Environmental Impact Assessment

St. George Groundwater Supply Exploration

Municipality of Eastern Charlotte
Registration Document

CBCL

212918.00 • February 2024

02	Final Revision 1	L. Hardwick	14-Feb-2024	C. Dubreuil
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Rev.	Issue	Reviewed By:	Date	Issued By:

Project No. 212918.00

February 14, 2024

Crystale Harty, Director
Environmental Impact Assessment Branch
New Brunswick Department of Environment and Local Government
Email: crystale.harty@gnb.ca

RE: *St. George Groundwater Supply Exploration Project, Eastern Charlotte, New Brunswick*

CBCL Limited is pleased to submit the following Environmental Impact Assessment Registration Document for the above-noted undertaking on behalf of the Municipality of Eastern Charlotte.

Please note, in October 2023, CBCL submitted a Registration Document to NBDELG for this project with two potential well sites described. Since that time, one of the property owners has changed their minds on the possibility of developing a municipal well on their land. As such, the following document has been updated to reflect one potential well site. Within this document, we have also addressed the TRC Comments received on November 16th, 2023.

Also, this document is intended to replace all other reports that have been previously submitted to NBDELG regarding this file. The WSSA information for the potential well site is included herein. The other sites previously reviewed are no longer being considered.

Yours very truly,

CBCL LIMITED

Amy Winchester

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Project No.: 212918.00

Executive Summary

The Municipality of Eastern Charlotte, New Brunswick (NB), is seeking to expand its existing St. George groundwater supply system. The intent of the expansion is to use an additional aquifer that is separate in hydrogeological and hydrological terms from the current source of municipal water – Magaguadavic and Lake Utopia aquifers. The hydrogeological exploration (the Project) will require geotechnical drilling to determine the thickness and composition of granular deposits and may entail pump tests of 500 cubic metres per day (m^3/d). The Project is therefore subject to a provincial Environmental Impact Assessment (EIA) pursuant to Schedule A of the EIA Regulation (87-83) of the *Clean Environment Act*, where projects involving the extraction of water at a rate of more than 50 m^3/d require EIA registration.

This Registration Document has been prepared to serve as both the EIA and a Step 2 Water Supply Source Assessment (WSSA) Process review as per the NB Sector-Specific EIA Guidelines for Waterworks and Water Supply projects for the NB Department of Environment and Local Government (NBDELG). This document herein replaces all other reports previously submitted to NBDELG regarding this file.

Desktop study and an ecological field investigation were used to characterise components of the existing environment of a proposed borehole target location within a radius of 10 metres (m) (the Site). Valued components (VCs) that may be affected by the Project were identified through issues scoping and pathway analysis:

- Geology and Soils
- Surface Water
- Groundwater
- Acoustic Environment
- Vegetation
- Wildlife and Migratory Birds
- Land Use
- Archaeological and Heritage Resources

Given the Project's limited level of activity for Step 2 WSSA exploration and readily accessible drilling location, few residual environmental effects have been identified. There are no provincially mapped or field-identified watercourses nor wetlands within 30 m of the Site. Given adherence to the mitigation measures as outlined for the VCs, significant adverse environmental effects are not anticipated.

Contents

Appendices

List of Tables

List of Figures

List of Acronyms

°C	degrees Celsius
AC CDC	Atlantic Canada Conservation Data Centre
AO	Aesthetic objective
CBCL	CBCL Limited
CCNB	Conservation Council of New Brunswick
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
ECCC	Environment and Climate Change Canada
E. coli	*Escherichia coli*
ECW	Eastern Charlotte Waterways
EIA	Environmental Impact Assessment
ESA	Environmentally Significant Area
GIS	Geographic information system
igpm	Imperial gallons per minute
km	Kilometre
km^2	Square kilometre
L/m	Litres per minute
m	Metre
m^3/d	Cubic metres per day
MAC	Maximum acceptable concentration
MBBA	Maritimes Breeding Bird Atlas
MBCA	*Migratory Birds Convention Act, 1994*
NB	New Brunswick
NBDELG	NB Department of Environment and Local Government
NBDNRED	NB Department of Natural Resources and Energy Development
OG	Operational guideline
OWLS	Online Well Log System
PID	Property identification
POL	Petroleum, oil, and lubricant
SAR	Species at risk
SARA	*Species at Risk Act*
SNB	Service New Brunswick
SoCC	Species of Conservation Concern
TSS	Total suspended solids
VC	Valued component
VOC	Volatile organic compound
WSSA	Water Supply Source Assessment
WWTP	Wastewater treatment plant

1 The Proponent

This Registration Document has been prepared by CBCL Limited (CBCL), on behalf of the Municipality of Eastern Charlotte, to serve as both the Environmental Impact Assessment (EIA) and Water Supply Source Assessment (WSSA) review processes as per the New Brunswick (NB) Sector-Specific EIA Guidelines for Waterworks and Water Supply projects. Details on the proponent and property ownership are provided below. The property containing the exploratory well is privately owned. Municipal staff have been in contact with the landowner and are in the process of getting written consent. Written consent will be obtained from landowner prior to initiating activities.

