least partly underlain by soil, sediment, or bedrock that is highly calcareous (enter 3 in next column), moderately calcareous (enter 2), or slightly calcareous (enter 1), none= 0. Limestone is typically a major component (karst geology) and water is not acidic (pH is usually >8). If no map coverage, change to blank. In NB: see Figure A-6 in Appendix A of the Manual, or use GIS with Bedrock Geology shapefile at	0	[AM, FA, FR, INV, OE, PH]
153	OF3 Other	In most of the AA:	0	
154	OF3 Conservation Investment	New timber harvest, roads, mineral extraction, and intensive summer recreation (e.g., off-road vehicles) are permanently prohibited. Includes most publicly-owned Protected Lands and private lands under long-term (30+ year) legal agreements to ownership is public (e.g., municipal, Crown Reservations/Notations) but some or all of the above activities are allowed.	0	
155	OF3 Mitigation	ownership is private but public access is allowed and/or a shorter-term conservation easement (whether renewable or not) is	0	
156	OF3 Sustained Scientific Use	ownership is private and owner does not allow access, or access permission unknown, and not a conservation easement.	1	
157	OF3 Calcareous Region			
158	OF3 Ownership			
159				
160				
161				
162				

A.	B.	C.	D.	E.
1	Date: 06/30/2017	Site Identifier: Green Space - AA3	Investigator:	
2	#	Condition Choices	Data	Definitions/Explanations
3	F1 Wetland Type	Follow the key below and mark the ONE row that best describes MOST of the vegetated part of the AA: A. Moss and/or lichen cover more than 25% of the ground. Substrate is mostly undecomposed peat. Choose between A1 and A2 and mark the choice with a 1 in their adjoining column. Otherwise go to B below. A1. Surface water is usually absent or, if present, pH is typically <4.5 and conductivity is <100 µS/cm (about 64 ppm TDS). Often dominated by ericaceous shrubs (e.g., Labrador tea) or other acid-tolerant plants (e.g., bog cranberry, pitcher plant, sundew). Sedges cover usually sparse or absent. Trees, if present, are mainly limited to black spruce. Surrounding landscape is mostly flat and wetland surface is never sloping, except sometimes from wetland center towards outer edges (convex). Inlet and outlet channels are usually absent. A2. Not A1. Surface water, if present, has pH typically >4.5 and conductivity is >100 µS/cm. Sedges and/or cottongrass often dominate the ground cover, while ericaceous shrubs and black spruce may also be present. Sometimes at toe of slope or edge of water body. An exit channel is usually present. Wetter than A1, often with many small persistent pools. B. Moss and/or lichen cover less than 25% of the ground. Soil is mineral or decomposed organic (muck). Choose between B1 and B2 and mark the choice with a 1 in their adjoining column. B1. Trees and shrubs taller than 1 m comprise more than 25% of the vegetated cover. Surface water is mostly absent or inundates the vegetation only seasonally (e.g., vernal pools or floodplain). B2. Not B1. Tree & tall shrubs comprise less than 25% of the vegetated cover. Vegetation is mostly herbaceous, e.g., cattail, bulrush, burreed, pond lily, horseshall. Surface water may be extensive and fluctuates seasonally, being either persistent or drying up partly or entirely. Reminder: For all questions, the AA should include all persistent waters in ponds smaller than 8 hectares (<200 m on a side) that are adjacent to the AA. The AA should also include part of the water area of adjacent lakes larger than 8 ha and adjacent rivers wider than 20 m. Specifically, the AA should include the open water part adjacent to wetland vegetation and equal in width to the average width of that vegetated zone. Throughout this data form, "adjacent" is used synonymously with abutting, adjoining, bordering, contiguous -- and means no upland (manmade or natural) completely separates the described features along their directly shared edge. Features joined only by a channel are not necessarily considered to be adjacent -- a large portion of their edges must match. The features do not have to be hydrologically connected in order to be considered adjacent.	Ericaceous shrubs are ones in the heather family (Ericaceae). Most have leathery evergreen leaves. They include noddy-wood, azalea, swamp laurel, leatherleaf, Labrador tea, and others. Most require acidic soil. Although not in the family Ericaceae, sweetgale (Myrica gale, bayberry) should be counted also. (AM, CS, FA, FR, INV, NR, OE, PH, Sens, SFS, WBF, WBN)	
4			0	
5			0	
6				
7				
8			1	
9			0	
10	F2 Wetland Types - Adjoining or Subordinate	If the AA is smaller than 1 ha, mark all other types that occupy more than 1% of the vegetated AA. If the AA is larger than 1 ha, mark all other types which are within or adjacent to the AA and occupy more than 1 ha, as visible from the AA or as interpreted from aerial imagery. Do not mark again the type marked in F1. A1 A2 B1 B2		(AM, INV, NR, PH, POL, SBM, Sens)
11			0	
12			0	
13			0	
14			1	
15			1	
16	F3 Woody Height & Form Diversity	Following EACH row below, indicate with a number code the percentage of the of the living vegetation in the AA is occupied by that feature (6 if >95%, 5 if 75-95%, 4 if 50-75%, 3 if 25-50%, 2 if 15-25%, 1 if <5%, 0 if none): coniferous trees (may include lamarack) taller than 3 m. deciduous trees taller than 3 m. coniferous or ericaceous shrubs or trees 1-3 m tall not directly below the canopy of trees. deciduous shrubs or trees 1-3 m tall not directly below the canopy of trees. coniferous or ericaceous shrubs <1 m tall not directly below the canopy of taller vegetation. deciduous shrubs or trees <1 m tall (e.g., deciduous seedlings) not directly below the canopy of taller vegetation.		(CS, INV, NR, PH, POL, SBM, Sens)
17			0	
18			3	
19			0	
20			2	
21			0	
22			1	
23	F4: If you marked ALL of the F3 rows 0 or 1, SKIP to F9. (N fixers).			
24	F4 Dominance of Most Abundant Shrub Species	Determine which two woody plant species (<3 m tall) comprise the greatest portion of the woody cover (<3 m tall). Then choose one: (those species together comprise > 50% of such cover). (those species together do not comprise > 50% of such cover).		
25			0	
26			1	
27	F5 Woody Diameter Classes	Mark ALL the types that comprise >5% of the woody canopy cover in the AA or >5% of the wooded areas (if any) along its upland edge (perimeter). The edge should include only the trees whose canopies extend into the AA. coniferous, 1-9 cm diameter and >1 m tall. broad-leaved deciduous 1-9 cm diameter and >1 m tall. coniferous, 10-19 cm diameter. broad-leaved deciduous 10-19 cm diameter. coniferous, 20-40 cm diameter. broad-leaved deciduous 20-40 cm diameter. coniferous, >40 cm diameter. broad-leaved deciduous >40 cm diameter.		Estimate the diameters at chest height. If small-diameter trees are overtopped (shaded) by larger ones, visualise a "subcanopy" at the average height of the smaller-diameter trees to serve as a basis for the minimum 5% canopy requirement in this question. The trees and shrubs need not be wetland species. (AM, CS, POL, SBM, Sens, WBN)
28			0	
29			1	
30			0	
31			1	
32			0	
33			1	
34			0	
35			1	

A	B	C	D	E
F6	Height Class Interspersion	Follow the key below and mark the ONE row that best describes MOST of the AA: A. Neither the vegetation taller than 1 m nor the vegetation shorter than that comprise >70% of the vegetated part of the AA. They each comprise 30-70%. Choose between A1 and A2 and mark the choice with a 1 in the adjoining column. Otherwise go to B below. A1. The two height classes are mostly scattered and intermixed throughout the AA. A2. Not A1. The two height classes are mostly in separate zones or bands, or in proportionately large clumps. B. Either the vegetation shorter than 1 m comprises >70% of the vegetated part of the AA, or the vegetation taller than that does. One size class might even be totally absent. Choose between B1 and B2 and mark the choice with a 1 in the adjoining column: B1. The less prevalent height class is mostly scattered and intermixed within the prevalent one. B2. Not B1. The less prevalent height class is mostly located apart from the prevalent one, in separate zones or clumps, or is completely absent.		[AM, INV, NR, PH, SBM, Sens]
F7	Large Snags (Dead Standing Trees)	The number of large snags (diameter >20 cm) in the AA plus adjacent upland area within 10 m of the wetland edge is: None, or fewer than 8/hectare which exceed this diameter. Several (>8/hectare) and a pond, lake, or slow-flowing water wider than 10 m is within 1 km. Several (>8/hectare) but above not true. The number of downed wood pieces longer than 2 m and with diameter >10 cm, and not persistently submerged, is: Few or none that meet these criteria. Several (<5 if AAs >5 hectares, less for smaller AAs) meet these criteria. The percentage of the AA's vegetated cover that contains nitrogen-fixing plants (e.g., alder, sweetgale, clover, lupine, alfalfa, other legumes) is: <1% or none 1-25% of the vegetated cover, in the AA or along its water edge (whichever has more). 25-50% of the vegetated cover, in the AA or along its water edge (whichever has more). 50-75% of the vegetated cover, in the AA or along its water edge (whichever has more). >75% of the vegetated cover, in the AA or along its water edge (whichever has more).		Snags are dead standing trees that often (not always) lack bark and foliage. Include only ones that are at least 2 m tall. [POL, SBM, WBN]
F8	Downed Wood			Exclude temporary "burn piles." [AM, INV, POL, SBM]
F9	N Fixers			Do not include N-fixing algae or lichens. [FA, FR, INV, NR, OE, PH, SBM, Sens]
F10	Sphagnum Moss Extent	The cover of Sphagnum moss (or any moss that forms a dense cushion many centimeters thick), including the moss obscured by taller sedges and other plants rooted in it, is: <5% of the vegetated part of the AA. 5-25% of the vegetated part of the AA. 25-50% of the vegetated part of the AA. 50-95% of the vegetated part of the AA. >95% of the vegetated part of the AA.		Exclude moss growing on trees and rocks. [CS, PH]
F11	% Bare Ground & Thatch	Consider the parts of the AA that lack surface water at the driest time of the growing season. Viewed from directly above the ground layer, the predominant condition in those areas at that time is: Little or no (<5% bare ground) is visible between erect stems or under canopy anywhere in the vegetated AA. Ground is extensively blanketed by dense thatch, moss, lichens, graminoids with great stem densities, or plants with ground-hugging foliage. Slightly bare ground (5-20% bare between plants) is visible in places, but those areas comprise less than 5% of the unfloded parts of the AA. Much bare ground (20-50% bare between plants) is visible in places, and those areas comprise more than 5% of the unfloded parts of the AA. Other conditions. Not applicable. Surface water (either open or obscured by emergent plants) covers all of the AA all the time.		Thatch is dead plant material (stems, leaves) resting on the ground surface. Bare ground that is present under a tree or shrub canopy should be counted. Wetlands with mineral soils and that are heavily shaded or are dominated by annual plant species tend to have more extensive areas that are bare during the early growing season. [AM, EC, INV, NR, OE, POL, PR, SBM, Sens]
F12	Ground Irregularity	Consider the parts of the AA that lack surface water at some time of the year. The number of hummocks, small pits, raised mounds, upturned trees, animal burrows, gullies, natural levees, microdepressions, and other areas of peat or mineral soil that are raised or depressed >10 cm compared to most of the area immediately surrounding them is: Few or none (minimal microtopography: <1% of the land has such features, or entire AA is always water-covered). Intermediate. Several (extensive microtopography).		[AM, EC, INV, NR, PH, POL, PR, SBM, SR, WS]
F68				
F69				
F70				
F71				

	A	B	C	D	E
F22	Fringe Wetland	During most of the year, open water within or adjacent to the vegetated AA (in a lake, stream, or river) is much wider than the vegetated wetland. Enter "1" if true, "0" if false.		0	[WBF, WBN, WC.]
F23	Lacustrine Wetland	The vegetated part of the AA is within or adjacent to a lake, i.e., a body of non-tidal standing open water whose size exceeds 8 hectares during most of a normal year.		0	[FR, PR, PU, WBF, WBN]
F24	% of AA Without Surface Water	The percentage of the AA that never contains surface water during an average year (that is, except perhaps for a few hours after snowmelt or rainstorms), but which is still a wetland, is:			[AM, FA, FR, INV, NR, PH, PR, SBM, Sens, SRV, WBF, WBN, WC.]
120		<1% AND <0.01 hectare (about 10 m on a side) never has surface water. In other words, all or nearly all of the AA is covered by water permanently or at least seasonally.		0	
121		1-25% of the AA, or <1% but >0.01 ha, never contains surface water.		0	
122		25-50% of the AA never contains surface water.		0	
123		50-75% of the AA never contains surface water.		1	
124		75-99% of the AA never contains surface water.		0	
125		99-100%. True for many bogs, meadow marshes, swamps that lack vernal pools. Enter "1" and SKIP to F42 (Channel Connection).		0	
126		Identify the parts of the AA that still contain surface water (flowing or ponded, open or hidden beneath vegetation) even during the driest times of a normal year, i.e., when the AA's surface water is at its lowest annual level. At that time, the percentage of the AA that still contains surface water is:			If you are unable to determine the condition at the driest time of year, ask the land owner or neighbors about it if possible. Indicators of persistence may include fish, some dragonflies, beaver, and muskrat [AM, CS, FA, FR, INV, NR, POL, PR, SBM, WBF, WBN]
127	% of AA with Persistent Surface Water	none. The AA dries up completely (no water in channels either) or never has surface water during most years.		0	
129		1-20% of the AA.		0	
130		20-50% of the AA.		1	
131		50-95% of the AA.		0	
132		>95% of the AA. True for many fringe wetlands.		0	
F26	% of Summer Time Water that is Shaded	At mid-day during the warmest time of year, the area of surface water within the AA that is shaded by vegetation and other features that are within the AA at that time is:			[FA, WC]
133		<5% of the water is shaded, or no surface water is present then.		1	
134		5-25% of the water is shaded.		0	
135		25-50% of the water is shaded.		0	
136		50-75% of the water is shaded.		0	
137		>75% of the water is shaded.		0	
138		The percentage of the AA that is covered by unfrozen surface water only during the wettest time of the year during most years is:			Flood marks (algal mats, adventitious roots, debris lines, ice scour, etc.) are often evident when not fully inundated. Also, such areas often have a larger proportion of upland and annual (vs. perennial) plant species. In riverine systems, the extent of this zone can be estimated by multiplying by 2 the bankfull height and visualizing where that would intercept the land along the river. [CS, FA, INV, NR, OE, PH, SR, WBF, WBN, WS]
139	% of AA that is Flooded Only Seasonally	None, or <0.01 hectare and <1% of the AA.		0	
140		1-20% of the AA, or <1% but >0.01 ha.		1	
141		20-50% of the AA.		0	
142		50-95% of the AA.		0	
143		>95% of the AA.		0	
F28	Annual Water Fluctuation Range	The annual fluctuation in surface water level within most of the parts of the AA that contain surface water is:			Look for flood marks (see above). Because the annual range of water levels is difficult to estimate without multiple visits, consider asking the land owner or neighbors about it. [AM, CS, INV, NR, OE, PH, PR, SR, WBN, WS]
145		<10 cm change (shallow or nearly so).		0	
146		10 cm - 50 cm change.		1	
147		0.5 - 1 m change.		0	
148		1-2 m change.		0	
149		>2 m change.		0	
150		Is the AA plus adjacent ponded water smaller than 0.01 hectares (about 10m x 10m or 1m x 100 m)? If so, enter "1" in column D and SKIP TO F42 (Connection).		0	
F29	Predominant Depth Class	During most of the time when surface water is present during the growing season, its depth, averaged over the entire in undated part of the AA, is:			If a boat is unavailable, estimate this by considering wetland size and local topography. Or if timing and safety allow, depths may be measured by drilling through winter ice. This question is asking about the spatial median depth that occurs during most of that time, even if inundation is only seasonal or temporary. If inundation in most but not all of the wetland is brief, the answer will be based on the depth of the most persistently inundated part of the wetland. Include surface water in channels and ditches as well as ponded
152		<10 cm deep (but >0).		0	
153		10 - 50 cm deep.		0	
154		0.5 - 1 m deep.		1	
155		1 - 2 m deep.		0	
156		>2 m deep. True for many fringe wetlands.		0	
157					

A	B	C	D	E
158	F30 Depth Classes - Evenness of Proportions	When present, surface water in most of the AA usually consists of (select one): One depth class that comprises >90% of the AA's inundated area. (use the classes in the question above). One depth class that comprises 50-90% of the AA's inundated area.	0	Estimate these proportions by considering the gradient and microtopography of the site. [FR, INV, WBF, WBN]
159			0	
160			1	
161			0	
F31	% of Water That is Ponded (not Flowing)	During most times when surface water is present, the percentage that is ponded (stagnant, or flows so slowly that the sediment is not held in suspension) is: <5% of the water, or it occupies <100 sq.m cumulatively. Nearly all the surface water is flowing. SKIP to F34. 5-30% of the water. 30-70% of the water. 70-95% of the water. >95% of the water.	0	Nearly all wetlands with surface water have some ponded water. [AM, CS, INV, NR, OE, PR, Sens, SR, WBF, WBN, WC, WS]
162			0	
163			0	
164			1	
165			0	
166			0	
167			0	
F32	Ponded Open Water - Minimum Size	During most of the growing season, the largest patch of open water that is ponded and is in or bordering the AA is <0.01 hectare (about 10m by 10m) and mostly deeper than 0.5 m. If true enter "1" and continue. If false, enter "0" and SKIP to F41 (Floating Algae & Duckweed).	1	Open water is not obscured by vegetation in aerial ("duck's eye") view. It includes vegetation floating on the water surface or entirely submersed [AM, CS, FA, FR, INV, NR, OE, PR, SR, WBF, WBN, WC, WS]
169			0	
170			0	
171			0	
172			0	
173			1	
174			0	
175			0	
F34	Width of Vegetated Zone within Wetland	At the time during the growing season when the AA's water level is lowest, the average width of vegetated area in the AA that separates adjoining uplands from open water within the AA is: <1 m 1 - 9 m 10 - 29 m 30 - 49 m 50 - 100 m > 100 m, or open water is absent.	0	"Vegetated area" does not include underwater or floating-leaved plants. I.e., aquatic bed. Width may include wooded riparian areas if they have wetland soil or plant indicators. [AM, CS, NR, OE, PH, PR, SBM, Sens, SR, WBN]
176			0	
177			0	
178			1	
179			0	
180			0	
181			0	
182			0	
F35	Flat Shoreline Extent	During most of the part of the growing season when water is present, the percentage of the AA's water edge length that is nearly flat (a slope less than about 5% measured within 5 m landward of the water) is: <1% of the water edge. 1-25% of the water edge. 25-50% of the water edge. 50-75% of the water edge. >75% of the water edge.	0	If several isolated pools are present in early summer, estimate the percent of their collective shorelines that has such a gentle slope. [SR, WBN]
183			0	
184			0	
185			0	
186			0	
187			1	
188			0	
F36	Robust Emergents	The percentage of the emergent vegetation cover in the AA that is tall (Typha spp., common reed (Phragmites), or tall (>1m) bulrush) is: <1% of the emergent vegetation, or emergent vegetation is absent. 1-25% of the emergent vegetation. 25-75% of the emergent vegetation. >75% of the emergent vegetation.	0	Emergent vegetation is herbaceous plants whose stems are partly above and partly below the water surface during most of the time water is present. [WBN]
189			0	
190			1	
191			0	
192			0	
193			0	
F37	Interpersion of Emergents & Open Water	During most of the part of the growing season when water is present, the spatial pattern of emergent vegetation is mostly: Scattered. More than 30% of such vegetation forms small islands or corridors surrounded by water. Intermediate. Clumped. More than 70% of such vegetation is in bands along the wetland perimeter or is clumped at one or a few sides of the surface water area.	0	[AM, FA, FR, INV, NR, OE, PH, PR, SBM, SR, WBF, WBN]
195			0	
196			1	
197			0	
F38	Persistent Deepwater Area	If the deepest patch of surface water (flowing or ponded) in or directly adjacent to the AA is mostly deeper than 0.5 m for >2 weeks during the growing season, enter "1" and continue. If not, enter "0" and SKIP to F42 (Connection).	1	
198			0	
199			0	
200			1	
201			0	
202			0	
F40	Isolated Island	The AA contains (or is part of) an island or beaver lodge within a lake, pond, or river, and is isolated from the shore by water depths >1 m on all sides during an average June. The island may be solid, or it may be a floating vegetation mat that is sufficiently large and dense to support a	0	For this question, consider only the wood that is at or above the water surface. Estimates of underwater wood based only on observations from terrestrial viewpoints are unreliable so should not be attempted. [AM, FA, FR, INV]
203			0	

