



April 13, 2020

Environmental Impact Assessment Branch
New Brunswick Department of Environment and Local Government
Marysville Place
20 McGloin Street
Fredericton, NB
E3A 5T8

Attention: Ms. Sheila Goucher
NBDELG EIA Project Manager

RE: Amendment to EIA Registration (File #4561-03-1496) – Phase 2: Commissioning of the New Production Well for the Village of Fredericton Junction, Sunbury County, New Brunswick

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Introduction

On behalf of our client, the Village of Fredericton Junction (the Village), Dillon Consulting Limited (Dillon) is submitting the following amendment to the New Brunswick Department of Environment and Local Government (NBDELG) as an update to the environmental impact assessment (EIA) registration document (NBDELG file #4561-03-1496) dated June 17, 2018 for Phase 2 of the Village's groundwater exploration program (i.e., commissioning of a new municipal production well) (herein referred to as 'the Project'). A water supply source assessment (WSSA) associated with the new Village water supply was also completed and submitted to the NBDELG for review under separate cover. The WSSA will be provided to the NBDELG following this letter.

The initial groundwater exploration program (i.e., Phase 1 of the Project) that was undertaken to find a suitable drinking water source was described in the EIA registration document titled "Village of Fredericton Junction: Environmental Impact Assessment Registration (Final), Groundwater Exploration Program" (Dillon 2018; NBDELG file #4516-03-1496) dated June 17, 2018, prepared by Dillon on behalf of the Village, as well as through interim updates provided to the NBDELG EIA Project Manager.

The purpose of this document is to mark the completion of the groundwater exploration program (i.e., Phase 1) and to amend the EIA registration to detail the planned activities as part of Phase 2 of the Project. Phase 2 encompasses the commissioning of a New Production Well for the Village, and the construction of associated infrastructure (e.g., well house, associated infrastructure, and connecting distribution piping). A description of the Project's timeline is also presented below.



Overview of the Project (Phases 1 and 2)

The Village of Fredericton Junction currently has one operational main potable water supply/production well (i.e., Well 4 depicted on **Figure 1 in Appendix A**) and one back-up well (i.e., Well 1 depicted on **Figure 1 in Appendix A**) serving its community. Water quality concerns have previously been identified with the back-up well due to outdated and unsound construction of the well. The main supply/production well (Well 4) has been operating at or near its permitted capacity since 2018. Ongoing long-term use of the main supply/production well without a reliable back-up water supply may stress the sustainable yield of the main production well, resulting in a longer term risk to the Village's drinking water supply. Therefore, the Village initiated a water exploration program to identify alternative sources of drinking water in 2018 (i.e., exploration locations pursued are identified on **Figure 1 in Appendix A**) which is detailed within the main EIA registration document (Dillon 2018). The EIA process as it relates to the Project is discussed briefly below.

Development of a new drinking water supply for the Village will result in withdrawal of groundwater in excess of 50 m³/day. Given this withdrawal rate, the Project is considered an 'undertaking' under item(s) of Schedule A of the New Brunswick *Environmental Impact Assessment Regulation 87-83* (EIA Regulation) under the *Clean Environment Act*, and therefore must be registered with the NBDELG and undergo an environmental impact assessment (EIA) review. Therefore, in 2018, Dillon was retained by the Village to prepare an EIA registration for Phase 1 (i.e., groundwater exploration) of the Project. Following the initial review of the EIA registration by the Technical Review Committee (TRC) and providing responses to its initial questions, NBDELG authorized the initiation of the groundwater exploration program.

Throughout 2018 and 2019, following desktop hydrogeological analysis of the area, a total of eight test (exploration) wells were drilled in various locations within the Village (refer to drill exploration locations identified on **Figure 1 in Appendix A**). Following the NBDELG's "Water Supply Source Assessment Guidelines" (NBDELG 2017), seven of the eight test well options were deemed to be unsuitable for municipal consumption based on a variety of factors including, but not limited to, meeting sufficient drinking water quality and quantity parameters.

Samples from the eighth test well did meet sufficient drinking water quality and quantity parameters, and therefore this location was selected as the New Production Well (herein referred to as such throughout this report, but also later identified as Well 5, as per the Village's well naming convention) for the Village and the well was re-drilled to the appropriate production well sizing (i.e., 200 mm). The New Production Well is located on a property owned by the Village that is currently used for Well 1 (back-up, active), located adjacent to the North Branch Oromocto River.



Old infrastructure is currently present on the property (i.e., old well houses) and the property falls within the Village of Fredericton Junction Designated Wellfield Protection Area associated with the active Well 1 (back-up well, active) and the former Well 2 (which has been decommissioned according to NBDELG guidelines). The New Production Well will replace Well 1, and will work in tandem with the current production well (i.e., Well 4 depicted on **Figure 1** in **Appendix A**) for the Village which will provide redundancy in the event of unforeseen circumstances that may render the main production well inoperable or its water supply insufficient to meet the Village's needs. The addition of the New Production Well will also provide a more sustainable and safe source of drinking water for the community. The specific components of the Project are detailed within a separate section, below.

For further details regarding the water quality of the current back-up well (Well 1) or the groundwater exploration program, refer to EIA registration document (Dillon 2018).

Following the submission of this EIA amendment and the WSSA to the NBDELG, further assessment work will be required to update the Wellfield Protection Zones associated with the New Production Well. This information will be submitted to the NBDELG separately as an update to the existing Wellfield Protected Area Designation Order (WfPADO).

Contact Information and Property Ownership

The current proponent of the Project (the Village of Fredericton Junction) is unchanged from the EIA registration document (Dillon 2018). The updated principal contact person for the purposes of the EIA Registration is:

Full Name of Company:	<u>Dillon Consulting Limited</u>
Principal Contact:	<u>Alison Smith, Project EIA Coordinator</u>
Address:	<u>1149 Smythe Street, Suite 200, Fredericton, NB, E3B 3H4</u>
Telephone:	<u>506-444-8820</u>
Email:	<u>asmith@dillon.ca</u>



Coordinates and corresponding property ownership for the New Production Well for the Village are outlined in **Table 1**.

Table 1: Property Ownership and Details

Parameters	Data for New Production Well (Well 5)
Latitude/Longitude	45.6631° N, -66.6165° W
UTM (NAD 1983)	2490920.411, 7406989.936
Parcel Identifier (PID)	60012838, 60191137, and 60015112
Property Owner Name	The Village of Fredericton Junction
Street Address	196/200 Sunbury Drive, Fredericton Junction, NB

Project Description

For a description of Phase 1 of the Project, refer to the EIA registration document (Dillon 2018).

As discussed above, this amendment to the EIA registration document details the components of Phase 2 of the Project (i.e., construction of well house for the New Production Well and other associated infrastructure). Where appropriate and where information is consistent between Phase 1 and Phase 2, references to specific sections of the EIA registration document (Dillon 2018) will be made throughout this document but the contents of those sections will not be repeated herein, for sake of brevity, unless those details have changed since the EIA registration was developed.

Project Name

The Project shall be referred to as “Phase 2: Commissioning of the New Production Well for the Village of Fredericton Junction, Sunbury County, NB”.

Purpose/Rationale/Need for the Undertaking

Please refer to Overview of the Project above and **Section 2.3** of the EIA registration document (Dillon 2018).

Siting Considerations

The area of proposed development on the subject property (i.e., New Production Well, well house, and related infrastructure) is defined as the ‘Project Development Area’ (‘PDA’) for the purposes of this amendment to the EIA registration document, and will herein be referred to as such. The PDA is defined as the area of physical disturbance associated with the Project (i.e., the Project footprint) and, for the



purpose of this amendment, consists of an area of approximately 1,530 m² associated with the new well, well house and related water treatment and pumping infrastructure, distribution piping, and related infrastructure. The PDA is shown on **Figure 2 in Appendix A**. The PDA also includes temporary laydown areas that may be required during construction activities and a parking area.

The general siting considerations that were applied for the groundwater exploration locations can be referenced in **Section 2.4** of the EIA registration document (Dillon 2018). The general siting considerations discussed in **Section 2.4** of the EIA registration document have also been applied to the current PDA as defined above.

The New Production Well (Well 5) is located on Property Identification (PID) No. 60012838, and is situated approximately 12 m northeast of former Well 2 (decommissioned) and approximately 33 m northwest of Well 1 (back-up well, active). The New Production Well is located approximately 87 m south of Sunbury Drive, 60 m south of the New Brunswick Southern Railway Company Limited rail line, and approximately 32 m north of North Branch Oromocto River as shown on **Figure 2 in Appendix A**. A gravel road extends from Sunbury Drive through the site, providing access to Well 1.

In addition to Well 1 (back-up well, active), Well 2 (decommissioned), and Well 4 (currently active main production well), Well 3 also formerly served the community. Well 3 was decommissioned according to the NBDELG guidelines and was formerly located adjacent to the Village's water tower on PID No. 60015104. The water tower is located approximately 1 km northwest of the New Production Well.

Based upon discussion with Village staff and local well drillers, the selected location is considered to be favourable for the New Production Well as it is easily accessible via the gravel road already present on the property, and it is in close proximity to existing municipal infrastructure. The area is also an active wellfield with restrictions in place, with which adjacent businesses are already familiar. The New Production Well is located within an area of existing municipal services and therefore not likely within a zone of influence of private potable wells or other municipal wells.

The approximate location of the New Production Well and the current concept of the related infrastructure is shown on **Figure 2 in Appendix A**. Based on current conceptual design, the well house will sit approximately 25 m from the North Branch Oromocto River on PID No. 60012838 and the proposed distribution lines will extend onto PID No. 60015112. As construction activities related to the well house will be occurring within 30 m of the edge of the watercourse, a Watercourse and Wetland Alteration (WAWA) Permit will be submitted to the NBDELG before the start of the



Project (further discussed below). The New Production Well is located just outside of the 30 m setback from the North Branch Oromocto River (i.e., 32 m from the river) and there are no wetlands located on the subject property or within the PDA. The New Production Well is also within the elevated potential zone for archaeological resources (i.e., defined as within 80 m of any watercourse). The mitigation required as a result of the siting of the well within this setback is further discussed below under the heading Heritage and Cultural Features.

Physical Components of the Project

The subsections below describe the physical components of the Project that will be completed to commission the New Production Well (Well 5), and connect it to the existing water distribution system for the Village (i.e., Phase 2). The activities below will occur within the PDA as defined above. Refer to **Figure 2** for the conceptual site layout.

New Production Well Construction and Hydraulic Testing Details

The PDA is located within the current Protected Wellfield Area related to Well 1 (back-up well, active) and Well 2 (decommissioned). Refer to the WSSA report (Dillon 2020) submitted to the NBDELG.

Based on observed geologic conditions during the groundwater exploration program, the New Production Well (also named Well 5 within the WSSA and for the Village's well naming convention purposes) was installed adjacent to exploration well 8 (refer to **Figure 1** in **Appendix A**; well also named test well "TH19-8" within the WSSA report). The New Production Well was drilled after a pumping test was completed on exploration well 8 to ensure the smaller diameter well met the volume demands of the Village. The drilling of the 200 mm diameter well was completed by E.R. Steeves Well Drilling, approximately 1.5 m south of exploration well 8, using a heavy duty dual drive air rotary drill rig. Drilling of the New Production Well was completed between December 24 and December 31, 2019. Following well installation, the New Production Well was pumped for a period of approximately 6 hours. Well construction details and a preliminary estimated yield from the New Production Well are provided below, in **Table 2**.



Table 2 - Production Well Construction Details

Well Construction Parameter	Data for New Production Well (Well 5)
250 mm Steel Casing	0 - 24.4 m below ground surface (mbgs) (bottom of casing installed within competent bedrock)
200 mm Steel Casing	0 - 27.4 mbgs (entire length of casing installed within competent bedrock)
Annular space outside of 200 mm casing	Grouted from ground surface to 24.4 mbgs
Open Bedrock Borehole	27.4 - 35.1 mbgs
Preliminary Estimated Well Yield (L/min)	159.1

Standard step-drawdown and 72 hour constant rate pumping tests were completed for the exploration well 8 before the drilling of the New Production Well at this location. Additionally, water samples were collected at the beginning, middle and end of the pumping test and analyzed for general chemistry, metals, petroleum hydrocarbons and microbiology to assess the suitability of water quality. Both the pumping test and the water quality analysis met the NBDELG's requirements for a municipal water supply. The results of the pumping tests and water quality analysis can be referenced within the WSSA report (Dillon 2020).

Construction of Well House

A new well house will be constructed to house operational equipment such as pumps, water treatment, etc., a work space, and washroom facilities. Based on current conceptual design, the well house will be approximately 6 m by 5.5 m in size and constructed on a slab foundation, directly adjacent to the New Production Well (refer to **Figure 2** in **Appendix A**).

Approximately 50 - 60 m² of excavation will be required to construct the slab foundation and this work will be conducted using standard construction equipment (e.g., excavator and backhoe).

Immediately adjacent to the new well house building, a chain link fence will secure/enclose the New Production Well's well head and a propane generator and propane tank that will be used for an emergency power supply to allow the system to operate during power outages. The propane generator and propane tanks will be located adjacent to one another inside of the fenced area. The fenced area is



estimated to be approximately 56 m². Then generator and propane tanks will be mounted on concrete slabs at grade.

Installation and Connection of New Piping

To connect the New Production Well to the existing water main and distribution infrastructure that services the Village, approximately 25 m of new piping will be installed (refer to 'water line' depicted on **Figure 2** in **Appendix A**).

Approximately 42 m of polyvinyl chloride (PVC) sanitary sewer service pipe will be installed and connected to an existing sanitary sewer manhole in the existing access driveway which drains to the Village's sanitary sewer collection system. The sewer pipe will service the new building (sink and floor drains). Refer to 'sanitary pipe' depicted on **Figure 2** in **Appendix A**.

For the connection of the water line and the sanitary pipe, approximately 170 m² of excavation is required. This work will be completed with standard construction equipment (e.g., excavator and backhoe).

Site Grading and Finishing of Parking Area (Landworks)

Landworks will be completed around the new well house (i.e., grading around building and finishing of small area for parking of service vehicles). A fence will be installed around the new production well; a gate will be installed to allow access to the well head for future well maintenance.

Landworks will be completed with standard construction equipment (e.g., skid steer). Some clean crushed and pit run gravel will be imported to the site for the parking area surface and for backfilling around the building foundation and under the slab (volume estimates not yet finalized). Where possible, existing material will be re-used on-site to minimize the requirement for imported fill.

The site will be finished with crushed rock or re-seeded/hydro-seeded as necessary.

Operation of the New Production Well

Operation of the New Production Well will include regular visits by Village personnel to conduct routine monitoring of the treatment system (i.e., standard chlorine and ultraviolet light treatment equipment). Additionally, a drill rig may conduct occasional maintenance (e.g., every 1-5 years on an as needed basis) on the well head.



Decommissioning and Removal of Old Infrastructure

The former well houses associated with Well 1 (currently present on site) and Well 2 (decommissioned) are still present on the property on PID No. 60012838 and 60191137 (refer to **Figure 2** in **Appendix A**). These well houses will be removed from the property as part of the Project. Additionally, Well 1 and the remaining exploration wells will be decommissioned as per the New Brunswick “Guidelines for Decommissioning (Abandonment) of Water Wells” (GNB No Date), with the exception of one exploration well (selection of the one well is yet to be determined), which will be left on-site as a standard observation well.

The Village’s former production wells (i.e., Well 2 and Well 3) have been previously decommissioned as per the NBDELG guidelines.

Project Schedule

This Project will take place over the 2020 construction season, with an anticipated construction commencement date prior to the end of May 2020 (subject to receiving approval from the NBDELG by that time). The construction period is estimated at 12-16 weeks.

Documents Related to the Project

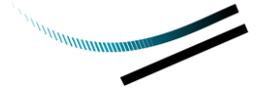
Dillon (Dillon Consulting Limited). 2018. Village of Fredericton Junction: Environmental Impact Assessment Registration (Final), Groundwater Exploration Program, June 2018 (NBDELG file #4516-03-1496).

Dillon (Dillon Consulting Limited). 2020. Village of Fredericton Junction: Fredericton Junction Water Exploration Project, Water Exploration Assessment Report (Final), March 2020. (WSSA Report).

Description of Existing Environment

Regional Environment

The New Production Well is located within close proximity to the previously studied groundwater exploration areas described in the EIA registration document (Dillon 2018). The characterization of the regional environment can be referenced within Dillon (2018) under **Section 3.1**.



Localized Environment

As outlined in **Section 3.2** of the EIA registration document (Dillon 2018), environmental features deemed to have specific value to the ecosystem, heritage and/or culture, or are afforded protection by legislation, are identified as Valued Components (VCs) of the environment. The following features have been identified as valued components in relation to the Project:

- Terrestrial Environment:
 - Wildlife and Wildlife Habitat,
 - Species of Conservation Concern,
 - Migratory Birds, and
 - Atmospheric Environment.
- Surface Water Environment:
 - Watercourses, and
 - Wetlands.
- Groundwater Environment;
- Heritage and Cultural Features; and
- Socio-economic Environment.

A reconnaissance-level site visit was conducted by Dillon biologists on September 23, 2019 to characterize and field verify the existing environment within the subject property and the PDA. A description based on desktop analysis and the results of the field visit of the localized existing environment organized by VC is provided within the following sections.

Terrestrial Environment

As discussed above, the New Production Well and proposed related infrastructure is located on PID No. 60012838 and 60015112. PID Nos. 60015112 and 60191137 are currently occupied by infrastructure related to Well 1 (back-up well, active) and Well 2 (decommissioned).

The PDA as a whole is a semi-vacant and manicured lot consisting of mixed grasses and weeds. The subject property is within a residential and commercial area of Fredericton Junction. There are mature white birch (*Betula papyrifera*) and red maple (*Acer rubrum*) as well as shrubs including white meadowsweet (*Spiraea alba*), red raspberry (*Rubus idaeus*), and highbush blackberry (*Rubus allegheniensis*) on the perimeter of the subject property, adjacent to the bank and the North Branch



Oromocto River. The shrubs and trees surrounding the subject property are not anticipated to interact with Project activities. Refer to **Figure 3 in Appendix A** for surrounding forest types as per the New Brunswick Department of Natural Resources and Energy Development (NBDNRED) Forest Classification.

Wildlife and Wildlife Habitat

The terrestrial environment (described above) in which the New Production Well is located does not offer unique or preferred habitat for wildlife species. It may however provide suitable habitat for small mammals and urbanized wildlife such as: skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), meadow voles (*Microtus pennsylvanicus*), squirrels (*Sciurus vulgaris*), chipmunk (*Tamias striatus*), white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), and coyote (*Canis latrans*), as outlined in the EIA registration document (Dillon 2018). Mammals may use the properties for foraging, migration, or denning.

A custom Atlantic Canada Conservation Data Centre (AC CDC 2020) data report (refer to **Appendix B**) was obtained for a 5 km radius around the Project, which details historical observations of flora and fauna within the 5 km radius. The North Branch Oromocto River and its riparian habitat (such as the riparian habitat within the subject property) provide foraging and nesting habitat for turtles. The AC CDC recorded that the Eastern painted turtle (*Chrysemys picta*) and the wood turtle (*Glyptemys insculpta*) have been historically observed in the general vicinity of the Project (although the location is not divulged due to the location sensitivity status of turtle species, in order to protect them from potential poaching).

With the exception of the loss of low quality wildlife habitat (i.e., manicured lawn) that will occur as a result of the new well house footprint, wildlife may continue to use the PDA and greater subject property upon completion of Project activities.

Priority Species

In this report, we define priority species as “species at risk” (abbreviated SAR), i.e., those species that are listed as “Extirpated”, “Endangered”, or “Threatened” on Schedule 1 of the federal *Species at Risk Act* (SARA) or the New Brunswick *Species at Risk Act* (NB SARA). We also include and define “species of conservation concern” (abbreviated SOCC) as those species that are not SAR but are listed in other parts of SARA, NB SARA, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or as regionally rare by the AC CDC (i.e., AC CDC subnational rarity ranking [S-ranks] of S1, S2, or S3).



According to the AC CDC records review (**Appendix B**), there have been two historical observations of fauna SAR/SOCC within 5 km of the Project. There have been no historical observations of flora SAR within 5 km of the Project, but the AC CDC reported that historical observations of some extremely rare (S-rank S1), rare (S2), and uncommon (S3) flora and fauna species that are considered to be SOCC according to the above definitions have historically been observed within 5 km of the Project. The locations of historical observations of flora and fauna SAR and SOCC within 1 km of the Project have been shown in **Figure 4** in **Appendix A**. These SAR/SOCC and rare species are briefly discussed in the subsections below and a description of their habitats and likelihood of being present within the subject property is provided in **Table C.1, C.2** and **C.3** within **Appendix C**.

Flora Priority Species

According to the AC CDC, there are no historical observations of flora SAR within 5 km of the Project, and no flora SAR or SOCC were identified during the site visit to the subject site on September 23, 2019.

The AC CDC lists several historical observations of flora SOCC within 5 km of the Project. Two extremely rare (S1) flora species within the Province (i.e., pale green orchid; *Palatanthera flava* var. *herbiola*, and Blunt-lobed Moonwort; *Sceptridium oneidense*) have been historically observed within 5 km of the Project, as well as 5 rare (S2) species and 12 uncommon (S3) species. A list of each rare species identified by the AC CDC, their habitat preferences, and their likelihood to be present within and use habitat available at the PDA is provided in **Table C.1** in **Appendix C**. Refer to **Figure 4** provided in **Appendix A** for locations of species identified by the AC CDC within 1 km of the Project.

Review of the provincial and federal Species at Risk Registries as described in **Section 3.4.2** of the EIA registration document (Dillon 2018) identified butternut (*Juglans cinerea*) as having the potential to occur along the North Branch Oromocto River. There were no butternut trees observed on the subject property or within the PDA during the September 23, 2019 site visit.

Fauna (Wildlife) Priority Species

According to the AC CDC, one bird SAR (bobolink; *Dolichonyx oryzivorus*) and one invertebrate SAR (yellow Lampmussel; *Lampsilis cariosa*) have been historically observed within 5 km of the Project. Refer to **Figure 4** provided in **Appendix A** for locations of species identified by the AC CDC within 1 km of the Project. Migratory birds are discussed in the section below.



Additionally, four rare and uncommon bird species listed by the AC CDC, including: cliff swallow (*Petrochelidon pyrrhonota*), purple martin (*Progne subis*), Red Crossbill (*Loxia curvirostra*) and Eastern Kingbird (*Tyrannus tyrannus*) have been historically observed within 5 km of the Project. Refer to **Table C.2** provided in **Appendix C** for a list of these rare/uncommon species and their habitat preferences.

SAR and SOCC that may be present within the general area based on a review of the provincial and federal Species at Risk Registries can be referenced within **Section 3.4.1** of the EIA registration document (Dillon 2018).

There are no critical or preferential habitats for SAR/SOCC present within the PDA. Bats, birds, and turtle SAR/SOCC may incidentally occur within the area due to the presence of nearby preferred habitat (namely wood turtle, bobolink, and the little brown myotis (*Myotis lucifugus*)). Specifically, bobolink may use the hay fields directly adjacent and to the east of the Project area for foraging and nesting purposes. During the site visit completed on September 23, 2019, no wildlife SOCC or SAR were observed.

Migratory Birds

Section 3.5 of the EIA registration document (Dillon 2018) lists the passerines (song birds/perching birds) and other bird species protected under the *Migratory Birds Convention Act*. No preferential habitat for migratory birds was identified within the PDA; however, migratory birds are anticipated to use surrounding habitats (i.e., treed areas, riparian area, and hayfields).

In general, nesting by passerines may occur within the treed portion at the perimeter of the site towards the North Branch Oromocto River. Birds noted above may continue to use the Project area following the completion of the Project activities. As discussed above, preferential habitat for bobolink (i.e., adjacent hay fields) was identified outside of the PDA and subject property (i.e., located approximately 30 m east of the PDA).

Environmentally Significant Areas

According to the AC CDC records review, the Fredericton Junction Fossil/Orchid Site Environmentally Significant Area (ESA) is located within 1 km of the Project (refer to **Figure 5 in Appendix A**). This site is significant due to the presence of unique geological characteristics (i.e., Pennsylvanian pebble conglomerate with white quartz pebbles) and the presence of plant fossils within coarse grained sandstone. This ESA is also the site of a park that provides access to this area adjacent to the North Branch Oromocto River; picnic tables and statues/artwork are also present here. The park is



regularly used by residents of the Village. The Project will not interact with this ESA/park.

Atmospheric Environment

The atmospheric environment described in the EIA registration document (Dillon 2018) is a regional characterization that does not vary much within the local area (i.e., Village). Therefore, the atmospheric environment at the PDA is expected to be the same as that of the Village. Refer to the EIA registration document (Dillon 2018) for mitigation outlined for the atmospheric environment.

Surface Water Environment

The Project is located within the Oromocto River watershed, and adjacent to the North Branch Oromocto River. Both watercourses and wetlands as they relate to the PDA are discussed below.

Watercourses

Based upon a desktop review of available mapping from GeoNB and a subsequent site visit completed on September 23, 2019, the New Production Well is approximately 32 m north of the North Branch Oromocto River, outside of the 30 m buffer for the watercourse; however, a portion of the proposed well house will be constructed within the 30 m buffer for the North Branch Oromocto River and will thus require a WAWA permit. The North Branch Oromocto River flows eastward to the South Oromocto River (located approximately 3.5 km to the east of the PDA), which then discharges into the Saint John River in Oromocto, New Brunswick. The related infrastructure (i.e., proposed well house and fencing) is located within 25 m of the bank of the North Branch Oromocto River (refer to **Figure 6** in **Appendix A**). As discussed, a WAWA permit application will be submitted to the NBDELG prior to the commencement of any work within 30 m of the River.

Halfmile Brook is located approximately 250 m north of the PDA, and an unnamed tributary to the North Branch Oromocto River is located approximately 200 m to the south.

The site elevation is 14.40 m, which is approximately 8 m above the elevation of the River. It is not expected that flood water would reach the elevation of the New Production Well based on this significant elevation difference and known flood patterns of the area (i.e., historical knowledge based on the presence of Wells 1 and 2 at the site).



Elevation data for each drill target option was based upon Geographic Information Systems (ArcGIS) data and elevations obtained from flood contours generated from Light Detection and Ranging (LiDAR) data from the flood extent, depressions and wet areas mapping.

Wetlands

Based on the province's available GeoNB wetland mapping, the nearest mapped wetland to the PDA is located approximately 200 m north of the PDA, across the North Branch Oromocto River (refer to **Figure 6** in **Appendix A**).