Project Name:	St. George Groundwater Supply Exploration
Project Location:	Eastern Charlotte, NB
Proponent:	Municipality of Eastern Charlotte 1 School Street St. George, NB E5C 3N2
Principal Proponent Contact:	Jason Gaudet Chief Administrative Officer Eastern Charlotte Email: jason.gaudet@easterncharlotte.ca
Principal Consultant Contact:	Amy Winchester, M.A.Sc., P.Eng. Senior Chemical Engineer, CBCL Limited CenterBeam Place 14 King Street, Suite 420 PO Box 20040 Saint John, NB E2L 1G2 Telephone: (506) 633 6650 Email: amyw@cbcl.ca
Property Identification Number (PID):	15197007

2 Project Description

2.1 Project Overview

The St. George Groundwater Supply Exploration Project (the Project) is considered Step 2 (Field Studies) of the WSSA process to verify the thickness and composition of granular deposits whose presence is indicated by NB provincial geology mapping. The Project activities will be limited to geotechnical exploration, test well construction, aquifer testing, evaluation of source water quality, and sustainable pumping rates at 500 cubic metres per day (m^3/d). An area with a radius of 10 metres (m) (the Site) has been proposed for Project activities. The Site is accessible via an existing road and across open field, requiring no clearing for the mobile equipment (drill rig) to reach the target borehole location.

The Project is subject to a provincial EIA pursuant to Schedule A of the EIA Regulation (87-83) of the *Clean Environment Act*, where projects involving the extraction of water at a rate of more than 50 m^3/d require EIA registration for review by the NB Department of Environment and Local Government (NBDELG). The primary regulators relevant to the scope of this Project are outlined in Table 2.1.

Table 2.1 Regulatory Considerations for the Project

Legislation	Responsible Authority	Relevance to EIA
Provincial		
Clean Environment Act		
• EIA Regulation	NBDELG	Process for submission and review of the EIA
Clean Water Act		
• Potable Water Regulation	NBDELG	Provides guidelines for health-based water quality parameters adopted from those of Health Canada
• Water Well Regulation	NBDELG	Specifies minimum set-back distances from infrastructure, mandatory well water testing, and decommissioning

Legislation	Responsible Authority	Relevance to EIA
• Watershed Protected Area Designation Order	NBDELG	Watersheds currently used as sources of public water supply systems listed under Schedule A have been designated as protected
Species at Risk Act (NB SARA)	NBDNRED	Lists provincially-protected species and those for whom it is illegal to "wilfully or knowingly" harm or disturb their critical habitat
Federal		
Migratory Birds Convention Act, 1994 (MBCA)	Environment and Climate Change Canada (ECCC) – Canadian Wildlife Service (CWS)	Section 5 of the Migratory Birds Regulations, 2022, prohibits harming or harassing migratory birds, taking or harming their eggs, and damaging or disturbing a migratory bird's nest without a permit unless the nest is vacant. There are 18 migratory bird species for which a notification to ECCC is required before a nest can be removed; this notification is required 24 to 36 months prior to removal (the length of time for notification is dependent on the species)
Species at Risk Act (SARA)	ECCC	It is an offence to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of a species listed as Endangered, Threatened or Extirpated in Schedule 1 of the SARA on federal lands without a SARA permit. Outside of federal lands, these prohibitions apply only to aquatic and migratory bird SAR

2.2 Purpose of the Project

The Project proposed is part of an adaptive measure to mitigate the effects of climate change on municipal infrastructure. An additional groundwater source is needed to augment and improve the current supply system for the St. George municipal water services. The existing network of production wells is adequate to supply the existing municipal water demand, but due to limited well performance and anticipated increased demand from commercial and industrial customers, the Municipality of Eastern Charlotte is

seeking to improve redundancy and investigate the potential for improved capacity under the current Approval to Operate.

The existing wells are relatively shallow and the water table is only a few metres above the pumps in the Lake Utopia zone. The community's primary industrial client has been increasing their demand, resulting in a strain on water supply. In combination with low lake levels, the water level in the existing wells and recharge rates have been low. Should there be no exploration and development of an additional aquifer, the municipality will need to limit future expansion of local infrastructure.