A	B	C	D	E
F41	Floating Algae & Duckweed	At some time of the year, mats of algae and/or duckweed are likely to cover >50% of the AA's otherwise unshaded water surface, or blanket >50% of the underwater substrate. If true, enter "1" in next column. If untrue or uncertain, enter "0".	0	[EC, PR, WBF]
F42	Channel Connection & Outflow Duration	The most persistent outlet channel (outlet channel or pipe, ditch, or overbank water exchange) between the AA and a downslope stream network is: (Note: If the AA represents only part of a wetland, answer this according to whichever is the least permanent surface connection: the one between the AA and the rest of the wetland, or the surface connection between the wetland and the downslope stream network.) Seasonal (surface water flows out for >9 months/year, regardless of whether frozen or not). Temporary (surface water flows out for <14 days, not necessarily consecutive, but must be unfrozen). None -- but maps show a stream network downslope from the AA and within a distance that is less than the AA's length. SKIP to F47 (pH) No surface water flows out of the wetland except possibly during extreme events (once per 10 years). Or, water flows only into a wetland, ditch, or lake that lacks an outlet. SKIP to F47 (pH Measurement).	1 0 0 0	The "downslope stream network" could consist of ditches, rivers, ponds, or bakes which eventually connect to the ocean. If this cannot be determined while visiting the AA, consult topographic maps perhaps by viewing these online with Toporama (http://atlas.trc.nrc.ca/toporama/index.html), or use GIS to view streams after downloading the NB Hydrographic Network shapesfiles from http://wrsnb.ca/geomb/e/DC/catalogue-E.asp (CS, FA, FR, NR, OE, PR, Sens, SFS, SR, WS, WC, WS)
F43	Outflow Confinement	During major runoff events, in the places where surface water exits the AA or connected waters nearby, the water: mostly passes through a pipe, culvert, narrowly breached dike, berm, beaver dam, or other partial obstruction (other than natural topography) that does not appear to drain the wetland artificially during most of the growing season. Leaves through natural exits (channels or diffuse outflow), not mainly through artificial or temporary features. Is exported more quickly than usual due to ditches or pipes within the AA or connected to its outlet, or within 10 m of the AA's edge, which drain the wetland artificially, or water is pumped out of the AA.	1 0 0	Major runoff events would include biennial high water caused by storms and/or rapid snowmelt. (CS, NR, OE, PR, Sens, SR, STR, WS)
F44	Tributary Channel	At least once annually, surface water from a tributary channel that is >100 m long moves into the AA. Or, surface water from a larger permanent water body adjacent to the AA spills into the AA. If enters only via a pipe, that pipe must be tied by a mapped stream or lake further upslope. If no, SKIP to F47 (pH Measurement).	1	If inlet tributaries cannot be searched for due to inaccessibility of part of the AA, follow suggestions in F42 above. (NR, PH, PR, SR)
F45	Input Water Temperature	Based on lack of shade, water source characteristics, or actual temperature measurements, the inflow is likely to be warmer than surface water in the AA during part of most years. Enter 1 = yes, 0 = no.	0	[WC]
F46	Throughflow Resistance	During its travel through the AA at the time of peak annual flow, water arriving in channels (select only the ONE encountered by most of the incoming water): Does not bump into many plant stems as it travels through the AA. Nearly all the water continues to travel in unvegetated (often incised) channels that have minimal contact with wetland vegetation, or through a zone of open water such as an instream pond or lake. Bumps into herbaceous vegetation but mostly remains in fairly straight channels. Bumps into tree trunks and/or shrub stems but mostly remains in fairly straight channels. Bumps into tree limbs and/or shrub stems and follows a fairly indirect path from entrance to exit (meandering, multi-branched, or braided). The pH in most of the AA's water: Was not measured because no surface water could be found during this visit. Enter "1". Was measured but surface water is present and is darkly tea-coloured. Or if no surface water, then mosses and plants that indicate peatland (e.g., Labrador tea) are prevalent. Enter "1". Was measured, and is: [enter the reading in the column to the right].	1 0 0 0 0 0	[FA, FR, INV, NR, OE, PR, SR, WS]
F47	pH Measurement	The Total Dissolved Solids (TDS) in most of the AA's surface water: Was not measured because no surface water could be found during this visit. Enter "1". Was measured, but plants that indicate saline conditions cover much of the vegetated AA. Enter "1". TDS is: [enter the reading in ppm in the column to the right, if measured, or answer next row]. Conductivity is: [enter the reading in µS/cm in the column to the right]. Use of the AA by beaver during the past 5 years is (select most applicable ONE): Evident from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags), likely based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water. Unlikely because site characteristics above are deficient, and/or this is a sealed area or other area where beaver are routinely removed. Select if not applicable choice.	1 0 0 0 0	Preferably, measure this in larger areas of ponded surface water within the AA, or in streams that have passed through (not along) most of the AA. Unless surface water is completely absent, do not dig holes or make depressions in peat in order to provide water for this measurement. Avoid measuring near roads or in puddles formed only by recent rain. (AM, FA, FR, INV, NR, PH, PR, Sens, WBF, WBN)
F48	TDS and/or Conductivity	Use of the AA by beaver during the past 5 years is (select most applicable ONE): Evident from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags), likely based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water. Unlikely because site characteristics above are deficient, and/or this is a sealed area or other area where beaver are routinely removed. Select if not applicable choice.	1 0 0	See above for measurement guidance. (FR, INV, NR, PH, PR, Sens)
F49	Beaver Probability	Use of the AA by beaver during the past 5 years is (select most applicable ONE): Evident from direct observation or presence of gnawed limbs, dams, tracks, dens, lodges, or extensive stands of water-killed trees (snags), likely based on known occurrence in the region and proximity to suitable habitat, which may include: (a) a persistent freshwater wetland, pond, or lake, or a perennial low or mid-gradient (<10%) channel, and (b) a corridor or multiple stands of hardwood trees and shrubs in vegetated areas near surface water. Unlikely because site characteristics above are deficient, and/or this is a sealed area or other area where beaver are routinely removed. Select if not applicable choice.	1 0 0	[FA, FR, PH, SBM, Sens, WBF, WBN]
F50	Groundwater Strength of Evidence	Springs are known to be present within the AA, or if groundwater levels have been monitored, that has demonstrated that groundwater primarily discharges to the wetland for longer periods during the year than periods when the wetland recharges the groundwater. The upper end of the AA is located very close to the base of (but mostly not ON) a natural slope much steeper (usually >15%) than that within the AA and longer than 100 m AND if surface water was measured, its pH (247) is >5.5. Neither of above is true, although some groundwater may discharge to or flow through the AA. Or, groundwater inflow is unknown. The gradient along most of the flow path within the AA is: <2% or the AA has no surface water outlet (not even seasonally) 2-5% 6-10% >10%	0 1 0 0	Adhere to these criteria strictly -- do not use personal judgment based on lens conditions, pH, or other evidence. Consult topographic maps to detect breaks in slope described here. Rust deposits associated with groundwater seeps may be most noticeable as orange discoloration in ice formations along streams during early winter. (AM, CS, FA, FR, INV, NR, OE, PH, PR, SFS, WC, WS,)
F51	Internal Gradient	The gradient along most of the flow path within the AA is: <2% or the AA has no surface water outlet (not even seasonally) 2-5% 6-10% >10%	0 1 0 0	This is not the same as the shoreline slope. It is the elevational difference between the AA's inlet and outlet, divided by the flow distance between them and converted to percent. If available, use a clinometer to measure this. Free clinometer apps can be downloaded to smartphones. If the wetland is large (longer than ~1 km), this may be estimated using Google Earth to determine the minimum and maximum elevation within the AA, then dividing by length.
F52	Notes for the next three questions: If the AA lacks an upland edge, evaluate based on the AA's entire perimeter, and moving outward into whatever areas are adjacent. In many situations, these questions are best answered by measuring from aerial images.			

A	B	C	D	E
F52	Vegetated Buffer as % of Perimeter	Within a zone extending 30 m laterally from the AA's edge with upland and/or other wetlands, the percentage that contains perennial vegetation cover (except lawns, row crops, heavily grazed land, conifer plantations) is:		JAM, FA, FR, INV, NRv, PH, POL, PRv, SBM, Sens, SRv, STR, WBN
246		<5%	0	
247		5 to 30%	0	
248		30 to 60%	0	
249		60 to 90%	1	
250		>90%, or all the area within 30 m of the AA edge is other wetlands. SKIP to F55.	0	
F53	Type of Cover in Buffer	Within 30 m upslope of where the wetland transitions to upland, the upland land cover that is NOT perennial vegetation is mostly (mark ONE): Impervious surface, e.g., paved road, parking lot, building, exposed rock. bare or nearly bare pervious surface or managed vegetation, e.g., lawn, row crops, unpaved road, dike, landslide. The steepest and/or most disturbed part of the upland area that is within 30 m of the wetland and occupies >10% of that upland area has a percent slope of:	1	JAM, FA, INV, NRv, PH, POL, SBM, STR, WBN
253		<1% (flat - almost no noticeable slope)	0	
254		1-5%	0	
255		5-30%	0	
256		>30%	1	
257		In the AA or within 100 m, there are elevated terrestrial features, such as cliffs, talus slopes, stream banks, or excavated pits (but not riprap) that extend at least 2 m nearly vertically, are unvegetated, and potentially contain crevices or other substrate suitable for nesting or den areas. Enter 1 (Yes) or 0 (No).	0	
258		Part or all of the AA resulted from human actions that persistently expanded a naturally occurring wetland or created a wetland where there previously was none (e.g., by excavation, impoundment).		Determine this using historical aerial photography, old maps, soil maps, or permit files as available (CS, NR, OE, PH, Sens)
259		No.	0	
260		Yes, and created 20 - 100 years ago.	1	
261		Yes, and created 3-20 years ago.	0	
262		Yes, and created within last 3 years.	0	
263		Yes, but time of origin unknown.	0	
264		Unknown if new within 20 years or not.	0	
265		More than 1% of the AA's previously vegetated area:		Look for charred soil or slumps (in multiple widely-spaced locations) or ask landowner. (CS, PH, STR)
266		burned within past 5 years.	0	
267		burned 6-10 years ago.	0	
268		burned 11-30 years ago.	0	
269		burned >30 years ago, or no evidence of a burn and no data.	1	
270		The maximum percentage of the wetland that is visible from the best vantage point on public roads, public parking lots, public buildings, or public maintained trails that intersect, adjoin, or are within 100 m of the AA (select one) is:		[PU, STR, WBF]
271		<25%	0	
272		25-50%	0	
273		>50%	1	
274		Assuming access permission was granted, select ALL statements that are true of the AA as it currently exists:		[PU, STR]
275		For an average person, walking is physically possible (no just near) >5% of the AA during most of the growing season, e.g., free of deep water and dense shrub thickets.	1	
276		Maintained roads, parking areas, or foot-trails are within 10 m of the AA, or the AA can be accessed part of the year by boats arriving via contiguous waters.	1	
277		Within or near the AA, there is an interpretive center, trails with interpretive signs or brochures, and/or regular guided interpretive tours.	0	
278		The percentage of the AA almost never visited by humans during an average growing season probably comprises: [Note: Only include the part actually walked or driven (not simply viewed from) with a vehicle or boat. Do not include visitors on trails outside of the AA unless more than half the wetland is visible from the trails and they are within 30 m of the wetland edge. In that case include only the area occupied by the trail]		JAM, FA, FR, INV, NRv, PH, PU, SBM, STR, WBF, WBN
279		<5% and no inhabited building is within 100 m of the AA.	0	
280		5-50% and inhabited building is within 100 m of the AA.	1	
281		5-50% and no inhabited building is within 100 m of the AA.	0	
282		5-50% and inhabited building is within 100 m of the AA.	0	
283		50-95% with or without inhabited building nearby.	0	
284		>95% of the AA with or without inhabited building nearby.	0	
F54	Cliffs or Sleep Banks			
F55	New or Expanded Wetland			
F56	Unvisited Core Area			

A	B	C	D	E
288	F61 Frequently Visited Area	The part of the AA visited by humans almost daily for several weeks during an average growing season probably comprises: [see note above].		[AM, PH, PU, SBM, STR, WBF, WBN]
289		<5%. If F61 was answered '>95%' (mostly never visited), SKIP to F65.	1	
290		5-50%	0	
291		50-95%	0	
292		>95% of the AA.	0	[PH, PU]
293	F62 BMP - Soils	Boardwalks, paved trails, fences or other infrastructure and/or well-enforced regulations appear to effectively prevent visitors from walking on soil within nearly all of the AA when the soil is unfrozen. Enter "1" if true.	0	[AM, PU, WBF, WBN]
294	F63 BMP - Wildlife Protection	Fences, observation blinds, platforms, paved trails, exclusion periods, and/or well-enforced prohibitions on motorised boats, off-leash pets, and off-road vehicles appear to effectively exclude or divert visitors and their pets from the AA at critical times in order to minimize disturbance of wildlife (except during hunting seasons). Enter "1" if true.	0	
295	F64 Consumptive Uses (Provisioning Services)	Recent evidence was found within the AA of the following potentially-sustainable consumptive uses. Select ALL that apply.		[FAV, FRX, WBRV]
296		low-impact commercial timber harvest (e.g., selective thinning).	0	
297		commercial or traditional-use harvesting of native plants, their fruits, or mushrooms.	0	
298		waterfowl hunting.	0	
299		fishing.	0	
300		trapping of furbearers.	0	
301		none of the above.	0	
302	F65 Domestic Wells	The closest wells or water bodies that currently provide drinking water are:		[NRV]
303		Within 0-100 m of the AA.	0	
304		100-500 m away.	0	
305		>500 m away, or no information.	1	
306	F66 Calcareous Fen	The AA is, or is part of, a calcareous fen. See the Plants, Calcar worksheet in the accompanying Supplinfo file for list of plant indicators (calciphiles). Enter 1 if more than two Strong or more than five Moderate calciphile species are present, otherwise enter 0, but if not able to identify those and no information, change to blank.	0	[PH, PR]

Wetland ID: Green Space AA3	
Date: May 30, 2017	
Observer: R. Dana/A. Smith	

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed. *Note: Benefits scores will be provided in the final calculator for WBF, WBN, SBM, and POL; their models are currently being revised.*

Results for this Assessment Area (AA):						
Wetland Functions or Other Attributes:	Function Score (normalized)	Function Rating	Benefits Score (normalized)	Benefits Rating	Function Score (raw)	Benefits Score (raw)
Water Storage & Delay (WS)	1.93	Lower	2.86	Moderate	3.04	2.50
Stream Flow Support (SFS)	6.15	Moderate	10.00	Higher	3.28	7.57
Water Cooling (WC)	5.42	Higher	7.99	Higher	3.61	5.15
Sediment Retention & Stabilisation (SR)	3.07	Moderate	8.03	Higher	5.11	4.87
Phosphorus Retention (PR)	3.82	Higher	7.24	Higher	5.91	6.88
Nitrate Removal & Retention (NR)	3.29	Lower	10.00	Higher	5.16	10.00
Carbon Sequestration (CS)	3.41	Lower			5.93	
Organic Nutrient Export (OE)	6.92	Higher			5.49	
Anadromous Fish Habitat (FA)	5.78	Moderate	9.19	Higher	3.71	6.79
Resident Fish Habitat (FR)	7.27	Higher	9.57	Higher	5.06	6.79
Aquatic Invertebrate Habitat (INV)	8.17	Higher	7.57	Higher	6.64	5.34
Amphibian & Turtle Habitat (AM)	5.54	Moderate	10.00	Higher	6.40	5.67
Waterbird Feeding Habitat (WBF)	7.40	Higher			5.93	
Waterbird Nesting Habitat (WBN)	5.82	Higher			4.85	
Songbird, Raptor, & Mammal Habitat (SBM)	7.33	Higher			6.07	
Pollinator Habitat (POL)	7.86	Higher			6.33	
Native Plant Habitat (PH)	6.02	Higher	9.22	Higher	5.91	5.24
Public Use & Recognition (PU)			3.92	Moderate		2.82
Wetland Sensitivity (Sens)			8.90	Higher		5.08
Wetland Ecological Condition (EC)			5.52	Moderate		7.29
Wetland Stressors (STR) (higher score means more)			10.00	Higher		5.94
Summary Ratings for Grouped Functions:						
HYDROLOGIC Group (WS)	1.93	Lower	2.86	Moderate	3.04	2.50
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, N	1.82	0.00	10.00	Higher	5.73	8.62
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC	7.56	10.00	10.00	Higher	5.70	6.79
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, V	6.95	0.00	10.00	Higher	5.80	6.60
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	5.10	0.00	10.00	Higher	6.22	5.24
WETLAND CONDITION (EC)			5.52	Moderate		7.29
WETLAND RISK (average of Sensitivity & Stressors)			10.00	Higher		5.51

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among the 98 NB calibration wetlands that were assessed previously.

**Attachment 4: Vegetation Summary &
ACCDC Report**

Vegetation List - Horizon Mangement Ltd. The Crossing Development, Ashburn Road, Saint John, NB

Scientific Name	Common Name	Wetland Indicator (WESP-AC)	Prov S Rank	Prov GS Rank
AA1 - Ashburn Road Shrub Wetland				
<i>Acer rubrum</i>	Red Maple		S5	4 Secure
<i>Agrimonia striata</i>	Woodland Agrimony		S5	4 Secure
<i>Alnus incana</i>	Speckled Alder	Yes	S5	4 Secure
<i>Amelanchier spp.</i>	Serviceberry spp.			
<i>Aralia nudicaulis</i>	Wild Sarsaparilla		S5	4 Secure
<i>Arenaria serpyllifolia</i>	Thyme-leaved Sandwort		SNA	7 Exotic
<i>Athyrium filix-femina</i>	Common Lady Fern		S5	4 Secure
<i>Betula papyrifera</i>	Paper Birch		S5	4 Secure
<i>Calamagrostis canadensis</i>	Bluejoint Reed Grass		S5	4 Secure
<i>Carex spp.</i>	Sedge Spp.	Yes		
<i>Climacium dendroides</i>	Tree Climacium Moss			
<i>Conioselinum chinense</i>	Chinese Hemlock-parsley		S4	4 Secure
<i>Cornus sericea</i>	Red Osier Dogwood	Yes	S5	4 Secure
<i>Dryopteris cristata</i>	Crested Wood Fern	Yes	S5	4 Secure
<i>Equisetum arvense</i>	Field Horsetail		S5	4 Secure
<i>Fragaria virginiana</i>	Wild Strawberry		S5	4 Secure
<i>Impatiens capensis</i>	Spotted Jewelweed		S5	4 Secure
<i>Iris versicolor</i>	Blue Flag	Yes	S5	4 Secure
<i>Lathyrus palustris</i>	Marsh Vetchling / Pea	Yes	S5	4 Secure
<i>Leontodon autumnalis</i>	Fall Dandelion		SNA	7 Exotic
<i>Maianthemum trifolium</i>	Three-leaved False Lilly of the Valley	Yes	S5	4 Secure
<i>Myosotis laxa</i>	Small Forget-Me-Not	Yes	S5	4 Secure
<i>Onoclea sensibilis</i>	Sensitive Fern	Yes	S5	4 Secure
<i>Osmunda cinnamomea</i>	Cinnamon Fern		S5	4 Secure
<i>Picea glauca</i>	White Spruce		S5	4 Secure
<i>Picea mariana</i>	Black Spruce	Yes	S5	4 Secure
<i>Populus tremuloides</i>	Trembling Aspen		S5	4 Secure
<i>Prunus virginiana</i>	Chokecherry		S5	4 Secure
<i>Ranunculus acris</i>	Common Buttercup		SNA	7 Exotic
<i>Rhododendron canadense</i>	Rhodora		S5	4 Secure
<i>Rhytidiadelphus</i>	Electrified Cat's Tail Moss			
<i>Ribes glandulosum</i>	Skunk Currant		S5	4 Secure
<i>Rosa spp.</i>	Rose spp.			
<i>Rubus idaeus</i>	Red Raspberry		S5	4 Secure
<i>Rubus pubescens</i>	Dwarf Red Raspberry		S5	4 Secure
<i>Rumex crispus</i>	Curled Dock		SNA	7 Exotic
<i>Salix spp.</i>	Willow Spp.	Yes		
<i>Scencio spp.</i>	Ragwort spp.			
<i>Sium suave</i>	Common Water Parsnip	Yes	S5	4 Secure
<i>Solidago canadensis</i>	Canada Goldenrod		S5	4 Secure
<i>Spiraea alba</i>	White Meadowsweet		S5	4 Secure
<i>Symphotrichum puniceum</i>	Purple-stemmed Aster	Yes	S5	4 Secure
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	Yes	S5	4 Secure
<i>Thuja occidentalis</i>	Eastern White Cedar	Yes	S5	4 Secure
<i>Trifolium pratense</i>	Red Clover		SNA	7 Exotic
<i>Typha latifolia</i>	Broad-leaved Cattail	Yes	S5	4 Secure
<i>Valeriana officinalis</i>	Common Valerian		SNA	7 Exotic

Scientific Name	Common Name	Wetland Indicator	Prov S Rank	Prov GS Rank
<i>AA2 - Ashburn Road Shrub Wetland and Calcareous Forested Wetland</i>				
<i>Abies balsamea</i>	Balsam Fir		S5	4 Secure
<i>Alnus incana</i>	Speckled Alder	Yes	S5	4 Secure
<i>Aulacomnium palustre</i>	Ribbed Bog Moss			
<i>Bazzania trilobata</i>	Whipwort			
<i>Betula papyrifera</i>	Paper Birch		S5	4 Secure
<i>Campylium spp.</i>	moss			
<i>Carex spp.</i>	Sedge Spp.	Yes		
<i>Carex trisperma</i>	Three-seeded Sedge	Yes	S5	4 Secure
<i>Climacium dendroides</i>	Tree Climacium Moss			
<i>Coptis trifolia</i>	Goldthread		S5	4 Secure
<i>Cornus sericea</i>	Red Osier Dogwood	Yes	S5	4 Secure
<i>Dasiphora fruticosa</i>	Shrubby Cinquefoil	Yes	S4	4 Secure
<i>Drepanocladus</i>	Moss			
<i>Gaultheria hispidula</i>	Creeping Snowberry		S5	4 Secure
<i>Glyceria striata</i>	Fowl Manna Grass	Yes	S5	4 Secure
<i>Iris versicolor</i>	Blue Flag	Yes	S5	4 Secure
<i>Kalmia angustifolia</i>	Sheep Laurel		S5	4 Secure
<i>Larix laricina</i>	Tamarack		S5	4 Secure
<i>Ledum groenlandicum</i>	Common Labrador Tea	Yes	S5	4 Secure
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley		S5	4 Secure
<i>Maianthemum trifolium</i>	Three-leaved False Lilly of the Valley	Yes	S5	4 Secure
<i>Menyanthes trifoliata</i>	Bog Buckbean	Yes	S5	4 Secure
<i>Myrica gale</i>	Sweet Gale	Yes	S5	4 Secure
<i>Osmunda cinnamomea</i>	Cinnamon Fern		S5	4 Secure
<i>Osmunda regalis</i>	Royal Fern	Yes	S5	4 Secure
<i>Photina spp.</i>	Chokeberry		S5	4 Secure
<i>Picea mariana</i>	Black Spruce	Yes	S5	4 Secure
<i>Populus balsamifera</i>	Balsam Poplar		S5	4 Secure
<i>Potentilla spp.</i>	Cinquefoil spp.			
<i>Rhododendron canadense</i>	Rhodora		S5	4 Secure
<i>Rhytidadelphus</i>	moss			
<i>Rubus pubescens</i>	Dwarf Red Raspberry		S5	4 Secure
<i>Salix spp.</i>	Willow Spp.	Yes		
<i>Sorbus americana</i>	American Mountain-Ash		S5	4 Secure
<i>Sphagnum capillifolium</i>	Small Red Peat Moss			
<i>Sphagnum fallax</i>	Flat-topped Bogmoss			
<i>Sphagnum magellanicum</i>	Mangellanic Bogmoss			
<i>Sphagnum russowii</i>	Russow's Boggmoss			
<i>Sphagnum squarrosum</i>	Spiky Bogmoss			
<i>Symphyotrichum puniceum</i>	Purple-stemmed Aster	Yes	S5	4 Secure
<i>Thuja occidentalis</i>	Eastern White Cedar	Yes	S5	4 Secure
<i>Trientalis borealis</i>	Northern Starflower		S5	4 Secure