A Dillon biologist trained in wetland identification, ecology, and delineation conducted the site visit on September 23, 2019. No wetlands were observed within the PDA or greater subject property.

Groundwater Environment

Based on the Generalized Surficial Geology Map of New Brunswick (Allard 2011), the surficial geology in the general area of the site consists of streamlined till, made up of silty diamicton, which is massive to shear banded, matrix supported, and lodgment and basal melt-out facies generally 1 m to greater than 38 m thick. This was deposited by advancing glaciers, indicative of rapidly-flowing warm based ice (Allard 2011).

Based on the New Brunswick Department of Natural Resources, Minerals, Policy, and Planning Division Bedrock Geology of New Brunswick map (Allard 2011), the bedrock geology in the area of the site is identified as Late Carboniferous rock of the Pictou Group (St. Peter et al. 2005). The NBDNR New Brunswick Bedrock Lexicon identifies the Pictou Group as consisting of coarse- to fine-grained, dark red, reddish brown and grey sandstones, red siltstones and mudstones, and minor grey shales (St. Peter et al. 2005).

During the well drilling activities, the observed stratigraphy generally consisted of the following:

- Overburden, brown/dark-brown, compact silt with some gravel (0 to 19.5 mbgs);
- Bedrock, grey sandstone, becoming more coarse with depth (19.5 to 26.8 mbgs); and
- Bedrock, interchanging brown/grey conglomerate and sandstone (26.8 to 36.0 mbgs).



Based on regional geological and topographical features, regional groundwater/surface water is anticipated to flow to the south/southeast towards the North Branch Oromocto River.

As discussed above in the Siting Considerations section, the New Production Well is located within an area of existing municipal services and therefore not likely within a zone of influence of private potable wells. The PDA is located in a wellfield protected area under the New Brunswick Wellfield Protection Program associated with Well 1 (active) and Well 2 (decommissioned).

Heritage and Cultural Features

Colbr Consulting Inc. (Colbr) was contracted by Dillon to conduct an Archaeological Impact Assessment (AIA) for the PDA, to meet the requirements of the *Heritage Conservation Act* as a part of this amendment. Under the appropriate archaeological permit and in consultation with the Archaeological Services Branch of the New Brunswick Department of Tourism, Heritage and Culture, Colbr conducted a site walkover (preliminary field examination) on November 16, 2019 as well as documentary research on past and present land use and known archaeological resources/sites within 5 km of the Project.

In general, areas within 80 m of any watercourse are considered to be high to medium potential areas for archaeological resources. Since a portion of the site infrastructure associated with the New Production Well (i.e., well house) is located within 30 m of the North Branch Oromocto River (a river known to be used by the Wolastoquey Nation for thousands of years) on a terrace and is in the proximity (i.e., within 5 km) of other known archaeological sites, the PDA is considered to have high potential for archaeological resources (Colbr 2020). Refer to **Figure 7** in **Appendix A** for the high potential archaeological buffer in relation to the New Production Well. Therefore, additional protection measures in the form of monitoring of excavation or other earth moving activities by a licensed archaeologist will be employed throughout the Project for the protection of archaeological resources, should they be discovered during Project activities.

The Archaeological Services Branch of the New Brunswick Department of Tourism, Heritage and Culture confirmed that the site does not require a Heritage Resource Impact Assessment (HRIA) for the Project (Colbr 2020).

Furthermore, with the presence of the nearby Fredericton Junction Fossil/Orchid Site Environmentally Significant Area (ESA) within 1 km of the Project (where plant fossils are present), there could be elevated potential for palaeontological resource within the PDA; however, the depth of the grey sandstone bedrock, was approximately



19.5 mbgs, which is deeper than the anticipated depth of excavations for the proposed well house or trenches (i.e., 1 - 2.5 m maximum).

Socio-economic Environment

The Project is located within the limit of the Village centre, on Village-owned property that has a Service New Brunswick land use designation of “Park, Recreation and Institutional”. Immediate surrounding land uses include single, two, and multiple family residential units. The New Brunswick Southern Railway Company Limited rail line is 60 m north of the PDA. Commercial businesses (i.e., Sunbury Diner and Sunbury Grocery) are located 100-150 m north/northeast of the PDA. Refer to **Figure 8** in **Appendix A** for surrounding land uses in relation to the New Production Well.

Land use and potential sources for contamination will further be assessed during the updating of the Protected Wellfield Zones associated with the New Production Well that must be completed under the WSSA process.

Environmental Effects Assessment and Mitigation

The standard and Project specific mitigation for potential environmental effects outlined in the EIA registration document (Dillon 2018) will be applied to the New Production Well and Phase 2 of the Project where applicable.

Based on the activities of Phase 2 (i.e., construction of new well house and connection of distribution piping), the following additional environmental interactions/effects and associated proposed mitigation are described by VC, in the sections below. Only those VC-Project interactions that are anticipated to result in environmental effects are discussed and have mitigation proposed below. The remaining VCs are considered to be sufficiently protected or their potential environmental effects are sufficiently mitigated through the mitigation outlined in the original EIA registration document.

Priority Fauna (Wildlife) Species

Potential Interactions

The Project may interact with priority fauna species as described within the EIA registration document (Dillon 2018) as well as through the loss of low quality habitat (grass lawn) within the footprint of the proposed well house and related facilities. Additionally, preferential habitat for bobolink (an SAR) was identified adjacent to (but not within) the PDA (approximately 15 m east); interactions related to bobolink (an SAR) are discussed below (Migratory Birds). Furthermore, the North Branch Oromocto



River, which provides turtle habitat, is located 25 m from the Project. Although unlikely due to the steep bank, it is possible that wood turtle may incidentally occur within the PDA or subject property for foraging (on grasses/shrubby areas) or breeding (on gravelly surfaces such as road/parking areas).

Without mitigation, the potential environmental effects to priority fauna (wildlife) species may include temporary disturbance of foraging fauna during Project activities, serious harm to fauna from construction equipment or permanent destruction of nests.

Proposed Additional Mitigation

The following additional mitigation will be employed during the Project to minimize environmental effects to fauna priority species as a result of the Project. Refer to the EIA registration document (Dillon 2018) for the original mitigation employed as a part of the well installation (which will be employed throughout this phase of the Project where applicable).

- The PDA/work areas will be visually checked on a daily basis for nesting turtles. Should a nesting turtle be located in the PDA/work area, the turtle will be gently removed from immediate danger and the NBDNRED Species at Risk Section (tel: 506-453-5873) will be contacted for further instruction.
- Vegetation will be retained as much as possible (i.e., work activities will not exceed the pre-defined PDA).
- To limit disruptions to potential bat activity at the PDA, Project construction activities will be limited to daylight hours unless absolutely necessary, and if required, nighttime lighting will be pointed downwards and meet Environment and Climate Change Canada (ECCC)/Canadian Wildlife Service (CWS) standards.
- Any nuisance wildlife as identified under the *Nuisance Wildlife Regulation* (97-141) of the New Brunswick *Fish and Wildlife Act* identified as disrupting production operation may only be removed by a licensed Nuisance Wildlife Control Officer or a licensed trapper.

Residual Interactions following Mitigation

The development of the Project will result in modest loss of low quality wildlife habitat (i.e., grass lawn) within the PDA. It is not expected that priority wildlife species rely on the habitat within the PDA for foraging or their lifecycle purposes and the rural and largely forested character of the area surrounding the PDA is expected to offer an abundance of higher quality habitat (i.e., treed riparian area, hay field and



shrubby areas). Therefore, with proposed mitigation, the residual interactions of the Project with priority wildlife species are not expected to be substantive.

Migratory Birds

Potential Interactions

As discussed above within the Fauna (Wildlife Priority Species) section above, the Project may interact with fauna, including migratory birds as described within the EIA registration document (Dillon 2018). As discussed, preferential habitat for bobolink (a migratory bird and SAR) was identified adjacent to the PDA (approximately 15 m east); although unlikely due to the lack of preferred habitat within the PDA, it is possible that bobolink may incidentally occur within the PDA or subject property. The incidental presence of other migratory birds in the PDA is also possible.

Without mitigation, potential environmental effects to migratory birds may include: permanent destruction of nests by construction equipment and temporary disruption to foraging or nesting birds.

Proposed Additional Mitigation

The following additional mitigation will be employed during the Project to reduce/eliminate environmental effects to migratory birds as a result of the Project. Refer to the EIA registration document (Dillon 2018) for the original mitigation employed as a part of the well installation (which will be employed throughout this phase of the Project where applicable).

- The PDA/work areas will be visually checked on a daily basis for nesting migratory birds. Should a nesting migratory bird be identified within the work area, ECCC/CWS will be notified and an appropriate no-work buffer zone (in consultation with ECCC/CWS) will be applied around the nest until the nest has been fledged. No flagging of the nest will occur to minimize chances of predation.
- Fill and excavated materials will not be stockpiled for long periods of time to deter the potential for nesting by bank swallows (*Riparia riparia*) or other ground nesting species (e.g., common nighthawk; *Chordeiles minor*). Fill/excavation material piles will be covered with tarps if left standing for more than 24 hours.
- The Project work area will not exceed the pre-determined extent of the PDA and ground vegetation will be retained as much as possible to retain migratory bird nesting habitat.



- As grubbing is scheduled to occur within the migratory bird season (April-August), a biologist will conduct a bird nest search at the grubbing/excavation site immediately prior to the commencement of excavation activities.
- No clearing of the perimeter shrubs/trees shall take place as part of the Project.
- To limit disruptions to potential migratory bird activity at the PDA, Project construction activities will be limited to daylight hours unless absolutely necessary, and if required, nighttime lighting will be pointed downwards and meet ECCC/CWS standards.

Residual Interactions following Mitigation

The development of the Project will result in modest loss of low quality bird habitat (i.e., grass lawn) within the PDA and it is possible that birds may interact with components of the Project such as nesting within stockpiled fill or within gravel areas within the PDA. It is not expected that birds rely on the habitat within the PDA for foraging or their lifecycle purposes and the largely forested area surrounding the PDA is expected to offer an abundance of higher quality habitat (i.e., treed riparian area, hay field and shrubby areas). Therefore, with proposed mitigation (such as monitoring and covering stockpiled fill), the residual interactions of the Project with migratory birds are not expected to be substantive.

Surface Water Environment

Potential Interactions

The Project has the potential to interact with the North Branch Oromocto River as described within the EIA registration document (Dillon 2018). Additionally, proposed Project components (i.e., proposed well house and associated fencing) are located within 30 m of the River.

Therefore, without mitigation, potential environmental effects may include erosion and sedimentation of exposed soils through excavations and stockpiling of fill/excavated materials.

Proposed Additional Mitigation

The following additional mitigation will be employed during the Project to reduce/eliminate environmental effects to the North Branch Oromocto River as a result of the Project. Refer to the EIA registration document for the original mitigation employed as a part of the well installation (which will be employed throughout this phase of the Project where applicable).



- A Watercourse and Wetland Alteration (WAWA) permit application will be submitted to the NBDELG prior to the start of Project activities within 30 m of the North Branch Oromocto River. Work will not be initiated until the WAWA permit has been issued, and the conditions of the WAWA permit will be adhered to during the Project and a copy of the site-specific WAWA permit will be kept on-site.
- Fill and excavated materials will not be stockpiled for long periods of time to reduce the likelihood of sedimentation. Fill/excavation material piles will be covered with tarps if left standing for more than 24 hours.
- Weather will be monitored and additional erosion control measures such as the installment of hay bales and check dams/silt fences will be employed, as appropriate, should stockpiled fill be present in unexpected heavy rain events.
- Work will not be conducted during heavy rain events to minimize the movement of exposed soils.

Residual Interactions following Mitigation

The New Production Well is not anticipated to cause adverse environmental effects with respect to the water quality and quantity of the North Branch Oromocto River. Based on the Government of Canada (2020) hydrometric (historical water level and streamflow) information collected at water monitoring station at Tracy (Monitoring Station No. 01AM001) and the projected pumping rates based on the hydrogeological modelling conducted for the WSSA (Dillon 2020), the New Production Well is anticipated to consume approximately 1.7% of the total flow of the North Branch Oromocto River during the lowest recorded water level (lowest water level data available from 2017). During highest flow periods, the well consumes about 0.005% of the total flow of the River. The approximate range of 0.005% and 1.7% of the total water flow/quantity is considered negligible (Dillon 2020). Therefore, with proposed mitigation, the residual interactions of the Project with the surface water environment are not expected to be substantive.

Groundwater Environment

Potential Interactions

Groundwater flow is unlikely to have potential effects as a result of the Project (refer to the WSSA report (Dillon 2020)). There is limited potential for Project-related activities to affect localized groundwater quality and quantity due to the presence of the New Production Well. As discussed above in the Siting Considerations section, the New Production Well is located within an area of existing municipal services and



therefore not likely within a zone of influence of private potable wells. The PDA is located in a wellfield protected area under the New Brunswick Wellfield Protection Program associated with Well 1 (active) and Well 2 (decommissioned).

Proposed Additional Mitigation

As discussed within the Physical Components of the Project section, an observation well will be installed within one of the exploration well locations on the property. The observation well will be positioned such that the radial effects of pumping of the New Production Well will be monitored as a means to assess the risk to the surrounding aquifer.

Residual Interactions following Mitigation

The New Production Well is located within an area of existing municipal services and therefore not likely within a zone of influence of private potable wells. Therefore, with proposed mitigation (i.e., regular monitoring of the aquifer via the observation well), the residual interactions of the Project with the groundwater environment are not expected to be substantive.

Heritage and Cultural Features

Potential Interactions

The Project has the potential to interact with heritage and cultural features via accidental discovery of archaeological resources during excavation activities. Given the presence of the nearby Fredericton Junction Fossil/Orchid Site Environmentally Significant Area (ESA) within 1 km of the Project (where plant fossils are present), the Project could also interact with palaeontological resources during excavation activities if excavations extend to bedrock. However, excavations are to occur within the soil layer and not into bedrock, so there is a low potential for fossils to be uncovered.

Without mitigation, environmental effects include the potential permanent destruction of any previously undiscovered archaeological or palaeontological resources that might be present within the PDA.

Proposed Additional Mitigation

To minimize potential environmental effects to potential archaeological and palaeontological resources, the following mitigation will be employed during the Project.

- Ground intrusive work activities will not exceed the predefined PDA.



- Any ground intrusive (excavation) work conducted will be monitored by a licensed archaeologist.
- The Archaeological Services Branch of the New Brunswick Department of Tourism, Heritage and Culture will be notified at 506-453-3115, should archaeological resources be encountered during the ground intrusive work.
- First Nations will be notified should archaeological resources be encountered during the ground intrusive work, which are deemed to be pre-contact in nature by the licenced archaeologist. First Nation Consultation is detailed within a separate section below.
- The New Brunswick Museum of the New Brunswick Department of Tourism, Heritage and Culture will be notified at 506-643-2300, should fossils be encountered during the ground intrusive work.

Residual Interactions following Mitigation

The development of the Project may interact with archaeological and palaeontological resources through accidental discovery/damage through excavation activities. A licensed archeologist will monitor all excavation activities for the Project; therefore, the residual interactions of the Project with archaeological and palaeontological resources are not expected to be substantive.

Socio-economic Environment

Potential Interactions

The Project has the potential to interact with the socio-economic environment via construction activities as well as the ongoing presence of the Project.

Without mitigation, the Project may result in environmental effects to the socio-economic environment such as temporary noise disruption from construction equipment, or incompatible land uses.

Proposed Additional Mitigation

To reduce potential environmental effects, the following mitigation measures will be employed as part of the Project:

- Local residents have been notified of the Project, including planned activities and planned schedule. Refer to Public Consultation Section below.
- Adjacent residents will be re-notified immediately before the commencement of construction activities (i.e., when the contractor is retained and the schedule is finalized).



- Construction activities will be limited to daytime hours unless absolutely necessary and nighttime work will be approved by the Village.
- The zoning for the Project is appropriate with surrounding land uses, so that incompatible land uses are not expected to occur.

Residual Interactions following Mitigation

The development of the Project has the potential to interact with the socio-economic environment through temporary disturbance such as noise or dust; however, the construction component of the Project will be temporary and the ongoing operation (i.e., intermittent maintenance activities) of the New Production Well is expected to result in minimal disruption to adjacent residents and will be the same as that which has occurred for Wells 1 and 2. Furthermore, the development of the Project will provide a more sustainable and safe source of drinking water for all residents using municipal services within the Village. Therefore, with proposed mitigation, the residual interactions of the Project with the socio-economic environment are not expected to be substantive.

Accidents, Malfunctions, and Unplanned Events

For a description of mitigation for potential accidents, malfunctions, and unplanned events in relation to the Project, refer to the EIA registration document (Dillon 2018).

Summary of Environmental Effects and Mitigation

With the mitigation proposed within the EIA registration document (Dillon 2018) and the additional mitigation outlined above for Phase 2 of the Project, the residual interactions of the Project with the above-noted VCs, and their resulting environmental effects, are not anticipated to be substantive.

Public Consultation

As completed during the 2018 EIA review period, the Village of Fredericton Junction sought and considered public input in relation to the Project. Individuals, companies, agencies, organized interest groups, and others that may be affected by the Project were contacted, made aware of the undertaking, explained the purpose of the Project and asked to provide comment where applicable.

In addition to the activities that were conducted in the 2018 EIA review period, Project notification letters were recently sent to all Village residents through standard mail on February 27, 2020 and were hand delivered to the residents located adjacent to the proposed Project. The intent of the letters to the Village residents was to provide an update on the Project, and to notify them of upcoming work, the



amendment to the EIA and of the open house that occurred on March 10, 2020. Refer to **Appendix D** for a copy of the letter. The March 10 open house was held at the Royal Canadian Legion Branch 55, between 6:00 pm and 8:00 pm. Two residents and four council members attended the open house.

Documentation of the public involvement/received input will be provided to NBDELG in a short summary report, including copies of the notification letters/open house materials, within 60 days of submitting this amendment to the NBDELG.

First Nations Consultation

As completed during the 2018 EIA review, the Village of Fredericton Junction recently sought and considered First Nations input in relation to the proposed Project. A Project Notification letter dated February 26, 2020, was delivered to the six Wolastoqey Nations (i.e., Kingsclear First Nation, Madawaska First Nation, Oromocto First Nation, St. Mary's First Nation, Tobique First Nation and Woodstock First Nation), as well as their representative umbrella organization, the Wolastoqey Nation in New Brunswick (WNNB). Refer to **Appendix D** for a copy of the letter.

The intent of the letter was to notify the First Nations of the Project, to provide background information/update on the groundwater exploration program, to detail the anticipated project components and anticipated other regulatory permitting requirements (i.e., WAWA and archaeological monitoring), and to notify them on the EIA amendment.

Documentation of First Nation involvement/received input will be provided to NBDELG in the short summary report mentioned above, including copies of the notification letter.



Closing

This report was prepared by Dillon on behalf of the Village of Fredericton Junction. Dillon has used the degree of care and skill ordinarily exercised under similar circumstances at the time the work was performed by reputable members of the environmental consulting profession practicing in Canada. Dillon assumes no responsibility for conditions which were beyond its scope of work. There is no warranty expressed or implied by Dillon.

The material in the report reflects Dillon's best judgment in light of the information available to Dillon at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Sincerely,

DILLON CONSULTING LIMITED

Alison Smith, B.Sc.ENR
Project EIA Coordinator

Attachments



References:

Allard, S. 2011. Surficial geology of the Fredericton Junction area (NTS 21 G/10), York, Sunbury, Queens, and Charlotte counties, New Brunswick. New Brunswick Department of Natural Resources; Lands, Minerals and Petroleum Division, Plate 2011-12 (revised April 2016).

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Appendix A

Figures



VILLAGE OF FREDERICTON JUNCTION

AMENDMENT TO ENVIRONMENTAL IMPACT
ASSESSMENT

SITE LOCATION

FIGURE 1

- New Production Well
- Former Production Well
- Production Wells
- Test Well Locations
- Local Street
- Highway



MAP DRAWING INFORMATION:
DATA PROVIDED BY GEONB

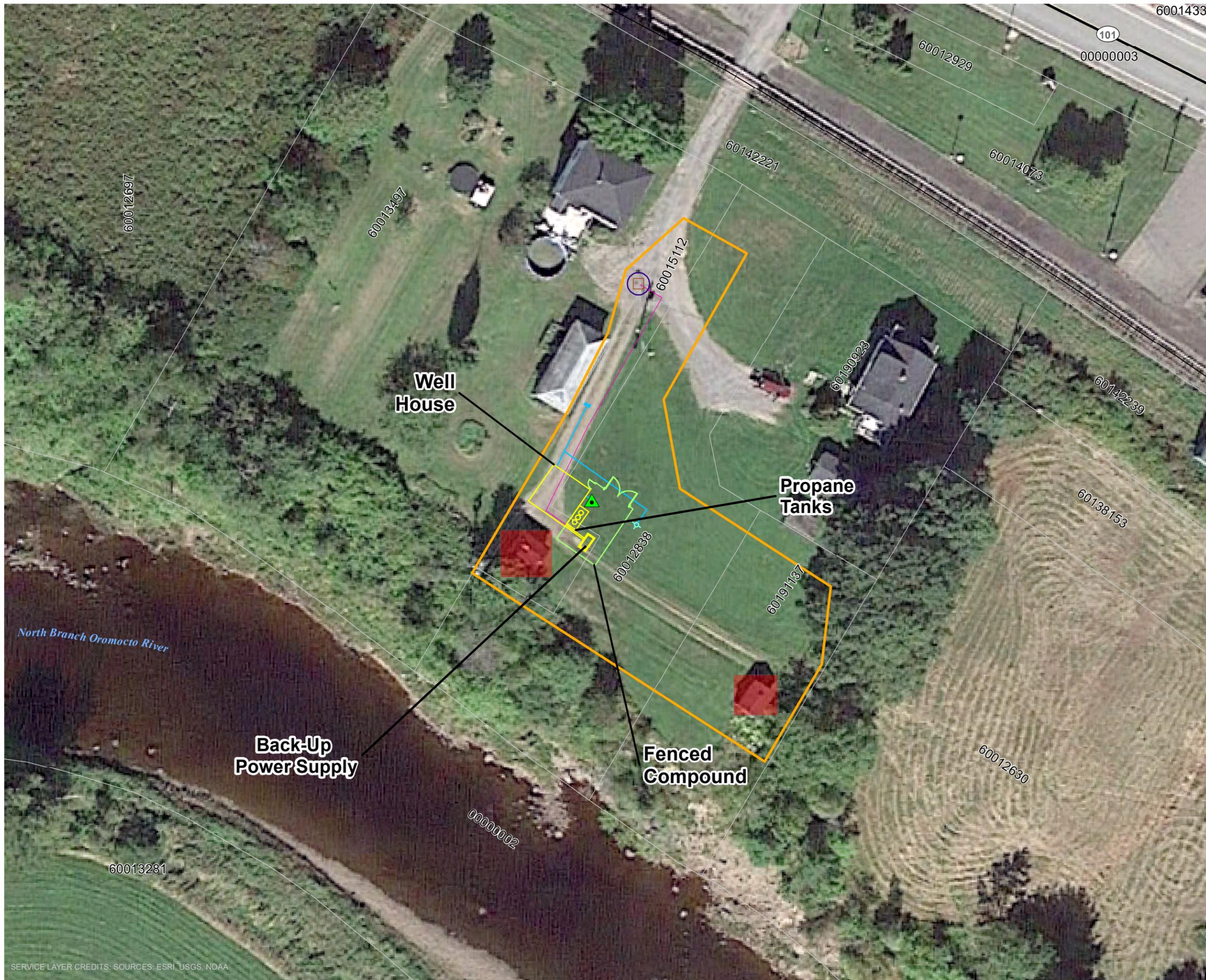
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MAP CHECKED BY: JH
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PROJECT: 18-7534
STATUS: FINAL
DATE: 2020-03-25

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

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**VILLAGE OF
FREDERICTON JUNCTION**

AMENDMENT TO ENVIRONMENTAL IMPACT
ASSESSMENT

**CONCEPTUAL SITE LAYOUT
FIGURE 2**

- New Production Well
- Conceptual Structure Design
- Fenced Compound
- Conceptual Sanitary Structure
- Conceptual Watermain
- Conceptual Sanitary Sewer
- Railway
- Local Street
- Highway
- Property Boundary
- Former Well Houses
- Project Development Area (1530 m2)



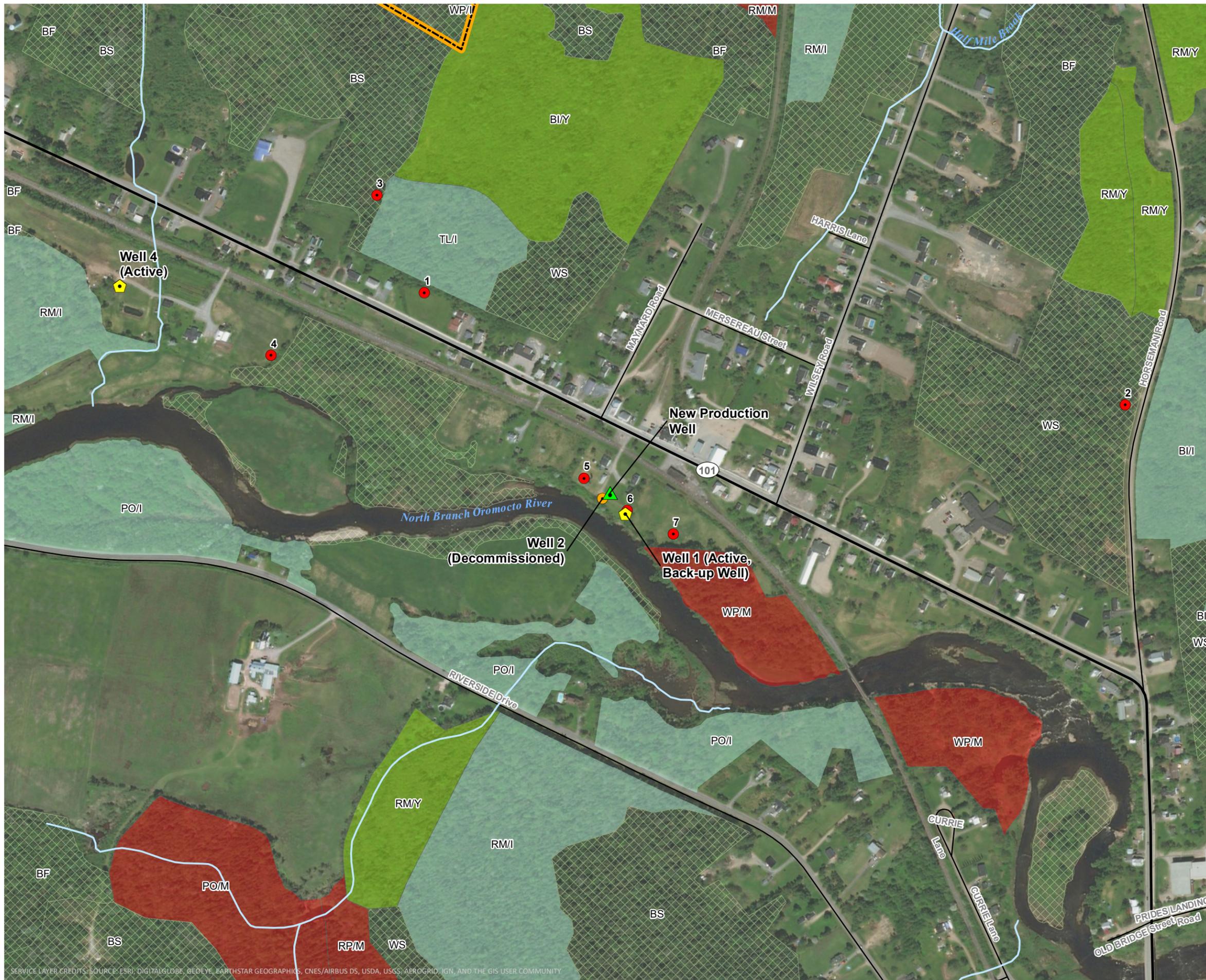
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VILLAGE OF FREDERICTON JUNCTION