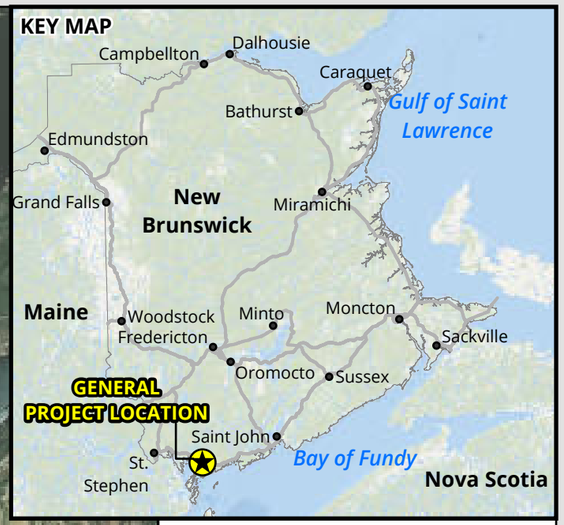
2.3 Project Location

The Project is located in Caithness, opposite the Magaguadavic River from the urban centre of St. George (Figure 2.1). A 10 m radius Site has been assessed that will contain the target location for exploratory drilling. The Site is located on a privately-owned property (PID 15197007) directly accessible from Mascarene Road (Figure 2.2), set-back approximately 30 m from the road's right-of-way.

2.4 Siting Considerations

Site selection for the test well was based on conceptual modeling, which incorporates information from the area geology, hydrography, topography, well water records, aquifer thicknesses, and hydraulic conductivity data as well as Site reconnaissance. Geospatial mapping techniques were used to delineate sub-watersheds, which were further evaluated in the context of the underlying geologic material. The urban centre of St. George is located approximately 800 m north of the Magaguadavic Basin; an area that is hydrologically separated from the proposed Project.

The conceptual model indicated zones that would maximize the depth of the target aquifer, minimize interference with existing wells, maximize potentially favourable groundwater gradients, and optimize well yield while seeking to minimize the costs of new transmission infrastructure.



LEGEND

Exploratory Well Site

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

General Project Location

DATE: 20/12/2023	PROJ N°: 212918	FIGURE: **2.1**
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

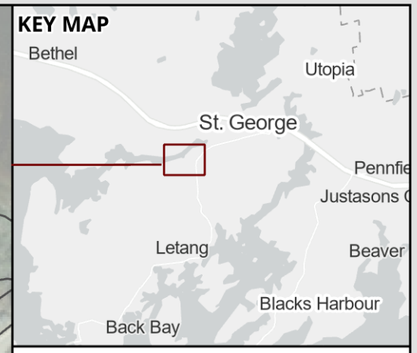
NOTES:

0 390 780 1,560 m

Coordinate System: NAD 1983 CSRS UTM Zone 19N
Units: Meter

Document Path: \\cbcl\anvcbl\Saint John\Data\PROJECTS\2021\212918.00 ST. GEORGE WELL EXPLORATION\04 CAD\08 GIS\PRO\212918 StGeorge_WaterSupplyExploration.aprx - sorourke - 20/Dec/2023

KEY MAP



LEGEND

- Exploratory Well Site
- Project Property
- Provincial Land Parcels
- Quarry
- Wastewater Treatment Plant

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Project Property

DATE: 09/01/2024	PROJ N°: 212918	FIGURE: **2.2**
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

NOTES:

0 65 130 260 m

SCALE:1:5,000 @ 11 X 17

Coordinate System: NAD 1983 UTM Zone 19N
Units: Meter

As part of preliminary Project design, a desktop review of the Site identified no land uses of concern or direct threats to groundwater quality in areas within 500 m of the subject property. Potential constraints to well development include the local wastewater treatment plant (WWTP), approximately 600 m northeast of the Site. The proposed exploratory activity will aid risk assessment associated with this land use should a significant aquifer be confirmed.

2.5 Project Components

The Project is scheduled to occur in the spring of 2024 with analysis and reporting to be completed in summer 2024. The Site comprises a 10 m radius around the target drilling location. Three events for onsite activities are involved.

2.5.1 Geotechnical Exploration

Initial field activities will focus on identifying aquifer material, including accessible data on the thickness and extent of the deposit, and the collection of a preliminary water quality sample. A compact, track-mounted geotechnical drill rig (example shown on cover) will drill a borehole with a diameter of 51 millimetres (mm) and a maximum depth of approximately 24 m. This activity will be completed within one day. The sample collected will be delivered to a certified laboratory for the analysis of general chemistry and trace metals in potable water, and possibly volatile organic compounds (VOCs). Pending the results of this initial exploration work, a broader program will be implemented to provide the information required for a WSSA, including test well construction, aquifer testing, evaluation of source water quality, and sustainable pumping rates.