Scientific Name	Common Name	Wetland Indicator	Prov S Rank	Prov GS Rank
<i>AA3 - Greenspace Shrub Wetland and Graminoid Riparian Flood Plain</i>				
<i>Agrimonia striata</i>	Woodland Agrimony		S5	4 Secure
<i>Alnus incana</i>	Speckled Alder	Yes	S5	4 Secure
<i>Berberis thunbergii</i>	Japanese Barberry		SNA	7 Exotic
<i>Betula papyrifera</i>	Paper Birch		S5	4 Secure
<i>Calamagrostis canadensis</i>	Blue-joint Reedgrass	Yes	S5	4 Secure
<i>Epilobium ciliatum</i>	Hairy Willow-Herb		S5	4 Secure
<i>Equisetum arvense</i>	Field Horsetail		S5	4 Secure
<i>Equisetum palustre</i>	Marsh Horsetail	Yes	S5	4 Secure
<i>Myosotis laxa</i>	Small Forget-Me-Not	Yes	S5	4 Secure
<i>Onoclea sensibilis</i>	Sensitive Fern	Yes	S5	4 Secure
<i>Osmunda claytoniana</i>	Interrupted Fern		S5	4 Secure
<i>Phalaris arundinacea</i>	Reed Canary Grass	Yes	S5	4 Secure
<i>Populus tremuloides</i>	Trembling Aspen		S5	4 Secure
<i>Prunus virginiana</i>	Choke Cherry		S5	4 Secure
<i>Rhododendron canadense</i>	Rhodora		S5	4 Secure
<i>Rosa spp.</i>	Rose			
<i>Rubus idaeus</i>	Red Raspberry		S5	4 Secure
<i>Rubus pubescens</i>	Dwarf Red Raspberry		S5	4 Secure
<i>Salix discolor</i>	Pussy Willow		S5	4 Secure
<i>Salix spp.</i>	Willow Spp.			
<i>Scirpus cyperinus</i>	Cottongrass Bulrush	Yes	S5	4 Secure
<i>Sorbus americana</i>	American Mountain-Ash		S5	4 Secure
<i>Spiraea alba</i>	White Meadowsweet		S5	4 Secure
<i>Typha latifolia</i>	Broad-Leaf Cattail	Yes	S5	4 Secure
<i>Veronica persica</i>	Bird-Eye Speedwell		SNA	7 Exotic

DATA REPORT 5686: Ashburn Road Saint John, NB

Prepared 29 September 2016
by J. Churchill, Data Manager

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3.0 Special Areas

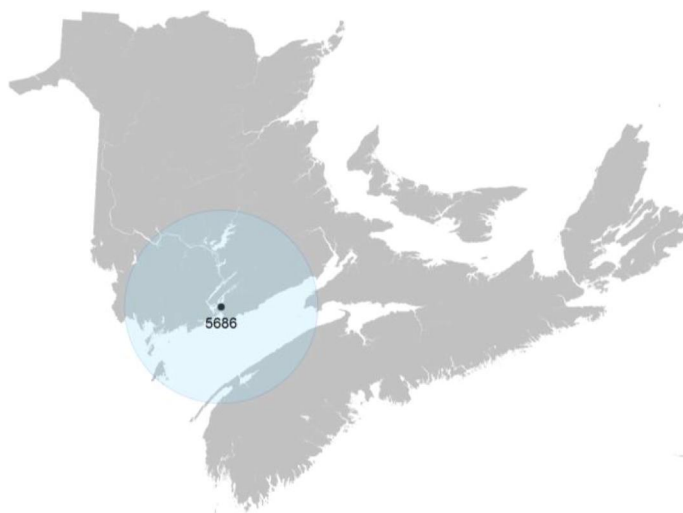
- 3.1 Managed Areas
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Map 1. A 100 km buffer around the study area

1.0 PREFACE

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

Upon request and for a fee, the ACCDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
AshburnRdStJNB_5686ob.xls	All Rare and legally protected <i>Flora and Fauna</i> within 5 km of your study area
AshburnRdStJNB_5686ob100km.xls	A list of Rare and legally protected <i>Flora and Fauna</i> within 100 km of your study area
AshburnRdStJNB_5686ma.xls	All <i>Managed Areas</i> in your study area
AshburnRdStJNB_5686sa.xls	All <i>Significant Natural Areas</i> in your study area
AshburnRdStJNB_5686ff.xls	Rare and common <i>Freshwater Fish</i> in your study area (DFO database)

1.2 RESTRICTIONS

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

- a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
- b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
- c) The ACCDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
- d) ACCDC data responses are restricted to the data in our Data System at the time of the data request.
- e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
- f) ACCDC data responses are not to be construed as exhaustive inventories of taxa in an area.
- g) The absence of a taxon cannot be inferred by its absence in an ACCDC data response.

1.3 ADDITIONAL INFORMATION

The attached file DataDictionary 2.1.pdf provides metadata for the data provided.

Please direct any additional questions about ACCDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries

Sean Blaney, Senior Scientist, Executive Director

Tel: (506) 364-2658

sblaney@mta.ca

Animals (Fauna)

John Klymko, Zoologist

Tel: (506) 364-2660

jklymko@mta.ca

Plant Communities

Sarah Robinson, Community Ecologist

Tel: (506) 364-2664

srobinson@mta.ca

Data Management, GIS

James Churchill, Data Manager

Tel: (902) 679-6146

jlchurchill@mta.ca

Billing

Jean Breau

Tel: (506) 364-2657

jrbreau@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Stewart Lusk, Natural Resources: (506) 453-7110.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Sherman Boates, NSDNR: (902) 679-6146. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NSDNR Regional Biologist:

Western: Duncan Bayne
(902) 648-3536

Duncan.Bayne@novascotia.ca

Western: Donald Sam
(902) 634-7525

Donald.Sam@novascotia.ca

Central: Shavonne Meyer
(902) 893-6353

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Central: Kimberly George
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Kimberly.George@novascotia.ca

Eastern: Mark Pulsifer
(902) 863-7523

Mark.Pulsifer@novascotia.ca

Eastern: Donald Anderson
(902) 295-3949

Donald.Anderson@novascotia.ca

Eastern: Terry Power
(902) 563-3370

Terrance.Power@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

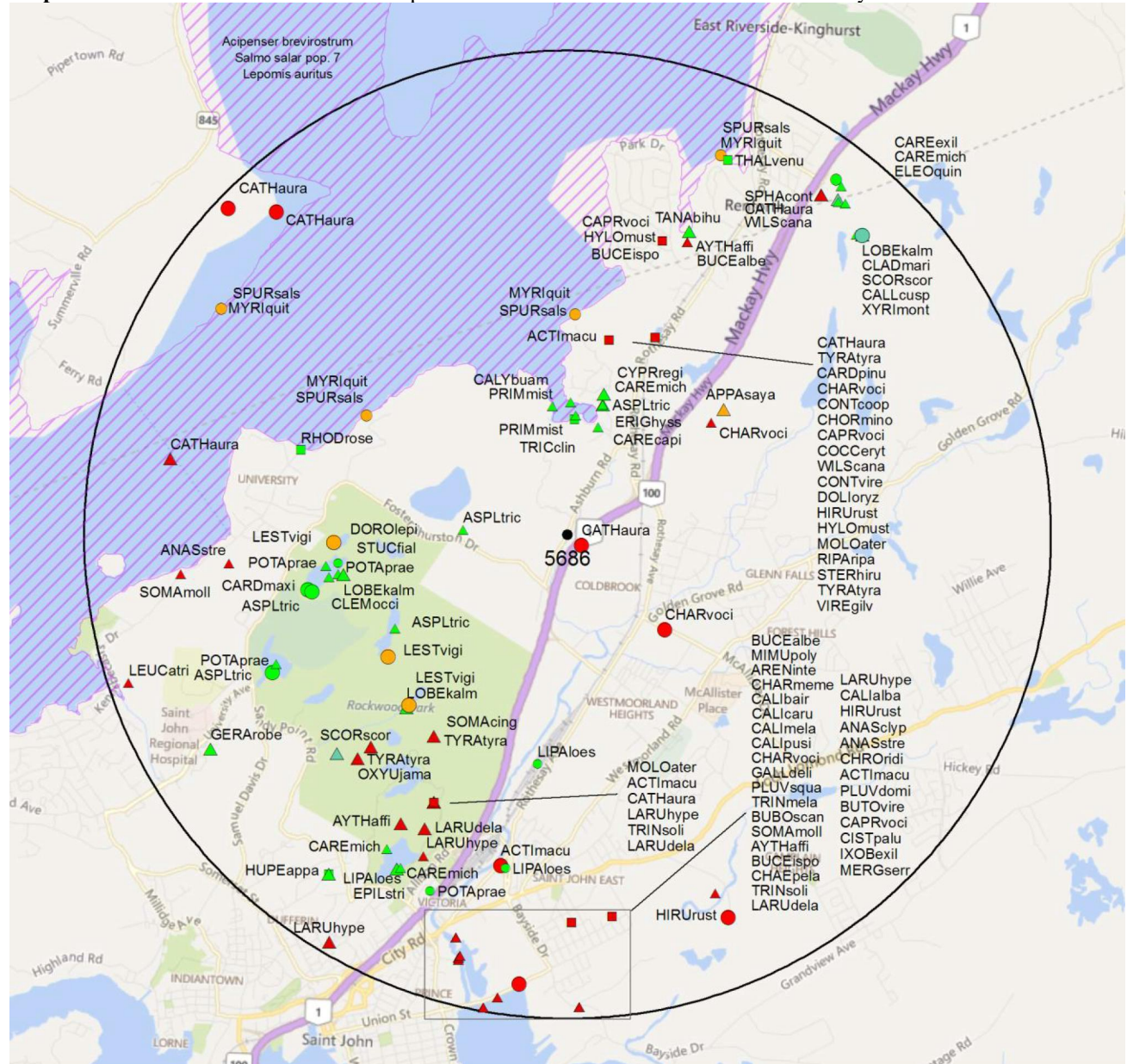
2.1 FLORA

A 5 km buffer around the study area contains 55 records of 25 vascular, 6 records of 3 nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

A 5 km buffer around the study area contains 361 records of 48 vertebrate, 11 records of 5 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within 5 km of the study area.



- RESOLUTION**
- 4.7 within 50s of kilometers
 - 4.0 within 10s of kilometers
 - 3.7 within 5s of kilometers
 - △ 3.0 within kilometers
 - △ 2.7 within 500s of meters
 - 2.0 within 100s of meters
 - 1.7 within 10s of meters

- HIGHER TAXON**
- vertebrate fauna
 - invertebrate fauna
 - vascular flora
 - nonvascular flora

3.0 SPECIAL AREAS

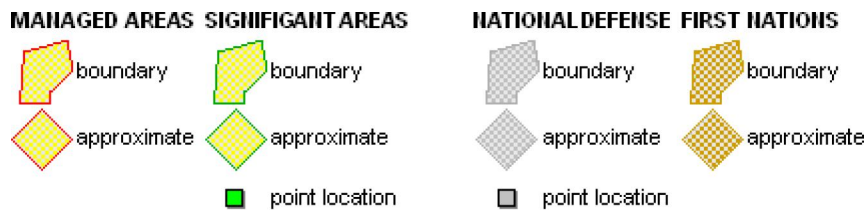
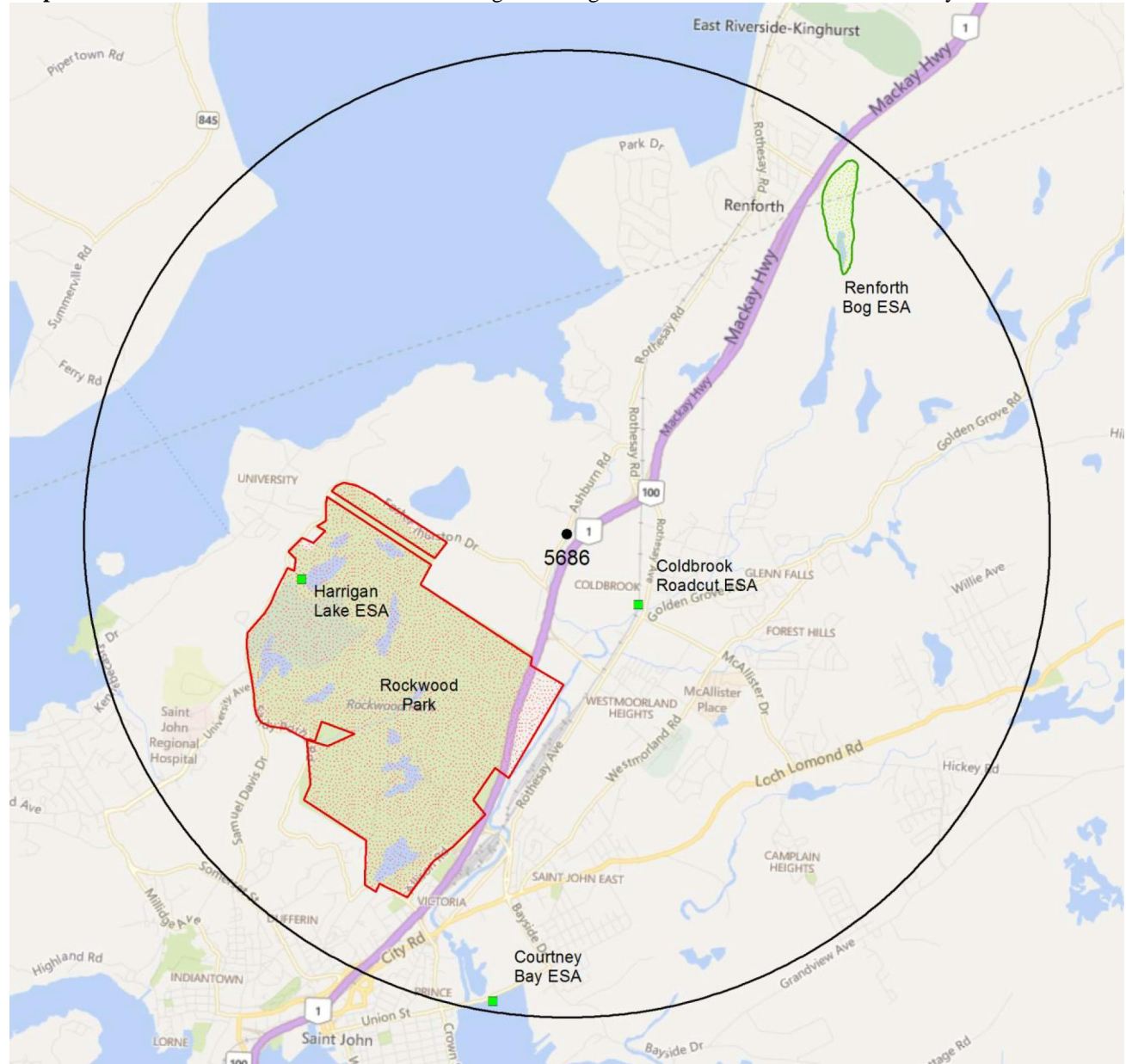
3.1 MANAGED AREAS

The GIS scan identified 1 managed area in the vicinity of the study area (Map 3 and attached file: *ma*.xls)

3.2 SIGNIFICANT AREAS

The GIS scan identified 4 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *sa*.xls)

Map 3: Boundaries and/or locations of known Managed and Significant Areas within 5 km of the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the 5 km-buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (\pm the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = invertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
<i>Cailliergonella cuspidata</i>	Common Large Wetland Moss				S2S3	3 Sensitive	2	4.3 \pm 0.0
<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss				S2S3	3 Sensitive	3	3.3 \pm 1.0
<i>Sphagnum contortum</i>	Twisted Peat Moss				S3S4	4 Secure	1	4.4 \pm 0.0
<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso				S2	2 May Be At Risk	1	1.4 \pm 0.0
<i>Geranium robertianum</i>	Herb Robert				S2S3	4 Secure	1	4.3 \pm 1.0
<i>Myriophyllum quitense</i>	Andean Water Milfoil				S2S3	4 Secure	4	2.3 \pm 0.0
<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	Thread-leaved Pondweed				S2S3	3 Sensitive	1	2.5 \pm 0.0
<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S2S3	4 Secure	4	2.4 \pm 0.0
<i>Erigeron hyssopifolius</i>	Hyssop-leaved Fleabane				S3	4 Secure	2	1.4 \pm 0.0
<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy				S3	4 Secure	1	3.4 \pm 1.0
<i>Cardamine maxima</i>	Large Toothwort				S3	4 Secure	1	2.4 \pm 0.0
<i>Rhodiola rosea</i>	Roseroot				S3	4 Secure	1	2.9 \pm 5.0
<i>Epilobium strictum</i>	Downy Willowherb				S3	4 Secure	2	4.3 \pm 5.0
<i>Primula mistassinica</i>	Mistassini Primrose				S3	4 Secure	2	1.2 \pm 5.0
<i>Clematis occidentalis</i>	Purple Clematis				S3	4 Secure	3	2.7 \pm 0.0
<i>Thalictrum venulosum</i>	Northern Meadow-rue				S3	4 Secure	1	4.2 \pm 5.0
<i>Carex capillaris</i>	Hairlike Sedge				S3	4 Secure	1	1.1 \pm 0.0
<i>Carex exilis</i>	Coastal Sedge				S3	4 Secure	1	4.6 \pm 0.0
<i>Carex michauxiana</i>	Michaux's Sedge				S3	4 Secure	6	1.4 \pm 0.0
<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush				S3	4 Secure	2	4.6 \pm 0.0
<i>Trichophorum clintonii</i>	Clinton's Clubrush				S3	4 Secure	1	1.2 \pm 0.0
<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S3	3 Sensitive	3	1.5 \pm 1.0
<i>Liparis loeselii</i>	Loesel's Twayblade				S3	4 Secure	3	2.4 \pm 0.0
<i>Xyris montana</i>	Northern Yellow-Eyed-Grass				S3	4 Secure	1	4.5 \pm 0.0
<i>Asplenium trichomanes-ramosum</i>	Green Splenwort				S3	4 Secure	8	1.1 \pm 0.0
<i>Huperzia appalachiana</i>	Appalachian Fir-Clubmoss				S3	3 Sensitive	1	4.3 \pm 1.0
<i>Lobelia kalmii</i>	Brook Lobelia				S3S4	4 Secure	3	2.4 \pm 1.0
<i>Cladium mariscoides</i>	Smooth Twigrush				S3S4	4 Secure	1	4.3 \pm 0.0

4.2 FAUNA

Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1 At Risk	1	5.0 \pm 0.0
<i>Calidris canutus rufa</i>	Red Knot rufa ssp	Endangered	Endangered	Endangered	S2M	1 At Risk	2	4.5 \pm 0.0
<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	1 At Risk	1	4.0 \pm 7.0
<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	2 May Be At Risk	2	2.2 \pm 7.0
<i>Caprimulgus vociferus</i>	Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1 At Risk	3	2.2 \pm 7.0
<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	1	4.5 \pm 0.0
<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Threatened	S2S3B,S2S3M	3 Sensitive	1	2.2 \pm 7.0
<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Threatened	S3B,S3M	3 Sensitive	5	2.2 \pm 7.0
<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	3 Sensitive	1	2.2 \pm 7.0
<i>Chordeiles minor</i>	Common Nighthawk	Threatened	Threatened	Threatened	S3B,S4M	1 At Risk	2	2.2 \pm 7.0
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	1	2.2 \pm 7.0
<i>Wilsonia canadensis</i>	Canada Warbler	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	2	2.2 \pm 7.0
<i>Bucephala islandica</i> (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	4	3.3 \pm 0.0

Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A <i>Cotopuz virens</i>	Eastern Wood-Pewee	Special Concern			S4B,S4M	4 Secure	2	2.2 ± 7.0
A <i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	4 Secure	1	4.8 ± 0.0
A <i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B,SUM	3 Sensitive	1	2.2 ± 7.0
A <i>Tringa melanoleuca</i>	Greater Yellowlegs	Not At Risk			S17B,S5M	4 Secure	42	4.3 ± 0.0
A <i>Leucophaeus atricilla</i>	Laughing Gull				S1B,S1M	3 Sensitive	1	4.8 ± 0.0
A <i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	4 Secure	1	3.2 ± 1.0
A <i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	4 Secure	3	3.3 ± 0.0
A <i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N,S2M	3 Sensitive	1	4.5 ± 0.0
A <i>Butorides virescens</i>	Green Heron				S1S2B,S1S2M	3 Sensitive	1	4.0 ± 7.0
A <i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	3 Sensitive	5	4.5 ± 0.0
A <i>Cistothorus palustris</i>	Marsh Wren				S2B,S2M	3 Sensitive	2	4.0 ± 7.0
A <i>Mimus polyglottos</i>	Northern Mockingbird				S2B,S2M	3 Sensitive	3	4.0 ± 7.0
A <i>Anas strepera</i>	Gadwall				S2B,S3M	4 Secure	9	4.0 ± 0.0
A <i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S5M	4 Secure	4	3.1 ± 4.0
A <i>Larus hyperboreus</i>	Glaucous Gull				S2B,S2M	4 Secure	9	3.1 ± 2.0
A <i>Anas clypeata</i>	Northern Shoveler				S2S3B,S2S3M	4 Secure	1	4.5 ± 0.0
A <i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	3 Sensitive	9	4.5 ± 0.0
A <i>Carduelis pinus</i>	Pine Siskin				S3	4 Secure	2	2.2 ± 7.0
A <i>Cathartes aura</i>	Turkey Vulture				S3B,S3M	4 Secure	9	0.2 ± 0.0
A <i>Charadrius vociferus</i>	Killdeer				S3B,S3M	3 Sensitive	28	1.4 ± 0.0
A <i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B,S3M	4 Secure	1	2.2 ± 7.0
A <i>Vireo gilvus</i>	Warbling Vireo				S3B,S3M	4 Secure	1	2.2 ± 7.0
A <i>Molothrus ater</i>	Brown-headed Cowbird				S3B,S3M	4 Secure	1	2.2 ± 7.0
A <i>Somateria mollissima</i>	Common Eider				S3B,S4M,S3N	2 May Be At Risk	3	2.2 ± 7.0
A <i>Mergus serrator</i>	Red-breasted Merganser				S3B,S5M,S4S5N	4 Secure	2	3.5 ± 0.0
A <i>Arenaria interpres</i>	Ruddy Turnstone				S3M	4 Secure	7	4.3 ± 0.0
A <i>Bucephala albeola</i>	Bufflehead				S3M,S2N	3 Sensitive	41	3.3 ± 0.0
A <i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	5	2.1 ± 5.0
A <i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S5M	4 Secure	30	2.1 ± 5.0
A <i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	4 Secure	1	5.0 ± 0.0
A <i>Larus delawarensis</i>	Ring-billed Gull				S3S4B,S5M	4 Secure	11	3.1 ± 2.0
A <i>Pluvialis squatarola</i>	Black-bellied Plover				S3S4M	4 Secure	44	4.3 ± 0.0
A <i>Calidris pusilla</i>	Semipalmated Sandpiper				S3S4M	4 Secure	43	4.3 ± 0.0
A <i>Calidris melanotos</i>	Pectoral Sandpiper				S3S4M	4 Secure	4	4.3 ± 0.0
A <i>Calidris alba</i>	Sanderling				S3S4M,S1N	3 Sensitive	7	4.5 ± 0.0
I <i>Appalachina sayana</i>	Spike-hip Crater	Not At Risk			S3?		1	2.1 ± 1.0
I <i>Dorocordulia lepida</i>	Petite Emerald				S3	4 Secure	1	2.4 ± 0.0
I <i>Somatochlora cingulata</i>	Lake Emerald				S3	4 Secure	1	2.4 ± 0.0
I <i>Lestes vigilax</i>	Swamp Spreadwing				S3	3 Sensitive	3	2.2 ± 0.0
I <i>Spurwinkia salsa</i>	Saltmarsh Hydrobe				S3	3 Sensitive	5	2.3 ± 0.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritime province considers a number of species “location sensitive”. Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting a 5 km buffer of your study area are indicated below with “YES”.