AMENDMENT TO ENVIRONMENTAL IMPACT
ASSESSMENT

SURROUNDING FOREST TYPES

FIGURE 3

- New Production Well
 - Current Production Wells
 - Former Production Well
 - Drill Exploration Location
 - Watercourse
 - Local Street
 - Highway
 - Village Limits
- Forest Development Stage**
- Unknown
 - Immature
 - Young
 - Mature
- BF: Balsam fir (*Abies balsamea*)
 BI: White birch and/or gray birch (*Betula* spp.)
 BS: Black spruce (*Picea mariana*)
 OH: Other hardwood -oak, ash, elm, basswood, butternut and/or ironwood
 PO: Poplar (*Populus* spp.)-trembling aspen, large tooth aspen and/or balsam poplar
 RM: Red maple (*Acer rubrum*)
 RP: Red pine (*Pinus resinosa*)
 TL: Eastern larch (*Larix laricina*)
 WP: White pine (*Pinus strobus*)
 WS: White spruce (*Picea glauca*)
 NBDNRED Forestry data is current to 2014

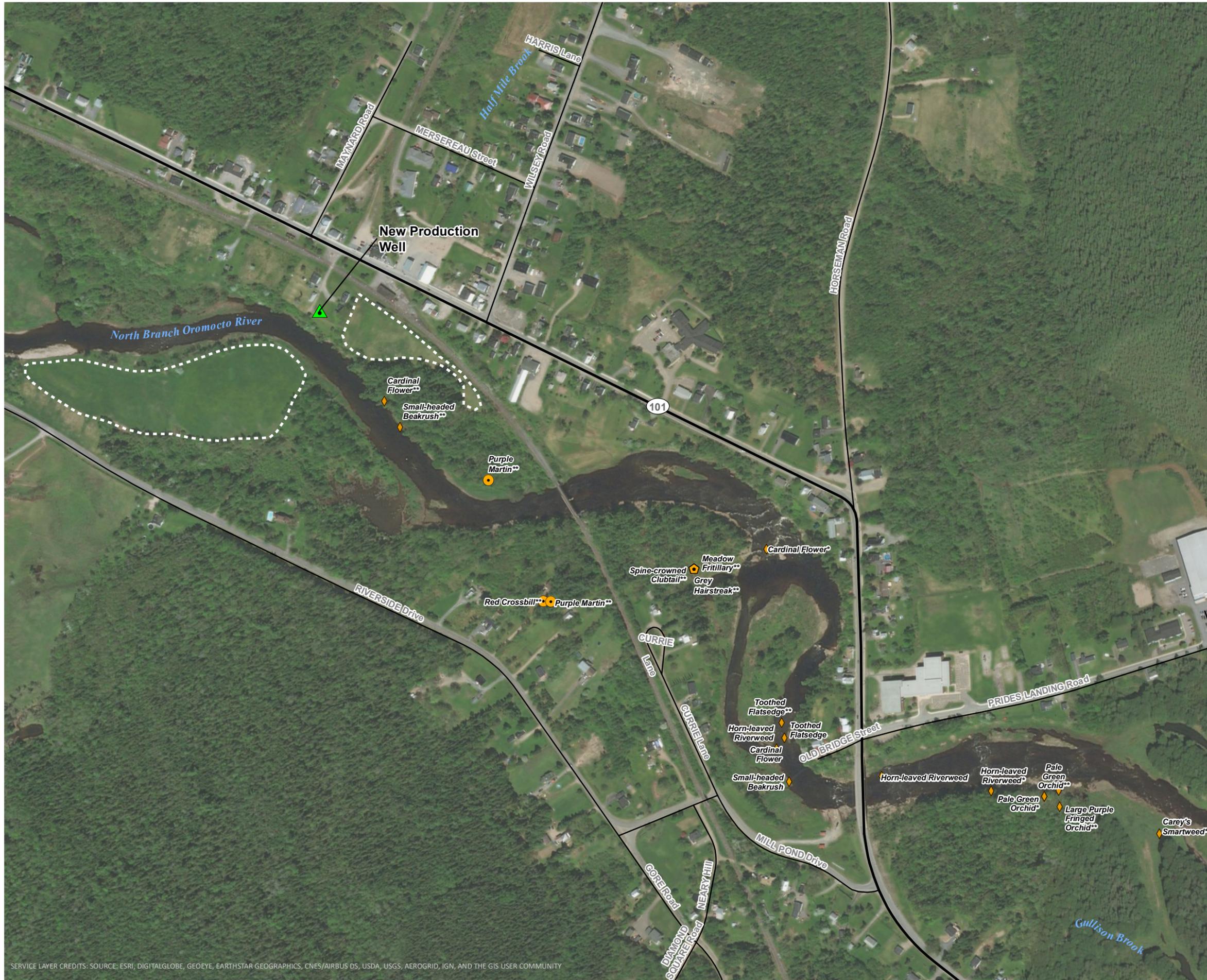


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ASSESSMENT

UNCOMMON FLORA AND FAUNA FIGURE 4

- New Production Well
- Local Street
- Highway
- Village Limits
- Dillon Identified Preferential Bobolink Habitat
- AC CDC Priority Species**
 - Bird
 - Invertebrate
 - Rare Vascular Plant (Non-SAR/SOCC)

2020 AC CDC Report of historically observed priority species within 1 km of the New Production Well

* Location of record within 50 to 100 m
 ** Location of record within 100 m to 1 km
 Locations of species rounded more than 1 km are not mapped



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VILLAGE OF FREDERICTON JUNCTION

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ENVIRONMENTALLY SIGNIFICANT AREAS FIGURE 5

-  New Production Well
-  Fredericton Junction Fossil/Orchid Site ESA
-  Local Street
-  Highway



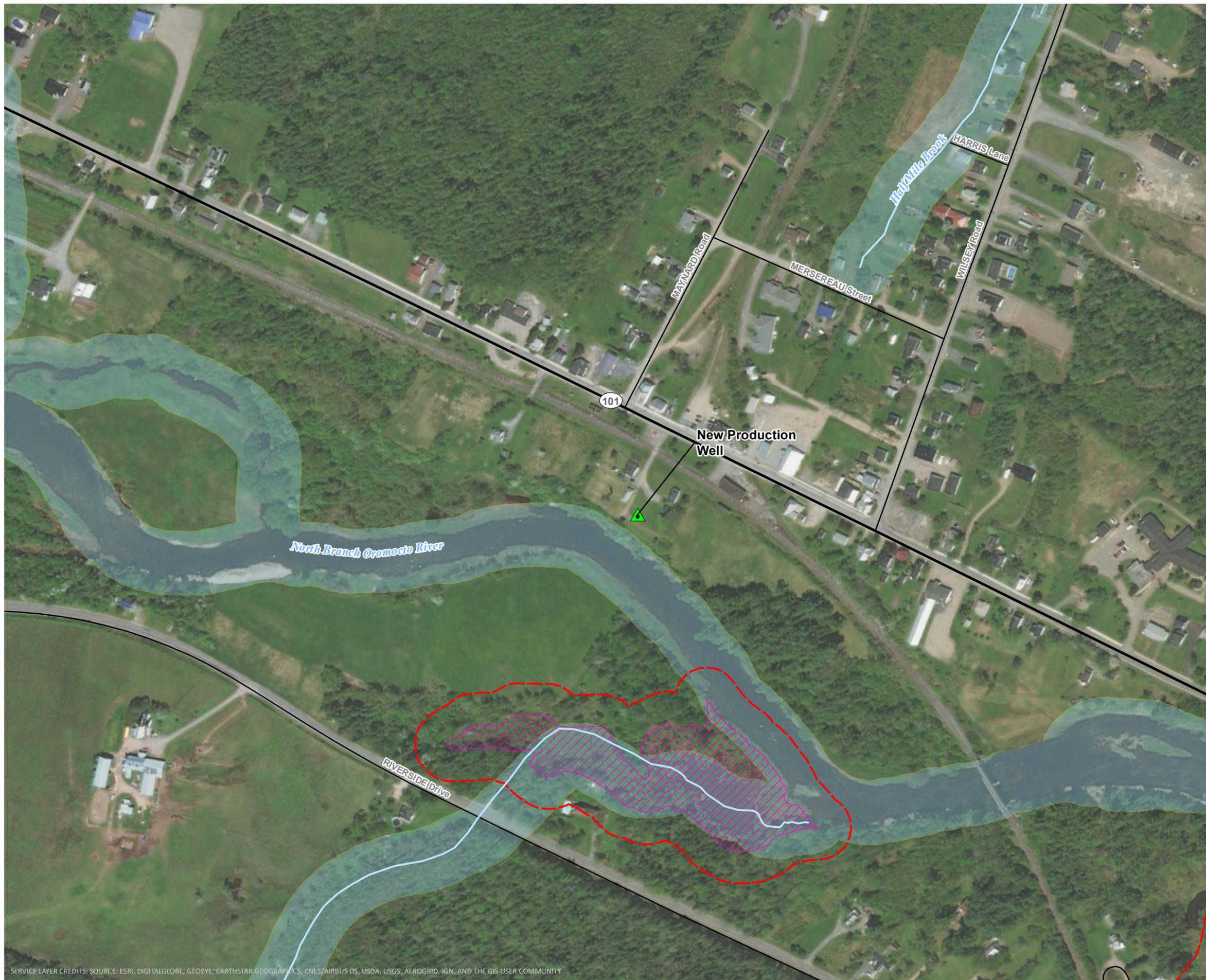
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VILLAGE OF FREDERICTON JUNCTION

AMENDMENT TO ENVIRONMENTAL IMPACT
ASSESSMENT

WATERCOURSES AND WETLANDS FIGURE 6

- New Production Well
- Watercourse
- Local Street
- Highway
- Wetland 30 m Buffer
- Wetland (NBDELG 2019)
- Watercourse 30 m Buffer

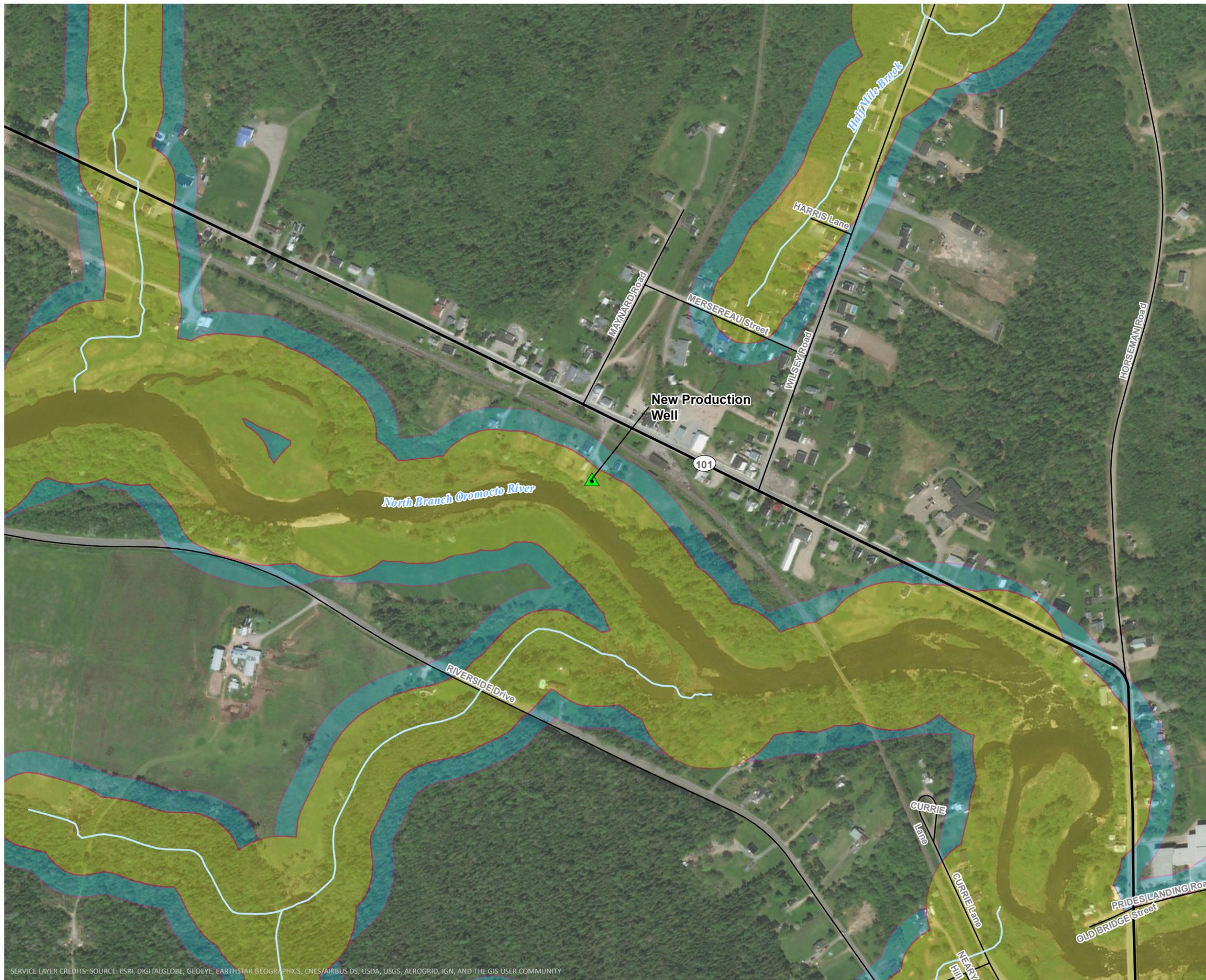


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VILLAGE OF FREDERICTON JUNCTION

AMENDMENT TO ENVIRONMENTAL IMPACT
ASSESSMENT

AREAS OF ELEVATED ARCHAEOLOGICAL POTENTIAL

FIGURE 7

- New Production Well
- Watercourse
- Local Street
- Highway
- High Archaeological Potential 50 m Buffer
- Medium Archaeological Potential 80 m Buffer



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VILLAGE OF FREDERICTON JUNCTION

AMENDMENT TO ENVIRONMENTAL IMPACT
ASSESSMENT

SURROUNDING LAND USE

FIGURE 8

-  New Production Well
-  Watercourse
-  Local Street
-  Highway
-  Village Limits
- Land Use Designation**
-  Village Centre (VC)
-  Single, Two and Multiple Family Residential (R2)
-  Parks, Recreation, Institutional (PRI)
-  Rural Area (RA)
-  Open Space (OS)



MAP DRAWING INFORMATION:
DATA PROVIDED BY GEONB

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MAP CHECKED BY: JH
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PROJECT: 18-7534
STATUS: FINAL
DATE: 2020-03-25

Appendix B

AC CDC Site Specific Report

DATA REPORT 6565: Fredericton Junction, NB

Prepared 14 February 2020
by C. Robicheau, Data Manager

CONTENTS OF REPORT

1.0 Preface

- 1.1 Data List
- 1.2 Restrictions
- 1.3 Additional Information
- Map 1: Buffered Study Area

2.0 Rare and Endangered Species

- 2.1 Flora
- 2.2 Fauna
- Map 2: Flora and Fauna

3.0 Special Areas

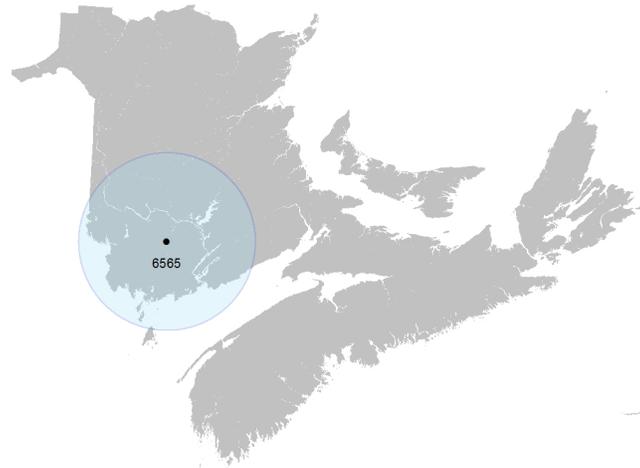
- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

4.0 Rare Species Lists

- 4.1 Fauna
- 4.2 Flora
- 4.3 Location Sensitive Species
- 4.4 Source Bibliography

5.0 Rare Species within 100 km

- 5.1 Source Bibliography



Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) 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 AC CDC 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 AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC 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 AC CDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

<u>Filename</u>	<u>Contents</u>
FrederictonJNB_6565ob.xls	Rare and legally protected Flora and Fauna in your study area
FrederictonJNB_6565ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
FrederictonJNB_6565sa.xls	Significant Natural Areas in your study area
FrederictonJNB_6565ff.xls	Rare and common Freshwater Fish in your study area (DFO database)

1.2 RESTRICTIONS

The AC CDC 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 AC CDC 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 AC CDC 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) AC CDC 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) AC CDC 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 AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries

Sean Blaney, Senior Scientist, Executive Director

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sean.blaney@accdc.ca

Animals (Fauna)

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Plant Communities

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Billing

Jean Breau

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Questions on the biology of Federal Species at Risk can be directed to AC CDC: (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 Hubert Askanas, Energy and Resource Development: (506) 453-5873.

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 Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Emma Vost
(902) 670-8187

Duncan.Bayne@novascotia.ca

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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

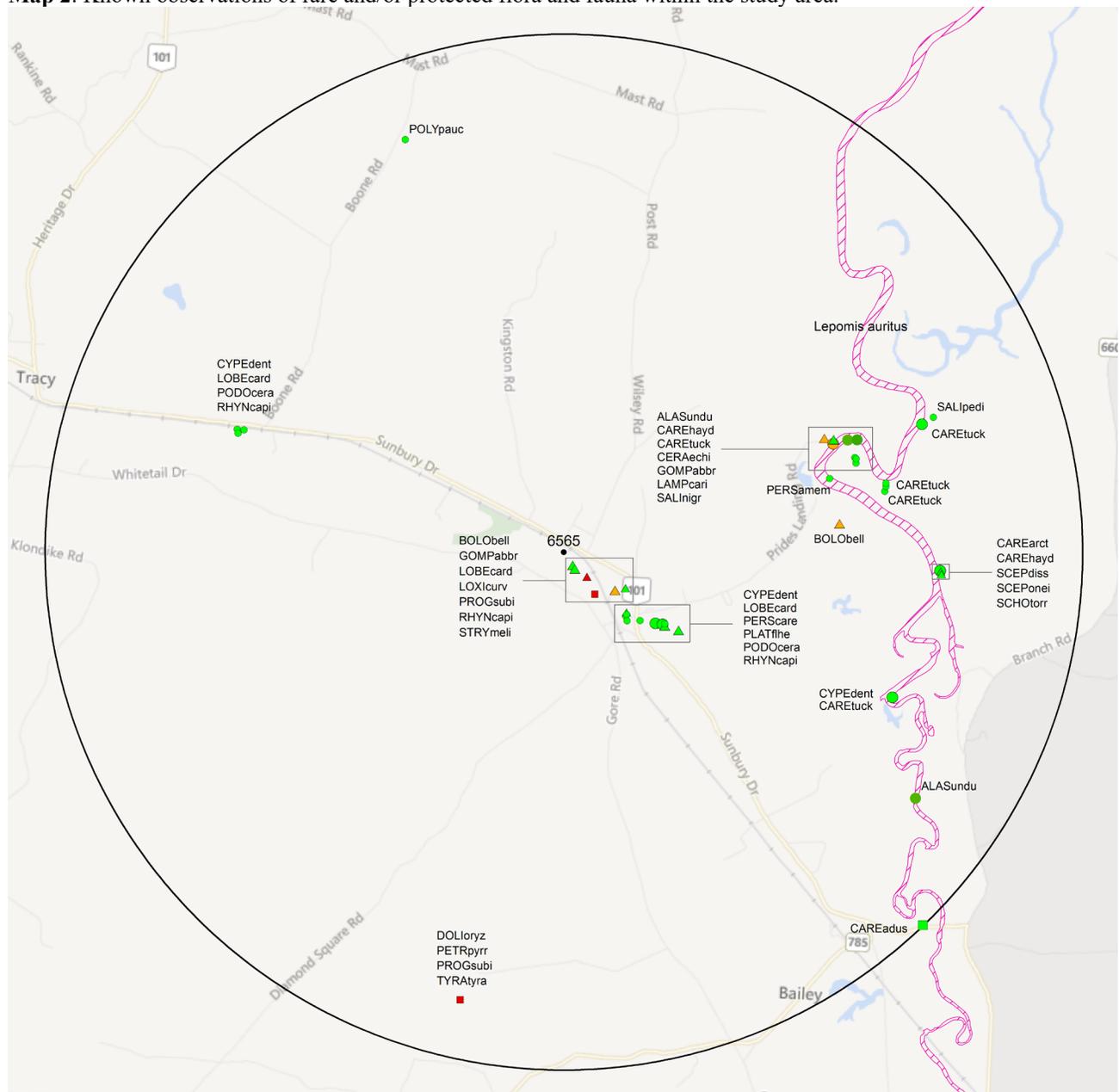
2.1 FLORA

The study area contains 45 records of 19 vascular and no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 7 records of 5 vertebrate and 17 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 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

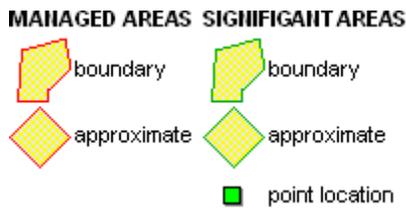
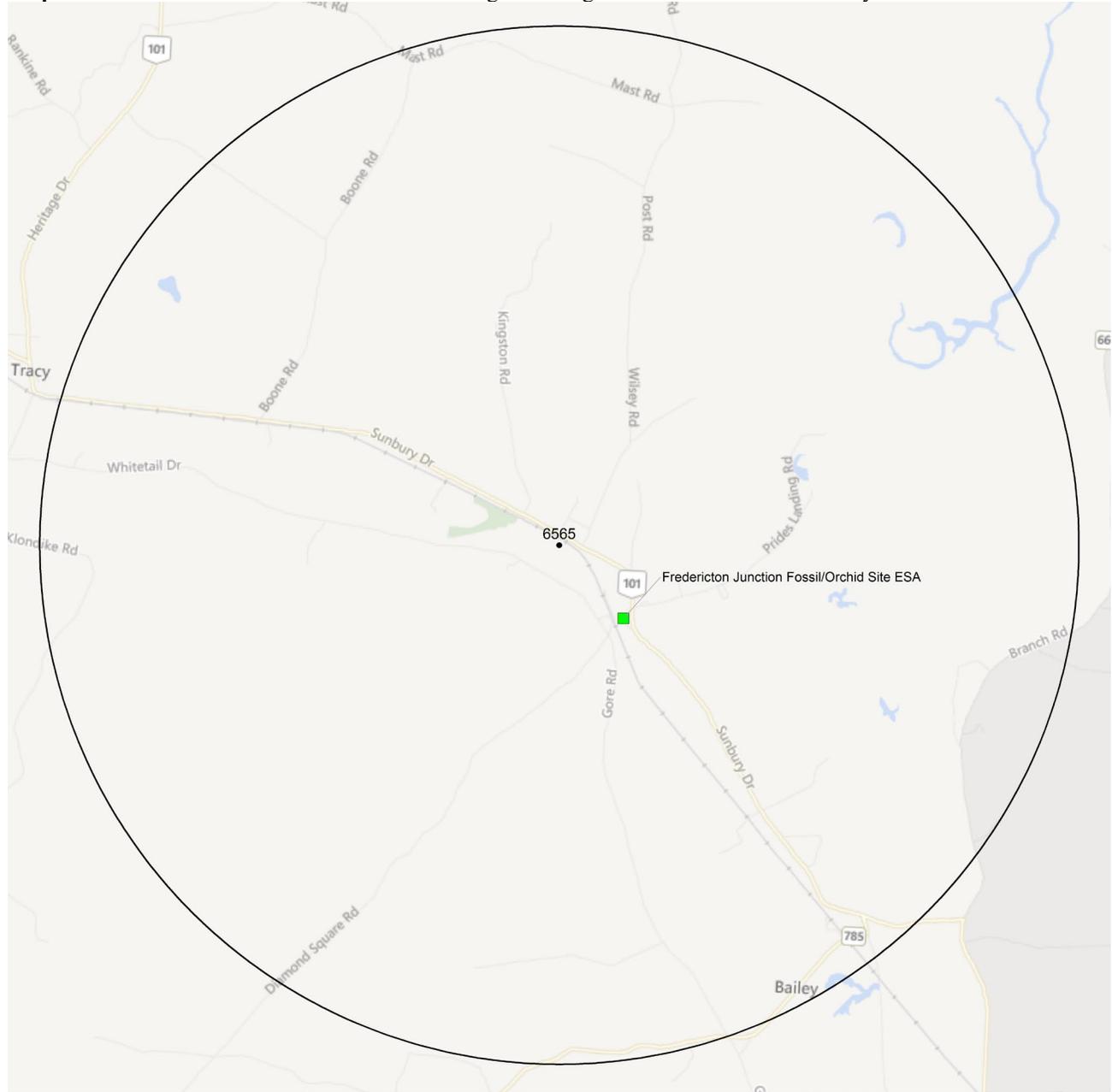
3.1 MANAGED AREAS

The GIS scan identified no managed areas in the vicinity of the study area (Map 3 and attached file: *ma*.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified 1 biologically significant site 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 the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding “location-sensitive” species, section 4.3) within the study 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] = vertebrate 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)
P	<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid				S1	2 May Be At Risk	7	1.2 \pm 0.0
P	<i>Sceptridium oneidense</i>	Blunt-lobed Moonwort				S1	2 May Be At Risk	1	3.6 \pm 0.0
P	<i>Polygaloides paucifolia</i>	Fringed Milkwort				S2	3 Sensitive	1	4.3 \pm 0.0
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	3 Sensitive	1	2.7 \pm 0.0
P	<i>Persicaria careyi</i>	Carey's Smartweed				S2	3 Sensitive	1	1.3 \pm 1.0
P	<i>Podostemum ceratophyllum</i>	Horn-leaved Riverweed				S2	3 Sensitive	5	0.9 \pm 0.0
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	4 Secure	1	5.0 \pm 10.0
P	<i>Lobelia cardinalis</i>	Cardinal Flower				S3	4 Secure	4	0.2 \pm 1.0
P	<i>Ceratophyllum echinatum</i>	Prickly Hornwort				S3	3 Sensitive	1	2.9 \pm 0.0
P	<i>Salix nigra</i>	Black Willow				S3	3 Sensitive	1	3.0 \pm 0.0
P	<i>Salix pedicellaris</i>	Bog Willow				S3	4 Secure	1	3.8 \pm 0.0
P	<i>Carex arcta</i>	Northern Clustered Sedge				S3	4 Secure	1	3.6 \pm 0.0
P	<i>Carex haydenii</i>	Hayden's Sedge				S3	4 Secure	3	2.8 \pm 1.0
P	<i>Carex tuckermanii</i>	Tuckerman's Sedge				S3	4 Secure	6	3.0 \pm 0.0
P	<i>Cyperus dentatus</i>	Toothed Flatsedge				S3	4 Secure	4	0.8 \pm 0.0
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush				S3	4 Secure	4	0.2 \pm 1.0
P	<i>Schoenoplectus torreyi</i>	Torrey's Bulrush				S3	4 Secure	1	3.6 \pm 0.0
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	3 Sensitive	1	1.2 \pm 1.0
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	4 Secure	1	3.6 \pm 0.0
C	<i>Acer saccharinum</i> / <i>Onoclea sensibilis</i> – <i>Lysimachia terrestris</i> Forest	Silver Maple / Sensitive Fern - Swamp Yellow Loosestrife Forest				S3		1	3.0 \pm 0.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	3 Sensitive	1	4.4 \pm 7.0
A	<i>Progne subis</i>	Purple Martin				S1B,S1M	2 May Be At Risk	3	0.3 \pm 0.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B,S2S3M	3 Sensitive	1	4.4 \pm 7.0
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	4 Secure	1	0.5 \pm 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B,S3S4M	3 Sensitive	1	4.4 \pm 7.0
I	<i>Lampsilis cariosa</i>	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	2	2.9 \pm 0.0
I	<i>Strymon melinus</i>	Grey Hairstreak				S2	4 Secure	2	0.6 \pm 2.0
I	<i>Boloria bellona</i>	Meadow Fritillary				S3	4 Secure	4	0.6 \pm 2.0
I	<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail				S3	4 Secure	6	0.6 \pm 1.0
I	<i>Alasmidonta undulata</i>	Triangle Floater				S3	3 Sensitive	3	2.9 \pm 0.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes 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 your study area are indicated below with “YES”.