2.5.2 Test Well Drilling

Should a viable aquifer be located through geotechnical drilling, CBCL will subcontract a licensed well driller to complete a test well with a diameter of 152 mm. The test well will be drilled using a truck-mounted water well rotary drilling rig. Typical drill rigs incorporate two large diesel compressors and a drilling mast 6 m in height. A second large support truck will be equipped with a small boom, steel casing, and extra 6 m length drilling rods. CBCL will document the borehole lithology and the airlift yield encountered as drilling proceeds. Where conditions permit, the test well will be completed as a fully cased well, slotted with a down-hole perforator over the productive zone of the aquifer. If the slotted well is not viable, work may proceed directly to installation of a screened well. This activity entails approximately 2 to 3 days.

2.5.3 Step-Tests

A step-drawdown test will be completed following adequate development (minimum two hours) and recovery of the test well. Pumping will be accomplished using a temporary pump installed with a small mast, powered by a temporary diesel generator stored approximately 6 m from the well head. Other vehicles on site during the test will include a

small support truck and camp trailer. Initial test rates will be based on the results of airlift testing. It is anticipated that the test will consist of four 1-hour steps with the following approximate pumping rates, subject to the capacity of the well and pump: 90 litres per minute (L/min) (20 imperial gallons per minute (igpm)), 182 L/min (40 igpm), 273 L/min (60 igpm), and 364 L/min (80 igpm). Physical parameters of the discharged water will be monitored in situ using a handheld probe, and a water quality sample will be collected at the end of the final step and submitted to a certified laboratory for general chemistry and trace metals analysis. The pump installer / driller will be required to keep a record of the pumping rate, measured at regular intervals using a totalizing flow meter. Water will either be discharged to a nearby ditch / drainage feature or dispersed evenly over the surrounding ground. The well will be allowed to recover overnight before the initiation of a 72-hour test.

2.5.4 Constant Rate Test

Should step testing results be favourable, a 24-hour constant-rate test will then be completed. CBCL will provide onsite observation of the beginning and end of the constant rate test and it will be coordinated with the pumping contractor to ensure that adequate data is collected throughout the remainder of the test. Pumping will be accomplished using a temporary pump installed with a small mast, powered by a temporary diesel generator stored approximately 6 m from the well head. Other vehicles on site during the test will include a small support truck and camp trailer. Water levels will be measured at 5-minute intervals using automated sensors installed in the test well and in two monitoring wells. It is anticipated that the monitoring wells will be installed as a part of geotechnical work.

Manually-measured water levels will supplement automated data collection. The pump installer / driller will be required to maintain a record of the pumping rate, measured at regular intervals using an inline totalizing flow meter. Water quality samples will be collected after 1-hour, 12-hour, and 24-hour periods for the laboratory analysis of general chemistry and trace metals as well as total coliform and *Escherichia coli* (*E. coli*.). CBCL will monitor the quality of discharged water using an in situ probe. All data will be collected in accordance with NBDELG requirements for WSSA.

2.5.5 Production Well

If the test well results are favourable, a stainless-steel wire-wrapped screen will be manufactured according to the conditions encountered, and a 203 mm diameter production well will be installed near the test well. The production well will be drilled using a truck-mounted water well rotary drilling rig. Typical drill rigs incorporate two large diesel compressors and a drilling mast 6 m in height. A second large support truck will be equipped with a small boom, steel casing, and extra 6 m length drilling rods. CBCL will observe and log the well installation to ensure that well construction meets with the NB Well Regulations and the requirements of a municipal system. Step-drawdown and constant rate tests will be completed on the production well using the same method as described in Sections 2.5.3 and 2.5.4. The constant-rate test of the production well will be

conducted for 72 hours, with sample collection at 1-hour, 48-hour, and 72-hour periods. The sample collected after 72 hours will be analyzed for VOCs in addition to general chemistry and trace metals.

CBCL will analyze all pumping, water level, and water quality data to provide an assessment of the well yield, safe pumping rate, well interference, and considerations for commissioning and treatment.

2.6 Project Decommissioning

The decommissioning of boreholes and wells will be completed as per the NB Guidelines for the Decommissioning (abandonment) of Groundwater Wells and Boreholes (NBDELG, 2021) by a licensed water well contractor who holds a valid NB Water Well Contractors Permit.

2.7 Studies Related to the Undertaking

2.7.1 Hydrogeological Feasibility Studies

CBCL concluded a program for wellfield development for the St. George municipal services system in April 2020 following feasibility study work from 2013 to 2017. Two new production wells were installed in the confined sand and gravel aquifer adjacent to the Magaguadavic River. The system now has capacity to draw potable water from five locations within two wellfields:

- Two new wells and one existing well in the Magaguadavic aquifer (a buried outwash aquifer); a confined valley deposit of sand and gravel associated with the Magaguadavic River, running from north to south.
- Two existing wells in the Lake Utopia aquifer; an unconfined valley deposit of sand and gravel, running westerly from Lake Utopia to the outlet of the Magaguadavic River.