New Brunswick Scientific Name	Common Name	SARA	Prov Legal Prot	Known within 5 km of Study Site?
<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern	Special Concern	No
<i>Chelydra serpentina</i>	Snapping Turtle	Threatened	Threatened	No
<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	No
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Endangered	Endangered	YES
<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	YES
<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Endangered	Endangered	No
<i>Coenonympha nipisiquit</i>	Maritime Ringlet	Endangered	Endangered	No
Bat <i>Hibernaculum</i>		[Endangered]¹	[Endangered]¹	YES

¹ *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NB Species at Risk Act.

4.4 SOURCE BIBLIOGRAPHY

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

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5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 32194 records of 144 vertebrate and 1057 records of 356 vascular, 575 4 records of 70 invertebrate fauna, 667 records of 187 nonvascular flora (attached: *obl100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs. All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (\pm the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Myotis lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	59	2.4 \pm 1.0	NB
A	<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	18	2.4 \pm 1.0	NB
A	<i>Perimys subflavus</i>	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	1 At Risk	8	8.8 \pm 0.0	NB
A	<i>Eubalaena glacialis</i>	North Atlantic Right Whale	Endangered	Endangered	Endangered	S1	1 At Risk	6	79.2 \pm 50.0	NS
A	<i>Sterna dougalli</i>	Roseate Tern	Endangered	Endangered	Endangered	S1?B,S1?M	1 At Risk	4	61.8 \pm 0.0	NB
A	<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1 At Risk	24	5.0 \pm 0.0	NB
A	<i>Dermodochelys coriacea</i> (Atlantic pop.)	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	1 At Risk	4	7.8 \pm 50.0	NB
A	<i>Salmo salar</i> pop. 1	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	2 May Be At Risk	55	18.3 \pm 1.0	NB
A	<i>Callidris canutus rufa</i>	Red Knot rufa ssp	Endangered	Endangered	Endangered	S2M	1 At Risk	374	4.5 \pm 0.0	NB
A	<i>Rangifer tarandus</i> pop. 2	Woodland Caribou (Atlantic-Gasp L-rsie pop.)	Endangered	Endangered	Extirpated	SX	0.1 Extirpated	4	12.7 \pm 5.0	NB
A	<i>Sturmella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	2 May Be At Risk	45	20.2 \pm 7.0	NB
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	1 At Risk	28	4.0 \pm 7.0	NB
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	2 May Be At Risk	167	2.2 \pm 7.0	NB
A	<i>Caprimulgus vociferus</i>	Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1 At Risk	80	2.2 \pm 7.0	NB
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Special Concern	Threatened	S2B,S2M	1 At Risk	27	14.4 \pm 1.0	NB
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2S3	1 At Risk	95	6.1 \pm 10.0	NB
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	325	4.5 \pm 0.0	NB
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened	Threatened	S2S3B,S2S3M	3 Sensitive	408	2.2 \pm 7.0	NB
A	<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Threatened	Threatened	Threatened	S3	4 Secure	1	46.4 \pm 1.0	NB
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Threatened	S3B,S3M	3 Sensitive	1346	2.2 \pm 7.0	NB
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	3 Sensitive	847	2.2 \pm 7.0	NB
A	<i>Chordeiles minor</i>	Common Nighthawk	Threatened	Threatened	Threatened	S3B,S4M	1 At Risk	285	2.2 \pm 7.0	NB
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	330	2.2 \pm 7.0	NB
A	<i>Wilsonia canadensis</i>	Canada Warbler	Threatened	Threatened	Threatened	S3S4B,S3S4M	1 At Risk	721	2.2 \pm 7.0	NB
A	<i>Anguilla rostrata</i>	American Eel	Threatened	Threatened	Threatened	S4	4 Secure	45	17.9 \pm 0.0	NB
A	<i>Osmerus mordax</i> pop. 2	Lake Utopia Smelt large-bodied pop.	Threatened	Threatened	Threatened			2	60.9 \pm 10.0	NB
A	<i>Coturnicops noveboracensis</i>	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	2 May Be At Risk	3	52.6 \pm 7.0	NB
A	<i>Histrionicus histrionicus</i> pop. 1	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	1 At Risk	153	36.6 \pm 17.0	NB
A	<i>Falco peregrinus</i> pop. 1	Peregrine Falcon - anatum/tundrus	Special Concern	Special Concern	Endangered	S1B,S3M	1 At Risk	593	1.9 \pm 0.0	NB
A	<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	3 Sensitive	17	41.8 \pm 0.0	NB
A	<i>Bucephala islandica</i> (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	56	3.3 \pm 0.0	NB
A	<i>Balaenoptera physalus</i>	Fin Whale - Atlantic pop.	Special Concern	Special Concern	Special Concern	S2S3	3 Sensitive	4	18.7 \pm 0.0	NB
A	<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	3 Sensitive	7	9.5 \pm 10.0	NB
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	3 Sensitive	29	13.7 \pm 0.0	NB
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	2 May Be At Risk	120	5.4 \pm 0.0	NB
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern	Special Concern	Special Concern	S3M	3 Sensitive	178	12.7 \pm 0.0	NB
A	<i>Phocoena phocoena</i>	Harbour Porpoise - Northwest Atlantic pop.	Special Concern	Threatened	Threatened	S4		230	6.1 \pm 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>(NW Atlantic pop.)</i>									
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern		Special Concern	S4B, S4M	4 Secure	620	2.2 ± 7.0	NB
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern		Special Concern	S4N, S4M	4 Secure	267	5.1 ± 1.0	NB
A	<i>Odobenus rosmarus rosmarus</i>	Atlantic Walrus	Special Concern		Extirpated	SX		1	75.0 ± 5.0	NS
A	<i>Hemidactylum scutatum</i>	Four-toed Salamander	Not At Risk			S1?	5 Undetermined	13	75.1 ± 0.0	NS
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N, S2S3M	4 Secure	30	4.8 ± 0.0	NB
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B, S1S2M	2 May Be At Risk	17	32.9 ± 7.0	NB
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1S2B, S1S2M	3 Sensitive	8	36.4 ± 7.0	NB
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S1S2B, SUM	2 May Be At Risk	5	24.4 ± 7.0	NB
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk	Special Concern		S2	3 Sensitive	2	24.8 ± 1.0	NB
A	<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk	Special Concern		S2B, S2M	2 May Be At Risk	47	16.9 ± 0.0	NB
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B, S2M	3 Sensitive	106	22.1 ± 7.0	NB
A	<i>Globocephala melas</i>	Long-finned Pilot Whale	Not At Risk			S2S3	3	8.1 ± 1.0	NB	
A	<i>Lynx canadensis</i>	Canadian Lynx	Not At Risk		Endangered	S3	1 At Risk	12	13.7 ± 1.0	NB
A	<i>Desmognathus fuscus</i>	Northern Dusky Salamander	Not At Risk			S3	3 Sensitive	51	12.0 ± 1.0	NB
A	<i>Megaptera novaeangliae</i>	Humpback Whale (NW Atlantic pop.)	Not At Risk	Special Concern		S3		3	80.6 ± 5.0	NB
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B, SUM	3 Sensitive	194	2.2 ± 7.0	NB
A	<i>Podiceps grisegena</i>	Red-necked Grebe	Not At Risk			S3M, S2N	3 Sensitive	657	9.3 ± 2.0	NB
A	<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	Not At Risk			S3S4		1	8.1 ± 1.0	NB
A	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	S4	1 At Risk	1332	1.9 ± 0.0	NB
A	<i>Canis lupus</i>	Gray Wolf	Not At Risk		Extirpated	SX	0.1 Extirpated	4	6.1 ± 1.0	NB
A	<i>Puma concolor pop. 1</i>	Cougar - Eastern pop.	Data Deficient		Extirpated	SU	5 Undetermined	104	12.8 ± 1.0	NB
A	<i>Morone saxatilis</i>	Striped Bass	E, E, SC		Endangered	S3	2 May Be At Risk	10	6.8 ± 10.0	NB
A	<i>Salvelinus alpinus</i>	Arctic Char				S1	3 Sensitive	3	64.3 ± 0.0	NB
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B, S5M	4 Secure	942	4.3 ± 0.0	NB
A	<i>Gallinula chloropus</i>	Common Moorhen				S1B, S1M	3 Sensitive	24	6.3 ± 1.0	NB
A	<i>Bartramia longicauda</i>	Upland Sandpiper				S1B, S1M	3 Sensitive	45	43.3 ± 7.0	NB
A	<i>Phalaropus tricolor</i>	Wilson's Phalarope				S1B, S1M	3 Sensitive	57	6.2 ± 1.0	NB
A	<i>Leucophaeus atricilla</i>	Laughing Gull				S1B, S1M	3 Sensitive	73	4.8 ± 0.0	NB
A	<i>Progne subis</i>	Purple Martin				S1B, S1M	2 May Be At Risk	237	9.5 ± 7.0	NB
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B, S2S3M	4 Secure	52	3.2 ± 1.0	NB
A	<i>Uria aalge</i>	Common Murre				S1B, S3N, S3M	4 Secure	108	24.4 ± 15.0	NB
A	<i>Aythya affinis</i>	Lesser Scaup				S1B, S4M	4 Secure	205	3.3 ± 0.0	NB
A	<i>Aythya marila</i>	Greater Scaup				S1B, S4M, S2N	4 Secure	36	6.6 ± 0.0	NB
A	<i>Eremophila alpestris</i>	Horned Lark				S1B, S4N, S5M	2 May Be At Risk	30	9.3 ± 5.0	NB
A	<i>Sterna paradisaea</i>	Arctic Tern				S1B, SUM	2 May Be At Risk	101	30.8 ± 16.0	NB
A	<i>Fratercula arctica</i>	Atlantic Puffin				S1B, SUN, SUM	3 Sensitive	134	24.4 ± 15.0	NB
A	<i>Branta bernicla</i>	Brant				S1N, S2S3M	4 Secure	504	10.9 ± 0.0	NB
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N, S2M	3 Sensitive	42	4.5 ± 0.0	NB
A	<i>Butorides virescens</i>	Green Heron				S1S2B, S1S2M	3 Sensitive	22	4.0 ± 7.0	NB
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B, S1S2M	3 Sensitive	53	6.2 ± 1.0	NB
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B, S1S2M	3 Sensitive	98	5.8 ± 5.0	NB
A	<i>Steigidopteryx serripennis</i>	Northern Rough-winged Swallow				S1S2B, S1S2M	2 May Be At Risk	21	18.4 ± 7.0	NB
A	<i>Troglodytes aedon</i>	House Wren				S1S2B, S1S2M	5 Undetermined	31	6.9 ± 0.0	NB
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S1S2B, S4N, S5M	4 Secure	47	46.6 ± 7.0	NB
A	<i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	3 Sensitive	101	4.5 ± 0.0	NB
A	<i>Gisothorax palustris</i>	Marsh Wren				S2B, S2M	3 Sensitive	66	4.0 ± 7.0	NB
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B, S2M	3 Sensitive	141	4.0 ± 7.0	NB
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2B, S2M	3 Sensitive	95	10.7 ± 7.0	NB
A	<i>Poocetes gramineus</i>	Vesper Sparrow				S2B, S2M	2 May Be At Risk	82	24.1 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Anas strepera</i>	Gadwall				S2B,S3M	4 Secure	109	4.0 ± 0.0	NB
A	<i>Alca torda</i>	Razorbill				S2B,S3N,S3M	4 Secure	125	24.4 ± 15.0	NB
A	<i>Pipilo erythrophthalmus</i>	Pine Grosbeak				S2B,S4S5N,S4S5	3 Sensitive	33	41.7 ± 7.0	NB
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S5M	4 Secure	248	3.1 ± 4.0	NB
A	<i>Oceanodroma leucorhoa</i>	Leach's Storm-Petrel				S2B,SUM	3 Sensitive	51	38.5 ± 0.0	NB
A	<i>Chen caerulescens</i>	Snow Goose				S2M	4 Secure	7	12.2 ± 1.0	NB
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2N,S2M	4 Secure	266	7.2 ± 3.0	NB
A	<i>Somateria spectabilis</i>	King Eider				S2N,S2M	4 Secure	54	39.3 ± 0.0	NB
A	<i>Larus hyperboreus</i>	Glaucous Gull				S2N,S2M	4 Secure	155	3.1 ± 2.0	NB
A	<i>Asio otus</i>	Long-eared Owl				S2S3	5 Undetermined	17	10.7 ± 7.0	NB
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S2S3	3 Sensitive	11	57.3 ± 7.0	NB
A	<i>Salmo salar</i>	Atlantic Salmon				S2S3	2 May Be At Risk	57	21.2 ± 0.0	NB
A	<i>Anas clypeata</i>	Northern Shoveler				S2S3B,S2S3M	4 Secure	87	4.5 ± 0.0	NB
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S2S3B,S2S3M	3 Sensitive	226	7.5 ± 7.0	NB
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B,S2S3M	3 Sensitive	566	5.8 ± 5.0	NB
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	3 Sensitive	261	4.5 ± 0.0	NB
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S2S3N,SUM	3 Sensitive	36	5.8 ± 0.0	NB
A	<i>Cephus grylle</i>	Black Guillemot				S3	4 Secure	623	9.3 ± 20.0	NB
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	4 Secure	128	7.3 ± 7.0	NB
A	<i>Carduelis pinus</i>	Pine Siskin				S3	4 Secure	332	2.2 ± 7.0	NB
A	<i>Prosopium cylindraceum</i>	Round Whitefish				S3	4 Secure	1	71.3 ± 0.0	NB
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	3 Sensitive	4	22.5 ± 0.0	NB
A	<i>Sorex maritimensis</i>	Maritime Shrew				S3	4 Secure	1	77.3 ± 0.0	NS
A	<i>Eptesicus fuscus</i>	Big Brown Bat				S3	3 Sensitive	49	5.2 ± 1.0	NB
A	<i>Callisitta aurora</i>	Turkey Vulture				S3B,S3M	4 Secure	289	0.2 ± 0.0	NB
A	<i>Rallus limicola</i>	Virginia Rail				S3B,S3M	3 Sensitive	109	6.3 ± 1.0	NB
A	<i>Charadrius vociferus</i>	Killdeer				S3B,S3M	3 Sensitive	828	1.4 ± 0.0	NB
A	<i>Tringa semipalmata</i>	Willet				S3B,S3M	3 Sensitive	168	12.7 ± 0.0	NB
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B,S3M	4 Secure	182	2.2 ± 7.0	NB
A	<i>Vireo gilvus</i>	Warbling Vireo				S3B,S3M	4 Secure	227	2.2 ± 7.0	NB
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B,S3M	4 Secure	115	14.1 ± 7.0	NB
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B,S3M	4 Secure	103	7.9 ± 7.0	NB
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B,S3M	2 May Be At Risk	301	2.2 ± 7.0	NB
A	<i>Icterus galbula</i>	Baltimore Oriole				S3B,S3M	4 Secure	199	7.2 ± 2.0	NB
A	<i>Coccythraustes vesperinus</i>	Evening Grosbeak				S3B,S3S4N,SUM	3 Sensitive	298	7.5 ± 7.0	NB
A	<i>Somateria mollissima</i>	Common Eider				S3B,S4M,S3N	4 Secure	1726	3.5 ± 0.0	NB
A	<i>Dendroica tigrina</i>	Cape May Warbler				S3B,S4S5M	4 Secure	132	7.5 ± 7.0	NB
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	3 Sensitive	53	10.7 ± 7.0	NB
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3B,S5M,S4S5N	4 Secure	344	4.0 ± 7.0	NB
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	4 Secure	687	4.3 ± 0.0	NB
A	<i>Phalaropus fulicarius</i>	Red Phalarope				S3M	3 Sensitive	89	38.5 ± 0.0	NB
A	<i>Melanitta nigra</i>	Black Scoter				S3M,S1S2N	3 Sensitive	770	5.1 ± 1.0	NB
A	<i>Bucephala albeola</i>	Bufflehead				S3M,S2N	3 Sensitive	1120	3.3 ± 0.0	NB
A	<i>Calidris maritima</i>	Purple Sandpiper				S3M,S3N	4 Secure	241	11.9 ± 15.0	NB
A	<i>Uria lomvia</i>	Thick-billed Murre				S3N,S3M	5 Undetermined	66	22.1 ± 8.0	NB
A	<i>Synaptomys cooperi</i>	Southern Bog Lemming				S3S4	4 Secure	79	28.2 ± 1.0	NB
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	488	2.1 ± 5.0	NB
A	<i>Actitis macularia</i>	Spotted Sandpiper				S3S4B,S5M	4 Secure	874	2.1 ± 5.0	NB
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	4 Secure	668	5.0 ± 0.0	NB
A	<i>Larus delawarensis</i>	Ring-billed Gull				S3S4B,S5M	4 Secure	242	3.1 ± 2.0	NB
A	<i>Dendroica striata</i>	Blackpoll Warbler				S3S4B,S5M	4 Secure	82	20.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3S4M	4 Secure	842	4.3 ± 0.0	NB
A	<i>Limosa haemastica</i>	Hudsonian Godwit				S3S4M	4 Secure	93	12.7 ± 0.0	NB
A	<i>Callidris pusilla</i>	Semipalmated Sandpiper				S3S4M	4 Secure	1984	4.3 ± 0.0	NB
A	<i>Callidris melanotos</i>	Pectoral Sandpiper				S3S4M	4 Secure	302	4.3 ± 0.0	NB
A	<i>Callidris alba</i>	Sanderling				S3S4M,S1N	3 Sensitive	823	4.5 ± 0.0	NB
A	<i>Morus bassanus</i>	Northern Gannet				SHB,S5M	4 Secure	687	9.1 ± 0.0	NB
A	<i>Lanius ludovicianus</i>	Loggerhead Shrike				SXB,SXM	1 At Risk	1	96.8 ± 1.0	NB
C	<i>Quercus macrocarpa</i>	Bur Oak - Red Maple / Sensitive Fern - Northern				S2		1	62.9 ± 0.0	NB
	<i>Acer rubrum / Onoclea sensibilis - Carex arctica</i>	Clustered Sedge Forest								
C	<i>Acer saccharinum / Onoclea sensibilis - Lysimachia terrestris</i>	Silver Maple / Sensitive Fern - Swamp Yellow Loosetrife Forest				S3		1	57.9 ± 0.0	NB
C	<i>Acer saccharum - Fraxinus americana / Polystichum acrostichoides</i>	Sugar Maple - White Ash / Christmas Fern Forest				S3S4		1	19.4 ± 0.0	NB
I	<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Endangered	Endangered	Endangered	S1	1 At Risk	34	65.2 ± 0.0	NB
I	<i>Gomphus ventricosus</i>	Skillet Clubtail	Endangered		Endangered	S1S2	2 May Be At Risk	49	50.4 ± 0.0	NB
I	<i>Ophiogomphus howei</i>	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	2 May Be At Risk	3	93.6 ± 0.0	NB
I	<i>Alasmodonta varicosa</i>	Brook Floater	Special Concern		Special Concern	S2	3 Sensitive	2	24.9 ± 0.0	NB
I	<i>Lampsilis cariosa</i>	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	100	24.9 ± 0.0	NB
I	<i>Bombus terricola</i>	Yellow-banded Bumblebee	Special Concern		Special Concern	S3?	3 Sensitive	15	34.2 ± 0.0	NB
I	<i>Daneus plexippus</i>	Monarch	Special Concern	Special Concern	Special Concern	S3B,S3M	3 Sensitive	91	6.4 ± 0.0	NB
I	<i>Appalachina sayana</i>	Spike-lip Crater	Not At Risk			S3?	5 Undetermined	2	2.1 ± 1.0	NB
I	<i>Haematopota irara</i>	Shy Cleg				S1	2 May Be At Risk	1	84.7 ± 1.0	NB
I	<i>Lycaena dorcas</i>	Dorcas Copper				S1	2 May Be At Risk	1	79.0 ± 0.0	NB
I	<i>Erota leta</i>	Early Hairstreak				S1	2 May Be At Risk	1	77.6 ± 1.0	NS
I	<i>Celithemis martha</i>	Martha's Pennant				S1	5 Undetermined	1	16.9 ± 0.0	NB
I	<i>Argemophilus furcifer</i>	Lilypad Clubtail				S1	5 Undetermined	6	56.3 ± 0.0	NB
I	<i>Poites origenes</i>	Crossline Skipper				S1?	5 Undetermined	5	44.0 ± 0.0	NB
I	<i>Plebejus saepiolus</i>	Greenish Blue				S1S2	4 Secure	4	58.1 ± 0.0	NB
I	<i>Ophiogomphus colubrinus</i>	Boreal Snaketail				S1S2	2 May Be At Risk	35	38.8 ± 1.0	NB
I	<i>Brachyleptura circumdata</i>	a Longhorned Beetle				S2		6	66.4 ± 0.0	NB
I	<i>Satyrus calanus</i>	Banded Hairstreak				S2	3 Sensitive	14	75.6 ± 1.0	NS
I	<i>Satyrus calanus falacer</i>	Banded Hairstreak				S2	4 Secure	4	83.0 ± 1.0	NB
I	<i>Strymon melinus</i>	Grey Hairstreak				S2	4 Secure	6	26.4 ± 0.0	NB
I	<i>Aeshna clepsydra</i>	Mottled Darner				S2	3 Sensitive	15	8.0 ± 1.0	NB
I	<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald				S2	5 Undetermined	6	82.9 ± 1.0	NB
I	<i>Ladona exusta</i>	White Corporal				S2	5 Undetermined	11	78.6 ± 1.0	NB
I	<i>Hetaerina americana</i>	American Rubyspot				S2	3 Sensitive	2	92.8 ± 0.0	NB
I	<i>Ischnura posita</i>	Fragile Forktail				S2	2 May Be At Risk	21	65.5 ± 0.0	NB
I	<i>Callophrys henrici</i>	Henry's Elfin				S2S3	4 Secure	14	77.6 ± 1.0	NS
I	<i>Agonum excavatum</i>	a Ground Beetle				S3	4 Secure	1	71.0 ± 0.0	NB
I	<i>Badister neopulchellus</i>	a Ground Beetle				S3	4 Secure	1	71.0 ± 0.0	NB
I	<i>Calathus gregarius</i>	a Ground Beetle				S3	4 Secure	1	84.4 ± 1.0	NB
I	<i>Clivina americana</i>	a Ground Beetle				S3	4 Secure	1	71.0 ± 0.0	NB
I	<i>Elaphrus americanus</i>	a Ground Beetle				S3	4 Secure	1	71.0 ± 0.0	NB
I	<i>Olisthopus parvatus</i>	a Ground Beetle				S3	4 Secure	1	66.5 ± 0.0	NB
I	<i>Paratachys scitulus</i>	a Ground Beetle				S3	5 Undetermined	1	71.0 ± 0.0	NB