New Brunswick

Scientific Name	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
<i>Chrysemys picta picta</i>	Eastern Painted Turtle			YES

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

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 AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
10	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
10	Robinson, S.L. 2015. 2014 field data.
6	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs.
5	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
5	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
5	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
4	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
4	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82, 125 recs.
3	Goltz, J.P. 2012. Field Notes, 1989-2005. , 1091 recs.
3	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
3	Sabine, D.L. 2005. 2001 Freshwater Mussel Surveys. New Brunswick Dept of Natural Resources & Energy, 590 recs.
3	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
2	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
2	Sollows, M.C.. 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
1	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
1	Doucet, D.A. 2008. Fieldwork 2008: Odonata. ACCDC Staff, 625 recs.
1	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
1	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
1	Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
1	Houston, J.J. 1990. Status of the Redbreast Sunfish (<i>Lepomis auritus</i>) in Canada. Can. Field-Nat. 104:64-68.
1	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 25,338 records of 151 vertebrate and 1474 records of 78 invertebrate fauna; 9164 records of 374 vascular and 397 records of 131 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs (including “location-sensitive” species). 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	31.9 \pm 1.0	NB
A	<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	17	32.4 \pm 1.0	NB
A	<i>Perimyotis subflavus</i>	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	1 At Risk	8	57.1 \pm 0.0	NB
A	<i>Eubalaena glacialis</i>	North Atlantic Right Whale	Endangered	Endangered	Endangered	S1		2	77.0 \pm 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Sterna dougallii</i>	Roseate Tern	Endangered	Endangered	Endangered	S1?B,S1?M	1 At Risk	3	71.9 ± 0.0	NB
A	<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1 At Risk	7	62.0 ± 0.0	NB
A	<i>Dermodochelys coriacea</i> (Atlantic pop.)	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	1 At Risk	3	62.8 ± 0.0	NB
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	2 May Be At Risk	16	14.1 ± 50.0	NB
A	<i>Calidris canutus rufa</i>	Red Knot rufa ssp	Endangered	Endangered	Endangered	S2M	1 At Risk	41	61.4 ± 0.0	NB
A	<i>Pagophila eburnea</i>	Ivory Gull	Endangered	Endangered		SNA	8 Accidental	2	70.7 ± 12.0	NB
A	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	Endangered	Threatened		SNA	8 Accidental	1	65.4 ± 7.0	NB
A	<i>Empidonax virescens</i>	Acadian Flycatcher	Endangered	Endangered		SNA	8 Accidental	2	31.7 ± 0.0	NB
A	<i>Protonotaria citrea</i>	Prothonotary Warbler	Endangered	Endangered		SNA	8 Accidental	2	62.0 ± 2.0	NB
A	<i>Rangifer tarandus pop. 2</i>	Woodland Caribou (Atlantic-Gasp) [—sie pop.]	Endangered	Endangered	Extirpated	SX	0.1 Extirpated	4	40.4 ± 1.0	NB
A	<i>Colinus virginianus</i>	Northern Bobwhite	Endangered	Endangered				4	46.5 ± 5.0	NB
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	2 May Be At Risk	48	5.7 ± 7.0	NB
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	1 At Risk	34	34.9 ± 0.0	NB
A	<i>Hylocichla ustulata</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	2 May Be At Risk	227	8.9 ± 7.0	NB
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1 At Risk	97	5.7 ± 7.0	NB
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened	Threatened	Threatened	S2B,S2M	3 Sensitive	1108	5.7 ± 7.0	NB
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Special Concern	Threatened	S2B,S2M	1 At Risk	5	62.7 ± 1.0	NB
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2S3	1 At Risk	1005	3.6 ± 0.0	NB
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	1 At Risk	440	5.6 ± 0.0	NB
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	3 Sensitive	365	5.7 ± 7.0	NB
A	<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Threatened		Threatened	S3	4 Secure	1	14.1 ± 1.0	NB
A	<i>Cardellina canadensis</i>	Canada Warbler	Threatened	Threatened	Threatened	S3B,S3M	1 At Risk	1290	5.7 ± 7.0	NB
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	3 Sensitive	964	4.4 ± 7.0	NB
A	<i>Limosa haemastica</i>	Hudsonian Godwit	Threatened			S3S4M	4 Secure	26	57.2 ± 0.0	NB
A	<i>Anguilla rostrata</i>	American Eel	Threatened		Threatened	S4	4 Secure	127	26.1 ± 0.0	NB
A	<i>Osmerus mordax pop. 2</i>	Lake Utopia Smelt large-bodied pop.	Threatened		Threatened			2	55.5 ± 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	38.5 ± 1.0	NB
A	<i>Histrionicus histrionicus pop. 1</i>	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	1 At Risk	120	37.4 ± 0.0	NB
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Endangered	S1B,S3M	1 At Risk	288	19.7 ± 0.0	NB
A	<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	3 Sensitive	15	17.2 ± 7.0	NB
A	<i>Bucephala islandica</i> (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	3 Sensitive	54	12.8 ± 0.0	NB
A	<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	3 Sensitive	8	36.7 ± 10.0	NB
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	3 Sensitive	33	26.1 ± 1.0	NB
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	2 May Be At Risk	189	5.7 ± 7.0	NB
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	1 At Risk	589	7.5 ± 0.0	NB
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern			S3B,S3S4N,SUM	3 Sensitive	292	5.7 ± 7.0	NB
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	1 At Risk	475	10.6 ± 0.0	NB
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern			S3M	3 Sensitive	70	62.2 ± 0.0	NB
A	<i>Phocoena phocoena</i> (NW Atlantic pop.)	Harbour Porpoise - Northwest Atlantic pop.	Special Concern	Threatened		S4		155	58.2 ± 100.0	NB
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern			S4	4 Secure	33	2.9 ± 0.0	NB
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	4 Secure	727	5.7 ± 7.0	NB
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern		Special Concern	S4N,S4M	4 Secure	135	25.6 ± 0.0	NB
A	<i>Calidris subruficollis</i>	Buff-breasted Sandpiper	Special Concern			SNA	8 Accidental	18	61.8 ± 1.0	NB
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	4 Secure	8	35.4 ± 1.0	NB
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B,S1S2M	2 May Be At Risk	19	32.5 ± 0.0	NB
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1S2B,S1S2M	3 Sensitive	10	29.7 ± 7.0	NB
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S1S2B,SUM	2 May Be At Risk	2	81.8 ± 0.0	NB
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk	Special Concern		S2	3 Sensitive	2	35.2 ± 5.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk	Special Concern		S2B,S2M	2 May Be At Risk	60	15.6 ± 7.0	NB
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B,S2M	3 Sensitive	343	5.7 ± 7.0	NB
A	<i>Globicephala melas</i>	Long-finned Pilot Whale	Not At Risk			S2S3		3	59.3 ± 1.0	NB
A	<i>Lynx canadensis</i>	Canadian Lynx	Not At Risk		Endangered	S3	1 At Risk	25	25.4 ± 0.0	NB
A	<i>Desmognathus fuscus</i>	Northern Dusky Salamander	Not At Risk			S3	3 Sensitive	91	33.9 ± 1.0	NB
A	<i>Megaptera novaeangliae</i>	Humpback Whale (NW Atlantic pop.)	Not At Risk	Special Concern		S3		2	77.0 ± 5.0	NB
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B,SUM	3 Sensitive	232	15.6 ± 7.0	NB
A	<i>Podiceps grisegena</i>	Red-necked Grebe	Not At Risk			S3M,S2N	3 Sensitive	155	33.2 ± 0.0	NB
A	<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	Not At Risk			S3S4		1	65.7 ± 1.0	NB
A	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	S4	1 At Risk	1014	5.7 ± 7.0	NB
A	<i>Canis lupus</i>	Gray Wolf	Not At Risk		Extirpated	SX	0.1 Extirpated	4	30.9 ± 1.0	NB
A	<i>Puma concolor pop. 1</i>	Eastern Cougar	Data Deficient		Endangered	SNA	5 Undetermined	58	10.2 ± 1.0	NB
A	<i>Morone saxatilis</i>	Striped Bass	E,E,SC			S3	2 May Be At Risk	10	35.2 ± 1.0	NB
A	<i>Vireo flavifrons</i>	Yellow-throated Vireo				S1?B,S1?M	8 Accidental	15	33.2 ± 0.0	NB
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S5M	4 Secure	409	17.8 ± 0.0	NB
A	<i>Aythya americana</i>	Redhead				S1B,S1M	8 Accidental	4	39.6 ± 7.0	NB
A	<i>Gallinula galeata</i>	Common Gallinule				S1B,S1M	3 Sensitive	29	35.0 ± 0.0	NB
A	<i>Antigone canadensis</i>	Sandhill Crane				S1B,S1M	8 Accidental	7	52.5 ± 0.0	NB
A	<i>Bartramia longicauda</i>	Upland Sandpiper				S1B,S1M	3 Sensitive	39	10.3 ± 0.0	NB
A	<i>Phalaropus tricolor</i>	Wilson's Phalarope				S1B,S1M	3 Sensitive	45	23.9 ± 0.0	NB
A	<i>Leucophaeus atricilla</i>	Laughing Gull				S1B,S1M	3 Sensitive	42	31.9 ± 1.0	NB
A	<i>Progne subis</i>	Purple Martin				S1B,S1M	2 May Be At Risk	264	0.3 ± 0.0	NB
A	<i>Thryothorus ludovicianus</i>	Carolina Wren				S1B,S1M	8 Accidental	40	31.6 ± 0.0	NB
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	4 Secure	45	33.2 ± 0.0	NB
A	<i>Uria aalge</i>	Common Murre				S1B,S3N,S3M	4 Secure	68	71.9 ± 0.0	NB
A	<i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	4 Secure	199	25.6 ± 0.0	NB
A	<i>Aythya marila</i>	Greater Scaup				S1B,S4M,S2N	4 Secure	32	32.1 ± 7.0	NB
A	<i>Eremophila alpestris</i>	Horned Lark				S1B,S4N,S5M	2 May Be At Risk	24	27.7 ± 7.0	NB
A	<i>Sterna paradisaea</i>	Arctic Tern				S1B,SUM	2 May Be At Risk	47	70.9 ± 1.0	NB
A	<i>Fratercula arctica</i>	Atlantic Puffin				S1B,SUN,SUM	3 Sensitive	69	70.9 ± 1.0	NB
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N,S2M	3 Sensitive	34	31.9 ± 1.0	NB
A	<i>Branta bernicla</i>	Brant				S1N,S2S3M	4 Secure	45	25.6 ± 0.0	NB
A	<i>Butorides virescens</i>	Green Heron				S1S2B,S1S2M	3 Sensitive	20	25.6 ± 7.0	NB
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B,S1S2M	3 Sensitive	18	41.6 ± 0.0	NB
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B,S1S2M	3 Sensitive	101	10.1 ± 0.0	NB
A	<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow				S1S2B,S1S2M	2 May Be At Risk	27	11.7 ± 1.0	NB
A	<i>Troglodytes aedon</i>	House Wren				S1S2B,S1S2M	5 Undetermined	33	17.2 ± 7.0	NB
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S1S2B,S4N,S5M	4 Secure	36	65.1 ± 7.0	NB
A	<i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	3 Sensitive	28	61.3 ± 0.0	NB
A	<i>Cistothorus palustris</i>	Marsh Wren				S2B,S2M	3 Sensitive	396	17.5 ± 0.0	NB
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B,S2M	3 Sensitive	124	14.4 ± 7.0	NB
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2B,S2M	3 Sensitive	108	18.9 ± 7.0	NB
A	<i>Poocetes gramineus</i>	Vesper Sparrow				S2B,S2M	2 May Be At Risk	81	8.2 ± 0.0	NB
A	<i>Mareca strepera</i>	Gadwall				S2B,S3M	4 Secure	88	19.1 ± 0.0	NB
A	<i>Alca torda</i>	Razorbill				S2B,S3N,S3M	4 Secure	47	65.2 ± 2.0	NB
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2B,S4S5N,S4S5M	3 Sensitive	42	8.9 ± 7.0	NB
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S5M	4 Secure	129	13.9 ± 0.0	NB
A	<i>Oceanodroma leucorhoa</i>	Leach's Storm-Petrel				S2B,SUM	3 Sensitive	19	71.9 ± 0.0	NB
A	<i>Anser caerulescens</i>	Snow Goose				S2M	4 Secure	6	37.3 ± 221.0	NB
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2N,S2M	4 Secure	102	37.7 ± 0.0	NB
A	<i>Somateria spectabilis</i>	King Eider				S2N,S2M	4 Secure	10	70.7 ± 9.0	NB
A	<i>Larus hyperboreus</i>	Glaucous Gull				S2N,S2M	4 Secure	133	19.7 ± 0.0	NB
A	<i>Asio otus</i>	Long-eared Owl				S2S3	5 Undetermined	17	37.2 ± 7.0	NB
A	<i>Picoides dorsalis</i>	American Three-toed				S2S3	3 Sensitive	15	23.1 ± 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>Salmo salar</i>	Woodpecker				S2S3	2 May Be At Risk	61	26.1 ± 0.0	NB
A	<i>Balaenoptera physalus</i>	Atlantic Salmon				S2S3		2	64.6 ± 1.0	NB
A	<i>Spatula clypeata</i>	Fin Whale				S2S3B,S2S3M	4 Secure	96	18.2 ± 7.0	NB
A	<i>Myiarchus crinitus</i>	Northern Shoveler				S2S3B,S2S3M	3 Sensitive	368	5.7 ± 7.0	NB
A	<i>Petrochelidon pyrrhonota</i>	Great Crested Flycatcher				S2S3B,S2S3M	3 Sensitive	540	4.4 ± 7.0	NB
A	<i>Pluvialis dominica</i>	Cliff Swallow				S2S3M	3 Sensitive	65	29.1 ± 0.0	NB
A	<i>Calcarius lapponicus</i>	American Golden-Plover				S2S3N,SUM	3 Sensitive	18	28.9 ± 0.0	NB
A	<i>Cephus grylle</i>	Lapland Longspur				S3	4 Secure	330	55.2 ± 7.0	NB
A	<i>Loxia curvirostra</i>	Black Guillemot				S3	4 Secure	117	0.5 ± 7.0	NB
A	<i>Spinus pinus</i>	Red Crossbill				S3	4 Secure	271	14.4 ± 7.0	NB
A	<i>Prosopium cylindraceum</i>	Pine Siskin				S3	4 Secure	3	40.1 ± 0.0	NB
A	<i>Salvelinus namaycush</i>	Round Whitefish				S3	3 Sensitive	7	34.6 ± 0.0	NB
A	<i>Sorex maritimensis</i>	Lake Trout				S3	4 Secure	1	42.8 ± 1.0	NB
A	<i>Eptesicus fuscus</i>	Maritime Shrew				S3	3 Sensitive	47	27.4 ± 1.0	NB
A	<i>Cathartes aura</i>	Big Brown Bat				S3B,S3M	4 Secure	333	17.2 ± 7.0	NB
A	<i>Rallus limicola</i>	Turkey Vulture				S3B,S3M	3 Sensitive	284	10.1 ± 0.0	NB
A	<i>Charadrius vociferus</i>	Virginia Rail				S3B,S3M	3 Sensitive	652	5.7 ± 7.0	NB
A	<i>Tringa semipalmata</i>	Killdeer				S3B,S3M	3 Sensitive	21	23.9 ± 0.0	NB
A	<i>Coccyzus erythrophthalmus</i>	Willet				S3B,S3M	4 Secure	185	5.7 ± 7.0	NB
A	<i>Vireo gilvus</i>	Black-billed Cuckoo				S3B,S3M	4 Secure	284	5.7 ± 7.0	NB
A	<i>Piranga olivacea</i>	Warbling Vireo				S3B,S3M	4 Secure	280	10.9 ± 7.0	NB
A	<i>Passerina cyanea</i>	Scarlet Tanager				S3B,S3M	4 Secure	125	25.1 ± 0.0	NB
A	<i>Molothrus ater</i>	Indigo Bunting				S3B,S3M	2 May Be At Risk	284	5.7 ± 7.0	NB
A	<i>Icterus galbula</i>	Brown-headed Cowbird				S3B,S3M	4 Secure	220	5.7 ± 7.0	NB
A	<i>Somateria mollissima</i>	Baltimore Oriole				S3B,S4M,S3N	4 Secure	717	36.1 ± 199.0	NB
A	<i>Setophaga tigrina</i>	Common Eider				S3B,S4S5M	4 Secure	159	10.9 ± 7.0	NB
A	<i>Anas acuta</i>	Cape May Warbler				S3B,S5M	3 Sensitive	50	25.6 ± 0.0	NB
A	<i>Mergus serrator</i>	Northern Pintail				S3B,S5M,S4S5N	4 Secure	101	26.9 ± 0.0	NB
A	<i>Arenaria interpres</i>	Red-breasted Merganser				S3M	4 Secure	150	47.7 ± 0.0	NB
A	<i>Phalaropus fulicarius</i>	Ruddy Turnstone				S3M	3 Sensitive	18	67.5 ± 0.0	NB
A	<i>Melanitta americana</i>	Red Phalarope				S3M,S1S2N	3 Sensitive	219	25.6 ± 0.0	NB
A	<i>Bucephala albeola</i>	Black Scoter				S3M,S2N	3 Sensitive	708	29.4 ± 0.0	NB
A	<i>Calidris maritima</i>	Bufflehead				S3M,S3N	4 Secure	144	60.1 ± 1.0	NB
A	<i>Uria lomvia</i>	Purple Sandpiper				S3N,S3M	5 Undetermined	43	68.7 ± 1.0	NB
A	<i>Synaptomys cooperi</i>	Thick-billed Murre				S3S4	4 Secure	75	30.5 ± 1.0	NB
A	<i>Tyrannus tyrannus</i>	Southern Bog Lemming				S3S4B,S3S4M	3 Sensitive	677	4.4 ± 7.0	NB
A	<i>Actitis macularius</i>	Eastern Kingbird				S3S4B,S5M	4 Secure	743	5.1 ± 0.0	NB
A	<i>Gallinago delicata</i>	Spotted Sandpiper				S3S4B,S5M	4 Secure	968	5.7 ± 7.0	NB
A	<i>Larus delawarensis</i>	Wilson's Snipe				S3S4B,S5M	4 Secure	252	12.8 ± 0.0	NB
A	<i>Setophaga striata</i>	Ring-billed Gull				S3S4B,S5M	4 Secure	47	20.1 ± 0.0	NB
A	<i>Pluvialis squatarola</i>	Blackpoll Warbler				S3S4M	4 Secure	245	23.9 ± 0.0	NB
A	<i>Calidris pusilla</i>	Black-bellied Plover				S3S4M	4 Secure	472	23.9 ± 0.0	NB
A	<i>Calidris melanotos</i>	Semipalmated Sandpiper				S3S4M	4 Secure	131	23.9 ± 0.0	NB
A	<i>Calidris alba</i>	Pectoral Sandpiper				S3S4M,S1N	3 Sensitive	212	23.9 ± 0.0	NB
A	<i>Morus bassanus</i>	Sanderling				SHB,S5M	4 Secure	423	59.5 ± 0.0	NB
C	<i>Quercus macrocarpa</i> - <i>Acer rubrum</i> / <i>Onoclea sensibilis</i> - <i>Carex arcta</i> Forest	Northern Gannet								NB
C	<i>Acer saccharinum</i> / <i>Onoclea sensibilis</i> - <i>Lysimachia terrestris</i> Forest	Bur Oak - Red Maple / Sensitive Fern - Northern Clustered Sedge Forest				S2		1	41.5 ± 0.0	NB
C	<i>Acer saccharum</i> - <i>Fraxinus americana</i> / <i>Polystichum acrostichoides</i> Forest	Silver Maple / Sensitive Fern - Swamp Yellow Loosestrife Forest				S3		1	3.0 ± 0.0	NB
C	<i>Cicindela marginipennis</i> / <i>Gomphus ventricosus</i>	Sugar Maple - White Ash / Christmas Fern Forest				S3S4		1	62.1 ± 0.0	NB
I	<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Endangered	Endangered	Endangered	S1	1 At Risk	75	41.3 ± 0.0	NB
I	<i>Gomphus ventricosus</i>	Skillet Clubtail	Endangered		Endangered	S1S2	2 May Be At Risk	50	25.8 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	3 Sensitive	113	5.7 ± 7.0	NB
	<i>Ophiogomphus howei</i>	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	2 May Be At Risk	18	40.2 ± 0.0	NB
	<i>Alasmidonta varicosa</i>	Brook Floater	Special Concern		Special Concern	S2	3 Sensitive	11	40.2 ± 0.0	NB
	<i>Lampsilis cariosa</i>	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	104	2.9 ± 0.0	NB
	<i>Bombus terricola</i>	Yellow-banded Bumblebee	Special Concern			S3?	3 Sensitive	37	41.6 ± 0.0	NB
	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle				SH	2 May Be At Risk	2	49.6 ± 0.0	NB
	<i>Appalachina sayana</i>	Spike-lip Crater	Not At Risk			S3?		2	59.5 ± 1.0	NB
	<i>Haematopota rara</i>	Shy Cleg				S1	5 Undetermined	1	30.5 ± 1.0	NB
	<i>Lycaena dorcas</i>	Dorcas Copper				S1	2 May Be At Risk	6	39.0 ± 0.0	NB
	<i>Erora laeta</i>	Early Hairstreak				S1	2 May Be At Risk	8	25.9 ± 7.0	NB
	<i>Somatochlora septentrionalis</i>	Muskeg Emerald				S1	2 May Be At Risk	1	47.3 ± 1.0	NB
	<i>Arigomphus furcifer</i>	Lilypad Clubtail				S1	5 Undetermined	9	30.2 ± 0.0	NB
	<i>Polites origenes</i>	Crossline Skipper				S1?	5 Undetermined	8	34.4 ± 0.0	NB
	<i>Plebejus saepiolus</i>	Greenish Blue				S1S2	4 Secure	3	27.4 ± 1.0	NB
	<i>Ophiogomphus colubrinus</i>	Boreal Snaketail				S1S2	2 May Be At Risk	36	25.8 ± 0.0	NB
	<i>Encyclops caerulea</i>	a Longhorned Beetle				S2		1	32.6 ± 0.0	NB
	<i>Brachyleptura circumdata</i>	a Longhorned Beetle				S2		6	30.0 ± 0.0	NB
	<i>Satyrium calanus</i>	Banded Hairstreak				S2	3 Sensitive	25	22.7 ± 0.0	NB
	<i>Satyrium calanus falacer</i>	Banded Hairstreak				S2	4 Secure	1	32.0 ± 1.0	NB
	<i>Strymon melinus</i>	Grey Hairstreak				S2	4 Secure	4	0.6 ± 2.0	NB
	<i>Aeshna clepsydra</i>	Mottled Darner				S2	3 Sensitive	12	39.8 ± 0.0	NB
	<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald				S2	5 Undetermined	5	29.8 ± 1.0	NB
	<i>Ladona exusta</i>	White Corporal				S2	5 Undetermined	9	30.1 ± 0.0	NB
	<i>Hetaerina americana</i>	American Rubyspot				S2	3 Sensitive	14	39.0 ± 0.0	NB
	<i>Coenagrion interrogatum</i>	Subarctic Bluet				S2	3 Sensitive	1	82.9 ± 0.0	NB
	<i>Ischnura posita</i>	Fragile Forktail				S2	2 May Be At Risk	10	29.5 ± 0.0	NB
	<i>Calliphrys henrici</i>	Henry's Elfin				S2S3	4 Secure	13	24.8 ± 2.0	NB
	<i>Celithemis martha</i>	Martha's Pennant				S2S3	5 Undetermined	3	50.9 ± 0.0	NB
	<i>Sphaeroderus nitidicollis</i>	a Ground Beetle				S3	4 Secure	1	37.2 ± 0.0	NB
	<i>Lepturoopsis biforis</i>	a Longhorned Beetle				S3		1	63.7 ± 1.0	NB
	<i>Orthosoma brunneum</i>	a Longhorned Beetle				S3		1	44.8 ± 5.0	NB
	<i>Elaphrus americanus</i>	a Ground Beetle				S3	4 Secure	1	30.2 ± 0.0	NB
	<i>Desmocerus palliatus</i>	Elderberry Borer				S3		4	63.7 ± 1.0	NB
	<i>Agonum excavatum</i>	a Ground Beetle				S3	4 Secure	1	30.2 ± 0.0	NB
	<i>Clivina americana</i>	a Ground Beetle				S3	4 Secure	1	30.2 ± 0.0	NB
	<i>Olisthopus parmatus</i>	a Ground Beetle				S3	4 Secure	1	37.2 ± 0.0	NB
	<i>Paratychys scitulus</i>	a Ground Beetle				S3	5 Undetermined	1	30.2 ± 0.0	NB
	<i>Coccinella hieroglyphica kirbyi</i>	a Ladybird Beetle				S3	4 Secure	1	63.7 ± 1.0	NB
	<i>Hippodamia parenthesis</i>	Parenthesis Lady Beetle				S3	4 Secure	2	63.7 ± 1.0	NB
	<i>Stenocorus vittiger</i>	a Longhorned Beetle				S3		1	30.2 ± 0.0	NB
	<i>Gnathacmaeops pratensis</i>	a Longhorned Beetle				S3		5	63.7 ± 1.0	NB
	<i>Pogonocherus mixtus</i>	a Longhorned Beetle				S3		1	63.7 ± 1.0	NB
	<i>Badister neopulchellus</i>	a Ground Beetle				S3	4 Secure	1	30.2 ± 0.0	NB
	<i>Saperda lateralis</i>	a Longhorned Beetle				S3		2	45.7 ± 0.0	NB
	<i>Hesperia sassacus</i>	Indian Skipper				S3	4 Secure	21	16.9 ± 0.0	NB
	<i>Euphyes bimacula</i>	Two-spotted Skipper				S3	4 Secure	25	16.0 ± 2.0	NB
	<i>Lycaena hyllus</i>	Bronze Copper				S3	3 Sensitive	26	21.1 ± 0.0	NB
	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	4 Secure	22	29.1 ± 0.0	NB
	<i>Calliphrys polios</i>	Hoary Elfin				S3	4 Secure	17	17.2 ± 7.0	NB
	<i>Plebejus idas empetri</i>	Crowberry Blue				S3	4 Secure	24	53.7 ± 0.0	NB
	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3	4 Secure	25	5.7 ± 7.0	NB
	<i>Boloria eunomia</i>	Bog Fritillary				S3	5 Undetermined	1	71.0 ± 0.0	NB
	<i>Boloria bellona</i>	Meadow Fritillary				S3	4 Secure	72	0.6 ± 2.0	NB
	<i>Polygonia satyrus</i>	Satyr Comma				S3	4 Secure	19	25.0 ± 1.0	NB
	<i>Polygonia gracilis</i>	Hoary Comma				S3	4 Secure	7	31.2 ± 7.0	NB
	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	4 Secure	17	25.6 ± 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
I	<i>Gomphus vastus</i>	Cobra Clubtail				S3	3 Sensitive	60	25.8 ± 0.0	NB
I	<i>Gomphus abbreviatus</i>	Spine-crowned Clubtail				S3	4 Secure	48	0.6 ± 1.0	NB
I	<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3	5 Undetermined	11	29.8 ± 1.0	NB
I	<i>Dorocordulia lepida</i>	Petite Emerald				S3	4 Secure	27	14.6 ± 1.0	NB
I	<i>Somatochlora cingulata</i>	Lake Emerald				S3	4 Secure	10	37.3 ± 0.0	NB
I	<i>Somatochlora forcipata</i>	Forcinate Emerald				S3	4 Secure	20	33.1 ± 1.0	NB
I	<i>Williamsonia fletcheri</i>	Ebony Boghaunter				S3	4 Secure	15	32.2 ± 1.0	NB
I	<i>Lestes eurinus</i>	Amber-Winged Spreadwing				S3	4 Secure	8	33.4 ± 1.0	NB
I	<i>Lestes vigilax</i>	Swamp Spreadwing				S3	3 Sensitive	38	29.7 ± 1.0	NB
I	<i>Enallagma geminatum</i>	Skimming Bluet				S3	5 Undetermined	18	37.1 ± 0.0	NB
I	<i>Enallagma signatum</i>	Orange Bluet				S3	4 Secure	23	36.8 ± 0.0	NB
I	<i>Stylurus scudderi</i>	Zebra Clubtail				S3	4 Secure	73	25.8 ± 0.0	NB
I	<i>Alasmidonta undulata</i>	Triangle Floater				S3	3 Sensitive	51	2.9 ± 0.0	NB
I	<i>Leptodea ochracea</i>	Tidewater Mucket				S3	4 Secure	67	24.7 ± 0.0	NB
I	<i>Striatura ferrea</i>	Black Striate				S3		1	30.3 ± 1.0	NB
I	<i>Neohelix albolabris</i>	Whitelip				S3		2	30.3 ± 1.0	NB
I	<i>Spurwinkia salsa</i>	Saltmarsh Hydrobe				S3		34	36.9 ± 0.0	NB
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B,S3M	4 Secure	5	56.2 ± 0.0	NB
I	<i>Satyrium liparops</i>	Striped Hairstreak				S3S4	4 Secure	19	22.7 ± 0.0	NB
I	<i>Cupido comyntas</i>	Eastern Tailed Blue				S3S4	4 Secure	55	15.9 ± 2.0	NB
N	<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	SH	1 At Risk	1	89.2 ± 1.0	NB
N	<i>Pannaria lurida</i>	Wrinkled Shingle Lichen	Threatened			S1?	2 May Be At Risk	6	74.9 ± 0.0	NB
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened			S1S2	5 Undetermined	4	37.9 ± 0.0	NB
N	<i>Fuscopannaria leucosticta</i>	Rimmed Shingles Lichen	Threatened			S2	2 May Be At Risk	70	27.8 ± 0.0	NB
N	<i>Pectenia plumbea</i>	Blue Felt Lichen	Special Concern	Special Concern	Special Concern	S1	2 May Be At Risk	1	88.7 ± 5.0	NB
N	<i>Pseudevernia cladonia</i>	Ghost Antler Lichen	Not At Risk			S2S3	5 Undetermined	13	30.2 ± 0.0	NB
N	<i>Bryum muehlenbeckii</i>	Muehlenbeck's Bryum Moss				S1	2 May Be At Risk	1	50.9 ± 1.0	NB
N	<i>Sphagnum macrophyllum</i>	Sphagnum				S1	2 May Be At Risk	4	30.7 ± 0.0	NB
N	<i>Syntrichia ruralis</i>	a Moss				S1	2 May Be At Risk	1	90.3 ± 0.0	NB
N	<i>Coscinodon cribrosus</i>	Sieve-Toothed Moss				S1	2 May Be At Risk	1	62.2 ± 0.0	NB
N	<i>Atrichum angustatum</i>	Lesser Smoothcap Moss				S1?	2 May Be At Risk	1	92.6 ± 2.0	NB
N	<i>Calliergon trifarium</i>	Three-ranked Moss				S1?	2 May Be At Risk	1	55.0 ± 0.0	NB
N	<i>Dichelyma falcatum</i>	a Moss				S1?	2 May Be At Risk	2	33.4 ± 1.0	NB
N	<i>Dicranum bonjeanii</i>	Bonjean's Broom Moss				S1?	2 May Be At Risk	1	32.0 ± 1.0	NB
N	<i>Entodon brevisetus</i>	a Moss				S1?	2 May Be At Risk	1	93.4 ± 10.0	NB
N	<i>Eurhynchium hians</i>	Light Beaked Moss				S1?	2 May Be At Risk	2	33.9 ± 1.0	NB
N	<i>Homomallium adnatum</i>	Adnate Hairy-gray Moss				S1?	2 May Be At Risk	2	93.4 ± 10.0	NB
N	<i>Plagiothecium latebricola</i>	Alder Silk Moss				S1?	2 May Be At Risk	1	64.2 ± 0.0	NB
N	<i>Racomitrium ericoides</i>	a Moss				S1?	2 May Be At Risk	1	30.9 ± 3.0	NB
N	<i>Rhytidium rugosum</i>	Wrinkle-leaved Moss				S1?	2 May Be At Risk	1	95.1 ± 0.0	NB
N	<i>Splachnum pennsylvanicum</i>	Southern Dung Moss				S1?	2 May Be At Risk	2	45.8 ± 0.0	NB
N	<i>Platylomella lescurii</i>	a Moss				S1?	5 Undetermined	1	55.8 ± 1.0	NB
N	<i>Jungermannia obovata</i>	Egg Flapwort				S1S2	6 Not Assessed	1	54.9 ± 0.0	NB
N	<i>Pallavicinia lyellii</i>	Lyell's Ribbonwort				S1S2	6 Not Assessed	3	44.5 ± 0.0	NB
N	<i>Reboulia hemisphaerica</i>	Purple-margined Liverwort				S1S2	6 Not Assessed	1	71.5 ± 1.0	NB
N	<i>Brachythecium acuminatum</i>	Acuminate Ragged Moss				S1S2	5 Undetermined	3	33.9 ± 10.0	NB
N	<i>Bryum salinum</i>	a Moss				S1S2	2 May Be At Risk	1	60.6 ± 0.0	NB
N	<i>Campylium radicale</i>	Long-stalked Fine Wet Moss				S1S2	5 Undetermined	1	33.9 ± 1.0	NB
N	<i>Tortula obtusifolia</i>	a Moss				S1S2	2 May Be At Risk	1	91.9 ± 0.0	NB
N	<i>Ditrichum pallidum</i>	Pale Cow-hair Moss				S1S2	2 May Be At Risk	2	38.5 ± 1.0	NB
N	<i>Fissidens taxifolius</i>	Yew-leaved Pocket Moss				S1S2	2 May Be At Risk	4	82.9 ± 0.0	NB
N	<i>Seligeria brevifolia</i>	a Moss				S1S2	3 Sensitive	1	95.7 ± 1.0	NB
N	<i>Sphagnum platyphyllum</i>	Flat-leaved Peat Moss				S1S2	5 Undetermined	3	38.5 ± 1.0	NB
N	<i>Timmia norvegica</i>	a moss				S1S2	2 May Be At Risk	1	80.6 ± 0.0	NB
N	<i>Tomentypnum falcifolium</i>	Sickle-leaved Golden Moss				S1S2	2 May Be At Risk	1	61.3 ± 1.0	NB
N	<i>Pseudotaxiphyllum distichaceum</i>	a Moss				S1S2	2 May Be At Risk	2	32.9 ± 1.0	NB