Borehole logs and those of private wells in the St. George area have indicated that the thickness of both aquifers currently being sourced may reach up to 30 m in places. The Lake Utopia aquifer is bounded to the south by a bedrock ridge that is overlain in places by significant thicknesses of sandy kame or till material. The depositional environment suggests that each aquifer is thickest in the centre and thins toward its margins. The underlying bedrock is primarily crystalline fractured rock generally associated with low permeabilities.

The results of the evaluation of withdrawal limits for the Lake Utopia and Magaguadavic aquifers supports the need for further exploration. A new aquifer resource is needed to

supplement water to the St. George municipal water system in order to support community growth.

2.7.2 Environmental Studies

Ecological field studies were performed by Boreal Environmental on June 16, 2023. The Site visit was completed to identify features associated with biodiversity, such as unmapped wetlands / watercourses, birds, and rare plants at the Site or its access. Boreal indicated that no rare plants or fauna were identified. A small unmapped wetland was delineated. Results are discussed in Chapter 3.

3 Existing Environment

3.1 Physical Environment

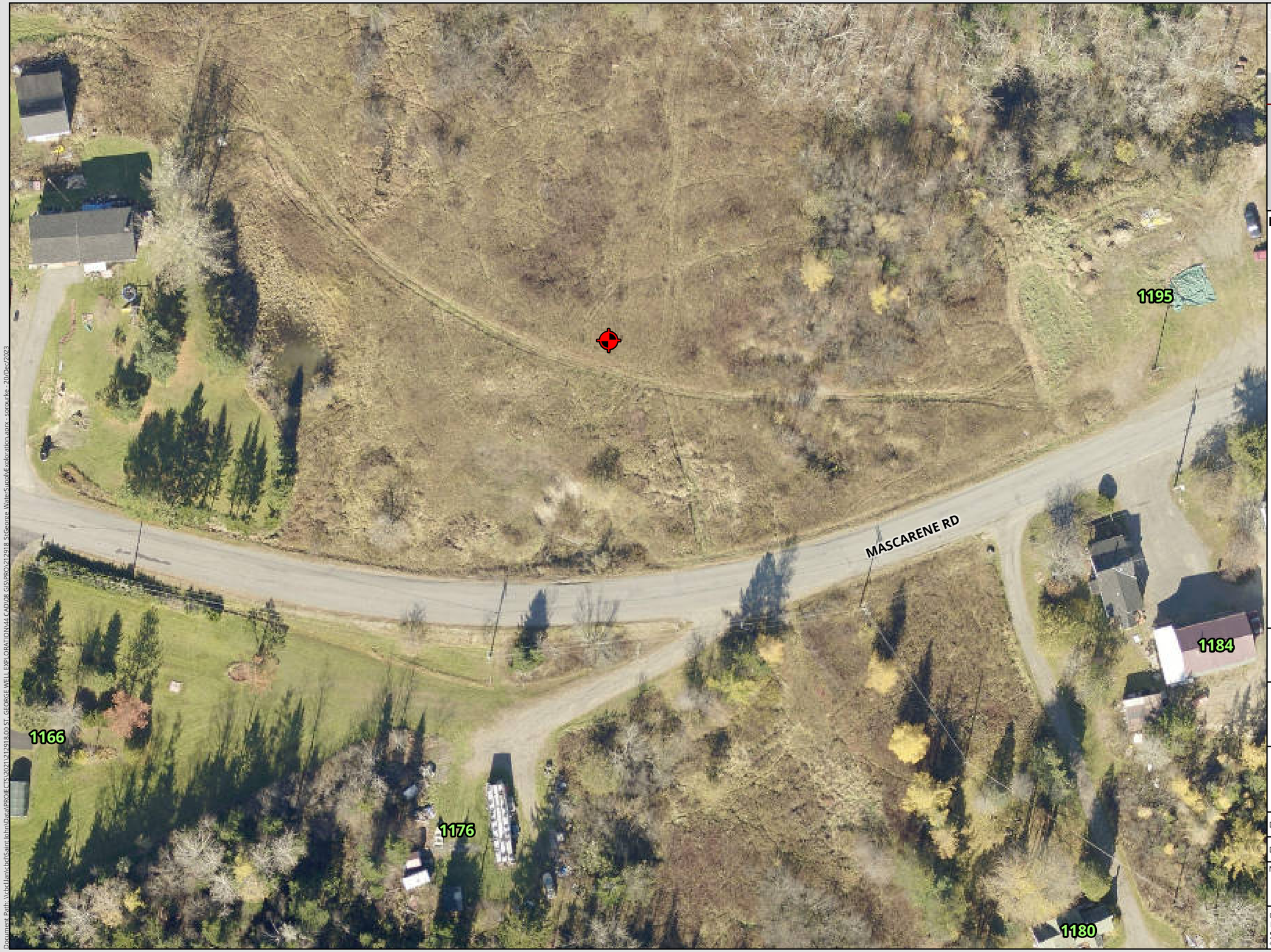
The Project property, PID 15197007, is located in a rural area on the opposite side of the Magaguadavic Basin from the urban centre of St. George. The Site is located in an open field on an empty lot with herbaceous vegetation (Figure 3.1). The property is accessed by Mascarene Road, which is predominantly lined by residential lots, approximately 600 m southwest of the St. George WWTP.