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I	<i>Sphaeroderus nitidicollis</i>	a Ground Beetle				S3	4 Secure	1	66.5 ± 0.0	NB
I	<i>Coccinella hieroglyphica kirbyi</i>	a Ladybird Beetle				S3	4 Secure	1	6.9 ± 1.0	NB
I	<i>Hippodamia parenthesis</i>	Parentthesis Lady Beetle				S3	4 Secure	2	6.9 ± 1.0	NB
I	<i>Stenocorus vittigera</i>	a Longhorned Beetle				S3	4 Secure	1	71.0 ± 0.0	NB
I	<i>Hesperia sassacus</i>	Indian Skipper				S3	4 Secure	4	79.3 ± 0.0	NB
I	<i>Euphyes bimaculata</i>	Two-spotted Skipper				S3	4 Secure	9	55.9 ± 0.0	NB
I	<i>Lycaena hylus</i>	Bronze Copper				S3	3 Sensitive	4	27.7 ± 1.0	NB
I	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	4 Secure	20	6.9 ± 1.0	NB
I	<i>Callophrys pollos</i>	Hoary Elfin				S3	4 Secure	8	6.9 ± 1.0	NB
I	<i>Plebejus idas</i>	Northern Blue				S3	4 Secure	9	18.6 ± 1.0	NB
I	<i>Plebejus idas empetri</i>	Crowberry Blue				S3	4 Secure	6	15.5 ± 1.0	NB
I	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3	4 Secure	22	6.9 ± 1.0	NB
I	<i>Boloria bellona</i>	Meadow Fritillary				S3	4 Secure	31	36.2 ± 0.0	NB
I	<i>Polygonia satyrus</i>	Satyr Comma				S3	4 Secure	9	21.8 ± 1.0	NB
I	<i>Polygonia gracilis</i>	Hoary Comma				S3	4 Secure	2	82.5 ± 1.0	NB
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	4 Secure	20	6.9 ± 10.0	NB
I	<i>Gomphus vastus</i>	Cobra Clubtail				S3	3 Sensitive	57	30.0 ± 0.0	NB
I	<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail				S3	4 Secure	22	17.4 ± 0.0	NB
I	<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3	5 Undetermined	14	82.9 ± 1.0	NB
I	<i>Dorocordulia leptida</i>	Petite Emerald				S3	4 Secure	38	2.4 ± 0.0	NB
I	<i>Somatochlora cingulata</i>	Lake Emerald				S3	4 Secure	9	2.4 ± 0.0	NB
I	<i>Somatochlora forcipata</i>	Forcipate Emerald				S3	4 Secure	15	82.6 ± 1.0	NB
I	<i>Williamsonia fletcheri</i>	Ebony Boghaunter				S3	4 Secure	7	58.8 ± 0.0	NB
I	<i>Lestes eurius</i>	Amber-Winged Spreadwing				S3	4 Secure	7	20.9 ± 1.0	NB
I	<i>Lestes vigilax</i>	Swamp Spreadwing				S3	3 Sensitive	32	2.2 ± 0.0	NB
I	<i>Enallagma geminatum</i>	Skimming Bluet				S3	5 Undetermined	12	17.4 ± 0.0	NB
I	<i>Enallagma signatum</i>	Orange Bluet				S3	4 Secure	11	56.5 ± 0.0	NB
I	<i>Stylurus scuderi</i>	Zebra Clubtail				S3	4 Secure	71	30.0 ± 0.0	NB
I	<i>Alasmidonia undulata</i>	Triangle Floater				S3	3 Sensitive	44	11.8 ± 0.0	NB
I	<i>Leptodea ochracea</i>	Tidewater Mucket				S3	4 Secure	61	11.6 ± 1.0	NB
I	<i>Neohelix albolabris</i>	Whitelip				S3	2	49.9 ± 0.0	NB	
I	<i>Spurwinkia saisa</i>	Saltmarsh Hydrobe				S3	34	2.3 ± 0.0	NB	
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B,S3M	4 Secure	4	18.4 ± 1.0	NB
I	<i>Satyrium liparops</i>	Striped Hairstreak				S3S4	4 Secure	2	80.2 ± 0.0	NB
I	<i>Satyrium liparops strigosum</i>	Striped Hairstreak				S3S4	4 Secure	1	86.4 ± 10.0	NB
I	<i>Cupido comyntas</i>	Eastern Tailed Blue				S3S4	4 Secure	7	9.3 ± 5.0	NB
I	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle				SH	2 May Be At Risk	2	6.9 ± 1.0	NB
N	<i>Erioderma mollissimum</i>	Graceful Felt Lichen	Endangered		Endangered	SH	2 May Be At Risk	1	80.7 ± 1.0	NB
N	<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	SH	1 At Risk	3	85.2 ± 1.0	NB
N	<i>Peltigera hydratryia</i>	Eastern Waterfan	Threatened			S1	5 Undetermined	4	80.3 ± 1.0	NB
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened			S1S2	5 Undetermined	2	84.9 ± 1.0	NB
N	<i>Degelia plumbea</i>	Blue Felt Lichen	Special Concern		Special Concern	S1	2 May Be At Risk	4	84.1 ± 5.0	NB
N	<i>Pseudevernia cladonia</i>	Ghost Antler Lichen	Not At Risk			S2S3	5 Undetermined	23	10.3 ± 0.0	NB
N	<i>Bryum muehlenbeckii</i>	Muehlenbeck's Bryum Moss				S1	2 May Be At Risk	1	10.2 ± 1.0	NB
N	<i>Dicranoweisia crispula</i>	Mountain Thatch Moss				S1	2 May Be At Risk	1	88.6 ± 0.0	NB
N	<i>Didymodon rigidulus</i> var. <i>gracilis</i>	a moss				S1	2 May Be At Risk	1	83.7 ± 1.0	NB

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N	<i>Sphagnum macrophyllum</i>	Sphagnum			S1	2 May Be At Risk	2	20.9 ± 0.0	NB	
N	<i>Syntrichia ruralis</i>	a Moss			S1	2 May Be At Risk	1	62.8 ± 0.0	NB	
N	<i>Coscinodon cribrosus</i>	Sieve-Toothed Moss			S1	2 May Be At Risk	1	8.3 ± 0.0	NB	
N	<i>Cladonia metacoralifera</i>	Reptilian Pixie-cup Lichen			S1	5 Undetermined	5	77.6 ± 1.0	NB	
N	<i>Coccocarpia palmicola</i>	Salted Shell Lichen			S1	2 May Be At Risk	1	92.0 ± 1.0	NB	
N	<i>Peltigera collina</i>	Tree Pelt Lichen			S1	2 May Be At Risk	1	92.6 ± 10.0	NB	
N	<i>Peltigera malacea</i>	Veinless Pelt Lichen			S1	5 Undetermined	1	80.1 ± 1.0	NB	
N	<i>Bryoria bicolor</i>	Electrified Horsehair Lichen			S1	2 May Be At Risk	1	80.1 ± 1.0	NB	
N	<i>Hygrobiella laxifolia</i>	Lax Notchwort			S1?	6 Not Assessed	1	77.7 ± 1.0	NB	
N	<i>Atrichum angustatum</i>	Lesser Smoothcap Moss			S1?	2 May Be At Risk	1	91.8 ± 3.0	NS	
N	<i>Batrachia thiphylla</i>	Straight-leaved Apple Moss			S1?	2 May Be At Risk	2	77.7 ± 0.0	NB	
N	<i>Calliergon trifarium</i>	Three-ranked Moss			S1?	2 May Be At Risk	1	15.1 ± 0.0	NB	
N	<i>Dichelyma falcatum</i>	a Moss			S1?	2 May Be At Risk	2	26.2 ± 1.0	NB	
N	<i>Dicranum bonjeanii</i>	Bonjean's Broom Moss			S1?	2 May Be At Risk	1	84.7 ± 1.0	NB	
N	<i>Dicranum condensatum</i>	Condensed Broom Moss			S1?	2 May Be At Risk	1	88.4 ± 0.0	NB	
N	<i>Entodon brevisetus</i>	a Moss			S1?	2 May Be At Risk	1	89.5 ± 10.0	NB	
N	<i>Eurhynchium hians</i>	Light Beaked Moss			S1?	2 May Be At Risk	3	59.9 ± 0.0	NB	
N	<i>Homomallium adnatum</i>	Adnate Hairy-gray Moss			S1?	2 May Be At Risk	2	89.5 ± 10.0	NB	
N	<i>Plagiothecium latebricola</i>	Alder Silk Moss			S1?	2 May Be At Risk	2	13.8 ± 0.0	NB	
N	<i>Racomitrium ericoides</i>	a Moss			S1?	2 May Be At Risk	1	85.6 ± 3.0	NB	
N	<i>Rhytidium rugosum</i>	Wrinkle-leaved Moss			S1?	2 May Be At Risk	2	61.7 ± 0.0	NB	
N	<i>Splachnum pennsylvanicum</i>	Southern Dung Moss			S1?	2 May Be At Risk	1	82.5 ± 1.0	NB	
N	<i>Platybomella lescurii</i>	a Moss			S1?	5 Undetermined	1	82.2 ± 1.0	NB	
N	<i>Cladopodiella francisci</i>	Holt's Notchwort			S1S2	6 Not Assessed	4	83.7 ± 1.0	NB	
N	<i>Harpanthus florovianus</i>	Great Mountain Flapwort			S1S2	6 Not Assessed	2	79.6 ± 1.0	NB	
N	<i>Jungermannia obovata</i>	Egg Flapwort			S1S2	6 Not Assessed	2	9.1 ± 0.0	NB	
N	<i>Pallavicinia lyelli</i>	Lyell's Ribbonwort			S1S2	6 Not Assessed	2	15.9 ± 1.0	NB	
N	<i>Radula tenax</i>	Tenacious Scalewort			S1S2	6 Not Assessed	1	88.7 ± 0.0	NB	
N	<i>Reboulia hemisphaerica</i>	Purple-margined Liverwort			S1S2	6 Not Assessed	1	88.6 ± 1.0	NB	
N	<i>Brachythecium acuminatum</i>	Acuminate Ragged Moss			S1S2	5 Undetermined	6	56.7 ± 100.0	NB	
N	<i>Bryum salinum</i>	a Moss			S1S2	2 May Be At Risk	2	44.0 ± 1.0	NB	
N	<i>Campylopus radiale</i>	Long-stalked Fine Wet Moss			S1S2	5 Undetermined	1	86.2 ± 1.0	NB	
N	<i>Tortula obtusifolia</i>	a Moss			S1S2	2 May Be At Risk	1	40.5 ± 0.0	NB	
N	<i>Distichium inclinatum</i>	Inclined Iris Moss			S1S2	2 May Be At Risk	5	83.5 ± 0.0	NB	
N	<i>Ditrichum pallidum</i>	Pale Cow-hair Moss			S1S2	2 May Be At Risk	3	69.3 ± 3.0	NS	
N	<i>Drummondia prorepens</i>	a Moss			S1S2	2 May Be At Risk	1	86.8 ± 0.0	NS	
N	<i>Hydrohypnum bestii</i>	Best's Brook Moss			S1S2	3 Sensitive	5	69.2 ± 0.0	NB	
N	<i>Sphagnum platyphyllum</i>	Flat-leaved Peat Moss			S1S2	5 Undetermined	1	97.5 ± 1.0	NB	
N	<i>Timmia norvegica</i>	a moss			S1S2	2 May Be At Risk	3	48.0 ± 0.0	NB	
N	<i>Timmia norvegica</i> var. <i>excurrens</i>	a moss			S1S2	2 May Be At Risk	1	83.5 ± 0.0	NB	
N	<i>Tomenytrichum falcifolium</i>	Sickle-leaved Golden Moss			S1S2	2 May Be At Risk	1	35.3 ± 1.0	NB	
N	<i>Tortella humilis</i>	Small Crisp Moss			S1S2	2 May Be At Risk	7	78.5 ± 0.0	NB	
N	<i>Pseudotaxiphyllum distichaceum</i>	a Moss			S1S2	2 May Be At Risk	3	44.0 ± 1.0	NB	
N	<i>Hamatocaulis vernicosus</i>	a Moss			S1S2	2 May Be At Risk	1	20.9 ± 100.0	NB	

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N	<i>Bryohaplodiadum microphyllum</i>	Tiny-leaved Haplodiadum Moss			S1S2	2 May Be At Risk	1	69.3 ± 3.0	NS	
N	<i>Umbilicaria vellea</i>	Grizzled Rocktripe Lichen			S1S2	5 Undetermined	1	83.7 ± 1.0	NB	
N	<i>Peltigera scabrosa</i>	Greater Toad Pelt Lichen			S1S2	2 May Be At Risk	4	89.3 ± 1.0	NB	
N	<i>Calypogeia neesiana</i>	Nees' Pouchwort			S1S3	6 Not Assessed	1	18.7 ± 1.0	NB	
N	<i>Cephalozella elachista</i>	Spurred Threadwort			S1S3	6 Not Assessed	1	15.2 ± 5.0	NB	
N	<i>Porella pinnata</i>	Pinnate Scalewort			S1S3	6 Not Assessed	1	25.5 ± 1.0	NB	
N	<i>Tritomaria scitula</i>	Mountain Notchwort			S1S3	6 Not Assessed	1	91.2 ± 1.0	NB	
N	<i>Amphidium mougeotii</i>	a Moss			S2	3 Sensitive	12	77.8 ± 0.0	NB	
N	<i>Anomodon viticulosus</i>	a Moss			S2	2 May Be At Risk	6	8.7 ± 1.0	NB	
N	<i>Cirriophyllum piliferum</i>	Hair-pointed Moss			S2	3 Sensitive	4	64.2 ± 0.0	NB	
N	<i>Cynodontium strumiferum</i>	Strumose Dogtooth Moss			S2	3 Sensitive	1	88.1 ± 8.0	NB	
N	<i>Dicranella palustris</i>	Drooping-Leaved Fork Moss			S2	3 Sensitive	10	42.6 ± 100.0	NB	
N	<i>Didymodon ferrugineus</i>	a moss			S2	3 Sensitive	2	17.4 ± 1.0	NB	
N	<i>Anomodon tristis</i>	a Moss			S2	2 May Be At Risk	4	84.1 ± 1.0	NB	
N	<i>Hypnum pratense</i>	Meadow Plat Moss			S2	3 Sensitive	1	11.8 ± 0.0	NB	
N	<i>Isopterygiopsis pulchella</i>	Neat Silk Moss			S2	3 Sensitive	7	82.9 ± 0.0	NB	
N	<i>Meesia triquetra</i>	Three-ranked Cold Moss			S2	2 May Be At Risk	1	56.7 ± 100.0	NB	
N	<i>Physcomitrium immersum</i>	a Moss			S2	3 Sensitive	6	25.5 ± 1.0	NB	
N	<i>Platydictya jungermannioides</i>	False Willow Moss			S2	3 Sensitive	3	79.7 ± 0.0	NB	
N	<i>Pohlia elongata</i>	Long-necked Nodding Moss			S2	3 Sensitive	10	78.5 ± 0.0	NB	
N	<i>Seligeria calcarea</i>	Chalk Brittle Moss			S2	3 Sensitive	2	89.3 ± 0.0	NB	
N	<i>Sphagnum centrale</i>	Central Peat Moss			S2	3 Sensitive	7	78.5 ± 0.0	NB	
N	<i>Sphagnum lindbergii</i>	Lindberg's Peat Moss			S2	3 Sensitive	7	15.9 ± 1.0	NB	
N	<i>Sphagnum flexuosum</i>	Flexuous Peatmoss			S2	3 Sensitive	2	86.1 ± 0.0	NB	
N	<i>Tayloria serrata</i>	Serrate Trumpet Moss			S2	3 Sensitive	7	29.2 ± 1.0	NB	
N	<i>Tetradontium brownianum</i>	Little Georgia			S2	3 Sensitive	7	83.1 ± 1.0	NB	
N	<i>Tetraplodon rnioides</i>	Entire-leaved Nitrogen Moss			S2	3 Sensitive	3	37.5 ± 0.0	NB	
N	<i>Thamnobryum alleghaniense</i>	a Moss			S2	3 Sensitive	11	47.9 ± 0.0	NB	
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss			S2	3 Sensitive	1	7.8 ± 0.0	NB	
N	<i>Ulotia phyllanthra</i>	a Moss			S2	3 Sensitive	5	44.0 ± 1.0	NB	
N	<i>Anomobryum filiforme</i>	a moss			S2	5 Undetermined	5	46.9 ± 0.0	NB	
N	<i>Cladonia macrophylla</i>	Fig-leaved Lichen			S2	5 Undetermined	3	86.8 ± 1.0	NB	
N	<i>Nephroma laevigatum</i>	Mustard Kidney Lichen			S2	2 May Be At Risk	2	77.5 ± 0.0	NS	
N	<i>Andreea rothii</i>	a Moss			S2?	3 Sensitive	6	18.3 ± 0.0	NB	
N	<i>Anomodon minor digastrum</i>	Blunt-leaved Anomodon Moss			S2?	2 May Be At Risk	1	95.6 ± 1.0	NB	
N	<i>Bryum pallescens</i>	Pale Bryum Moss			S2?	3 Sensitive	2	51.9 ± 0.0	NB	
N	<i>Dichelyma capillaceum</i>	Hairlike Dichelyma Moss			S2?	5 Undetermined	2	7.1 ± 1.0	NB	
N	<i>Dicranum spurium</i>	Spurred Broom Moss			S2?	3 Sensitive	1	89.9 ± 3.0	NB	
N	<i>Hygrotyponum montanum</i>	a Moss			S2?	3 Sensitive	2	30.2 ± 0.0	NB	
N	<i>Schistostega pennata</i>	Luminous Moss			S2?	3 Sensitive	2	61.1 ± 1.0	NB	
N	<i>Seligeria campylopoda</i>	a Moss			S2?	3 Sensitive	3	42.6 ± 100.0	NB	
N	<i>Seligeria diversifolia</i>	a Moss			S2?	3 Sensitive	1	20.9 ± 100.0	NB	
N	<i>Sphagnum angermanicum</i>	a Peatmoss			S2?	3 Sensitive	2	46.9 ± 0.0	NB	
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss			S2?	3 Sensitive	3	33.2 ± 10.0	NB	
N	<i>Ramalina pollinaria</i>	Chalky Ramalina Lichen			S2?	3 Sensitive	6	47.9 ± 0.0	NB	
N	<i>Nephroma arcticum</i>	Arctic Kidney Lichen			S2?	5 Undetermined	1	86.9 ± 1.0	NB	
N					S2?	3 Sensitive	1	80.8 ± 1.0	NB	

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N	<i>Bryum uliginosum</i>	a Moss			S2S3	3 Sensitive	2	19.2 ± 4.0	NB	
N	<i>Buxbaumia aphylla</i>	Brown Shield Moss			S2S3	3 Sensitive	2	86.1 ± 15.0	NB	
N	<i>Calliergonella cuspidata</i>	Common Large Wetland Moss			S2S3	3 Sensitive	7	4.3 ± 0.0	NB	
N	<i>Campylopus polygamum</i>	a Moss			S2S3	3 Sensitive	1	81.1 ± 0.0	NB	
N	<i>Palustrinella falcata</i>	a Moss			S2S3	3 Sensitive	2	77.8 ± 0.0	NB	
N	<i>Didymodon rigidulus</i>	Rigid Screw Moss			S2S3	3 Sensitive	9	83.5 ± 0.0	NB	
N	<i>Ephemerum serratum</i>	a Moss			S2S3	3 Sensitive	2	62.4 ± 0.0	NB	
N	<i>Fissidens bushii</i>	Bush's Pocket Moss			S2S3	3 Sensitive	1	91.8 ± 3.0	NS	
N	<i>Orthotrichum speciosum</i>	Showy Bristle Moss			S2S3	5 Undetermined	2	72.8 ± 2.0	NB	
N	<i>Pohlia prolifera</i>	Cottony Nodding Moss			S2S3	3 Sensitive	4	83.2 ± 1.0	NB	
N	<i>Racomitrium fasciculare</i>	a Moss			S2S3	3 Sensitive	4	77.8 ± 0.0	NB	
N	<i>Racomitrium affine</i>	a Moss			S2S3	3 Sensitive	1	88.7 ± 1.0	NB	
N	<i>Saelania glaucescens</i>	Blue Dew Moss			S2S3	3 Sensitive	2	88.6 ± 0.0	NB	
N	<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss			S2S3	3 Sensitive	4	3.3 ± 1.0	NB	
N	<i>Sphagnum subfulvum</i>	a Peatmoss			S2S3	2 May Be At Risk	3	35.3 ± 1.0	NB	
N	<i>Taxiphyllum deplanatum</i>	Imbricate Yew-leaved Moss			S2S3	3 Sensitive	3	44.0 ± 1.0	NB	
N	<i>Zygodon viridissimus</i>	a Moss			S2S3	2 May Be At Risk	4	80.6 ± 5.0	NS	
N	<i>Schistidium agassizii</i>	Elf Bloom Moss			S2S3	3 Sensitive	5	72.8 ± 2.0	NB	
N	<i>Loeskeobryum brevirostre</i>	a Moss			S2S3	3 Sensitive	13	69.8 ± 2.0	NB	
N	<i>Cyrtomium hymenophylloides</i>	Short-pointed Lantern Moss			S2S3	3 Sensitive	6	77.8 ± 0.0	NB	
N	<i>Cladonia acuminata</i>	Scantily Clad Pixie Lichen			S2S3	5 Undetermined	2	80.7 ± 1.0	NB	
N	<i>Cladonia ramulosa</i>	Bran Lichen			S2S3	5 Undetermined	4	84.9 ± 1.0	NB	
N	<i>Cladonia sulphurina</i>	Greater Sulphur-cup Lichen			S2S3	5 Undetermined	1	94.0 ± 1.0	NB	
N	<i>Parmelopsis ambigua</i>	Green Starburst Lichen			S2S3	5 Undetermined	1	78.3 ± 1.0	NB	
N	<i>Sphaerophorus globosus</i>	Northern Coral Lichen			S2S3	3 Sensitive	5	77.0 ± 1.0	NB	
N	<i>Cynodontium tenellum</i>	Delicate Dogtooth Moss			S3	3 Sensitive	1	44.0 ± 1.0	NB	
N	<i>Hypnum curvifolium</i>	Curved-leaved Plat Moss			S3	3 Sensitive	11	73.9 ± 3.0	NS	
N	<i>Tortella fragilis</i>	Fragile Twisted Moss			S3	3 Sensitive	1	83.5 ± 0.0	NB	
N	<i>Schistidium maritimum</i>	a Moss			S3	4 Secure	7	44.0 ± 1.0	NB	
N	<i>Hymenostylium recurvirostre</i>	Hymenostylium Moss			S3	3 Sensitive	4	83.2 ± 1.0	NB	
N	<i>Solorina saccata</i>	Woodland Owl Lichen			S3	5 Undetermined	6	78.3 ± 1.0	NB	
N	<i>Normanina pulchella</i>	Rimmed Elf-ear Lichen			S3	5 Undetermined	3	79.5 ± 1.0	NB	
N	<i>Cladonia farinacea</i>	Farinose Pixie Lichen			S3	5 Undetermined	5	86.8 ± 1.0	NB	
N	<i>Leptogium lichenoides</i>	Tattered Jellyskin Lichen			S3	5 Undetermined	6	83.7 ± 1.0	NB	
N	<i>Nephroma bellum</i>	Naked Kidney Lichen			S3	4 Secure	3	79.8 ± 1.0	NB	
N	<i>Peltigera degenii</i>	Lustrous Pelt Lichen			S3	5 Undetermined	3	80.3 ± 1.0	NB	
N	<i>Usnea strigosa</i>	Bushy Beard Lichen			S3	5 Undetermined	1	89.9 ± 1.0	NB	
N	<i>Leptogium laceroides</i>	Short-bearded Jellyskin Lichen			S3	3 Sensitive	2	85.8 ± 1.0	NB	
N	<i>Peltigera membranacea</i>	Membranous Pelt Lichen			S3	5 Undetermined	6	78.3 ± 1.0	NB	
N	<i>Cladonia carniole</i>	Crowned Pixie-cup Lichen			S3	5 Undetermined	1	86.8 ± 1.0	NB	
N	<i>Cladonia deformis</i>	Lesser Sulphur-cup Lichen			S3	4 Secure	5	77.6 ± 1.0	NB	
N	<i>Aulacomnium androgynum</i>	Little Groove Moss			S3?	4 Secure	7	69.3 ± 3.0	NS	
N	<i>Dicranella rufescens</i>	Red Forklet Moss			S3?	5 Undetermined	2	83.5 ± 0.0	NB	
N	<i>Rhytidiadelphus loreus</i>	Lanky Moss			S3?	2 May Be At Risk	2	83.7 ± 1.0	NB	
N	<i>Sphagnum lescurei</i>	a Peatmoss			S3?	5 Undetermined	5	7.8 ± 0.0	NB	
N	<i>Stereocaulon subcoralloides</i>	Coralloid Foam Lichen			S3?	5 Undetermined	1	86.9 ± 1.0	NB	