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N	<i>Hamatocaulis vernicosus</i>	a Moss				S1S2	2 May Be At Risk	1	75.4 ± 100.0	NB
N	<i>Calypogeia neesiana</i>	Nees' Pouchwort				S1S3	6 Not Assessed	1	62.0 ± 1.0	NB
N	<i>Cephaloziella elachista</i>	Spurred Threadwort				S1S3	6 Not Assessed	1	55.4 ± 5.0	NB
N	<i>Porella pinnata</i>	Pinnate Scalewort				S1S3	6 Not Assessed	2	60.1 ± 1.0	NB
N	<i>Amphidium mougeotii</i>	a Moss				S2	3 Sensitive	1	67.7 ± 8.0	NB
N	<i>Anomodon viticulosus</i>	a Moss				S2	2 May Be At Risk	5	61.6 ± 1.0	NB
N	<i>Cirriphyllum piliferum</i>	Hair-pointed Moss				S2	3 Sensitive	2	92.2 ± 1.0	NB
N	<i>Cynodontium strumiferum</i>	Strumose Dogtooth Moss				S2	3 Sensitive	1	67.7 ± 8.0	NB
N	<i>Dicranella palustris</i>	Drooping-Leaved Fork Moss				S2	3 Sensitive	2	54.8 ± 100.0	NB
N	<i>Didymodon ferrugineus</i>	a moss				S2	3 Sensitive	3	62.8 ± 1.0	NB
N	<i>Anomodon tristis</i>	a Moss				S2	2 May Be At Risk	1	31.3 ± 1.0	NB
N	<i>Hypnum pratense</i>	Meadow Plait Moss				S2	3 Sensitive	1	56.4 ± 0.0	NB
N	<i>Meesia triquetra</i>	Three-ranked Cold Moss				S2	2 May Be At Risk	2	54.8 ± 100.0	NB
N	<i>Physcomitrium immersum</i>	a Moss				S2	3 Sensitive	7	33.9 ± 1.0	NB
N	<i>Sphagnum centrale</i>	Central Peat Moss				S2	3 Sensitive	1	71.7 ± 0.0	NB
N	<i>Sphagnum lindbergii</i>	Lindberg's Peat Moss				S2	3 Sensitive	8	53.5 ± 1.0	NB
N	<i>Tayloria serrata</i>	Serrate Trumpet Moss				S2	3 Sensitive	1	84.6 ± 1.0	NB
N	<i>Tetraplodon mnioides</i>	Entire-leaved Nitrogen Moss				S2	3 Sensitive	3	56.2 ± 0.0	NB
N	<i>Thamnobryum alleghaniense</i>	a Moss				S2	3 Sensitive	2	80.7 ± 0.0	NB
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss				S2	3 Sensitive	1	61.1 ± 0.0	NB
N	<i>Ulotia phyllantha</i>	a Moss				S2	3 Sensitive	1	60.6 ± 1.0	NB
N	<i>Anomobryum filiforme</i>	a moss				S2	5 Undetermined	2	33.9 ± 1.0	NB
N	<i>Leptogium corticola</i>	Blistered Jellyskin Lichen				S2	2 May Be At Risk	1	46.0 ± 0.0	NB
N	<i>Andreaea rothii</i>	a Moss				S2?	3 Sensitive	1	76.6 ± 0.0	NB
N	<i>Brachythecium digastrum</i>	a Moss				S2?	3 Sensitive	2	33.9 ± 1.0	NB
N	<i>Bryum pallescens</i>	Pale Bryum Moss				S2?	5 Undetermined	2	18.1 ± 1.0	NB
N	<i>Dichelyma capillaceum</i>	Hairlike Dichelyma Moss				S2?	3 Sensitive	2	48.0 ± 4.0	NB
N	<i>Dicranum spurium</i>	Spurred Broom Moss				S2?	3 Sensitive	2	60.9 ± 0.0	NB
N	<i>Schistostega pennata</i>	Luminous Moss				S2?	3 Sensitive	3	33.9 ± 1.0	NB
N	<i>Seligeria campylopoda</i>	a Moss				S2?	3 Sensitive	2	75.4 ± 100.0	NB
N	<i>Seligeria diversifolia</i>	a Moss				S2?	3 Sensitive	2	46.7 ± 0.0	NB
N	<i>Sphagnum angermanicum</i>	a Peatmoss				S2?	3 Sensitive	3	31.1 ± 1.0	NB
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss				S2?	3 Sensitive	1	80.8 ± 0.0	NB
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2?	5 Undetermined	1	42.8 ± 0.0	NB
N	<i>Physcia subtilis</i>	Slender Rosette Lichen				S2?	5 Undetermined	1	67.6 ± 0.0	NB
N	<i>Bryum uliginosum</i>	a Moss				S2S3	3 Sensitive	1	75.7 ± 4.0	NB
N	<i>Buxbaumia aphylla</i>	Brown Shield Moss				S2S3	3 Sensitive	2	60.4 ± 15.0	NB
N	<i>Calliergonella cuspidata</i>	Common Large Wetland Moss				S2S3	3 Sensitive	4	59.5 ± 0.0	NB
N	<i>Campylium polygamum</i>	a Moss				S2S3	3 Sensitive	1	62.6 ± 1.0	NB
N	<i>Didymodon rigidulus</i>	Rigid Screw Moss				S2S3	3 Sensitive	1	34.4 ± 8.0	NB
N	<i>Ephemerum serratum</i>	a Moss				S2S3	3 Sensitive	3	41.4 ± 0.0	NB
N	<i>Fissidens bushii</i>	Bush's Pocket Moss				S2S3	3 Sensitive	1	94.7 ± 1.0	NB
N	<i>Orthotrichum speciosum</i>	Showy Bristle Moss				S2S3	5 Undetermined	3	40.9 ± 3.0	NB
N	<i>Racomitrium fasciculare</i>	a Moss				S2S3	3 Sensitive	1	64.3 ± 0.0	NB
N	<i>Scorpidium scorpioides</i>	Hooked Scorpion Moss				S2S3	3 Sensitive	4	55.0 ± 0.0	NB
N	<i>Sphagnum subfulvum</i>	a Peatmoss				S2S3	2 May Be At Risk	4	61.3 ± 1.0	NB
N	<i>Taxiphyllum deplanatum</i>	Imbricate Yew-leaved Moss				S2S3	3 Sensitive	2	60.6 ± 1.0	NB
N	<i>Zygodon viridissimus</i>	a Moss				S2S3	2 May Be At Risk	2	60.5 ± 5.0	NB
N	<i>Schistidium agassizii</i>	Elf Bloom Moss				S2S3	3 Sensitive	2	56.0 ± 2.0	NB
N	<i>Cynodontium tenellum</i>	Delicate Dogtooth Moss				S3	3 Sensitive	1	60.6 ± 1.0	NB
N	<i>Hypnum curvifolium</i>	Curved-leaved Plait Moss				S3	3 Sensitive	1	60.5 ± 5.0	NB
N	<i>Tortella fragilis</i>	Fragile Twisted Moss				S3	3 Sensitive	1	64.2 ± 0.0	NB
N	<i>Schistidium maritimum</i>	a Moss				S3	4 Secure	1	60.6 ± 1.0	NB
N	<i>Cladonia strepsilis</i>	Olive Cladonia Lichen				S3	4 Secure	1	59.8 ± 0.0	NB
N	<i>Aulacomnium androgynum</i>	Little Groove Moss				S3?	4 Secure	2	59.8 ± 1.0	NB
N	<i>Dicranella rufescens</i>	Red Forklet Moss				S3?	5 Undetermined	2	33.1 ± 4.0	NB
N	<i>Sphagnum lescurii</i>	a Peatmoss				S3?	5 Undetermined	2	59.0 ± 0.0	NB

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N	<i>Sphagnum inundatum</i>	a Sphagnum				S3?	5 Undetermined	1	38.9 ± 0.0	NB
N	<i>Leptogium subtile</i>	Appressed Jellyskin Lichen				S3?	5 Undetermined	3	42.1 ± 0.0	NB
N	<i>Collema occultatum</i>	Crusted Tarpaper Lichen				S3?	5 Undetermined	1	42.8 ± 0.0	NB
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss				S3S4	4 Secure	1	34.4 ± 8.0	NB
N	<i>Brachythecium velutinum</i>	Velvet Ragged Moss				S3S4	4 Secure	5	43.3 ± 4.0	NB
N	<i>Dicranella cerviculata</i>	a Moss				S3S4	3 Sensitive	3	60.6 ± 1.0	NB
N	<i>Dicranum majus</i>	Greater Broom Moss				S3S4	4 Secure	3	56.2 ± 0.0	NB
N	<i>Fissidens bryoides</i>	Lesser Pocket Moss				S3S4	4 Secure	4	41.1 ± 0.0	NB
N	<i>Heterocladium dimorphum</i>	Dimorphous Tangle Moss				S3S4	4 Secure	1	56.0 ± 2.0	NB
N	<i>Isopterygiopsis muelleriana</i>	a Moss				S3S4	4 Secure	6	30.9 ± 3.0	NB
N	<i>Myurella julacea</i>	Small Mouse-tail Moss				S3S4	4 Secure	1	67.7 ± 8.0	NB
N	<i>Physcomitrium pyriforme</i>	Pear-shaped Urn Moss				S3S4	3 Sensitive	6	28.0 ± 0.0	NB
N	<i>Pogonatum dentatum</i>	Mountain Hair Moss				S3S4	4 Secure	1	60.6 ± 1.0	NB
N	<i>Sphagnum torreyanum</i>	a Peatmoss				S3S4	4 Secure	4	60.7 ± 0.0	NB
N	<i>Sphagnum austinii</i>	Austin's Peat Moss				S3S4	4 Secure	1	59.4 ± 1.0	NB
N	<i>Sphagnum contortum</i>	Twisted Peat Moss				S3S4	4 Secure	1	59.1 ± 0.0	NB
N	<i>Splachnum rubrum</i>	Red Collar Moss				S3S4	4 Secure	1	82.6 ± 1.0	NB
N	<i>Tetraphis geniculata</i>	Geniculate Four-tooth Moss				S3S4	4 Secure	4	54.3 ± 0.0	NB
N	<i>Tetraplodon angustatus</i>	Toothed-leaved Nitrogen Moss				S3S4	4 Secure	2	60.6 ± 1.0	NB
N	<i>Tomentypnum nitens</i>	Golden Fuzzy Fen Moss				S3S4	4 Secure	1	81.9 ± 3.0	NB
N	<i>Weissia controversa</i>	Green-Cushioned Weissia				S3S4	4 Secure	1	41.4 ± 0.0	NB
N	<i>Trichostomum tenuirostre</i>	Acid-Soil Moss				S3S4	4 Secure	3	60.5 ± 5.0	NB
N	<i>Limprichtia revolvens</i>	a Moss				S3S4	4 Secure	2	85.8 ± 0.0	NB
N	<i>Rauivella scita</i>	Smaller Fern Moss				S3S4	3 Sensitive	1	92.9 ± 3.0	NB
N	<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen				S3S4	3 Sensitive	2	80.4 ± 0.0	NB
N	<i>Cladina terrae-novae</i>	Newfoundland Reindeer Lichen				S3S4	4 Secure	1	60.5 ± 0.0	NB
N	<i>Cladonia floerkeana</i>	Gritty British Soldiers Lichen				S3S4	4 Secure	1	59.8 ± 0.0	NB
N	<i>Vahlia leucophaea</i>	Shelter Shingle Lichen				S3S4	5 Undetermined	1	40.4 ± 0.0	NB
N	<i>Nephroma parile</i>	Powdery Kidney Lichen				S3S4	4 Secure	3	42.6 ± 0.0	NB
N	<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen				S3S4	4 Secure	6	68.5 ± 0.0	NB
N	<i>Pseudocyphellaria holarctica</i>	Yellow Specklebelly Lichen				S3S4	3 Sensitive	38	40.1 ± 0.0	NB
N	<i>Pannaria conoplea</i>	Mealy-rimmed Shingle Lichen				S3S4	3 Sensitive	12	46.0 ± 0.0	NB
N	<i>Dermatocarpon luridum</i>	Brookside Stippleback Lichen				S3S4	4 Secure	9	11.6 ± 0.0	NB
N	<i>Grimmia anodon</i>	Toothless Grimmia Moss				SH	5 Undetermined	2	61.0 ± 10.0	NB
N	<i>Leucodon brachypus</i>	a Moss				SH	2 May Be At Risk	3	52.6 ± 100.0	NB
N	<i>Orthotrichum gymnostomum</i>	a Moss				SH	2 May Be At Risk	1	65.0 ± 10.0	NB
N	<i>Thelia hirtella</i>	a Moss				SH	2 May Be At Risk	1	54.8 ± 100.0	NB
N	<i>Cyrtio-hypnum minutulum</i>	Tiny Cedar Moss				SH	2 May Be At Risk	3	88.0 ± 10.0	NB
P	<i>Juglans cinerea</i>	Butternut	Endangered	Endangered	Endangered	S1	1 At Risk	275	23.3 ± 1.0	NB
P	<i>Polemonium vanbruntiae</i>	Van Brunt's Jacob's-ladder	Threatened	Threatened	Threatened	S1	1 At Risk	74	54.5 ± 0.0	NB
P	<i>Symphotrichum anticostense</i>	Anticosti Aster	Threatened	Threatened	Endangered	S2S3	1 At Risk	8	38.1 ± 0.0	NB
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S4S5	4 Secure	447	10.7 ± 4.0	NB
P	<i>Symphotrichum praealtum</i>	Willow-leaved Aster	Threatened	Threatened		SNA	7 Exotic	1	70.6 ± 1.0	NB
P	<i>Isoetes prototypus</i>	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	1 At Risk	22	28.8 ± 0.0	NB
P	<i>Pteropora andromedea</i>	Woodland Pinedrops			Endangered	S1	1 At Risk	24	37.2 ± 0.0	NB
P	<i>Cryptotaenia canadensis</i>	Canada Honewort				S1	2 May Be At Risk	4	85.9 ± 1.0	NB
P	<i>Sanicula trifoliata</i>	Large-Fruited Sanicle				S1	2 May Be At Risk	12	62.2 ± 5.0	NB
P	<i>Antennaria parlinii</i>	a Pussytoes				S1	2 May Be At Risk	7	48.3 ± 1.0	NB
P	<i>Antennaria howellii ssp. petaloidea</i>	Pussy-Toes				S1	2 May Be At Risk	2	49.1 ± 1.0	NB
P	<i>Bidens discoidea</i>	Swamp Beggarticks				S1	2 May Be At Risk	4	36.3 ± 0.0	NB