3.1.1 Geology and Soils

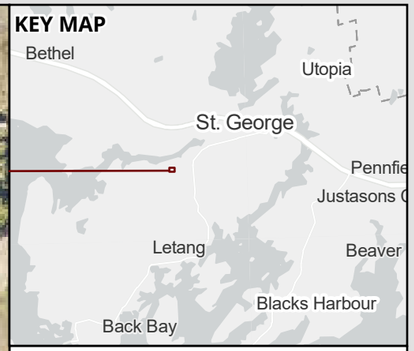
The Project is located in the Valley Lowlands Ecoregion within the Magaguadavic Ecodistrict. This district is characterized by undulating plateau at an intermediate elevation between the higher elevations to the northwest and low-lying Fundy Coastal area to the south (NB Department of Natural Resources and Energy Development (NBDNRED), 2007). The bedrock consists mainly of Ordovician to Devonian sedimentary strata and Silurian to Devonian granitic rocks. Ice contact delta deposits composed of sand and gravel are highly permeable to water, making the area suitable for groundwater sourcing (Figure 3.2). Elevations in the district range from 150 m in the north to sea level in the south; the elevation of the Site being approximately 32 m.

The Soils of Canada map classifies the soils of the area as being 90% podzilic and 10% gleysolic, and by the Canada Land Inventory as having severe limitations for agriculture due to stoniness for arable culture or permanent pasture (Agriculture and Agri-Food Canada, 2023).

A review of the mineral mapping in the GeoNB online Geographic Information System (GIS) tool managed by Service New Brunswick (SNB) indicates that there are no documented mineral deposits nearby; the nearest mineral records being on the opposite side of the Magaguadavic River (SNB, 2023). There are no mineral claims nor oil and natural gas licenses near the Project and it is not located within the boundaries of an existing protected wellfield.



KEY MAP



LEGEND

Exploratory Well Site

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Site Setting

DATE: 20/12/2023	PROJ N^{O}: 212918	FIGURE: **3.1**
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

NOTES:

0 5 10 20 m

SCALE:1:640 @ 11 X 17

Coordinate System: NAD 1983 UTM Zone 19N
Units: Meter

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ST GEORGE

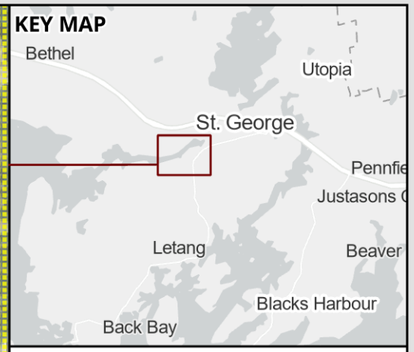
MAGAGUADAVIC BASIN

L'ETETE RD

FUNDY BAY DR

MASCARENE RD

KEY MAP



LEGEND

- Exploratory Well Site

Soil Type / Lithology Group

- Gravels and Tills
- Britt Brook - Metasedimentary
- Irving - Igneous

Aggregate Data

- Glacial Fluvial Outwash
- Ice Contact Delta

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TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Geology Mapping

DATE: 20/12/2023	PROJ N°: 212918	FIGURE: 3.2
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

NOTES:

0 85 170 340 m

SCALE:1:6,500 @ 11 X 17

Coordinate System: NAD 1983 UTM Zone 19N
Units: Meter

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3.1.2 Surface Water

The Project is located south of the Magaguadavic River, whose watershed covers 1,806 square kilometres (km^2) (NBDELG, 2007). The river flows 129 kilometres (km) in total, meeting the head of tide at the Magaguadavic Basin dam. The area is located on the tidal stretch of the river below the dam, which is hydrologically separate from the majority of the watershed.

The Site is located more than 30 m from provincially mapped and field-identified waterbodies. While there are no mapped wetlands in the vicinity, a small wetland (0.12 ha) was delineated approximately 44 m east of the Site (Figure 3.3). The Wetland Delineation Data Form for this wetland (identified as WL 4) and a photolog is attached as Appendix A.