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N	<i>Anomodon rugelii</i>	Rugel's Anomodon Moss			S3S4	3 Sensitive	2	86.5 ± 1.0	NS	
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss			S3S4	4 Secure	1	93.3 ± 8.0	NB	
N	<i>Brachythecium velutinum</i>	Velvet Ragged Moss			S3S4	4 Secure	3	79.5 ± 1.0	NB	
N	<i>Dicranella cerviculata</i>	a Moss			S3S4	3 Sensitive	5	44.0 ± 1.0	NB	
N	<i>Dicranum majus</i>	Greater Broom Moss			S3S4	4 Secure	19	37.5 ± 0.0	NB	
N	<i>Dicranum leoneuron</i>	a Dicranum Moss			S3S4	4 Secure	1	83.2 ± 0.0	NB	
N	<i>Encalypta ciliata</i>	Fringed Extinquisher Moss			S3S4	3 Sensitive	1	83.8 ± 0.0	NB	
N	<i>Fissidens bryoides</i>	Lesser Pocket Moss			S3S4	4 Secure	2	17.8 ± 5.0	NB	
N	<i>Heterocladium dimorphum</i>	Dimorphous Tangle Moss			S3S4	4 Secure	4	72.8 ± 2.0	NB	
N	<i>Isoteryglopsis muelleriana</i>	a Moss			S3S4	4 Secure	18	81.5 ± 0.0	NB	
N	<i>Myurella julacea</i>	Small Mouse-tail Moss			S3S4	4 Secure	3	83.2 ± 0.0	NB	
N	<i>Physcomitrium pyriforme</i>	Pear-shaped Urn Moss			S3S4	3 Sensitive	5	59.9 ± 0.0	NB	
N	<i>Pogonatum dentatum</i>	Mountain Hair Moss			S3S4	4 Secure	2	44.0 ± 1.0	NB	
N	<i>quinquefarum</i>	Five-ranked Peat Moss			S3S4	4 Secure	1	83.5 ± 0.0	NB	
N	<i>Sphagnum torreyanum</i>	a Peatmoss			S3S4	4 Secure	5	20.6 ± 0.0	NB	
N	<i>Sphagnum austini</i>	Austin's Peat Moss			S3S4	4 Secure	1	20.4 ± 1.0	NB	
N	<i>Sphagnum contortum</i>	Twisted Peat Moss			S3S4	4 Secure	1	4.4 ± 0.0	NB	
N	<i>Splachnum rubrum</i>	Red Collar Moss			S3S4	4 Secure	1	24.9 ± 1.0	NB	
N	<i>Tetraphis geniculata</i>	Geniculate Four-tooth Moss			S3S4	4 Secure	12	14.0 ± 0.0	NB	
N	<i>Tetraplodon angustatus</i>	Toothed-Heaved Nitrogen Moss			S3S4	4 Secure	2	44.0 ± 1.0	NB	
N	<i>Weissia controversa</i>	Green-Cushioned Weissia			S3S4	4 Secure	2	77.6 ± 0.0	NS	
N	<i>Abietinella abietina</i>	Wiry Fern Moss			S3S4	4 Secure	1	83.5 ± 0.0	NB	
N	<i>Trichostomum tenuirostre</i>	Acid-Soil Moss			S3S4	4 Secure	6	69.6 ± 3.0	NS	
N	<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen			S3S4	3 Sensitive	2	82.6 ± 1.0	NB	
N	<i>Ramalina thrausta</i>	Angelhair Ramalina Lichen			S3S4	5 Undetermined	11	77.0 ± 1.0	NB	
N	<i>Hypogymnia vittata</i>	Slender Monk's Hood Lichen			S3S4	4 Secure	22	77.0 ± 1.0	NB	
N	<i>Cladonia floerkeana</i>	Gritty British Soldiers Lichen			S3S4	4 Secure	3	78.7 ± 1.0	NB	
N	<i>Hypocenomyce friesii</i>	a Lichen			S3S4	5 Undetermined	1	83.7 ± 1.0	NB	
N	<i>Melanella panniformis</i>	Shingled Camouflage Lichen			S3S4	5 Undetermined	4	80.1 ± 1.0	NB	
N	<i>Nephroma parile</i>	Powdery Kidney Lichen			S3S4	4 Secure	6	83.7 ± 1.0	NB	
N	<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen			S3S4	4 Secure	11	78.3 ± 1.0	NB	
N	<i>Pseudocyphellaria perpetua</i>	Gilded Specklebelly Lichen			S3S4	3 Sensitive	2	85.6 ± 1.0	NB	
N	<i>Anaptychia palmulata</i>	Shaggy Fringed Lichen			S3S4	3 Sensitive	3	85.6 ± 1.0	NB	
N	<i>Peltigera neopolycactyla</i>	Undulating Pelt Lichen			S3S4	5 Undetermined	8	78.3 ± 1.0	NB	
N	<i>Cladonia cariosa</i>	Lesser Ribbed Pixie Lichen			S3S4	4 Secure	3	88.6 ± 1.0	NB	
N	<i>Hypocenomyce scalaris</i>	Common Clam Lichen			S3S4	5 Undetermined	1	86.9 ± 1.0	NB	
N	<i>Dermatocarpon luridum</i>	Brookside Stippleback Lichen			S3S4	4 Secure	5	77.6 ± 1.0	NB	
N	<i>Gimmia anodon</i>	Toothless Grimmia Moss			SH	5 Undetermined	2	5.5 ± 10.0	NB	
N	<i>Leucodon brachypus</i>	a Moss			SH	2 May Be At Risk	8	74.4 ± 100.0	NB	
N	<i>Thelia hirtella</i>	a Moss			SH	2 May Be At Risk	2	56.7 ± 100.0	NB	
N	<i>Cyrtio-hypnum minutulum</i>	Tiny Cedar Moss			SH	2 May Be At Risk	3	85.7 ± 10.0	NB	
P	<i>Polemonium cinerea</i>	Buttercup	Endangered	Endangered	S1	1 At Risk	58	17.8 ± 1.0	NB	
P	<i>vanbruntiae</i>	Van Brunt's Jacob's-ladder	Threatened	Threatened	S1	1 At Risk	72	39.5 ± 0.0	NB	

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P	<i>Symphoricarichum antiochiense</i>	Anticosti Aster	Threatened	Threatened	Endangered	S2S3	1 At Risk	4	95.6 ± 0.0	NB
P	<i>Isoetes prototypus</i>	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	1 At Risk	27	25.2 ± 0.0	NB
P	<i>Pterospora andromedea</i>	Woodland Pinedrops	Special Concern	Special Concern	Endangered	S1	1 At Risk	11	92.5 ± 0.0	NB
P	<i>Cyptaotaenia canadensis</i>	Canada Honewort	Special Concern	Special Concern		S1	2 May Be At Risk	1	60.9 ± 1.0	NB
P	<i>Sanicula trifoliata</i>	Large-Fruited Sanicle	Special Concern	Special Concern		S1	2 May Be At Risk	1	29.0 ± 5.0	NB
P	<i>Antennaria parlinii</i>	a Pussytoes	Special Concern	Special Concern		S1	2 May Be At Risk	7	49.3 ± 1.0	NB
P	<i>Antennaria howellii</i>	Pussy-Toes	Special Concern	Special Concern		S1	2 May Be At Risk	2	8.2 ± 5.0	NB
P	<i>ssp. petaloidea</i>	Swamp Beggarticks	Special Concern	Special Concern		S1	2 May Be At Risk	3	66.5 ± 0.0	NB
P	<i>Bidens discoides</i>	Eastern Cudweed	Special Concern	Special Concern		S1	2 May Be At Risk	5	81.8 ± 0.0	NB
P	<i>Pseudognaphalium obtusifolium</i>		Special Concern	Special Concern		S1	2 May Be At Risk	13	94.2 ± 0.0	NB
P	<i>Helianthus decapetalus</i>	Ten-rayed Sunflower	Special Concern	Special Concern		S1	2 May Be At Risk	5	31.8 ± 1.0	NB
P	<i>Hieracium kalmii</i>	Kalm's Hawkweed	Special Concern	Special Concern		S1	2 May Be At Risk	7	32.6 ± 1.0	NB
P	<i>Hieracium kalmii</i> var. <i>kalmii</i>	Kalm's Hawkweed	Special Concern	Special Concern		S1	2 May Be At Risk	8	39.9 ± 0.0	NB
P	<i>Hieracium paniculatum</i>	Panicled Hawkweed	Special Concern	Special Concern		S1	2 May Be At Risk	5	77.9 ± 0.0	NB
P	<i>Hieracium robinsonii</i>	Robinson's Hawkweed	Special Concern	Special Concern		S1	3 Sensitive	14	92.0 ± 0.0	NB
P	<i>Senecio pseudoamica</i>	Seabeach Ragwort	Special Concern	Special Concern		S1	2 May Be At Risk	16	24.0 ± 0.0	NB
P	<i>Cardamine parviflora</i> var. <i>arenicola</i>	Small-flowered Bittercress	Special Concern	Special Concern		S1	2 May Be At Risk	1	94.3 ± 1.0	NB
P	<i>Cardamine concatenata</i>	Cut-leaved Toothwort	Special Concern	Special Concern		S1	2 May Be At Risk	21	8.1 ± 0.0	NB
P	<i>Draba arabisans</i>	Rock Whitlow-Grass	Special Concern	Special Concern		S1	2 May Be At Risk	10	93.1 ± 0.0	NB
P	<i>Draba breweri</i> var. <i>cana</i>	Brewer's Whitlow-grass	Special Concern	Special Concern		S1	2 May Be At Risk	12	7.5 ± 1.0	NB
P	<i>Draba glabella</i>	Rock Whitlow-Grass	Special Concern	Special Concern		S1	2 May Be At Risk	4	24.7 ± 0.0	NB
P	<i>Minuartia groenlandica</i>	Greenland Stitchwort	Special Concern	Special Concern		S1	2 May Be At Risk	4	6.1 ± 1.0	NB
P	<i>Chenopodium capitatum</i>	Strawberry-bite	Special Concern	Special Concern		S1	2 May Be At Risk	13	66.1 ± 1.0	NB
P	<i>Chenopodium simplex</i>	Maple-leaved Goosefoot	Special Concern	Special Concern		S1	2 May Be At Risk	2	13.5 ± 0.0	NB
P	<i>Triadenum virginicum</i>	Virginia St John's-wort	Special Concern	Special Concern		S1	2 May Be At Risk	5	8.1 ± 10.0	NB
P	<i>Corema conradii</i>	Broom Crowberry	Special Concern	Special Concern		S1	2 May Be At Risk	2	41.4 ± 0.0	NB
P	<i>Vaccinium boreale</i>	Northern Blueberry	Special Concern	Special Concern		S1	2 May Be At Risk	1	90.5 ± 5.0	NB
P	<i>Vaccinium corymbosum</i>	Highbush Blueberry	Special Concern	Special Concern		S1	3 Sensitive	8	87.9 ± 0.0	NB
P	<i>Chamaesyce polygonifolia</i>	Seaside Spurge	Special Concern	Special Concern		S1	2 May Be At Risk	7	65.2 ± 0.0	NB
P	<i>Lespedeza capitata</i>	Round-headed Bush-clover	Special Concern	Special Concern		S1	2 May Be At Risk	6	56.4 ± 0.0	NB
P	<i>Gentiana rubricaulis</i>	Purple-stemmed Gentian	Special Concern	Special Concern		S1	2 May Be At Risk	2	69.4 ± 0.0	NB
P	<i>Lomatogonium rotatum</i>	Marsh Felwort	Special Concern	Special Concern		S1	2 May Be At Risk	2	44.0 ± 0.0	NB
P	<i>Prosepinaca pectinata</i>	Comb-leaved Mermaidweed	Special Concern	Special Concern		S1	2 May Be At Risk	4	30.4 ± 0.0	NB
P	<i>Pycnanthemum virginianum</i>	Virginia Mountain Mint	Special Concern	Special Concern		S1	2 May Be At Risk	16	14.0 ± 1.0	NB
P	<i>Lysimachia quadrifolia</i>	Whorled Yellow Loosestrife	Special Concern	Special Concern		S1	2 May Be At Risk	30	69.5 ± 2.0	NS
P	<i>Primula laurentiana</i>	Laurentian Primrose	Special Concern	Special Concern		S1	2 May Be At Risk	6	12.4 ± 0.0	NB
P	<i>Ranunculus sceleratus</i>	Cursed Buttercup	Special Concern	Special Concern		S1	2 May Be At Risk	5	83.4 ± 0.0	NB
P	<i>Crataegus ionesia</i>	Jones' Hawthorn	Special Concern	Special Concern		S1	5 Undetermined	1	94.9 ± 0.0	NB
P	<i>Potentilla canadensis</i>	Canada Cinquefoil	Special Concern	Special Concern		S1	2 May Be At Risk	1	77.4 ± 5.0	NB
P	<i>Galium brevipes</i>	Limestone Swamp Bedstraw	Special Concern	Special Concern		S1	2 May Be At Risk	24	8.6 ± 10.0	NB
P	<i>Saxifraga paniculata</i> ssp. <i>neogaea</i>	White Mountain Saxifrage	Special Concern	Special Concern		S1	2 May Be At Risk	8	16.5 ± 1.0	NB
P	<i>Agalinis paupercula</i> var. <i>borealis</i>	Small-flowered Agalinis	Special Concern	Special Concern		S1	2 May Be At Risk			NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Agalinis tenuifolia</i>	Slender Agalinis			S1	2 May Be At Risk	2 May Be At Risk	6	79.8 ± 0.0	NB
P	<i>Gnaphalium aureum</i>	Golden Hedge-Hyssop			S1	3 Sensitive	3 Sensitive	3	22.1 ± 0.0	NB
P	<i>Pedicularis canadensis</i>	Canada Louisewort			S1	2 May Be At Risk	2 May Be At Risk	3	64.8 ± 0.0	NB
P	<i>Viola sagittata</i> var. <i>ovata</i>	Arrow-Leaved Violet			S1	2 May Be At Risk	2 May Be At Risk	38	71.5 ± 0.0	NS
P	<i>Alisma subcordatum</i>	Southern Water Plantain			S1	5 Undetermined	5 Undetermined	4	23.9 ± 0.0	NB
P	<i>Carex atlantica</i> ssp. <i>atlantica</i>	Atlantic Sedge			S1	2 May Be At Risk	2 May Be At Risk	1	64.4 ± 0.0	NB
P	<i>Carex backii</i>	Rocky Mountain Sedge			S1	2 May Be At Risk	2 May Be At Risk	8	62.2 ± 0.0	NB
P	<i>Carex merrii-fermaidii</i>	Merritt Fernald's Sedge			S1	2 May Be At Risk	2 May Be At Risk	3	85.1 ± 0.0	NB
P	<i>Carex saxatilis</i>	Russet Sedge			S1	2 May Be At Risk	2 May Be At Risk	13	6.6 ± 10.0	NB
P	<i>Carex sterilis</i>	Sterile Sedge			S1	2 May Be At Risk	2 May Be At Risk	2	96.9 ± 2.0	NB
P	<i>Carex grisea</i>	Inflated Narrow-leaved Sedge			S1	2 May Be At Risk	2 May Be At Risk	10	34.4 ± 0.0	NB
P	<i>Cyperus diandrus</i>	Low Flatsedge			S1	2 May Be At Risk	2 May Be At Risk	7	79.8 ± 1.0	NB
P	<i>Cyperus lupulinus</i>	Hop Flatsedge			S1	2 May Be At Risk	2 May Be At Risk	6	62.5 ± 0.0	NB
P	<i>Cyperus lupulinus</i> ssp. <i>macilentus</i>	Hop Flatsedge			S1	2 May Be At Risk	2 May Be At Risk	16	60.3 ± 0.0	NB
P	<i>Rhynchospora capillacea</i>	Slender Beakrush			S1	2 May Be At Risk	2 May Be At Risk	3	95.1 ± 0.0	NB
P	<i>Scirpus pendulus</i>	Hanging Bulrush			S1	2 May Be At Risk	2 May Be At Risk	5	92.8 ± 0.0	NB
P	<i>Sisyrinchium angustifolium</i>	Narrow-leaved Blue-eyed-grass			S1	2 May Be At Risk	2 May Be At Risk	8	9.8 ± 1.0	NB
P	<i>Juncus greenii</i>	Greene's Rush			S1	2 May Be At Risk	2 May Be At Risk	1	54.2 ± 0.0	NB
P	<i>Juncus subtilis</i>	Creeping Rush			S1	2 May Be At Risk	2 May Be At Risk	1	41.4 ± 5.0	NB
P	<i>Allium canadense</i>	Canada Garlic			S1	2 May Be At Risk	2 May Be At Risk	11	30.7 ± 0.0	NB
P	<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain			S1	2 May Be At Risk	2 May Be At Risk	11	74.1 ± 0.0	NB
P	<i>Malaxis brachypoda</i>	White Adder's-Mouth			S1	2 May Be At Risk	2 May Be At Risk	3	82.3 ± 0.0	NS
P	<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid			S1	2 May Be At Risk	2 May Be At Risk	14	58.0 ± 0.0	NB
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid			S1	2 May Be At Risk	2 May Be At Risk	2	61.3 ± 1.0	NB
P	<i>Spiranthes casei</i>	Case's Ladies'-Tresses			S1	2 May Be At Risk	2 May Be At Risk	6	92.6 ± 0.0	NB
P	<i>Bromus pubescens</i>	Hairy Wood Brome Grass			S1	5 Undetermined	5 Undetermined	6	62.8 ± 0.0	NB
P	<i>Cinna arundinacea</i>	Sweet Wood Reed Grass			S1	2 May Be At Risk	2 May Be At Risk	6	38.9 ± 0.0	NB
P	<i>Danthonia compressa</i>	Flattened Oat Grass			S1	2 May Be At Risk	2 May Be At Risk	6	62.8 ± 1.0	NB
P	<i>Dichanthium dichotomum</i>	Forked Panic Grass			S1	2 May Be At Risk	2 May Be At Risk	5	20.9 ± 1.0	NB
P	<i>Festuca subverticillata</i>	Nodding Fescue			S1	2 May Be At Risk	2 May Be At Risk	2	87.8 ± 1.0	NS
P	<i>Glyceria obtusa</i>	Atlantic Manna Grass			S1	2 May Be At Risk	2 May Be At Risk	4	46.5 ± 0.0	NB
P	<i>Sporobolus compositus</i>	Rough Dropseed			S1	2 May Be At Risk	2 May Be At Risk	17	94.4 ± 0.0	NB
P	<i>Potamogeton friesii</i>	Fries' Pondweed			S1	2 May Be At Risk	2 May Be At Risk	6	12.5 ± 5.0	NB
P	<i>Potamogeton nodosus</i>	Long-leaved Pondweed			S1	2 May Be At Risk	2 May Be At Risk	4	71.1 ± 0.0	NB
P	<i>Potamogeton strictifolius</i>	Straight-leaved Pondweed			S1	2 May Be At Risk	2 May Be At Risk	2	14.8 ± 0.0	NB
P	<i>Xyris difformis</i>	Bog Yellow-eyed-grass			S1	5 Undetermined	5 Undetermined	3	13.3 ± 0.0	NB
P	<i>Asplenium ruta-muraria</i> var. <i>cryptolepis</i>	Wallrue Spleenwort			S1	2 May Be At Risk	2 May Be At Risk	3	8.1 ± 0.0	NB
P	<i>Cystopteris laurentiana</i>	Laurentian Bladder Fern			S1	2 May Be At Risk	2 May Be At Risk	1	61.3 ± 1.0	NB
P	<i>Botrychium oneidense</i>	Blunt-lobed Moonwort			S1	2 May Be At Risk	2 May Be At Risk	4	56.4 ± 0.0	NB
P	<i>Botrychium rugulosum</i>	Rugulose Moonwort			S1	2 May Be At Risk	2 May Be At Risk	1	86.2 ± 1.0	NB
P	<i>Schizaea pusilla</i>	Little Curlygrass Fern			S1	2 May Be At Risk	2 May Be At Risk	26	20.3 ± 0.0	NB
P	<i>Hieracium kalmii</i> var. <i>fasciculatum</i>	Kalm's Hawkweed			S1?	5 Undetermined	5 Undetermined	6	83.0 ± 0.0	NB
P	<i>Drosera rotundifolia</i> var. <i>comosa</i>	Round-leaved Sundew			S1?	5 Undetermined	5 Undetermined	5	65.3 ± 1.0	NB
P	<i>Carex laxiflora</i>	Loose-Flowered Sedge			S1?	5 Undetermined	5 Undetermined	2	73.3 ± 5.0	NS
P	<i>Wolffia columbiana</i>	Columbian Watermeal			S1?	2 May Be At Risk	2 May Be At Risk	5	67.3 ± 0.0	NB