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P	<i>Pseudognaphalium obtusifolium</i>	Eastern Cudweed				S1	2 May Be At Risk	2	64.6 ± 0.0	NB
P	<i>Helianthus decapetalus</i>	Ten-rayed Sunflower				S1	2 May Be At Risk	20	37.2 ± 0.0	NB
P	<i>Hieracium paniculatum</i>	Panicled Hawkweed				S1	2 May Be At Risk	4	23.3 ± 0.0	NB
P	<i>Symphyotrichum laeve</i>	Smooth Aster				S1	5 Undetermined	5	73.9 ± 1.0	NB
P	<i>Andersonglossum boreale</i>	Northern Wild Comfrey				S1	2 May Be At Risk	7	98.6 ± 0.0	NB
P	<i>Cardamine parviflora</i>	Small-flowered Bittercress				S1	2 May Be At Risk	8	49.8 ± 0.0	NB
P	<i>Cardamine concatenata</i>	Cut-leaved Toothwort				S1	2 May Be At Risk	14	23.7 ± 0.0	NB
P	<i>Draba arabisans</i>	Rock Whitlow-Grass				S1	2 May Be At Risk	7	55.1 ± 0.0	NB
P	<i>Draba cana</i>	Lance-leaved Draba				S1	2 May Be At Risk	10	40.2 ± 0.0	NB
P	<i>Draba glabella</i>	Rock Whitlow-Grass				S1	2 May Be At Risk	7	11.6 ± 1.0	NB
P	<i>Mononeuria groenlandica</i>	Greenland Stitchwort				S1	2 May Be At Risk	1	41.8 ± 0.0	NB
P	<i>Chenopodium simplex</i>	Maple-leaved Goosefoot				S1	2 May Be At Risk	8	33.0 ± 5.0	NB
P	<i>Blitum capitatum</i>	strawberry-bite				S1	2 May Be At Risk	5	31.5 ± 6.0	NB
P	<i>Callitriche terrestris</i>	Terrestrial Water-Starwort				S1	5 Undetermined	1	75.4 ± 0.0	NB
P	<i>Hypericum virginicum</i>	Virginia St. John's-wort				S1	2 May Be At Risk	7	45.7 ± 0.0	NB
P	<i>Viburnum acerifolium</i>	Maple-leaved Viburnum				S1	2 May Be At Risk	10	82.7 ± 0.0	NB
P	<i>Drosera anglica</i>	English Sundew				S1	2 May Be At Risk	1	80.7 ± 0.0	NB
P	<i>Drosera linearis</i>	Slender-Leaved Sundew				S1	2 May Be At Risk	1	80.7 ± 0.0	NB
P	<i>Corema conradii</i>	Broom Crowberry				S1	2 May Be At Risk	1	62.3 ± 10.0	NB
P	<i>Vaccinium boreale</i>	Northern Blueberry				S1	2 May Be At Risk	1	45.8 ± 0.0	NB
P	<i>Vaccinium corymbosum</i>	Highbush Blueberry				S1	3 Sensitive	9	59.5 ± 5.0	NB
P	<i>Hylodesmum glutinosum</i>	Large Tick-trefoil				S1	2 May Be At Risk	3	83.1 ± 1.0	NB
P	<i>Lespedeza capitata</i>	Round-headed Bush-clover				S1	2 May Be At Risk	10	46.8 ± 0.0	NB
P	<i>Gentiana rubricaulis</i>	Purple-stemmed Gentian				S1	2 May Be At Risk	14	37.2 ± 0.0	NB
P	<i>Lomatogonium rotatum</i>	Marsh Felwort				S1	2 May Be At Risk	2	81.2 ± 0.0	NB
P	<i>Ribes cynosbati</i>	Prickly Gooseberry				S1	2 May Be At Risk	1	94.5 ± 0.0	NB
P	<i>Proserpinaca pectinata</i>	Comb-leaved Mermaidweed				S1	2 May Be At Risk	1	49.0 ± 0.0	NB
P	<i>Pycnanthemum virginianum</i>	Virginia Mountain Mint				S1	2 May Be At Risk	4	52.1 ± 0.0	NB
P	<i>Decodon verticillatus</i>	Swamp Loosestrife				S1	2 May Be At Risk	3	62.4 ± 0.0	NB
P	<i>Polygala verticillata</i>	Whorled Milkwort				S1	5 Undetermined	2	90.9 ± 0.0	NB
P	<i>Polygonum douglasii</i>	Douglas Knotweed				S1		1	91.8 ± 0.0	NB
P	<i>Lysimachia hybrida</i>	Lowland Yellow Loosestrife				S1	2 May Be At Risk	15	72.7 ± 0.0	NB
P	<i>Lysimachia quadrifolia</i>	Whorled Yellow Loosestrife				S1	2 May Be At Risk	14	43.5 ± 1.0	NB
P	<i>Ranunculus sceleratus</i>	Cursed Buttercup				S1	2 May Be At Risk	6	32.2 ± 0.0	NB
P	<i>Crataegus jonesiae</i>	Jones' Hawthorn				S1	2 May Be At Risk	6	31.2 ± 1.0	NB
P	<i>Potentilla canadensis</i>	Canada Cinquefoil				S1	5 Undetermined	1	79.7 ± 0.0	NB
P	<i>Geum fragarioides</i>	Barren Strawberry				S1	2 May Be At Risk	27	77.0 ± 0.0	NB
P	<i>Galium brevipes</i>	Limestone Swamp Bedstraw				S1	2 May Be At Risk	3	33.8 ± 5.0	NB
P	<i>Saxifraga paniculata</i> ssp. <i>laestadii</i>	Laestadius' Saxifrage				S1	2 May Be At Risk	23	55.1 ± 0.0	NB
P	<i>Agalinis tenuifolia</i>	Slender Agalinis				S1	2 May Be At Risk	6	29.2 ± 0.0	NB
P	<i>Agalinis purpurea</i> var. <i>parviflora</i>	Small-flowered Purple False Foxglove				S1	2 May Be At Risk	8	32.5 ± 10.0	NB
P	<i>Gratiola lutea</i>	Golden Hedge-hyssop				S1	3 Sensitive	2	46.7 ± 0.0	NB
P	<i>Pedicularis canadensis</i>	Canada Lousewort				S1	2 May Be At Risk	20	37.2 ± 0.0	NB
P	<i>Viola canadensis</i>	Canada Violet				S1	2 May Be At Risk	76	94.2 ± 0.0	NB
P	<i>Viola sagittata</i> var. <i>ovata</i>	Arrow-Leaved Violet				S1	2 May Be At Risk	12	35.7 ± 0.0	NB
P	<i>Alisma subcordatum</i>	Southern Water Plantain				S1	5 Undetermined	8	29.6 ± 5.0	NB
P	<i>Carex annectens</i>	Yellow-Fruited Sedge				S1	2 May Be At Risk	1	95.5 ± 0.0	NB
P	<i>Carex backii</i>	Rocky Mountain Sedge				S1	2 May Be At Risk	6	39.7 ± 1.0	NB
P	<i>Carex blanda</i>	Eastern Woodland Sedge				S1	2 May Be At Risk	1	95.3 ± 0.0	NB
P	<i>Carex cephaloidea</i>	Thin-leaved Sedge				S1	2 May Be At Risk	20	42.5 ± 0.0	NB
P	<i>Carex merritt-feraldii</i>	Merritt Fernald's Sedge				S1	2 May Be At Risk	2	70.2 ± 0.0	NB
P	<i>Carex scirpoidea</i>	Scirpuslike Sedge				S1	2 May Be At Risk	6	92.5 ± 0.0	NB
P	<i>Carex waponahkikensis</i>	Dawn-land Sedge				S1	5 Undetermined	1	92.1 ± 0.0	NB
P	<i>Carex sterilis</i>	Sterile Sedge				S1	2 May Be At Risk	1	39.4 ± 0.0	NB
P	<i>Carex grisea</i>	Inflated Narrow-leaved				S1	2 May Be At Risk	15	35.4 ± 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>Carex saxatilis</i>	Sedge				S1	2 May Be At Risk	14	56.3 ± 10.0	NB
P	<i>Cyperus diandrus</i>	Russet Sedge				S1	2 May Be At Risk	7	29.0 ± 1.0	NB
P	<i>Cyperus lupulinus</i>	Low Flatsedge				S1	2 May Be At Risk	18	38.9 ± 0.0	NB
P	<i>Cyperus lupulinus ssp. macilentus</i>	Hop Flatsedge				S1	2 May Be At Risk	16	41.2 ± 1.0	NB
P	<i>Eleocharis flavescens var. olivacea</i>	Bright-green Spikerush				S1	2 May Be At Risk	3	71.5 ± 1.0	NB
P	<i>Rhynchospora capillacea</i>	Slender Beakrush				S1	2 May Be At Risk	3	37.7 ± 0.0	NB
P	<i>Scirpus pendulus</i>	Hanging Bulrush				S1	2 May Be At Risk	1	68.8 ± 0.0	NB
P	<i>Sisyrinchium angustifolium</i>	Narrow-leaved Blue-eyed-grass				S1	2 May Be At Risk	5	10.1 ± 0.0	NB
P	<i>Juncus greenii</i>	Greene's Rush				S1	2 May Be At Risk	1	60.4 ± 0.0	NB
P	<i>Juncus subtilis</i>	Creeping Rush				S1	2 May Be At Risk	1	39.6 ± 5.0	NB
P	<i>Allium canadense</i>	Canada Garlic				S1	2 May Be At Risk	11	35.8 ± 5.0	NB
P	<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain				S1	2 May Be At Risk	9	32.9 ± 0.0	NB
P	<i>Malaxis monophyllus var. brachypoda</i>	North American White Adder's-mouth				S1	2 May Be At Risk	11	56.3 ± 5.0	NB
P	<i>Platanthera flava var. herbiola</i>	Pale Green Orchid				S1	2 May Be At Risk	13	1.2 ± 0.0	NB
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid				S1	2 May Be At Risk	9	17.2 ± 0.0	NB
P	<i>Spiranthes casei</i>	Case's Ladies'-Tresses				S1	2 May Be At Risk	6	37.2 ± 0.0	NB
P	<i>Bromus pubescens</i>	Hairy Wood Brome Grass				S1	5 Undetermined	6	41.3 ± 0.0	NB
P	<i>Cinna arundinacea</i>	Sweet Wood Reed Grass				S1	2 May Be At Risk	22	37.7 ± 0.0	NB
P	<i>Danthonia compressa</i>	Flattened Oat Grass				S1	2 May Be At Risk	3	56.8 ± 0.0	NB
P	<i>Dichanthelium dichotomum</i>	Forked Panic Grass				S1	2 May Be At Risk	19	53.1 ± 1.0	NB
P	<i>Elymus hystrix</i>	Spreading Wild Rye				S1	2 May Be At Risk	21	76.7 ± 0.0	NB
P	<i>Glyceria obtusa</i>	Atlantic Manna Grass				S1	2 May Be At Risk	6	34.5 ± 0.0	NB
P	<i>Sporobolus compositus</i>	Rough Dropseed				S1	2 May Be At Risk	17	37.5 ± 0.0	NB
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S1	2 May Be At Risk	6	33.8 ± 5.0	NB
P	<i>Potamogeton nodosus</i>	Long-leaved Pondweed				S1	2 May Be At Risk	4	27.8 ± 1.0	NB
P	<i>Potamogeton strictifolius</i>	Straight-leaved Pondweed				S1	2 May Be At Risk	2	55.6 ± 0.0	NB
P	<i>Xyris difformis</i>	Bog Yellow-eyed-grass				S1	5 Undetermined	3	45.7 ± 0.0	NB
P	<i>Asplenium ruta-muraria var. cryptolepis</i>	Wallrue Spleenwort				S1	2 May Be At Risk	3	55.1 ± 0.0	NB
P	<i>Cystopteris laurentiana</i>	Laurentian Bladder Fern				S1	2 May Be At Risk	1	94.9 ± 1.0	NB
P	<i>Dryopteris clintoniana</i>	Clinton's Wood Fern				S1	2 May Be At Risk	1	95.3 ± 0.0	NB
P	<i>Sceptridium oneidense</i>	Blunt-lobed Moonwort				S1	2 May Be At Risk	8	3.6 ± 0.0	NB
P	<i>Sceptridium rugulosum</i>	Rugulose Grapefern				S1	2 May Be At Risk	5	45.1 ± 1.0	NB
P	<i>Schizaea pusilla</i>	Little Curlygrass Fern				S1	2 May Be At Risk	19	59.6 ± 0.0	NB
P	<i>Cuscuta campestris</i>	Field Dodder				S1?	2 May Be At Risk	3	50.3 ± 10.0	NB
P	<i>Polygonum aviculare ssp. neglectum</i>	Narrow-leaved Knotweed				S1?	5 Undetermined	7	31.7 ± 0.0	NB
P	<i>Sisyrinchium mucronatum</i>	Michaux's Blue-eyed-grass				S1?	5 Undetermined	1	98.5 ± 0.0	NB
P	<i>Wolffia columbiana</i>	Columbian Watermeal				S1?	2 May Be At Risk	5	25.7 ± 0.0	NB
P	<i>Micranthes virginensis</i>	Early Saxifrage				S1S2	2 May Be At Risk	14	36.0 ± 0.0	NB
P	<i>Potamogeton bicupulatus</i>	Snailseed Pondweed				S1S2	2 May Be At Risk	5	24.8 ± 0.0	NB
P	<i>Selaginella rupestris</i>	Rock Spikemoss				S1S2	2 May Be At Risk	14	37.8 ± 0.0	NB
P	<i>Thelypteris simulata</i>	Bog Fern				S1S2	2 May Be At Risk	20	37.3 ± 0.0	NB
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S1S3	2 May Be At Risk	2	53.5 ± 0.0	NB
P	<i>Spiranthes arcisepala</i>	Appalachian Ladies'-tresses				S1S3	2 May Be At Risk	2	11.1 ± 0.0	NB
P	<i>Neottia bifolia</i>	Southern Twayblade			Endangered	S2	1 At Risk	16	32.7 ± 0.0	NB
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2	3 Sensitive	6	43.0 ± 5.0	NB
P	<i>Sanicula odorata</i>	Clustered Sanicle				S2	2 May Be At Risk	12	43.2 ± 0.0	NB
P	<i>Solidago racemosa</i>	Racemose Goldenrod				S2	2 May Be At Risk	19	37.2 ± 1.0	NB
P	<i>Ionactis linariifolia</i>	Flax-leaved Aster				S2	3 Sensitive	11	37.1 ± 0.0	NB
P	<i>Symphyotrichum racemosum</i>	Small White Aster				S2	3 Sensitive	13	12.4 ± 0.0	NB

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P	<i>Pseudognaphalium macounii</i>	Macoun's Cudweed				S2	3 Sensitive	10	23.2 ± 1.0	NB
P	<i>Impatiens pallida</i>	Pale Jewelweed				S2	2 May Be At Risk	6	92.7 ± 0.0	NB
P	<i>Alnus serrulata</i>	Smooth Alder				S2	3 Sensitive	58	36.7 ± 0.0	NB
P	<i>Boechea stricta</i>	Drummond's Rockcress				S2	3 Sensitive	19	37.5 ± 0.0	NB
P	<i>Sagina nodosa</i>	Knotted Pearlwort				S2	3 Sensitive	7	59.7 ± 1.0	NB
P	<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort				S2	3 Sensitive	1	64.2 ± 0.0	NB
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S2	3 Sensitive	9	22.2 ± 10.0	NB
P	<i>Atriplex glabriuscula</i> var. <i>franktonii</i>	Frankton's Saltbush				S2	4 Secure	3	70.6 ± 1.0	NB
P	<i>Oxybasis rubra</i>	Red Goosefoot				S2	3 Sensitive	4	52.5 ± 1.0	NB
P	<i>Hypericum x dissimulatum</i>	Disguised St. John's-wort				S2	3 Sensitive	2	12.4 ± 0.0	NB
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S2	3 Sensitive	114	37.6 ± 0.0	NB
P	<i>Viburnum lentago</i>	Nannyberry				S2	4 Secure	102	37.0 ± 0.0	NB
P	<i>Viburnum recognitum</i>	Northern Arrow-Wood				S2	4 Secure	168	54.1 ± 0.0	NB
P	<i>Astragalus eucosmus</i>	Elegant Milk-vetch				S2	2 May Be At Risk	11	34.1 ± 1.0	NB
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S2	3 Sensitive	11	36.5 ± 1.0	NB
P	<i>Quercus macrocarpa</i>	Bur Oak				S2	2 May Be At Risk	67	25.7 ± 0.0	NB
P	<i>Gentiana linearis</i>	Narrow-Leaved Gentian				S2	3 Sensitive	5	33.6 ± 5.0	NB
P	<i>Myriophyllum humile</i>	Low Water Milfoil				S2	3 Sensitive	10	12.4 ± 1.0	NB
P	<i>Proserpinaca palustris</i>	Marsh Mermaidweed				S2	3 Sensitive	25	38.3 ± 0.0	NB
P	<i>Hedeoma pulegioides</i>	American False Pennyroyal				S2	4 Secure	17	37.0 ± 0.0	NB
P	<i>Nuphar x rubrodisca</i>	Red-disk Yellow Pond-lily				S2	3 Sensitive	11	17.6 ± 10.0	NB
P	<i>Aphyllon uniflorum</i>	One-flowered Broomrape				S2	3 Sensitive	14	10.8 ± 1.0	NB
P	<i>Polygaloides paucifolia</i>	Fringed Milkwort				S2	3 Sensitive	20	4.3 ± 0.0	NB
P	<i>Polygala senega</i>	Seneca Snakeroot				S2	3 Sensitive	9	42.6 ± 1.0	NB
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	3 Sensitive	40	2.7 ± 0.0	NB
P	<i>Persicaria careyi</i>	Carey's Smartweed				S2	3 Sensitive	17	1.3 ± 1.0	NB
P	<i>Podostemum ceratophyllum</i>	Horn-leaved Riverweed				S2	3 Sensitive	45	0.9 ± 0.0	NB
P	<i>Anemone multifida</i>	Cut-leaved Anemone				S2	3 Sensitive	3	37.9 ± 0.0	NB
P	<i>Hepatica americana</i>	Round-lobed Hepatica				S2	3 Sensitive	52	14.2 ± 1.0	NB
P	<i>Ranunculus flabellaris</i>	Yellow Water Buttercup				S2	4 Secure	23	23.8 ± 1.0	NB
P	<i>Crataegus scabrada</i>	Rough Hawthorn				S2	3 Sensitive	8	52.6 ± 1.0	NB
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn				S2	3 Sensitive	1	33.9 ± 5.0	NB
P	<i>Rosa acicularis</i> ssp. <i>sayi</i>	Prickly Rose				S2	2 May Be At Risk	5	99.4 ± 0.0	NB
P	<i>Cephalanthus occidentalis</i>	Common Buttonbush				S2	3 Sensitive	67	37.6 ± 0.0	NB
P	<i>Galium kamschaticum</i>	Northern Wild Licorice				S2	3 Sensitive	2	89.2 ± 0.0	NB
P	<i>Salix candida</i>	Sage Willow				S2	3 Sensitive	2	39.0 ± 1.0	NB
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S2	3 Sensitive	3	97.6 ± 0.0	NB
P	<i>Castilleja septentrionalis</i>	Northeastern Paintbrush				S2	3 Sensitive	3	99.5 ± 0.0	NB
P	<i>Euphrasia randii</i>	Rand's Eyebright				S2	2 May Be At Risk	10	60.2 ± 0.0	NB
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort				S2	3 Sensitive	11	27.6 ± 100.0	NB
P	<i>Dirca palustris</i>	Eastern Leatherwood				S2	2 May Be At Risk	17	37.3 ± 0.0	NB
P	<i>Phryma leptostachya</i>	American Lopseed				S2	3 Sensitive	41	41.1 ± 1.0	NB
P	<i>Verbena urticifolia</i>	White Vervain				S2	2 May Be At Risk	19	37.0 ± 1.0	NB
P	<i>Viola novae-angliae</i>	New England Violet				S2	3 Sensitive	7	49.3 ± 0.0	NB
P	<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage				S2	3 Sensitive	72	46.1 ± 0.0	NB
P	<i>Carex granularis</i>	Limestone Meadow Sedge				S2	3 Sensitive	8	31.5 ± 0.0	NB
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S2	3 Sensitive	11	59.0 ± 0.0	NB
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S2	3 Sensitive	56	36.4 ± 0.0	NB
P	<i>Carex livida</i>	Livid Sedge				S2	3 Sensitive	2	59.6 ± 0.0	NB
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S2	3 Sensitive	34	34.1 ± 0.0	NB
P	<i>Carex prairea</i>	Prairie Sedge				S2	3 Sensitive	1	94.0 ± 0.0	NB
P	<i>Carex salina</i>	Saltmarsh Sedge				S2	3 Sensitive	2	61.2 ± 1.0	NB
P	<i>Carex sprengeii</i>	Longbeak Sedge				S2	3 Sensitive	36	37.0 ± 0.0	NB
P	<i>Carex tenuiflora</i>	Sparse-Flowered Sedge				S2	2 May Be At Risk	16	39.2 ± 0.0	NB