Another unmapped wetland was identified approximately 300 m northeast on the adjacent PID. A drainage channel connects the wetland to a provincially mapped tributary that flows to the Magaguadavic River.

The Site is upland of the Magaguadavic River, approximately 435 m south of flood zone extent (Figure 3.4). Flood zone mapping is based on that available by the province for 1:100 year events, based on data collected in 2010.

3.1.3 Groundwater

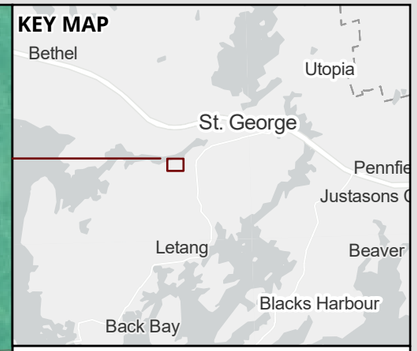
Mandatory reporting for water quality in newly drilled or redrilled domestic water wells in NB was introduced under the Potable Water Regulation of the *Clean Water Act* in 1994. NBDELG maintains a database of the results of these analyses that may be viewed using the Online Well Log System (OWLS). CBCL completed a search for a 1.0 km radius of the Project property (PID 15197007), which contained 27 drilled well records (Appendix B). Of these, four are exploratory wells and one is used for industrial purposes; the remainder being domestic water wells. Depths for the water-bearing fraction zone ranged from 6.71 to 250.25 m with estimated safe yields of 0 to 250.25 litres per minute (55 igpm). Drilling logs reported matrices of gravel, granite, till, slate, clay, stone, sandstone, and mud.

Of the 27 drill records in the OWLs data, only four had registered water quality analysis reports. Water quality assessment using the NB Drinking Water Guidelines (NB Department of Health, 2023) indicates that three of the four samples analysed reported at least one parameter in exceedance of a maximum acceptable concentration (MAC) value: one for arsenic, one for lead, and one for manganese. One sample exceeded the aesthetic objective (AO) for iron as well as the operational guideline (OG) for turbidity. The water hardness reported in the four samples ranged from 81.7 milligrams per litre (mg/L) to 159.4 mg/L, which is considered hard water (Health Canada, 1995).

MAGAGUADAVIC RIVER

MASCARENE RD

KEY MAP



LEGEND

Exploratory Well Site

Field Identified Features (Boreal, 2023)

- Wetland
- 30m Wetland Buffer
- Drainage Line
- Watercourse

Provincially Mapped Features (GeoNB, 2023)

- Wetland Buffer (30m)
- Wetland
- Watercourse

Forested Habitat

Primary Species

- Balsam Fair
- Poplar
- Red Spruce
- White Birch

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TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Aquatic and Terrestrial Habitat

DATE: 20/12/2023	PROJ N°: 212918	FIGURE: **3.3**
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

NOTES:

0 25 50 100 m

SCALE:1:2,000 @ 11 X 17

Coordinate System: NAD 1983 UTM Zone 19N
Units: Meter

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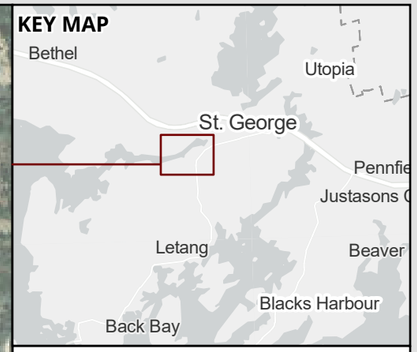
KEY MAP



LEGEND

- Exploratory Well Site
- 2010 Flood Extent
- 1 in 100 yr Flood Extent

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Provincial Flood Map

DATE: 20/12/2023	PROJ N°: 212918	FIGURE: **3.4**
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

NOTES:

0 85 170 340 m

SCALE:1:6,500 @ 11 X 17

Coordinate System: NAD 1983 UTM Zone 19N
Units: Meter

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LAKE UTOPIA

1

1

ST GEORGE

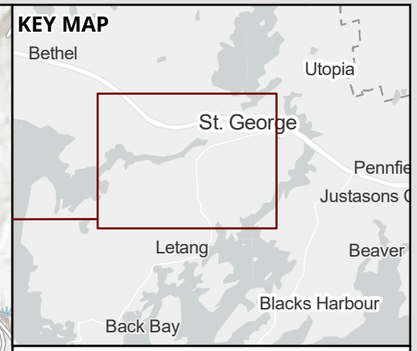
L'ETETE RD

MAGAGUADAVIC RIVER

MASCARENE RD

FUNDY BAY DR

KEY MAP



LEGEND

Atlantic Canada Conservation Data Centre (2023)