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P	<i>Rumex aquaticus</i> var. <i>fenestratus</i>	Western Dock			S1S2	2 May Be At Risk	1	80.3 ± 1.0	NB	
P	<i>Saxifraga virginensis</i>	Early Saxifrage			S1S2	2 May Be At Risk	10	92.5 ± 0.0	NB	
P	<i>Potamogeton bicupulatus</i>	Snailseed Pondweed			S1S2	2 May Be At Risk	5	33.6 ± 0.0	NB	
P	<i>Selaginella rupestris</i>	Rock Spikemoss			S1S2	2 May Be At Risk	26	61.5 ± 1.0	NB	
P	<i>Thelypteris simulata</i>	Bog Fern			S1S2	2 May Be At Risk	7	66.8 ± 0.0	NB	
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder			S1S3	2 May Be At Risk	2	9.0 ± 0.0	NB	
P	<i>Listera australis</i>	Southern Twayblade		Endangered	S2	1 At Risk	15	78.9 ± 0.0	NB	
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely			S2	3 Sensitive	1	86.4 ± 0.0	NB	
P	<i>Pseudognaphalium macounii</i>	Macoun's Cudweed			S2	3 Sensitive	8	8.3 ± 0.0	NB	
P	<i>Solidago simplex</i> var. <i>racemosa</i>	Sticky Goldenrod			S2	2 May Be At Risk	12	93.7 ± 0.0	NB	
P	<i>Ionactis linearifolius</i>	Stiff Aster			S2	3 Sensitive	1	90.6 ± 0.0	NB	
P	<i>Symphoricarichum racemosum</i>	Small White Aster			S2	3 Sensitive	7	58.3 ± 1.0	NB	
P	<i>Impatiens pallida</i>	Pale Jewelweed			S2	2 May Be At Risk	4	81.4 ± 0.0	NS	
P	<i>Alnus serrulata</i>	Smooth Alder			S2	3 Sensitive	8	43.6 ± 0.0	NB	
P	<i>Arabis drummondii</i>	Drummond's Rockcress			S2	3 Sensitive	19	7.7 ± 1.0	NB	
P	<i>Sagina nodosa</i>	Knotted Peatwort			S2	3 Sensitive	15	44.1 ± 1.0	NB	
P	<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Peatwort			S2	3 Sensitive	2	25.8 ± 0.0	NB	
P	<i>Stellaria longifolia</i>	Long-leaved Starwort			S2	3 Sensitive	7	7.0 ± 10.0	NB	
P	<i>Atriplex franktonii</i>	Frankton's Saltbush			S2	4 Secure	3	38.8 ± 1.0	NB	
P	<i>Chenopodium rubrum</i>	Red Pigweed			S2	3 Sensitive	4	7.3 ± 1.0	NB	
P	<i>Hypericum dissimulatum</i>	Disguised St John's-wort			S2	3 Sensitive	7	60.1 ± 1.0	NB	
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed			S2	3 Sensitive	5	95.3 ± 1.0	NB	
P	<i>Viburnum lentago</i>	Nannyberry			S2	4 Secure	12	87.4 ± 0.0	NB	
P	<i>Viburnum recognitum</i>	Northern Arrow-Wood			S2	4 Secure	1	65.3 ± 0.0	NB	
P	<i>Astragalus eucoismus</i>	Elegant Milk-veich			S2	2 May Be At Risk	10	17.5 ± 0.0	NB	
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed			S2	3 Sensitive	18	7.8 ± 50.0	NB	
P	<i>Quercus macrocarpa</i>	Bur Oak			S2	2 May Be At Risk	44	7.5 ± 1.0	NB	
P	<i>Gentiana linearis</i>	Narrow-Leaved Gentian			S2	3 Sensitive	5	85.7 ± 5.0	NB	
P	<i>Myriophyllum humile</i>	Low Water Milfoil			S2	3 Sensitive	5	64.4 ± 1.0	NB	
P	<i>Proserpinaca palustris</i> var. <i>crebra</i>	Marsh Mermaidweed			S2	3 Sensitive	10	29.4 ± 0.0	NB	
P	<i>Hedoma pulegioides</i>	American False Pennyroyal			S2	4 Secure	60	8.7 ± 0.0	NB	
P	<i>Nuphar lutea</i> ssp. <i>rubrodisca</i>	Red-disked Yellow Pond-lily			S2	3 Sensitive	9	17.3 ± 1.0	NB	
P	<i>Orobanche uniflora</i>	One-Flowered Broomrape			S2	3 Sensitive	13	8.2 ± 1.0	NB	
P	<i>Polygala paucifolia</i>	Fringed Milkwort			S2	3 Sensitive	15	63.0 ± 0.0	NB	
P	<i>Polygonum amphibium</i> var. <i>emersum</i>	Water Smartweed			S2	3 Sensitive	24	29.4 ± 0.0	NB	
P	<i>Polygonum careyi</i>	Carey's Smartweed			S2	3 Sensitive	15	20.5 ± 5.0	NB	
P	<i>Podostemum ceratophyllum</i>	Hom-leaved Riverweed			S2	3 Sensitive	8	50.7 ± 0.0	NB	
P	<i>Anemone multifida</i>	Cut-leaved Anemone			S2	3 Sensitive	1	95.7 ± 0.0	NB	
P	<i>Hepatica nobilis</i> var. <i>obtusata</i>	Round-lobed Hepatica			S2	3 Sensitive	35	49.4 ± 1.0	NB	
P	<i>Ranunculus flabellaris</i>	Yellow Water Buttercup			S2	4 Secure	14	39.4 ± 0.0	NB	
P	<i>Ranunculus longirostris</i>	Eastern White Water-Crowfoot			S2	5 Undetermined	5	77.5 ± 1.0	NB	
P	<i>Crataegus scabrada</i>	Rough Hawthorn			S2	3 Sensitive	9	8.1 ± 0.0	NB	
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn			S2	3 Sensitive	1	86.2 ± 5.0	NB	

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P	<i>Cephalanthus occidentalis</i>	Common Buttonbush			S2	3 Sensitive	3 Sensitive	19	56.2 ± 0.0	NB
P	<i>Salix candida</i>	Sage Willow			S2	3 Sensitive	3 Sensitive	3	92.5 ± 1.0	NS
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis			S2	3 Sensitive	3 Sensitive	27	72.8 ± 1.0	NS
P	<i>Euphrasia randii</i>	Rand's Eyebright			S2	2 May Be At Risk	2 May Be At Risk	16	25.3 ± 0.0	NB
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort			S2	3 Sensitive	3 Sensitive	5	16.1 ± 5.0	NB
P	<i>Dirca palustris</i>	Eastern Leatherwood			S2	2 May Be At Risk	2 May Be At Risk	4	92.6 ± 0.0	NB
P	<i>Phytolacca leptostachya</i>	American Lopseed			S2	3 Sensitive	3 Sensitive	1	97.7 ± 1.0	NB
P	<i>Verbena urticifolia</i>	White Vervain			S2	2 May Be At Risk	2 May Be At Risk	10	92.7 ± 1.0	NB
P	<i>Viola novae-angliae</i>	New England Violet			S2	3 Sensitive	3 Sensitive	4	24.2 ± 0.0	NB
P	<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage			S2	3 Sensitive	3 Sensitive	66	8.8 ± 1.0	NB
P	<i>Carex comosa</i>	Bearded Sedge			S2	2 May Be At Risk	2 May Be At Risk	2	97.0 ± 1.0	NS
P	<i>Carex granularis</i>	Limestone Meadow Sedge			S2	3 Sensitive	3 Sensitive	6	60.9 ± 5.0	NB
P	<i>Carex gynocrates</i>	Northern Bog Sedge			S2	3 Sensitive	3 Sensitive	5	62.8 ± 1.0	NB
P	<i>Carex hirtifolia</i>	Pubescent Sedge			S2	3 Sensitive	3 Sensitive	4	37.4 ± 0.0	NB
P	<i>Carex livida</i> var. <i>radicaulis</i>	Livid Sedge			S2	3 Sensitive	3 Sensitive	1	8.3 ± 2.0	NB
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge			S2	3 Sensitive	3 Sensitive	2	81.8 ± 0.0	NB
P	<i>Carex prairea</i>	Prairie Sedge			S2	3 Sensitive	3 Sensitive	1	86.0 ± 5.0	NS
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge			S2	3 Sensitive	3 Sensitive	2	79.5 ± 0.0	NB
P	<i>Carex salina</i>	Saltmarsh Sedge			S2	3 Sensitive	3 Sensitive	2	9.3 ± 1.0	NB
P	<i>Carex sprengei</i>	Longbeak Sedge			S2	3 Sensitive	3 Sensitive	3	56.7 ± 0.0	NB
P	<i>Carex tenuiflora</i>	Sparse-Flowered Sedge			S2	2 May Be At Risk	2 May Be At Risk	6	80.4 ± 0.0	NB
P	<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge			S2	3 Sensitive	3 Sensitive	5	12.5 ± 0.0	NB
P	<i>Cyperus squarrosus</i>	Awned Flatsedge			S2	3 Sensitive	3 Sensitive	31	25.9 ± 0.0	NB
P	<i>Eriophorum gracile</i>	Slender Cottongrass			S2	2 May Be At Risk	2 May Be At Risk	5	64.6 ± 0.0	NB
P	<i>Blysmus rufus</i>	Red Bulrush			S2	3 Sensitive	3 Sensitive	3	87.0 ± 0.0	NB
P	<i>Elodea nuttallii</i>	Nuttall's Waterweed			S2	3 Sensitive	3 Sensitive	6	23.7 ± 0.0	NB
P	<i>Juncus vaseyi</i>	Vasey Rush			S2	3 Sensitive	3 Sensitive	4	89.6 ± 0.0	NB
P	<i>Allium tricoccum</i>	Wild Leek			S2	2 May Be At Risk	2 May Be At Risk	13	18.2 ± 0.0	NB
P	<i>Najas gracillima</i>	Thread-Like Naiad			S2	3 Sensitive	3 Sensitive	11	47.3 ± 0.0	NB
P	<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso			S2	2 May Be At Risk	2 May Be At Risk	5	1.4 ± 0.0	NB
P	<i>Coeloglossum viride</i> var. <i>virescens</i>	Long-bracted Frog Orchid			S2	2 May Be At Risk	2 May Be At Risk	7	29.4 ± 5.0	NB
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper			S2	2 May Be At Risk	2 May Be At Risk	5	8.3 ± 2.0	NB
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses			S2	3 Sensitive	3 Sensitive	14	17.3 ± 0.0	NB
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses			S2	2 May Be At Risk	2 May Be At Risk	12	86.4 ± 5.0	NB
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass			S2	3 Sensitive	3 Sensitive	15	50.8 ± 0.0	NB
P	<i>Elymus canadensis</i>	Canada Wild Rye			S2	2 May Be At Risk	2 May Be At Risk	14	70.0 ± 1.0	NB
P	<i>Leersia virginica</i>	White Cut Grass			S2	2 May Be At Risk	2 May Be At Risk	42	39.1 ± 0.0	NB
P	<i>Piptatherum canadense</i>	Canada Rice Grass			S2	3 Sensitive	3 Sensitive	6	50.8 ± 0.0	NB
P	<i>Poa glauca</i>	Glaucous Blue Grass			S2	4 Secure	4 Secure	14	8.3 ± 2.0	NB
P	<i>Puccinellia phryganodes</i>	Creeping Alkali Grass			S2	3 Sensitive	3 Sensitive	15	39.3 ± 0.0	NB
P	<i>Schizachyrium scoparium</i>	Little Bluestem			S2	3 Sensitive	3 Sensitive	41	23.7 ± 0.0	NB
P	<i>Zizania aquatica</i> var. <i>aquatica</i>	Indian Wild Rice			S2	5 Undetermined	5 Undetermined	5	38.7 ± 0.0	NB
P	<i>Piptatherum pungens</i>	Slender Rice Grass			S2	2 May Be At Risk	2 May Be At Risk	4	90.1 ± 1.0	NB
P	<i>Potamogeton vaseyi</i>	Vasey's Pondweed			S2	3 Sensitive	3 Sensitive	4	12.5 ± 1.0	NB

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P	<i>Asplenium trichomanes</i>	Maidenhair Splenwort			S2		3 Sensitive	16	8.1 ± 0.0	NB
P	<i>Woodwardia virginica</i>	Virginia Chain Fern			S2		3 Sensitive	13	82.1 ± 1.0	NB
P	<i>Woodsia alpina</i>	Alpine Cliff Fern			S2		3 Sensitive	7	8.6 ± 0.0	NB
P	<i>Selaginella selaginoides</i>	Low Spikemoss			S2		3 Sensitive	11	8.3 ± 6.0	NB
P	<i>Toxicodendron radicans</i>	Poison Ivy			S2?		3 Sensitive	14	23.8 ± 0.0	NB
P	<i>Symphoricarichum novi-belgii</i> var. <i>crenifolium</i>	New York Aster			S2?		5 Undetermined	9	6.1 ± 0.0	NB
P	<i>Humulus lupulus</i> var. <i>lupuloides</i>	Common Hop			S2?		3 Sensitive	4	81.7 ± 0.0	NB
P	<i>Rubus recurvicaulis</i>	Arching Dewberry			S2?		4 Secure	5	5.8 ± 5.0	NB
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw			S2?		4 Secure	5	38.9 ± 1.0	NB
P	<i>Salix myricoides</i>	Bayberry Willow			S2?		3 Sensitive	7	81.8 ± 0.0	NB
P	<i>Carex vacillans</i>	Estuarine Sedge			S2?		3 Sensitive	4	76.5 ± 1.0	NB
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid			S2?		5 Undetermined	3	93.0 ± 10.0	NS
P	<i>Solidago altissima</i>	Tall Goldenrod			S2S3		4 Secure	5	16.8 ± 1.0	NB
P	<i>Barbarea orthoceras</i>	American Yellow Rocket			S2S3		3 Sensitive	6	16.9 ± 0.0	NB
P	<i>Ceratophyllum echinatum</i>	Prickly Hornwort			S2S3		3 Sensitive	15	17.5 ± 0.0	NB
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort			S2S3		4 Secure	10	23.3 ± 1.0	NB
P	<i>Lonicera oblongifolia</i>	Swamp Fly Honey-suckle			S2S3		3 Sensitive	5	23.6 ± 6.0	NB
P	<i>Elatine americana</i>	American Waterwort			S2S3		3 Sensitive	7	15.5 ± 1.0	NB
P	<i>Bartonia paniculata</i>	Branched Bartonia			S2S3		3 Sensitive	4	26.8 ± 0.0	NB
P	<i>Bartonia paniculata</i> ssp. <i>iodandra</i>	Branched Bartonia			S2S3		3 Sensitive	36	20.4 ± 0.0	NB
P	<i>Geranium robertianum</i>	Herb Robert			S2S3		4 Secure	28	4.3 ± 1.0	NB
P	<i>Myriophyllum quitense</i>	Andean Water Milfoil			S2S3		4 Secure	71	2.3 ± 0.0	NB
P	<i>Epilobium coloratum</i>	Purple-veined Willowherb			S2S3		3 Sensitive	8	6.2 ± 1.0	NB
P	<i>Rumex pallidus</i>	Seabeach Dock			S2S3		3 Sensitive	6	7.4 ± 0.0	NB
P	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry			S2S3		4 Secure	19	8.4 ± 0.0	NB
P	<i>Galium labradoricum</i>	Labrador Bedstraw			S2S3		3 Sensitive	4	65.0 ± 1.0	NB
P	<i>Valeriana uliginosa</i>	Swamp Valerian			S2S3		3 Sensitive	1	98.6 ± 1.0	NB
P	<i>Carex adusta</i>	Lesser Brown Sedge			S2S3		4 Secure	7	8.8 ± 1.0	NB
P	<i>Corallorhiza maculata</i> var. <i>occidentalis</i>	Spotted Coralroot			S2S3		3 Sensitive	4	77.1 ± 1.0	NB
P	<i>Corallorhiza maculata</i> var. <i>maculata</i>	Spotted Coralroot			S2S3		3 Sensitive	2	83.5 ± 1.0	NB
P	<i>Listera auriculata</i>	Auricled Twayblade			S2S3		3 Sensitive	9	11.9 ± 1.0	NB
P	<i>Spiranthes cernua</i>	Nodding Ladies'-Tresses			S2S3		3 Sensitive	21	54.2 ± 0.0	NB
P	<i>Eragrostis pectinacea</i>	Tufted Love Grass			S2S3		4 Secure	14	37.6 ± 1.0	NB
P	<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	Thread-leaved Pondweed			S2S3		3 Sensitive	7	2.5 ± 0.0	NB
P	<i>Stuckenia pectinata</i>	Sago Pondweed			S2S3		3 Sensitive	67	1.7 ± 0.0	NB
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed			S2S3		4 Secure	12	2.4 ± 0.0	NB
P	<i>Isoetes acadensis</i>	Acadian Quillwort			S2S3		3 Sensitive	9	50.2 ± 0.0	NB
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue			S2S3		3 Sensitive	9	8.5 ± 1.0	NB
P	<i>Panax trifolius</i>	Dwarf Ginseng			S3		3 Sensitive	17	20.3 ± 0.0	NB
P	<i>Artemisia campestris</i>	Field Wormwood			S3		4 Secure	25	62.8 ± 0.0	NB
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Field Wormwood			S3		4 Secure	77	56.5 ± 0.0	NB
P	<i>Eriogon hyssopifolius</i>	Hyssop-leaved Fleabane			S3		4 Secure	28	1.4 ± 0.0	NB
P	<i>Prenanthes racemosa</i>	Glaucous Rattlesnakeroot			S3		4 Secure	67	6.1 ± 1.0	NB
P	<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy			S3		4 Secure	19	3.4 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	SARA	COSEWIC	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Symphoricarpon boreale</i>	Boreal Aster			S3		3 Sensitive	8	17.2 ± 0.0	NB
P	<i>Betula pumila</i>	Bog Birch			S3		4 Secure	20	62.0 ± 1.0	NB
P	<i>Arabis glabra</i>	Tower Mustard			S3		5 Undetermined	1	69.1 ± 0.0	NB
P	<i>Arabis hirsuta</i> var. <i>pyncocarpa</i>	Western Hairy Rockcross			S3		4 Secure	22	7.7 ± 0.0	NB
P	<i>Cardamine maxima</i>	Large Toothwort			S3		4 Secure	28	2.4 ± 0.0	NB
P	<i>Subularia aquatica</i> var. <i>americana</i>	Water Awlwort			S3		4 Secure	14	36.8 ± 0.0	NB
P	<i>Lobelia cardinalis</i>	Cardinal Flower			S3		4 Secure	279	58.3 ± 0.0	NB
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort			S3		4 Secure	12	13.1 ± 0.0	NB
P	<i>Hudsonia tomentosa</i>	Woolly Beach-heath			S3		4 Secure	3	28.6 ± 0.0	NB
P	<i>Cornus amomum</i> ssp. <i>obliqua</i>	Pale Dogwood			S3		3 Sensitive	64	23.0 ± 0.0	NB
P	<i>Crassula aquatica</i>	Water Pygmyweed			S3		4 Secure	10	40.5 ± 0.0	NB
P	<i>Rhodiola rosea</i>	Roseroot			S3		4 Secure	48	2.9 ± 5.0	NB
P	<i>Penthorum sedoides</i>	Ditch Stonecrop			S3		4 Secure	47	26.7 ± 0.0	NB
P	<i>Elatine minima</i>	Small Waterwort			S3		4 Secure	28	16.1 ± 0.0	NB
P	<i>Astragalus alpinus</i> var. <i>brunetanus</i>	Alpine Milk-Vetch			S3		4 Secure	3	93.8 ± 0.0	NB
P	<i>Hedysarum alpinum</i>	Alpine Sweet-vetch			S3		4 Secure	2	17.6 ± 0.0	NB
P	<i>Gentianella amarella</i> ssp. <i>acuta</i>	Northern Gentian			S3		4 Secure	3	7.4 ± 0.0	NB
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill			S3		4 Secure	8	13.0 ± 5.0	NB
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil			S3		4 Secure	16	6.7 ± 0.0	NB
P	<i>Myriophyllum heterophyllum</i>	Variable-leaved Water Milfoil			S3		4 Secure	49	18.4 ± 0.0	NB
P	<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil			S3		4 Secure	19	7.5 ± 1.0	NB
P	<i>Stachys tenuifolia</i>	Smooth Hedge-Nettle			S3		3 Sensitive	12	20.5 ± 0.0	NB
P	<i>Teucrium canadense</i>	Canada Germander			S3		3 Sensitive	5	75.5 ± 1.0	NS
P	<i>Utricularia radiata</i>	Little Floating Bladderwort			S3		4 Secure	36	13.9 ± 0.0	NB
P	<i>Nuphar lutea</i> ssp. <i>pumila</i>	Small Yellow Pond-lily			S3		4 Secure	15	8.3 ± 0.0	NB
P	<i>Epilobium hornemannii</i>	Homemann's Willowherb			S3		4 Secure	5	37.5 ± 0.0	NB
P	<i>Epilobium hornemannii</i> ssp. <i>hornemannii</i>	Homemann's Willowherb			S3		4 Secure	1	80.2 ± 0.0	NB
P	<i>Polygala sanguinea</i>	Downy Willowherb			S3		4 Secure	20	4.3 ± 5.0	NB
P	<i>Polygonum arifolium</i>	Blood Milkwort			S3		3 Sensitive	15	50.2 ± 0.0	NB
P	<i>Polygonum punctatum</i>	Haberd-leaved Tearthumb			S3		4 Secure	14	39.5 ± 0.0	NB
P	<i>Polygonum punctatum</i> var. <i>confertiflorum</i>	Dotted Smartweed			S3		4 Secure	1	66.7 ± 0.0	NB
P	<i>Polygonum scandens</i>	Dotted Smartweed			S3		4 Secure	10	66.2 ± 2.0	NB
P	<i>Littorella uniflora</i>	Climbing False Buckwheat			S3		4 Secure	33	27.5 ± 0.0	NB
P	<i>Primula mistassinica</i>	American Shoreweed			S3		4 Secure	20	16.1 ± 0.0	NB
P	<i>Pyrola minor</i>	Mistassini Primrose			S3		4 Secure	12	1.2 ± 5.0	NB
P	<i>Clematis occidentalis</i>	Lesser Pyrola			S3		4 Secure	5	40.4 ± 0.0	NB
P	<i>Ranunculus gmelinii</i>	Purple Clematis			S3		4 Secure	23	2.7 ± 0.0	NB
P	<i>Thalictrum venulosum</i>	Gmelin's Water Buttercup			S3		4 Secure	6	38.7 ± 0.0	NB
P	<i>Amelanchier canadensis</i>	Northern Meadow-rue			S3		4 Secure	79	4.2 ± 5.0	NB
P	<i>Rosa palustris</i>	Canada Serviceberry			S3		4 Secure	16	7.5 ± 1.0	NB
P	<i>Rubus occidentalis</i>	Swamp Rose			S3		4 Secure	25	5.8 ± 5.0	NB
P	<i>Sanguisorba canadensis</i>	Black Raspberry			S3		4 Secure	18	40.5 ± 0.0	NB
P	<i>Galium boreale</i>	Canada Burnet			S3		4 Secure	15	86.4 ± 0.0	NB
P		Northern Bedstraw			S3		4 Secure	8	17.8 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Salix interior</i>	Sandbar Willow			S3	4 Secure	27	56.7 ± 0.0	NB	
P	<i>Salix nigra</i>	Black Willow			S3	3 Sensitive	124	7.9 ± 1.0	NB	
P	<i>Salix pedicellaris</i>	Bog Willow			S3	4 Secure	44	19.7 ± 1.0	NB	
P	<i>Comandra umbellata</i>	Bastard's Toadflax			S3	4 Secure	1	68.9 ± 10.0	NB	
P	<i>Parnassia glauca</i>	Fen Grass-of-Parnassus			S3	4 Secure	1	93.6 ± 10.0	NB	
P	<i>Limosella australis</i>	Southern Mudwort			S3	4 Secure	10	90.8 ± 0.0	NB	
P	<i>Veronica serpyllifolia</i>	Thyme-Leaved Speedwell			S3	4 Secure	10	80.9 ± 1.0	NB	
P	<i>ssp. humifusa</i>									
P	<i>Boehmeria cylindrica</i>	Small-spike False-nettle			S3	3 Sensitive	46	60.1 ± 0.0	NB	
P	<i>Pilea pumila</i>	Dwarf Cleanweed			S3	4 Secure	25	38.9 ± 0.0	NB	
P	<i>Viola adunca</i>	Hooked Violet			S3	4 Secure	10	56.9 ± 1.0	NB	
P	<i>Viola nephrophylla</i>	Northern Bog Violet			S3	4 Secure	8	8.9 ± 0.0	NB	
P	<i>Carex aquatilis</i>	Water Sedge			S3	4 Secure	20	8.9 ± 1.0	NB	
P	<i>Carex arctica</i>	Northern Clustered Sedge			S3	4 Secure	48	38.2 ± 0.0	NB	
P	<i>Carex atratiformis</i>	Scabrous Black Sedge			S3	4 Secure	1	8.3 ± 0.0	NB	
P	<i>Carex capillaris</i>	Hairlike Sedge			S3	4 Secure	16	1.1 ± 0.0	NB	
P	<i>Carex chordeorrhiza</i>	Creeping Sedge			S3	4 Secure	18	45.7 ± 1.0	NB	
P	<i>Carex conoidea</i>	Field Sedge			S3	4 Secure	28	12.1 ± 1.0	NB	
P	<i>Carex eburnea</i>	Bristle-leaved Sedge			S3	4 Secure	1	80.6 ± 0.0	NB	
P	<i>Carex exilis</i>	Coastal Sedge			S3	4 Secure	86	4.6 ± 0.0	NB	
P	<i>Carex garberi</i>	Garber's Sedge			S3	3 Sensitive	2	17.0 ± 0.0	NB	
P	<i>Carex haydenii</i>	Hayden's Sedge			S3	4 Secure	35	13.7 ± 1.0	NB	
P	<i>Carex lupulina</i>	Hop Sedge			S3	4 Secure	75	22.7 ± 0.0	NB	
P	<i>Carex michauxiana</i>	Michaux's Sedge			S3	4 Secure	62	1.4 ± 0.0	NB	
P	<i>Carex ornostachya</i>	Necklace Spike Sedge			S3	4 Secure	8	55.2 ± 1.0	NB	
P	<i>Carex rosea</i>	Rosy Sedge			S3	4 Secure	23	16.9 ± 0.0	NB	
P	<i>Carex tenera</i>	Tender Sedge			S3	4 Secure	42	23.4 ± 0.0	NB	
P	<i>Carex tuckermanii</i>	Tuckerman's Sedge			S3	4 Secure	64	22.7 ± 0.0	NB	
P	<i>Carex vaginata</i>	Sheathed Sedge			S3	3 Sensitive	6	90.5 ± 0.0	NB	
P	<i>Carex wiegandii</i>	Wiegand's Sedge			S3	4 Secure	39	12.3 ± 0.0	NB	
P	<i>Carex recta</i>	Estuary Sedge			S3	4 Secure	9	22.4 ± 0.0	NB	
P	<i>Cyperus dentatus</i>	Toothed Flatsedge			S3	4 Secure	145	5.5 ± 5.0	NB	
P	<i>Cyperus esculentus</i>	Perennial Yellow Nutsedge			S3	4 Secure	39	34.3 ± 0.0	NB	
P	<i>Eleocharis intermedia</i>	Matted Spikerush			S3	4 Secure	2	74.8 ± 0.0	NB	
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush			S3	4 Secure	5	4.6 ± 0.0	NB	
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush			S3	4 Secure	8	50.8 ± 0.0	NB	
P	<i>Rhynchospora fusca</i>	Brown Beakrush			S3	4 Secure	31	11.5 ± 0.0	NB	
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush			S3	4 Secure	24	1.2 ± 0.0	NB	
P	<i>Schoenoplectus fluviatilis</i>	River Bulrush			S3	3 Sensitive	46	16.5 ± 0.0	NB	
P	<i>Schoenoplectus torreyi</i>	Torrey's Bulrush			S3	4 Secure	30	6.3 ± 0.0	NB	
P	<i>Lemma trisulca</i>	Star Duckweed			S3	4 Secure	18	7.6 ± 1.0	NB	
P	<i>Triantha glutinosa</i>	Sticky False-Asphodel			S3	4 Secure	9	17.1 ± 0.0	NB	
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper			S3	3 Sensitive	13	1.5 ± 10.0	NB	
P	<i>Liparis loeselii</i>	Loesel's Twayblade			S3	4 Secure	16	2.4 ± 0.0	NB	
P	<i>Platanthera blephariglotis</i>	White Fringed Orchid			S3	4 Secure	17	77.4 ± 0.0	NB	
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid			S3	3 Sensitive	27	12.7 ± 1.0	NB	
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome			S3	3 Sensitive	3	51.5 ± 0.0	NB	
P	<i>Calamagrostis pickeeringii</i>	Pickeering's Reed Grass			S3	4 Secure	105	15.3 ± 0.0	NB	
P	<i>Dichanthellum depauperatum</i>	Starved Panic Grass			S3	4 Secure	24	50.8 ± 0.0	NB	
P	<i>Muhlenbergia richardsonii</i>	Mat Muhly			S3	4 Secure	9	94.2 ± 0.0	NB	