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P	<i>Carex albicans</i>	White-tinged Sedge				S2	3 Sensitive	1	83.1 ± 1.0	NB
P	<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge				S2	3 Sensitive	5	48.3 ± 0.0	NB
P	<i>Cyperus squarrosus</i>	Awned Flatsedge				S2	3 Sensitive	36	29.6 ± 10.0	NB
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S2	2 May Be At Risk	2	38.8 ± 0.0	NB
P	<i>Elodea nuttallii</i>	Nuttall's Waterweed				S2	3 Sensitive	9	28.5 ± 0.0	NB
P	<i>Allium tricoccum</i>	Wild Leek				S2	2 May Be At Risk	24	37.3 ± 0.0	NB
P	<i>Najas gracillima</i>	Thread-Like Naiad				S2	3 Sensitive	11	37.8 ± 0.0	NB
P	<i>Calypso bulbosa</i>	Calypso				S2	2 May Be At Risk	2	30.6 ± 0.0	NB
P	<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso				S2	2 May Be At Risk	14	32.5 ± 1.0	NB
P	<i>Coeloglossum viride</i>	Long-bracted Frog Orchid				S2	2 May Be At Risk	6	20.6 ± 5.0	NB
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper				S2	2 May Be At Risk	11	20.7 ± 1.0	NB
P	<i>Galearis spectabilis</i>	Showy Orchis				S2	2 May Be At Risk	48	77.7 ± 1.0	NB
P	<i>Goodyera oblongifolia</i>	Menzies' Rattlesnake-plantain				S2	3 Sensitive	1	75.7 ± 0.0	NB
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S2	3 Sensitive	22	7.1 ± 0.0	NB
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses				S2	2 May Be At Risk	3	11.2 ± 0.0	NB
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S2	3 Sensitive	14	9.5 ± 0.0	NB
P	<i>Elymus canadensis</i>	Canada Wild Rye				S2	2 May Be At Risk	16	25.6 ± 1.0	NB
P	<i>Leersia virginica</i>	White Cut Grass				S2	2 May Be At Risk	42	18.3 ± 10.0	NB
P	<i>Piptatheropsis canadensis</i>	Canada Ricegrass				S2	3 Sensitive	5	12.9 ± 0.0	NB
P	<i>Poa glauca</i>	Glaucous Blue Grass				S2	4 Secure	1	62.2 ± 2.0	NB
P	<i>Puccinellia phryganodes</i> ssp. <i>neoarctica</i>	Creeping Alkali Grass				S2	3 Sensitive	9	60.2 ± 0.0	NB
P	<i>Puccinellia nutkaensis</i>	Alaska Alkaligrass				S2	3 Sensitive	4	62.4 ± 1.0	NB
P	<i>Schizachyrium scoparium</i>	Little Bluestem				S2	3 Sensitive	52	12.5 ± 0.0	NB
P	<i>Zizania aquatica</i> var. <i>aquatica</i>	Eastern Wild Rice				S2	5 Undetermined	6	33.9 ± 5.0	NB
P	<i>Potamogeton vaseyi</i>	Vasey's Pondweed				S2	3 Sensitive	11	31.6 ± 0.0	NB
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S2	3 Sensitive	10	34.6 ± 0.0	NB
P	<i>Anchistea virginica</i>	Virginia chain fern				S2	3 Sensitive	19	28.6 ± 1.0	NB
P	<i>Woodsia alpina</i>	Alpine Cliff Fern				S2	3 Sensitive	5	55.1 ± 0.0	NB
P	<i>Selaginella selaginoides</i>	Low Spikemoss				S2	3 Sensitive	4	52.2 ± 6.0	NB
P	<i>Toxicodendron radicans</i> var. <i>radicans</i>	Eastern Poison Ivy				S2?	3 Sensitive	12	25.6 ± 1.0	NB
P	<i>Symphotrichum novi-belgii</i> var. <i>crenifolium</i>	New York Aster				S2?	5 Undetermined	4	31.5 ± 1.0	NB
P	<i>Humulus lupulus</i> var. <i>lupuloides</i>	Common Hop				S2?	3 Sensitive	5	27.7 ± 0.0	NB
P	<i>Rubus x recurvicaulis</i>	arching dewberry				S2?	4 Secure	5	11.0 ± 1.0	NB
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw				S2?	4 Secure	6	35.3 ± 1.0	NB
P	<i>Salix myricoides</i>	Bayberry Willow				S2?	3 Sensitive	14	37.3 ± 0.0	NB
P	<i>Carex vacillans</i>	Estuarine Sedge				S2?	3 Sensitive	3	64.7 ± 1.0	NB
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S2?	5 Undetermined	3	59.3 ± 0.0	NB
P	<i>Solidago altissima</i>	Tall Goldenrod				S2S3	4 Secure	15	25.6 ± 1.0	NB
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort				S2S3	4 Secure	6	38.9 ± 0.0	NB
P	<i>Lonicera oblongifolia</i>	Swamp Fly Honeysuckle				S2S3	3 Sensitive	48	52.2 ± 6.0	NB
P	<i>Elatine americana</i>	American Waterwort				S2S3	3 Sensitive	8	37.7 ± 0.0	NB
P	<i>Bartonia paniculata</i> ssp. <i>iodandra</i>	Branched Bartonia				S2S3	3 Sensitive	16	31.6 ± 0.0	NB
P	<i>Geranium robertianum</i>	Herb Robert				S2S3	4 Secure	23	53.7 ± 1.0	NB
P	<i>Myriophyllum quitense</i>	Andean Water Milfoil				S2S3	4 Secure	71	43.5 ± 0.0	NB
P	<i>Epilobium coloratum</i>	Purple-veined Willowherb				S2S3	3 Sensitive	9	31.4 ± 1.0	NB
P	<i>Rumex pallidus</i>	Seabeach Dock				S2S3	3 Sensitive	6	43.3 ± 1.0	NB
P	<i>Rumex occidentalis</i>	Western Dock				S2S3	2 May Be At Risk	1	25.0 ± 1.0	NB
P	<i>Amelanchier gaspensis</i>	Gasp r Serviceberry				S2S3	5 Undetermined	1	95.1 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry				S2S3	4 Secure	13	8.8 ± 3.0	NB
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S2S3	3 Sensitive	39	50.2 ± 0.0	NB
P	<i>Valeriana uliginosa</i>	Swamp Valerian				S2S3	3 Sensitive	15	69.0 ± 0.0	NB
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	4 Secure	6	5.0 ± 10.0	NB
P	<i>Juncus brachycephalus</i>	Small-Head Rush				S2S3	3 Sensitive	5	77.4 ± 0.0	NB
P	<i>Corallorhiza maculata</i> var. <i>occidentalis</i>	Spotted Coralroot				S2S3	3 Sensitive	8	24.3 ± 1.0	NB
P	<i>Corallorhiza maculata</i> var. <i>maculata</i>	Spotted Coralroot				S2S3	3 Sensitive	3	31.2 ± 1.0	NB
P	<i>Neottia auriculata</i>	Auricled Twayblade				S2S3	3 Sensitive	9	30.0 ± 0.0	NB
P	<i>Spiranthes cernua</i>	Nodding Ladies'-Tresses				S2S3	3 Sensitive	15	31.5 ± 0.0	NB
P	<i>Eragrostis pectinacea</i>	Tufted Love Grass				S2S3	4 Secure	14	25.8 ± 1.0	NB
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S2S3	3 Sensitive	6	57.6 ± 0.0	NB
P	<i>Stamogeton praelongus</i>	White-stemmed Pondweed				S2S3	4 Secure	18	57.7 ± 0.0	NB
P	<i>Isoetes acadensis</i>	Acadian Quillwort				S2S3	3 Sensitive	10	23.3 ± 1.0	NB
P	<i>Botrychium tenebrosum</i>	Swamp Moonwort				S2S3	3 Sensitive	1	65.4 ± 0.0	NB
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S2S3	3 Sensitive	10	8.3 ± 1.0	NB
P	<i>Panax trifolius</i>	Dwarf Ginseng				S3	3 Sensitive	14	35.3 ± 1.0	NB
P	<i>Arnica lanceolata</i>	Lance-leaved Arnica				S3	4 Secure	11	63.0 ± 0.0	NB
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Tall Wormwood				S3	4 Secure	100	37.0 ± 1.0	NB
P	<i>Artemisia campestris</i>	Field Wormwood				S3	4 Secure	9	41.3 ± 0.0	NB
P	<i>Erigeron hyssopifolius</i>	Hyssop-leaved Fleabane				S3	4 Secure	8	14.5 ± 0.0	NB
P	<i>Nabalus racemosus</i>	Glaucous Rattlesnakeroot				S3	4 Secure	71	32.6 ± 100.0	NB
P	<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy				S3	4 Secure	29	37.2 ± 5.0	NB
P	<i>Symphyotrichum boreale</i>	Boreal Aster				S3	3 Sensitive	46	37.8 ± 0.0	NB
P	<i>Betula pumila</i>	Bog Birch				S3	4 Secure	31	9.1 ± 1.0	NB
P	<i>Turritis glabra</i>	Tower Mustard				S3	5 Undetermined	10	80.5 ± 0.0	NB
P	<i>Arabis pycnocarpa</i>	Cream-flowered Rockcress				S3	4 Secure	19	37.3 ± 0.0	NB
P	<i>Cardamine maxima</i>	Large Toothwort				S3	4 Secure	84	32.6 ± 0.0	NB
P	<i>Subularia aquatica</i> ssp. <i>americana</i>	American Water Awlwort				S3	4 Secure	18	29.6 ± 1.0	NB
P	<i>Lobelia cardinalis</i>	Cardinal Flower				S3	4 Secure	384	0.2 ± 1.0	NB
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort				S3	4 Secure	6	60.2 ± 0.0	NB
P	<i>Ceratophyllum echinatum</i>	Prickly Hornwort				S3	3 Sensitive	18	2.9 ± 0.0	NB
P	<i>Hudsonia tomentosa</i>	Woolly Beach-heath				S3	4 Secure	3	42.4 ± 0.0	NB
P	<i>Cornus obliqua</i>	Silky Dogwood				S3	3 Sensitive	266	37.5 ± 0.0	NB
P	<i>Crassula aquatica</i>	Water Pygmyweed				S3	4 Secure	3	38.7 ± 1.0	NB
P	<i>Rhodiola rosea</i>	Roseroot				S3	4 Secure	41	55.0 ± 0.0	NB
P	<i>Penthorum sedoides</i>	Ditch Stonecrop				S3	4 Secure	73	24.3 ± 1.0	NB
P	<i>Elatine minima</i>	Small Waterwort				S3	4 Secure	55	23.0 ± 0.0	NB
P	<i>Astragalus alpinus</i> var. <i>brunetianus</i>	Alpine Milk-Vetch				S3	4 Secure	7	37.2 ± 0.0	NB
P	<i>Hedysarum americanum</i>	Alpine Hedysarum				S3	4 Secure	4	63.5 ± 0.0	NB
P	<i>Gentianella amarella</i> ssp. <i>acuta</i>	Northern Gentian				S3	4 Secure	12	55.8 ± 0.0	NB
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	4 Secure	17	43.2 ± 5.0	NB
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S3	4 Secure	22	27.0 ± 5.0	NB
P	<i>Myriophyllum heterophyllum</i>	Variable-leaved Water Milfoil				S3	4 Secure	51	35.7 ± 0.0	NB
P	<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil				S3	4 Secure	21	12.2 ± 0.0	NB
P	<i>Stachys hispida</i>	Smooth Hedge-Nettle				S3	3 Sensitive	12	36.3 ± 1.0	NB
P	<i>Utricularia radiata</i>	Little Floating Bladderwort				S3	4 Secure	54	24.8 ± 0.0	NB
P	<i>Nuphar microphylla</i>	Small Yellow Pond-lily				S3	4 Secure	20	33.4 ± 0.0	NB
P	<i>Epilobium hornemannii</i>	Hornemann's Willowherb				S3	4 Secure	4	56.3 ± 0.0	NB
P	<i>Epilobium strictum</i>	Downy Willowherb				S3	4 Secure	30	39.1 ± 0.0	NB
P	<i>Polygala sanguinea</i>	Blood Milkwort				S3	3 Sensitive	49	13.3 ± 0.0	NB
P	<i>Persicaria arifolia</i>	Halberd-leaved Tearthumb				S3	4 Secure	28	37.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Persicaria punctata</i>	Dotted Smartweed				S3	4 Secure	14	33.8 ± 2.0	NB
P	<i>Fallopia scandens</i>	Climbing False Buckwheat				S3	4 Secure	34	12.6 ± 1.0	NB
P	<i>Littorella americana</i>	American Shoreweed				S3	4 Secure	29	32.3 ± 1.0	NB
P	<i>Primula mistassinica</i>	Mistassini Primrose				S3	4 Secure	20	10.6 ± 0.0	NB
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	4 Secure	3	62.4 ± 0.0	NB
P	<i>Clematis occidentalis</i>	Purple Clematis				S3	4 Secure	27	35.5 ± 0.0	NB
P	<i>Ranunculus gmelinii</i>	Gmelin's Water Buttercup				S3	4 Secure	25	31.6 ± 0.0	NB
P	<i>Thalictrum confine</i>	Northern Meadow-rue				S3	4 Secure	89	25.7 ± 1.0	NB
P	<i>Amelanchier canadensis</i>	Canada Serviceberry				S3	4 Secure	17	14.2 ± 1.0	NB
P	<i>Rosa palustris</i>	Swamp Rose				S3	4 Secure	49	10.9 ± 1.0	NB
P	<i>Rubus occidentalis</i>	Black Raspberry				S3	4 Secure	81	35.4 ± 0.0	NB
P	<i>Galium boreale</i>	Northern Bedstraw				S3	4 Secure	6	14.4 ± 0.0	NB
P	<i>Salix nigra</i>	Black Willow				S3	3 Sensitive	126	3.0 ± 0.0	NB
P	<i>Salix pedicellaris</i>	Bog Willow				S3	4 Secure	66	3.8 ± 0.0	NB
P	<i>Salix interior</i>	Sandbar Willow				S3	4 Secure	29	23.3 ± 1.0	NB
P	<i>Comandra umbellata</i>	Bastard's Toadflax				S3	4 Secure	1	52.4 ± 10.0	NB
P	<i>Parnassia glauca</i>	Fen Grass-of-Parnassus				S3	4 Secure	7	34.5 ± 10.0	NB
P	<i>Limosella australis</i>	Southern Mudwort				S3	4 Secure	1	74.2 ± 5.0	NB
P	<i>Boehmeria cylindrica</i>	Small-spike False-nettle				S3	3 Sensitive	148	36.4 ± 1.0	NB
P	<i>Pilea pumila</i>	Dwarf Clearweed				S3	4 Secure	43	32.1 ± 1.0	NB
P	<i>Viola adunca</i>	Hooked Violet				S3	4 Secure	10	38.1 ± 1.0	NB
P	<i>Viola nephrophylla</i>	Northern Bog Violet				S3	4 Secure	32	11.8 ± 0.0	NB
P	<i>Carex arcta</i>	Northern Clustered Sedge				S3	4 Secure	57	3.6 ± 0.0	NB
P	<i>Carex capillaris</i>	Hairlike Sedge				S3	4 Secure	5	58.2 ± 0.0	NB
P	<i>Carex chordorrhiza</i>	Creeping Sedge				S3	4 Secure	31	11.2 ± 0.0	NB
P	<i>Carex conoidea</i>	Field Sedge				S3	4 Secure	25	39.6 ± 1.0	NB
P	<i>Carex eburnea</i>	Bristle-leaved Sedge				S3	4 Secure	2	83.1 ± 1.0	NB
P	<i>Carex exilis</i>	Coastal Sedge				S3	4 Secure	113	17.6 ± 0.0	NB
P	<i>Carex garberi</i>	Garber's Sedge				S3	3 Sensitive	13	10.9 ± 1.0	NB
P	<i>Carex haydenii</i>	Hayden's Sedge				S3	4 Secure	48	2.8 ± 1.0	NB
P	<i>Carex lupulina</i>	Hop Sedge				S3	4 Secure	121	19.3 ± 1.0	NB
P	<i>Carex michauxiana</i>	Michaux's Sedge				S3	4 Secure	59	27.6 ± 0.0	NB
P	<i>Carex ormostachya</i>	Necklace Spike Sedge				S3	4 Secure	17	23.6 ± 1.0	NB
P	<i>Carex rosea</i>	Rosy Sedge				S3	4 Secure	150	38.2 ± 0.0	NB
P	<i>Carex tenera</i>	Tender Sedge				S3	4 Secure	52	30.7 ± 0.0	NB
P	<i>Carex tuckermanii</i>	Tuckerman's Sedge				S3	4 Secure	83	3.0 ± 0.0	NB
P	<i>Carex vaginata</i>	Sheathed Sedge				S3	3 Sensitive	11	48.7 ± 0.0	NB
P	<i>Carex wiegandii</i>	Wiegand's Sedge				S3	4 Secure	67	32.8 ± 0.0	NB
P	<i>Carex recta</i>	Estuary Sedge				S3	4 Secure	6	40.3 ± 0.0	NB
P	<i>Carex atratiformis</i>	Scabrous Black Sedge				S3	4 Secure	1	62.2 ± 0.0	NB
P	<i>Cyperus dentatus</i>	Toothed Flatsedge				S3	4 Secure	191	0.8 ± 0.0	NB
P	<i>Cyperus esculentus</i>	Perennial Yellow Nutsedge				S3	4 Secure	11	39.7 ± 0.0	NB
P	<i>Cyperus esculentus var. leptostachyus</i>	Perennial Yellow Nutsedge				S3	4 Secure	45	26.2 ± 5.0	NB
P	<i>Eleocharis intermedia</i>	Matted Spikerush				S3	4 Secure	4	37.8 ± 0.0	NB
P	<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush				S3	4 Secure	9	34.7 ± 0.0	NB
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush				S3	4 Secure	34	0.2 ± 1.0	NB
P	<i>Rhynchospora fusca</i>	Brown Beakrush				S3	4 Secure	40	17.1 ± 0.0	NB
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush				S3	4 Secure	29	42.0 ± 0.0	NB
P	<i>Bolboschoenus fluviatilis</i>	River Bulrush				S3	3 Sensitive	58	27.2 ± 0.0	NB
P	<i>Schoenoplectus torreyi</i>	Torrey's Bulrush				S3	4 Secure	34	3.6 ± 0.0	NB
P	<i>Lemna trisulca</i>	Star Duckweed				S3	4 Secure	22	42.0 ± 0.0	NB
P	<i>Triantha glutinosa</i>	Sticky False-Asphodel				S3	4 Secure	58	33.8 ± 1.0	NB
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S3	3 Sensitive	39	56.4 ± 0.0	NB
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3	4 Secure	20	26.1 ± 0.0	NB
P	<i>Platanthera blephariglottis</i>	White Fringed Orchid				S3	4 Secure	64	29.5 ± 1.0	NB
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	3 Sensitive	51	1.2 ± 1.0	NB
P	<i>Bromus latiglumis</i>	Broad-Grumled Brome				S3	3 Sensitive	5	8.1 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Calamagrostis pickeringii</i>	Pickering's Reed Grass				S3	4 Secure	106	30.0 ± 0.0	NB
P	<i>Dichanthelium depauperatum</i>	Starved Panic Grass				S3	4 Secure	24	8.7 ± 0.0	NB
P	<i>Dichanthelium depauperatum var. 1</i>	Starved Panic Grass				S3	4 Secure	1	63.1 ± 0.0	NB
P	<i>Muhlenbergia richardsonis</i>	Mat Muhly				S3	4 Secure	16	37.2 ± 0.0	NB
P	<i>Heteranthera dubia</i>	Water Stargrass				S3	4 Secure	62	30.1 ± 0.0	NB
P	<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed				S3	4 Secure	24	29.3 ± 1.0	NB
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S3	3 Sensitive	16	33.7 ± 5.0	NB
P	<i>Xyris montana</i>	Northern Yellow-Eyed-Grass				S3	4 Secure	26	29.6 ± 0.0	NB
P	<i>Zannichellia palustris</i>	Horned Pondweed				S3	4 Secure	5	50.0 ± 0.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S3	4 Secure	147	32.5 ± 0.0	NB
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake				S3	4 Secure	2	67.2 ± 1.0	NB
P	<i>Asplenium viride</i>	Green Spleenwort				S3	4 Secure	15	45.4 ± 0.0	NB
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S3	4 Secure	18	55.5 ± 0.0	NB
P	<i>Dryopteris goldiana</i>	Goldie's Woodfern				S3	3 Sensitive	92	40.8 ± 5.0	NB
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S3	4 Secure	1	81.7 ± 1.0	NB
P	<i>Equisetum palustre</i>	Marsh Horsetail				S3	4 Secure	9	26.2 ± 10.0	NB
P	<i>Isoetes tuckermanii</i>	Tuckerman's Quillwort				S3	4 Secure	20	17.4 ± 0.0	NB
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3	4 Secure	11	30.7 ± 1.0	NB
P	<i>Huperzia appressa</i>	Mountain Firmoss				S3	3 Sensitive	3	59.9 ± 1.0	NB
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	4 Secure	42	3.6 ± 0.0	NB
P	<i>Botrychium lanceolatum ssp. angustisegmentum</i>	Narrow Triangle Moonwort				S3	3 Sensitive	17	17.0 ± 0.0	NB
P	<i>Botrychium simplex</i>	Least Moonwort				S3	4 Secure	13	36.0 ± 0.0	NB
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3	4 Secure	28	31.2 ± 10.0	NB
P	<i>Utricularia resupinata</i>	Inverted Bladderwort				S3?	4 Secure	16	17.6 ± 0.0	NB
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S3?	3 Sensitive	20	33.5 ± 1.0	NB
P	<i>Mertensia maritima</i>	Sea Lungwort				S3S4	4 Secure	23	56.7 ± 1.0	NB
P	<i>Lobelia kalmii</i>	Brook Lobelia				S3S4	4 Secure	42	33.8 ± 1.0	NB
P	<i>Suaeda calceoliformis</i>	Horned Sea-blite				S3S4	4 Secure	4	32.4 ± 0.0	NB
P	<i>Myriophyllum sibiricum</i>	Siberian Water Milfoil				S3S4	4 Secure	32	38.9 ± 0.0	NB
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle				S3S4	5 Undetermined	6	34.3 ± 7.0	NB
P	<i>Utricularia gibba</i>	Humped Bladderwort				S3S4	4 Secure	41	22.3 ± 0.0	NB
P	<i>Rumex fueginus</i>	Tierra del Fuego Dock				S3S4	4 Secure	1	80.4 ± 1.0	NB
P	<i>Drymocallis arguta</i>	Tall Wood Beauty				S3S4	4 Secure	44	30.1 ± 0.0	NB
P	<i>Rubus chamaemorus</i>	Cloudberry				S3S4	4 Secure	85	52.9 ± 0.0	NB
P	<i>Geocaulon lividum</i>	Northern Comandra				S3S4	4 Secure	12	59.1 ± 1.0	NB
P	<i>Juniperus horizontalis</i>	Creeping Juniper				S3S4	4 Secure	3	62.4 ± 1.0	NB
P	<i>Cladium mariscoides</i>	Smooth Twigrush				S3S4	4 Secure	51	17.1 ± 0.0	NB
P	<i>Eriophorum russeolum</i>	Russet Cottongrass				S3S4	4 Secure	12	34.4 ± 2.0	NB
P	<i>Triglochin gaspensis</i>	Gasp Arrowgrass				S3S4	4 Secure	12	60.1 ± 0.0	NB
P	<i>Spirodela polyrhiza</i>	great duckweed				S3S4	4 Secure	41	26.8 ± 1.0	NB
P	<i>Corallorhiza maculata</i>	Spotted Coralroot				S3S4	3 Sensitive	15	34.8 ± 0.0	NB
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S3S4	4 Secure	3	49.0 ± 2.0	NB
P	<i>Distichlis spicata</i>	Salt Grass				S3S4	4 Secure	3	92.0 ± 1.0	NB
P	<i>Potamogeton oakesianus</i>	Oakes' Pondweed				S3S4	4 Secure	36	29.6 ± 0.0	NB
P	<i>Montia fontana</i>	Water Blinks				SH	2 May Be At Risk	1	77.8 ± 1.0	NB
P	<i>Solidago caesia</i>	Blue-stemmed Goldenrod				SX	0.1 Extirpated	2	62.6 ± 1.0	NB
P	<i>Solidago ptarmicoides</i>	Upland White Goldenrod				SX	0.1 Extirpated	3	91.9 ± 1.0	NB
P	<i>Celastrus scandens</i>	Climbing Bittersweet				SX	0.1 Extirpated	4	34.2 ± 100.0	NB

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The recipient of these data shall acknowledge the AC CDC 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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165	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
165	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
151	Benedict, B. Connell Herbarium Specimen Database Download 2004. Connell Memorial Herbarium, University of New Brunswick. 2004.
150	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
146	Sollows, M.C., 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
144	Blaney, C.S.; Mazerolle, D.M. 2012. Fieldwork 2012. Atlantic Canada Conservation Data Centre, 13,278 recs.
129	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
127	Wisniowski, C. & Dowding, A. 2019. NB species occurrence data for 2016-2018. Nature Trust of New Brunswick.
126	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
118	Mazerolle, D.M. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
114	Bishop, G. & Papoulias, M.; Arnold (Chaplin), M. 2005. Grand Lake Meadows field notes, Summer 2005. New Brunswick Federation of Naturalists, 1638 recs.
110	Paquet, Julie. 2018. Atlantic Canada Shorebird Survey (ACSS) database 2012-2018. Environment Canada, Canadian Wildlife Service.
107	Sabine, M. 2016. Black Ash records from the NB DNR Forest Development Survey. New Brunswick Department of Natural Resources.
101	Sabine, D.L. 2005. 2001 Freshwater Mussel Surveys. New Brunswick Dept of Natural Resources & Energy, 590 recs.
100	Boyne, A.W. 2000. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 168 recs.
100	Churchill, J.L. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre, 2318 recs.
97	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
95	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
82	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
78	Beardmore, T. 2017. Wood turtle data: observations May 2017. Nashwaaksis Stream, NB. Natural Resources Canada, 78 records.
77	Robinson, S.L. 2015. 2014 field data.
75	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
75	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
74	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.
72	Blaney, C.S.; Mazerolle, D.M.; Oberndorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
71	Cowie, Faye. 2007. Surveyed Lakes in New Brunswick. Canadian Rivers Institute, 781 recs.
71	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11706 recs.

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69	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
68	Haughian, S.R. 2018. Description of <i>Fuscopannaria leucosticta</i> field work in 2017. New Brunswick Museum, 314 recs.
67	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
67	Honeyman, K. 2019. Unique Areas Database, 2018. J.D. Irving Ltd.
66	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
65	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
63	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larivee, Sambo Zhang (ed.) e-butterfly.org.
61	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
59	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
58	Belliveau, A.G. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
58	MacDougall, A.; Bishop, G.; et al. 1998. 1997 Appalachian Hardwood Field Data. Nature Trust of New Brunswick, 4473 recs.
58	Scott, Fred W. 1998. Updated Status Report on the Cougar (<i>Puma Concolor</i> cougar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
57	Klymko, J. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre.
57	Stewart, J.I. 2010. Peregrine Falcon Surveys in New Brunswick, 2002-09. Canadian Wildlife Service, Sackville, 58 recs.
56	McAlpine, D.F. 1998. NBM Science Collections: Wood Turtle records. New Brunswick Museum, Saint John NB, 329 recs.
55	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
48	Manthorne, A. 2014. MaritimesSwiftwatch Project database 2013-2014. Bird Studies Canada, Sackville NB, 326 recs.
45	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
36	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
36	Spicer, C.D. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 211 recs.
35	Mills, E. Connell Herbarium Specimens, 1957-2009. University New Brunswick, Fredericton. 2012.
34	Doucet, D.A. & Edsall, J.; Brunelle, P.-M. 2007. Miramichi Watershed Rare Odonata Survey. New Brunswick ETF & WTF Report, 1211 recs.
33	Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2009. New Brunswick Dept Natural Resources, 19 recs (14 active).
31	Doucet, D.A. 2008. Fieldwork 2008: Odonata. ACCDC Staff, 625 recs.
27	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
27	Sabine, M. 2016. NB DNR staff incidental Black Ash observations. New Brunswick Department of Natural Resources.
26	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
25	Hinds, H.R. 1999. Connell Herbarium Database. University New Brunswick, Fredericton, 131 recs.
23	Klymko, J.J.D. 2016. 2014 field data. Atlantic Canada Conservation Data Centre.
22	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
22	Sollows, M.C., 2009. NBM Science Collections databases: Coccinellid & Cerambycid Beetles. New Brunswick Museum, Saint John NB, download Feb. 2009, 569 recs.
21	Shortt, R. Connell Herbarium Black Ash specimens. University New Brunswick, Fredericton. 2019.
20	Sabine, M. 2016. Black Ash records from NB DNR permanent forest sampling Plots. New Brunswick Department of Natural Resources, 39 recs.
19	Webster, R.P. Database of R.P. Webster butterfly collection. 2017.
17	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2000.
17	Clayden, S.R. 2012. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 57 recs.
16	Neily, T. H. 2018. Lichen and Bryophyte records, AEI 2017-2018. Tom Neily; Atlantic Canada Conservation Data Centre.
15	Edsall, J. 2001. Lepidopteran records in New Brunswick, 1997-99. , Pers. comm. to K.A. Bredin. 91 recs.
14	Spicer, C.D. 2001. Powerline Corridor Botanical Surveys, Charlotte & Saint John Counties. A M E C International, 1269 recs.
13	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
13	Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, listserv.unb.ca/archives/naturenb. 68 recs.
13	Tingley, S. (compiler). 2001. Butterflies of New Brunswick. , Web site: www.geocities.com/Yosemite/8425/buttrfly. 142 recs.
12	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
11	Klymko, J. Dataset of butterfly records at the New Brunswick Museum not yet accessioned by the museum. Atlantic Canada Conservation Data Centre. 2016.
11	Webster, R.P. 2004. Lepidopteran Records for National Wildlife Areas in New Brunswick. Webster, 1101 recs.
10	Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (<i>Pseudevernia claudonia</i>). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
10	Kennedy, Joseph. 2010. New Brunswick Peregrine records, 2010. New Brunswick Dept Natural Resources, 16 recs (11 active).
10	Nosworthy, J. 2013. Van Brunt's Jacob's-ladder observations along tributary of Dipper Harbour Ck. Nature Conservancy of Canada, 10 recs.
10	Vladimir King Trajkovic. 2018. Brook Floater (<i>Alasmodonta varicosa</i>) records from MREAC surveys 2010-2017. Miramichi River Environmental Assessment Committee.
10	Wisniowski, C. 2018. Optimizing wood turtle conservation in New Brunswick through collaboration, strategic planning, and landowner outreach. Nature Trust of New Brunswick, 10 records.
9	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
9	Speers, L. 2001. Butterflies of Canada database. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 190 recs.
9	Webster, R.P. 2006. Survey for Suitable Salt Marshes for the Maritime Ringlet, New Populations of the Cobblestone Tiger Beetle, & New Localities of Three Rare Butterfly Species. New Brunswick WTF Report, 28 recs.
8	Bateman, M.C. 2000. Waterfowl Brood Surveys Database, 1990-2000
8	Canadian Wildlife Service, Sackville, unpublished data. 149 recs.
8	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
8	Webster, R.P. Atlantic Forestry Centre Insect Collection, Maritimes butterfly records. Natural Resources Canada. 2014.
7	Bredin, K.A. 2001. WTF Project: Freshwater Mussel Fieldwork in Freshwater Species data. Atlantic Canada Conservation Data Center, 101 recs.
7	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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7	Goltz, J.P. 1994. In the Footsteps of Our Ancestors. NB Naturalists, 21 (2-4): 20. 8 recs.
7	Klymko, J.J.D. 2012. Insect fieldwork & submissions, 2003-11. Atlantic Canada Conservation Data Centre. Sackville NB, 1337 recs.
7	McAlpine, D.F. 1983. Status & Conservation of Solution Caves in New Brunswick. New Brunswick Museum, Publications in Natural Science, no. 1, 28pp.
7	Patrick, A.; Horne, D.; Noseworthy, J. et. al. 2017. Field data for Nova Scotia and New Brunswick, 2015 and 2017. Nature Conservancy of Canada.
7	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.
6	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
6	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
6	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
6	Cowie, F. 2007. Electrofishing Population Estimates 1979-98. Canadian Rivers Institute, 2698 recs.
6	Cronin, P. & Ayer, C.; Dubee, B.; Hooper, W.C.; LeBlanc, E.; Madden, A.; Pettigrew, T.; Seymour, P. 1998. Fish Species Management Plans (draft). NB DNRE Internal Report. Fredericton, 164pp.
6	Litvak, M.K. 2001. Shortnose Sturgeon records in four NB rivers. UNB Saint John NB. Pers. comm. to K. Bredin, 6 recs.
6	Marshall, L. 1998. Atlantic Salmon: Southwest New Brunswick outer-Fundy SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-13. 6 recs.
6	Newell, R.E. 2008. Vascular Plants of Muzroll Lake. Pers. comm. to C.S. Blaney, 1 pg. 43 recs.
6	Richardson, D., Anderson, F., Cameron, R., Pepper, C., Clayden, S. 2015. Field Work Report on the Wrinkled Shingle lichen (<i>Pannaria lurida</i>). COSEWIC.
5	Goltz, J.P. 2001. Botany Ramblings April 29-June 30, 2001. N.B. Naturalist, 28 (2): 51-2. 8 recs.
5	Layberry, R.A. 2012. Lepidopteran records for the Maritimes, 1974-2008. Layberry Collection, 1060 recs.
5	NatureServe Canada. 2018. iNaturalist Butterfly Data Export . iNaturalist.org and iNaturalist.ca.
4	Beardmore, T. 2017. 2017 Butternut observations. Natural Resources Canada.
4	Bredin, K.A. 2003. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Centre, 20 recs.
4	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
4	Klymko, J.J.D. 2012. Odonata specimens & observations, 2010. Atlantic Canada Conservation Data Centre, 425 recs.
4	LaPaix, R.W. 2014. Trans-Canada Energy East Pipeline Environmental Assessment, Records from 2013-14. Stantec Consulting, 5 recs.
4	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
4	Richardson, D., Anderson, F., Cameron, R., McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen (<i>Anzia colpodes</i>). COSEWIC.
4	Sabine, D.L. 2011. Dorcas Copper records from 2001 Fieldwork. New Brunswick Dept of Natural Resources, 4 recs.
3	Bishop, G. 2012. Field data from September 2012 Anticosti Aster collection trip. , 135 rec.
3	Bishop, G., Bagnell, B.A. 2004. Site Assessment of Musquash Harbour, Nature Conservancy of Canada Property - Preliminary Botanical Survey. B&B Botanical, 12pp.
3	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
3	Clayden, S.R. 2006. Pseudevernia cladonia records. NB Museum. Pers. comm. to S. Blaney, Dec, 4 recs.
3	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
3	Forbes, G. 2001. Bog Lemming, Phalarope records. NB. , Pers. comm. to K.A. Bredin. 6 recs.
3	Lautenschlager, R.A. 2005. Survey for Species at Risk on the Canadian Forest Service's Acadia Research Forest near Fredericton, New Brunswick. Atlantic Canada Conservation Data Centre, 6. 3 recs.
3	Nash, Vicky. 2018. Hammond River Angling Association Wood Turtle observations. Hammond River Angling Association, 3 recs.
3	Simpson, D. Collection sites for Black Ash seed lots preserved at the National Tree Seed Centre in Fredericton NB. National Tree Seed Centre, Canadian Forest Service. 2016.
3	Toner, M. 2005. Lynx Records 1996-2005. NB Dept of Natural Resources, 48 recs.
2	Anon. 2017. Export of Maritimes Butterfly records. Global Biodiversity Information Facility (GBIF).
2	Bagnell, B.A. 2003. Update to New Brunswick Rare Bryophyte Occurrences. B&B Botanical, Sussex, 5 recs.
2	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
2	Basquill, S.P., Porter, C. 2019. Bryophyte and lichen specimens submitted to the E.C. Smith Herbarium. NS Department of Lands and Forestry.
2	Belliveau, A.G. E.C. Smith Herbarium Specimen Database 2019. E.C. Smith Herbarium, Acadia University. 2019.
2	Blaney, C.S. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre.
2	Boyne, A.W. 2000. Harlequin Duck Surveys. Canadian Wildlife Service, Sackville, unpublished data. 5 recs.
2	Brunelle, P.-M. 2005. Wood Turtle observations. Pers. comm. to S.H. Gerriets, 21 Sep. 3 recs, 3 recs.
2	Clayden, S.R.; Goltz, J.P. 2018. Emails to Sean Blaney on occurrence of <i>Polygonum douglasii</i> at Big Bluff, Kings Co., New Brunswick. pers. comm., 1 record.
2	e-Butterfly. 2018. Selected Maritimes butterfly records from 2016 and 2017. Maxim Larriève, Sambo Zhang (ed.) e-butterfly.org.
2	Edsall, J. 1992. Summer 1992 Report. New Brunswick Bird Info Line, 2 recs.
2	Edsall, J. 1993. Spring 1993 Report. New Brunswick Bird Info Line, 3 recs.
2	Goltz, J. 2017. Harlequin Duck observations. New Brunswick Department of Agriculture, Aquaculture and Fisheries.
2	Goltz, J.P. 2002. Botany Ramblings: 1 July to 30 September, 2002. N.B. Naturalist, 29 (3):84-92. 7 recs.
2	Hay, G.U. 1883. Botany of the Upper St. John. Bulletin of the Natural History Society of New Brunswick, 2:21-31. 2 recs.
2	Hinds, H.R. 1999. A Vascular Plant Survey of the Musquash Estuary in New Brunswick. , 12pp.
2	McIntosh, W. 1904. Supplementary List of the Lepidoptera of New Brunswick. Bulletin of the Natural History Society of New Brunswick, 23: 355-357.
2	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.
2	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
2	Sabine, D.L. 2013. Dwaine Sabine butterfly records, 2009 and earlier.
2	Toner, M. 2001. Lynx Records 1973-2000. NB Dept of Natural Resources, 29 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.
2	Webster, R.P. Email to John Klymko detailing records of butterflies collected by Reggie Webster in June 2017. Webster, R.P. 2017.
1	Amirault, D.L. 1997-2000. Unpublished files. Canadian Wildlife Service, Sackville, 470 recs.