Taxonomic Group	Scientific Name	Common Name	SARA	COSEWIC	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Heteranthera dubia</i>	Water Stargrass			S3	4 Secure	4 Secure	57	7.1 ± 0.0	NB
P	<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed			S3	4 Secure	4 Secure	11	21.8 ± 0.0	NB
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed			S3	3 Sensitive	3 Sensitive	16	8.3 ± 1.0	NB
P	<i>Xyris montana</i>	Northern Yellow-Eyed-Grass			S3	4 Secure	4 Secure	25	4.5 ± 0.0	NB
P	<i>Zannichellia palustris</i>	Horned Pondweed			S3	4 Secure	4 Secure	5	7.5 ± 1.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern			S3	4 Secure	4 Secure	5	14.2 ± 1.0	NB
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake			S3	4 Secure	4 Secure	2	14.7 ± 1.0	NB
P	<i>Asplenium trichomanes-ramosum</i>	Green Spleenwort			S3	4 Secure	4 Secure	18	1.1 ± 5.0	NB
P	<i>Dryopteris fragrans</i> var. <i>remotiuscula</i>	Fragrant Wood Fern			S3	4 Secure	4 Secure	29	8.1 ± 0.0	NB
P	<i>Dryopteris goldiana</i>	Goldie's Woodfern			S3	3 Sensitive	3 Sensitive	4	97.3 ± 5.0	NB
P	<i>Woodсия glabella</i>	Smooth Cliff Fern			S3	4 Secure	4 Secure	23	26.2 ± 1.0	NB
P	<i>Equisetum palustre</i>	Marsh Horsetail			S3	4 Secure	4 Secure	6	74.3 ± 10.0	NB
P	<i>Isaetes tuckermanni</i>	Tuckerman's Quillwort			S3	4 Secure	4 Secure	29	33.7 ± 0.0	NB
P	<i>Lycopodium sabinifolium</i>	Ground-Fir			S3	4 Secure	4 Secure	12	13.2 ± 1.0	NB
P	<i>Huperzia appalachiana</i>	Appalachian Fir-Clubmoss			S3	3 Sensitive	3 Sensitive	16	4.3 ± 1.0	NB
P	<i>Botrychium dissectum</i>	Cut-leaved Moonwort			S3	4 Secure	4 Secure	27	10.6 ± 0.0	NB
P	<i>Botrychium lanceolatum</i> var. <i>angustisegmentum</i>	Lance-Leaf Grape-Fern			S3	3 Sensitive	3 Sensitive	7	8.4 ± 0.0	NB
P	<i>Botrychium simplex</i>	Least Moonwort			S3	4 Secure	4 Secure	8	83.6 ± 0.0	NB
P	<i>Polypodium appalachianum</i>	Appalachian Polypody			S3	4 Secure	4 Secure	15	5.2 ± 1.0	NB
P	<i>Utricularia resupinata</i>	Inverted Bladderwort			S3?	4 Secure	4 Secure	19	13.8 ± 0.0	NB
P	<i>Circaea submolis</i>	Quebec Hawthorn			S3?	3 Sensitive	3 Sensitive	16	11.1 ± 1.0	NB
P	<i>Mercurialis maritima</i>	Sea Lungwort			S3S4	4 Secure	4 Secure	28	6.9 ± 0.0	NB
P	<i>Lobelia kalmii</i>	Brook Lobelia			S3S4	4 Secure	4 Secure	18	2.4 ± 1.0	NB
P	<i>Suaeda calceoliformis</i>	Horned Sea-blite			S3S4	4 Secure	4 Secure	6	16.8 ± 1.0	NB
P	<i>Myriophyllum sibiricum</i>	Siberian Water Milfoil			S3S4	4 Secure	4 Secure	28	6.3 ± 0.0	NB
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle			S3S4	5 Undetermined	5 Undetermined	5	47.5 ± 1.0	NB
P	<i>Utricularia gibba</i>	Humped Bladderwort			S3S4	4 Secure	4 Secure	32	11.5 ± 0.0	NB
P	<i>Rumex maritimus</i>	Sea-Side Dock			S3S4	4 Secure	4 Secure	1	83.3 ± 1.0	NB
P	<i>Potentilla arguta</i>	Tall Cinquefoil			S3S4	4 Secure	4 Secure	27	16.9 ± 0.0	NB
P	<i>Rubus chamaemorus</i>	Cloudberry			S3S4	4 Secure	4 Secure	56	7.5 ± 1.0	NB
P	<i>Geocaulon lividum</i>	Northern Comandra			S3S4	4 Secure	4 Secure	11	12.3 ± 0.0	NB
P	<i>Juniperus horizontalis</i>	Creeping Juniper			S3S4	4 Secure	4 Secure	19	13.8 ± 1.0	NB
P	<i>Cladium mariscoides</i>	Smooth Twigrush			S3S4	4 Secure	4 Secure	30	4.3 ± 0.0	NB
P	<i>Eriophorum russeolum</i>	Russet Cottongrass			S3S4	4 Secure	4 Secure	10	17.0 ± 1.0	NB
P	<i>Triglochin gaspensis</i>	Gasp I- Arrowgrass			S3S4	4 Secure	4 Secure	18	12.5 ± 1.0	NB
P	<i>Sporobolus polyrrhiza</i>	Great Duckweed			S3S4	4 Secure	4 Secure	32	27.3 ± 0.0	NB
P	<i>Corallorhiza maculata</i>	Spotted Coralroot			S3S4	3 Sensitive	3 Sensitive	15	6.1 ± 1.0	NB
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass			S3S4	4 Secure	4 Secure	4	12.9 ± 2.0	NB
P	<i>Distichlis spicata</i>	Salt Grass			S3S4	4 Secure	4 Secure	3	66.2 ± 0.0	NB
P	<i>Potamogeton oakesianus</i>	Oakes' Pondweed			S3S4	4 Secure	4 Secure	41	14.2 ± 5.0	NB
P	<i>Montia fontana</i>	Water Blinks			SH	2 May Be At Risk	2 May Be At Risk	3	66.5 ± 1.0	NB
P	<i>Solidago caesia</i>	Blue-stemmed Goldenrod			SX	0.1 Extirpated	0.1 Extirpated	2	6.1 ± 1.0	NB
P	<i>Celastrus scandens</i>	Climbing Bittersweet			SX	0.1 Extirpated	0.1 Extirpated	2	93.2 ± 100.0	NB
P	<i>Carex swanii</i>	Swan's Sedge			SX	0.1 Extirpated	0.1 Extirpated	52	75.7 ± 5.0	NS

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

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75	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor cougar) [E eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
69	Spears, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
66	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
66	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/ . 582 recs.
65	Cowie, Faye. 2007. Surveyed Lakes in New Brunswick. Canadian Rivers Institute, 781 recs.
63	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
55	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
49	McAlpine, D.F. 1998. NBM Science Collections: Wood Turtle records. New Brunswick Museum, Saint John NB, 329 recs.
46	Clayden, S.R. 2012. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 57 recs.
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38	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.

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38		Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2009. New Brunswick Dept Natural Resources, 19 recs (14 active).
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34		Mills, E. Connell Herbarium Specimens, 1957-2009. University New Brunswick, Fredericton. 2012.
30		Epworth, W. 2012. Species at Risk records, 2009-11. Fort Folly Habitat Recovery Program, 162 recs.
30		Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
29		Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
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27		Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick. listserv.unb.ca/archives/naturenb. 68 recs.
27		Prorych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, 1:1-168, II:169-331. 1446 recs.
27		Tingley, S. (compiler). 2001. Butterflies of New Brunswick. Web site: www.geocities.com/Yosemite/8425/butterfly. 142 recs.
26		Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
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22		Speers, L. 2001. Butterflies of Canada database. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 190 recs.
20		Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.
19		Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (<i>Pseudevermia cladonia</i>). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
17		Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
16		Caisse, A. Herbarium Records. Fundy National Park, Alma NB. 1961-1993.
16		Doucet, D.A. & Edsall, J.; Brunelle, P.-M. 2007. Miramichi Watershed Rare Odonata Survey. New Brunswick ETF & WTF Report, 1211 recs.
16		Edsall, J. 2001. Lepidopteran records in New Brunswick, 1997-99. Pers. comm. to K.A. Bredin. 91 recs.
16		Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (<i>Isoetes prototypus</i>). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
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15		Blaney, C.S.; Mazerolle, D.M.; Oberdorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
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13		Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
13		Wissink, R. 2000. Rare Plants of Fundy: maps. Parks Canada, 20 recs.
12		Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
12		Spicer, C.D. 2001. Powerline Corridor Botanical Surveys, Charlotte & Saint John Counties. A M E C International, 1269 recs.
11		Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2010. New Brunswick Dept Natural Resources, 16 recs (11 active).
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10		Noseworthy, J. 2013. Van Brunt's Jacob's-ladder observations along tributary of Dipper Harbour Ck. Nature Conservancy of Canada, 10 recs.
9		Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
9		McAlpine, D.F. 1983. Status & Conservation of Solution Caves in New Brunswick. New Brunswick Museum, Publications in Natural Science, no. 1, 28pp.
8		Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
8		Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
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8		Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
7		Bredin, K.A. 2001. WTF Project: Freshwater Mussel Fieldwork in Freshwater Species data. Atlantic Canada Conservation Data Centre, 101 recs.
7		Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
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6		Litvak, M.K. 2001. Shortnose Surgeon records in four NB rivers. UNB Saint John NB. Pers. comm. to K. Bredin, 6 recs.
5		Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
5		Boyne, A.W. 2000. Harlequin Duck Surveys. Canadian Wildlife Service, Sackville, unpublished data. 5 recs.
5		Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14, 39 recs.
5		Parker, M.S.R. 2011. Hampton Wind Farm 2010: significant floral/faunal observations, 13 recs.
4		Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
4		Clayden, S.R. 2003. NS lichen ranks, locations. Pers. comm to C.S. Blaney. 1p, 5 recs; 5 recs.
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4	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
3	Adams, J. & Herman, T.B. 1998. Thesis. Unpublished map of <i>C. insculpta</i> sightings. Acadia University, Wolfville NS, 88 recs.
3	Bateman, M.C. 2000. Waterfowl Brood Surveys Database, 1990-2000 . Canadian Wildlife Service, Sackville, unpublished data. 149 recs.
3	Belliveau, A.G. 2014. Plant Records from Southern and Central Nova Scotia. Atlantic Canada Conservation Data Centre, 919 recs.
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3	Bishop, G., Bagnell, B.A. 2004. Site Assessment of Musquash Harbour, Nature Conservancy of Canada Property - Preliminary Botanical Survey. B&B Botanical, 12pp.
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3	Forbes, G. 2001. Bog Lemming. Phalarope records, NB. , Pers. comm. to K.A. Bredin. 6 recs.
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2	Amiro, Peter G. 1998. Atlantic Salmon: Inner Bay of Fundy SFA 22 & part of SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-12. 4 recs.
2	Bagnell, B.A. 2003. Update to New Brunswick Rare Bryophyte Occurrences. B&B Botanical, Sussex, 5 recs.
2	Brunelle, P.-M. 2009. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
2	Edsall, J. 1992. Summer 1992 Report. New Brunswick Bird Info Line, 2 recs.
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2	Goltz, J.P. 2001. Botany Ramblings April 29-June 30, 2001. N.B. Naturalist, 28 (2): 51-2. 8 recs.
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2	Marx, M. & Kenney, R.D. 2001. North Atlantic Right Whale Database. University of Rhode Island, 4 recs.
2	Proulx, V.D. 2002. Selaginella rupestris sight record at Centreville, Nova Scotia. Virginia D. Proulx collection, 2 recs.
2	Walker, E.M. 1942. Additions to the List of Odonates of the Maritime Provinces. Proc. Nova Scotian Inst. Sci., 20. 4: 159-176. 2 recs.
1	Amirault, D.L. 1997-2000. Unpublished files. Canadian Wildlife Service, Sackville, 470 recs.
1	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobateac Research Institute, 296 records. 296 recs.
1	Benedict, B. Agalinis neoscotica specimen from Grand Manan. 2009.
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1	Dadswell, M.J. 1979. Status Report on Shortnose Sturgeon (Acipenser brevirostrum) in Canada. Committee on the Status of Endangered Wildlife in Canada, 15 pp.
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1	Hill, N. 2014. 2014 Monarch email report, Bridgetown, NS. Fern Hill Institute for Plant Conservation.
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1	Jolicœur, G. 2008. Anticosti Aster at Chapel Bar, St John River. QC DOE? Pers. comm. to D.M. Mazerolle, 1 rec.
1	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
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1	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.
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1	Maass, W.S.G. & Yelman, D. 2002. Assessment and status report on the boreal felt lichen (Erioderma pedicellatum) in Canada. Committee on the Status of Endangered Wildlife in Canada, 1 rec.

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1	McAlpine, D.F. & Collingwood, L. 1989. Rare Salamander Survey in Fundy National Park. Fundy National Park, Internal Documents, 1 rec.
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1	Neily, T.H. & Pepper, C.; Toms, B. 2013. Nova Scotia lichen location database. Mersey Tobetic Research Institute, 1301 records.
1	Poirier, Nelson. 2012. Geranium robertianum record for NB. Pers. comm. to S. Blaney, Sep. 6, 1 rec.
1	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
1	Powell, B.C. 1967. Female sexual cycles of <i>Chysoermy spicta</i> & <i>Clemmys insculpta</i> in Nova Scotia. <i>Can. Field-Nat.</i> , 81:134-139. 26 recs.
1	Sabine, D.L. & Goltz, J.P. 2006. Discovery of <i>Utricularia resupinata</i> at Little Otter Lake, CFB Gagetown. Pers. comm. to D.M. Mazerolle, 1 rec.
1	Sabine, D.L. 2004. Specimen data: Whitaker Lake & Marysville NB. Pers. comm. to C.S. Blaney, 2pp. 4 recs.
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1	Sabine, D.L. 2013. Dwayne Sabine butterfly records, 2009 and earlier.
1	Smith, M. 2013. Email to Sean Blaney regarding <i>Schizaea pusilla</i> at Caribou Plain Bog, Fundy NP. pers. comm., 1 rec.
1	Sleeves, R. 2004. <i>Goodyera pubescens</i> occurrence from Colpitts Brook, Albert Co., Pers. comm. to C.S. Blaney. 1 rec.
1	Taylor, Eric B. 1997. Status of the Sympatric Smelt (genus <i>Osmerus</i>) Populations of Lake Utopia, New Brunswick. Committee on the Status of Endangered Wildlife in Canada, 1 rec.
1	Toner, M. 2001. Lynx Records 1973-2000. NB Dept of Natural Resources, 29 recs.
1	Toner, M. 2005. <i>Listera australis</i> population at Bull Pasture Plains. NB Dept of Natural Resources. Pers. comm. to S. Blaney, 8 recs.
1	Toner, M. 2009. Wood Turtle Sightings. NB Dept of Natural Resources. Pers. comm. to S. Gerriets, Jul 13 & Sep 2, 2 recs.
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1	Torenvliet, Ed. 2010. Wood Turtle roadkill. NB Dept of Transport. Pers. comm. to R. Lautenschlager, Aug. 20, photos, 1 rec.
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1	Wisink, R. 2000. Four-toed Salamander Survey results, 2000. Fundy National Park, Internal Documents, 1 rec.

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