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1	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.
1	Benedict, B. 2006. Argus annotation: <i>Salix pedicellaris</i> . Pers. comm to C.S. Blaney, June 21, 1 rec.
1	Bredin, K.A. 2001. NB Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Center, 16 recs.
1	Brunton, D.F. 2016. Record of <i>Potamogeton vaseyi</i> in Joslin Creek, NB. pers. comm., 1 record.
1	Clayden, S.R. 2003. NS lichen ranks, locations. Pers. comm to C.S. Blaney. 1p, 5 recs, 5 recs.
1	Clayden, S.R. 2007. NBM Science Collections. Pers. comm. to D. Mazerolle, 1 rec.
1	Dadswell, M.J. 1979. Status Report on Shortnose Sturgeon (<i>Acipenser brevirostrum</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 15 pp.
1	DeMerchant, A. 2019. Bank Swallow colony observation. NB Department of Energy and Resource Development, Pers. comm. to J.L. Churchill.
1	Dept of Fisheries & Oceans. 1999. Status of Wild Striped Bass, & Interaction between Wild & Cultured Striped Bass in the Maritime Provinces. , Science Stock Status Report D3-22. 13 recs.
1	Doucet, D.A. & Edsall, J. 2007. <i>Ophiogomphus howei</i> records. Atlantic Canada Conservation Data Centre, Sackville NB, 21 recs.
1	Edsall, J. 1993. Summer 1993 Report. New Brunswick Bird Info Line, 2 recs.
1	Goltz, J.P. 2016. Email to Sean Blaney re: discovery of <i>Carex waponahkikensis</i> at Campobello Island. pers. comm., 1 record.
1	Hicklin, P.W. 1990. Shorebird Concentration Sites (unpubl. data). Canadian Wildlife Service, Sackville, 296 sites, 30 spp.
1	Hinds, H.R. 2000. Flora of New Brunswick (2nd Ed.). University New Brunswick, 694 pp.
1	Holder, M. & Kingsley, A.L. 2000. Peatland Insects in NB & NS: Results of surveys in 10 bogs during summer 2000. Atlantic Canada Conservation Data Centre, Sackville, 118 recs.
1	Jessop, B. 2004. <i>Acipenser oxyrinchus</i> locations. Dept of Fisheries & Oceans, Atlantic Region, Pers. comm. to K. Bredin. 1 rec.
1	Jolicoeur, G. 2008. <i>Anticosti Aster</i> at Chapel Bar, St John River. QC DOE? Pers. comm. to D.M. Mazerolle, 1 rec.
1	Klymko, J. 2019. Maritimes Hemiptera records harvested from iNaturalist . iNaturalist.
1	Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
1	Lovit, M. 2015. Rare Passamaquoddy Flora of Grand Manan. New Brunswick Museum, Florence M. Christie Grant in Botany, 32 pp.
1	Maass, W.S.G. & Yetman, D. 2002. Assessment and status report on the boreal felt lichen (<i>Erioderma pedicellatum</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 1 rec.
1	MacFarlane, Wayne. 2018. Skunk Cabbage observation on Long Island, Kings Co. NB. Pers. comm., 1 records.
1	MacKinnon, D.S. 2013. Email report of Peregrine Falcon nest E of St. Martins NB. NS Department of Environment and Labour, 1 record.
1	Madden, A. 1998. Wood Turtle records in northern NB. New Brunswick Dept of Natural Resources & Energy, Campbellton, Pers. comm. to S.H. Gerriets. 16 recs.
1	McAlpine, D.F. & Cox, S.L., McCabe, D.A., Schnare, J.-L. 2004. Occurrence of the Long-tailed Shrew (<i>Sorex dispar</i>) in the Nerepis Hills NB. Northeastern Naturalist, vol 11 (4) 383-386. 1 rec.
1	NatureServe Canada. 2018. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
1	Norton, Barb. 2010. Personal communication concerning <i>Botrychium oneidense</i> near Ayers Lake, NB. , One record.
1	Ogden, K. Nova Scotia Museum butterfly specimen database. Nova Scotia Museum. 2017.
1	Poirier, Nelson. 2012. <i>Geranium robertianum</i> record for NB. Pers. comm. to S. Blaney, Sep. 6, 1 rec.
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: Whittaker Lake & Marysville NB. Pers. comm. to C.S. Blaney, 2pp, 4 recs.
1	Sabine, D.L. 2012. Bronze Copper records, 2003-06. New Brunswick Dept of Natural Resources, 5 recs.
1	Singleton, J. 2004. <i>Primula mistassinica</i> record for Nashwaak NB. 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. 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.
1	Toner, M. 2011. Wood Turtle sighting. NB Dept of Natural Resources. Pers. com. to S. Gerriets, Sep 2, photo, 1 rec.
1	Torenvliet, Ed. 2010. Wood Turtle roadkill. NB Dept of Transport. Pers. com. to R. Lautenschlager, Aug. 20, photos, 1 rec.
1	Webster, R.P. Reggie Webster's records of <i>Encyclops caerulea</i> . pers. collection. 2018.

Appendix C

Species Lists

Table C.1: Flora Priority Species within 5 km of the Fredericton Junction Water Supply Project (NBDELG EIA file #4516-03-1496)

Scientific Name	Common Name	COSEWIC	SARA	Provincial Legal Protection (NB SARA)	Prov Rarity Rank	Preferred Habitat	Likelihood of Presence
<i>Palatanthera flava var. herbiola</i>	Pale Green orchid	---	---	S1	2 May Be At Risk	Anthropogenic, forest edges, forests, grassland, meadows and fields, riverine, swamps, wetland margins, woodlands	Low
<i>Sceptridium oneidense</i>	Blunt-lobed Moonwort	---	---	S1	2 May Be At Risk	Forest, swamps, wetland margins	Low
<i>Polygaloides paucifolia</i>	Fringed Moonwort	---	---	S2	3 Sensitive	Forest, meadows and fields, woodlands	Low
<i>Persicaria amphibia var. emersa</i>	Long-root Smartweed	---	---	S2	3 Sensitive	Anthropogenic, marshes, shores of rivers or lakes, swamps, wetland margins	Low
<i>Persicaria careyi</i>	Carey's Smartweed	---	---	S2	3 Sensitive	Anthropogenic, meadows and fields, shores of rivers or lakes	Low
<i>Podostemum ceratophyllum</i>	Horn-leaved Riverweed	---	---	S2	3 Sensitive	Riverine, shores of rivers or lakes	Low
<i>Carex adusta</i>	Lesser brown Sedge	---	---	S2S3	4 Secure	Anthropogenic, woodlands	Low
<i>Lobelia cardinalis</i>	Cardinal Flower	---	---	S3	4 Secure	Marshes, shores of rivers or lakes, wetland margins	Low
<i>Ceratophyllum echinatum</i>	Prickly Hornwort	---	---	S3	3 Sensitive	Lacustrine, riverine	Low
<i>Salix nigra</i>	Black Willow	---	---	S3	3 Sensitive	Floodplain, shores of rivers or lakes, swamps	Medium due to presence of preferential habitat (shoreline) and difficulty with field identification of willow sp.
<i>Salix pedicellaris</i>	Bog Willow	---	---	S3	4 Secure	Fens, shores of rivers or lakes, swamps	Low
<i>Carex arcta</i>	Northern Clustered Sedge	---	---	S3	4 Secure	Forest, shores of rivers, or lakes	Low
<i>Carex haydenii</i>	Hayden's Sedge	---	---	S3	4 Secure	Marshes, meadows and fields, shores of rivers or lakes	Medium due to presence of preferential habitat (shoreline).
<i>Carex tuckermanii</i>	Tuckerman's Sedge	---	---	S3	4 Secure	Floodplain, shores of rivers or lakes, swamps	Low
<i>Cyperus dentatus</i>	Toothed Flatsedge	---	---	S3	4 Secure	Shores of rivers or lakes, wetland margins	Low
<i>Rhynchospora capitellata</i>	Small-headed Beakrush	---	---	S3	4 Secure	Anthropogenic, meadows and fields, shores of rivers or lakes	Low
<i>Schoenoplectus torreyi</i>	Torrey's Bulrush	---	---	S3	4 Secure	Lacustrine, marshes, riverine	Low

Table C. 1: Flora Priority Species within 5 km of the Fredericton Junction Water Supply Project (NBDELG EIA file #4516-03-1496)

Scientific Name	Common Name	COSEWIC	SARA	Provincial Legal Protection (NB SARA)	Prov Rarity Rank	Preferred Habitat	Likelihood of Presence
<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid	---	---	S3	3 Sensitive	Anthropogenic, bogs, forests, meadows and fields, swamps, wetland margins	Low
<i>Sceptridium dissectum</i>	Dissected Moonwort	---	---	S3	4 Secure	Forest edges, forests, meadows and fields	Low

Table C. 2: Fauna Priority Species within 5 km of the Fredericton Junction Water Supply Project (NBDELG EIA file #4516-03-1496)

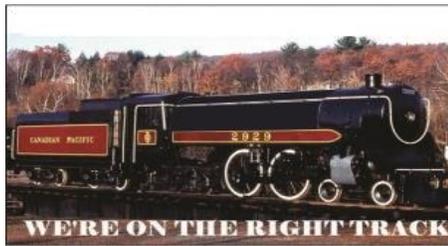
Scientific Name	Common Name	COSEWIC	SARA	Provincial Legal Protection (NB SARA)	Prov Rarity Rank	Prov GS Rank	Preferred Habitat	Likelihood of Presence
<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B, S3M	3 Sensitive	Open meadows and hayfields, marshes	Medium due to preferential habitat located 15 m east of the PDA.
<i>Progne subis</i>	Purple Martin	---	---	---	S1B, S1M	2 May Be At Risk	Towns, farms, semi-open country near water	Medium due to preferential habitat located immediately around PDA.
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	---	---	---	S2S3B, S2S3M	3 Sensitive	Open to semi-open land, farms, cliffs, river bluffs, lakes	Medium due to preferential habitat located immediately around PDA.
<i>Loxia curvirostra</i>	Red Crossbill	---	---	---	S3	4 Secure	Conifer forests and groves	Low
<i>Tyrannus tyrannus</i>	Eastern Kingbird	---	---	---	S3S4B, S2S3M	3 Sensitive	Wood edges, river groves, farms, shelterbelts, orchards, roadsides	Medium due to preferential habitat located immediately around PDA.

Table C. 3: Invertebrate Priority Species within 5 km of the Fredericton Junction Water Supply Project (NBDELG EIA file #4516-03-1496)

Scientific Name	Common Name	COSEWIC	SARA	Provincial Legal Protection (NB SARA)	Prov Rarity Rank	Prov GS Rank	Preferred Habitat	Likelihood of Presence
Lampsilis cariosa	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	Saint John River near Fredericton	Low
Strymon melinus	Grey Hairstreak	---	---	---	S2	4 Secure	Open, nonforested sites, common in disturbed, weedy areas	Medium due to presence of preferential habitat (disturbed weedy areas).
Boloria bellona	Meadow Fritillary	---	---	---	S3	4 Secure	Meadows, roadsides, forest clearings and bogs	Medium due to presence of preferential habitat (clearing/roadside).
Gomphus abbreviatus	Spine-crown Clubtail	---	---	---	S3	4 Secure	Sunny, clean, wide, swift, rock streams w/boulders	Low
Alasmidonta undulata	Triangle Floater	---	---	---	S3	3 Sensitive	Streams, rivers, and lakes	Low

Appendix D

Public and First Nation Consultation Documents



VILLAGE OF FREDERICTON JUNCTION

102 Wilsey Road
Fredericton Junction, N.B. E5L 1W7
Telephone: 506-368-2628
Fax: 506-368-1900
www.frederictonjunction.ca
fredjct@nb.aibn.com

February 26, 2020

Attention: Village of Fredericton Junction Resident

Re: Notification of New Potable Water Supply for the Village of Fredericton Junction, Sunbury County, New Brunswick

Dear Resident,

The Village of Fredericton Junction (“the Village”) has been undertaking a water exploration program to identify a new viable alternative source of drinking water since 2018 (refer to drill exploration locations identified on **Figure 1**). Following this extensive groundwater exploration program, the Village has identified a viable water source to support the main production well (i.e., New Production Well on **Figure 1**). To commission and connect the new production well to the existing water supply distribution system within the Village, the following activities will be conducted:

- A new well house will be constructed (including new slab foundation) to provide treatment equipment storage, work space and washroom facilities. Based on current conceptual design, the well house may be 6 m by 6 m in size.
 - Landworks will be completed around the new well house (i.e., grading around building and finishing of small area for parking of service vehicles). A fence will be installed around the new production well.
 - Excavation and/or trenching will be completed to install new piping that connects the new production well to the existing water distribution system for the Village, as well as for the new foundation (i.e., approximately 300 square meters of excavation in total will be completed onsite).
 - A new sanitary sewer line for the well house will be installed and connected to existing sewer infrastructure.
 - Old infrastructure currently onsite (i.e., former well houses and Well 1) will be decommissioned and materials will be removed from the site.
 - Based on the current conceptual design, some work (i.e., construction of new well house) will take place within 30 m of the North Branch of the Oromocto River. Therefore, a Watercourse and Wetland Alteration (WAWA) Permit will be obtained from the Province of New Brunswick.
 - An Environmental Protection Plan outlining mitigation and protective measures will be completed and implemented during the project.
-

- The project site is considered to be within a high potential area for archaeological resources based on its location adjacent to the North Branch Oromocto River, and furthermore, it is understood that this waterway may have been utilized by the Wolastoqey Nation. Therefore, a licensed archaeologist will be present onsite to monitor excavation/trenching (i.e., slab foundation and piping) activities in case of accidental discovery of an archaeological resource.

Following review of the Project and approval by the New Brunswick Department of Environment and Local Government (NBDELG), this Project will take place over the 2020 construction season with an anticipated construction start date prior to the end of May 2020. The construction period is estimated at 12-16 weeks.

Consistent with the process outlined in the WSSA and Environmental Impact Assessment guidelines, an addendum to the original EIA (Dillon 2018) document describing the program is required to outline the activities listed above. In the coming weeks, the addendum document will be available for review on the NBDELG website (https://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/registrations.html). The original EIA document can be found on the NBDELG website (http://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/registrations/2018.html) by clicking on the link identified as 'Village of Fredericton Junction'.

An open house is planned for March 10, 2020 at the Royal Canadian Legion Branch 55 (159 Sunbury Drive) where members of the Project team will be available to answer questions about the Project. Additionally, should you wish to receive a copy of the addendum of the EIA document, or have any questions regarding the Project in the interim, please contact the Village office (Tel: 506.368.2628), or the undersigned.

Sincerely,



Cindy Ogden
Chief Administration Officer
Village of Fredericton Junction
102 Wilsey Road
Fredericton Junction, NB
E3B 3H4
506-368-2628
fredjct@nb.aibn.com



Alison Smith, B.Sc. ENR
EIA Coordinator
Dillon Consulting Limited
1149 Smythe Street, Suite 200
Fredericton, NB
E3B 3H4
506.444.8820
asmith@dillon.ca

References:

Dillon (Dillon Consulting Limited). 2018. Village of Fredericton Junction Environmental Impact Assessment Registration (Final), Groundwater Exploration Program



**VILLAGE OF
FREDERICTON JUNCTION**
ENVIRONMENTAL IMPACT ASSESSMENT

SITE LOCATION
FIGURE 1

- New Production Well
- Former Production Well
- Production Wells
- Test Well Locations
- Local Street
- Highway



MAP DRAWING INFORMATION:
DATA PROVIDED BY GEONB

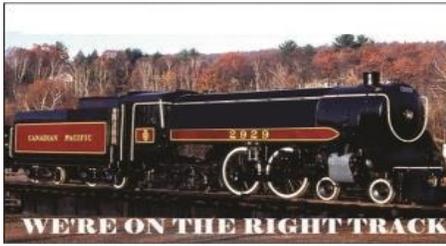
MAP CREATED BY: KE
MAP CHECKED BY: JH
MAP PROJECTION: NAD 1983 CSRS NEW BRUNSWICK STEREOGRAPHIC



PROJECT: 18-7534
STATUS: FINAL
DATE: 2020-02-25

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

FILE LOCATION: \\54DILLON\DATA\PROJECTS\PROJECTS\187534_FRED_JUNCTION_EIA_UPDATE\DATA_MAPS\MXD\FIG1_FRED_JUNCT_WSSA_20200210.MXD



VILLAGE OF FREDERICTON JUNCTION

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February 26, 2020

Kingsclear First Nation

77 French Village Road
Kingsclear First Nation, NB
E3E 1K3

Attention: Chief Gabriel Atwin (gabrielatwin@kingsclear.ca)

Re: Notification of New Potable Water Supply for the Village of Fredericton Junction, Sunbury County, New Brunswick

The Village of Fredericton Junction (“the Village”) currently has one operational potable water supply well (“production well”) and one back-up well serving their community. Water quality concerns have previously been identified due to outdated and unsound construction of the current back-up well (i.e., Well 1 depicted on **Figure 1**). The main production well has been operating at or near its permitted capacity since 2018. Ongoing long term use of the main production well without a reliable back-up supply may stress the sustainable yield of the main production well, resulting in a longer term risk to the Village’s drinking water supply. Therefore, the Village initiated a water exploration program to identify alternative sources of drinking water in 2018 (i.e., exploration locations pursued are identified on **Figure 1**).

Following the groundwater exploration program, the Village has identified a viable water supply to support the main production well (i.e., New Production Well on **Figure 1**), as well as provide redundancy in the event of unforeseen circumstances which may render the main production well inoperable. The New Production Well is located on a property owned by the Village of Fredericton Junction that is used for Well 1, adjacent to the Northwest Branch of the Oromocto River. Old infrastructure (i.e., old well houses) is currently present on the property. To commission the new back-up production well to the existing water supply distribution system within the Village, the following activities will be conducted:

- A new well house will be constructed (including new slab foundation) to provide treatment equipment storage, work space and washroom facilities. Based on current conceptual design, the well house may be 6 m by 6 m in size.

- Landworks will be completed around the new well house (i.e., grading around building and finishing of small area for parking of service vehicles). A fence will be installed around the new production well.
- Excavation and/or trenching will be completed to install new piping that connects the new production well to the existing water distribution system for the Village, as well as for the new foundation (i.e., approximately 300 square meters of excavation in total will be completed onsite).
- A new sanitary sewer line for the well house will be installed and connected to existing sewer infrastructure.
- Old infrastructure currently onsite (i.e., former well houses and Well 1) will be decommissioned and materials will be removed from the site.
- Based on the current conceptual design, some work (i.e., construction of new well house) will take place within 30 m of the North Branch of the Oromocto River. Therefore, a Watercourse and Wetland Alteration (WAWA) Permit will be obtained from the Province of New Brunswick.
- An Environmental Protection Plan outlining mitigation and protective measures will be completed and implemented during the project.
- The project site is considered to be within a high potential area for archaeological resources based on its location adjacent to the North Branch Oromocto River, and furthermore, it is understood that this waterway may have been utilized by the Wolastoqey Nation. Therefore, a licensed archaeologist will be present onsite to monitor excavation/trenching (i.e., slab foundation and piping) activities in case of accidental discovery of an archaeological resource.
- First Nations will be notified immediately should an accidental discovery of an archeological resource be deemed as potentially being a precontact artifact by a licensed archaeologist.

Following review of the Project and approval by the New Brunswick Department of Environment and Local Government (NBDELG), this Project will take place over the 2020 construction season with an anticipated construction start date prior to the end of May 2020. The construction period is estimated at 12-16 weeks.

Consistent with the process outlined in the WSSA and Environmental Impact Assessment guidelines, an addendum to the original EIA (Dillon 2018) document describing the program is required to outline the activities listed above. In the coming weeks, the addendum document will be available for review on the NBDELG website (https://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/registrations.html). The original EIA document can be found on the NBDELG website (http://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/registrations/2018.html) by clicking [on](#) the link identified as ‘Village of Fredericton Junction’.

Should you wish to receive a copy of the addendum to the EIA document, or have any questions regarding the project, please contact the undersigned at your convenience.

Sincerely,



Cindy Ogden
Chief Administration Officer
Village of Fredericton Junction
102 Wilsey Road
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cc: Keyaira Gruben, Consultation Coordinator (keyairagruben@kingsclear.ca)
Shyla O'Donnel, Consultation Director (Shyla.odonnell@wolastoqey.ca)
Gordon Grey, Ecologist/Consultation Coordinator (Gordon.grey@wolastoqey.ca)

References:

Dillon (Dillon Consulting Limited). 2018. Village of Fredericton Junction Environmental Impact Assessment Registration (Final), Groundwater Exploration Program



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FREDERICTON JUNCTION**
ENVIRONMENTAL IMPACT ASSESSMENT

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