ACCDC SAR & SoCC Observation

- Bird Species
- Fish Species
- Insect Species
- Mammal Species
- Plant Species

Rainbow Smelt Habitat (Lake Utopia small Body Population)

2km Study Area

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Species At Risk & Significant Habitats

DATE: 20/12/2023	PROJ N°: 212918	FIGURE: **3.5**
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3.2 Atmospheric Environment

3.2.1 Climate

According to the Conservation Council of NB (CCNB), the province, as well as Canada as a whole, has warmed at more than double the global rate over the last 70 years: by nearly 2°C compared to approximately 1°C globally (CCNB, 2023). Warmer air, holding more moisture, has resulted in an increased incidence of precipitation events greater than 50 mm. NB experienced record-breaking floods in 2018 and 2019 due to above average snowpack and rain.

Flood events have become an issue in Eastern Charlotte, namely in the lower Magaguadavic watershed where the current St. George municipal water production wells are located. In December 2010, precipitation was recorded at 185 mm in some areas, causing severe flooding throughout the lower Magaguadavic watershed (Eastern Charlotte Waterways (ECW), 2014). The stormwater covered nearly 100 roads, resulting in dozens of people needing rescue from their homes. The 2010 flood event compromised St. George municipal Wells 2 and 3. In response, the ECW developed Action 1.8 in their Magaguadavic River Watershed Management Plan—Flood-proof vulnerable water wells (ECW, 2014). The Action calls for changes to infrastructure to assure safe drinking water in future flood events.

3.2.2 Air Quality

According to the latest New Brunswick Air Quality Monitoring Results report for the year 2021 (NBDELG, 2022), there were very few exceedances of either provincial or federal guidelines recorded from monitoring stations in NB operated by the Air Quality Branch of the NBDELG—none of which were recorded at the nearest monitoring station (St. Andrews), located approximately 18 km southwest of the Project, on the opposite side of Passamaquoddy Bay.

3.2.3 Acoustic Environment

The Project property has an acoustic environment typical to that of other rural areas in NB. The Site is proximate to the Mascarene Road which, serving as a primary route to the L'Etete Road and urban centre of St. George, is a relatively busy rural road. Field technicians noted that traffic from the road, as well as vessel traffic on the Magaguadavic River, contributed to noise heard at the Site. Trucking activity was also heard from the area of the WWTP and True North Salmon.

3.3 Biological Environment

3.3.1 Vegetation

The Site is in a disturbed area near residential, industrial, and community infrastructure. Land cover in the property includes mature coniferous and deciduous forests, young forest, and wetlands. Provincial forestry layer mapping (SNB, 2023) indicates that the forested area around the Site is predominantly Balsam Fir (*Abies balsamea*) (Figure 3.3).

CBCL requested a standard data report from the Atlantic Canada Conservation Data Centre (AC CDC) for the Project. The report (Appendix C) provides observations of Species at Risk (SAR) and Species of Conservation Concern (SoCC) in the surrounding area. Only one SAR was recorded, located approximately 2.4 km from the Study Area centre. In total, 14 SoCC are listed within the report. Their conservation status and likelihood of disturbance as a result of the Project, based on habitat preference, are outlined in Table 3.1. While the Site habitat supports the possibility for some of these rare plant species, there were no vegetation SAR or SoCC identified at during field studies completed by Boreal on June 16, 2023.

3.3.2 Wildlife and Migratory Birds

The AC CDC report lists observations for 42 faunal SoCC within its 5 km Study Area. Those with federal and/or provincial designations, including those listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), are presented with habitat preferences in Table 3.2. Bat species or hibernacula are not known to occur within the Study Area, although there have been reports of Snapping Turtle (*Chelydra serpentina*). There are no known protected, managed, or environmentally significant areas (ESAs) in or near the Project. The results of the AC CDC search, focussed to a 2 km radius for clarity, are illustrated in Figure 3.5, where there have been no reported sightings of a SAR; most SoCC having been reported in the urban centre of St. George.

The Second Atlas of Breeding Birds of the Maritime Provinces (MBBA) was consulted to identify migratory birds that may use the Project Area for nesting (Stewart et al., 2015). The Project Area lies within the Letang Estuary Region of the Atlas, Square 19FK79, where 96 avian species were recorded (Appendix D). With the exception of the Least Bittern (*Ixobrychus exilis*), the MBBA classifies all SoCC listed in Table 3.2 as being possible breeders within the Letang Estuary region. Given the surrounding habitat, the SAR bird having the highest likelihood for presence in proximity to Project activities is the Bobolink (*Dolichonyx oryzivorus*). No SAR or SoCC were identified near the Site during field studies completed by Boreal on June 16, 2023. A Bald Eagle (*Haliaeetus leucocephalus*) was observed flying overhead but nests were not observed.

Table 3.1 AC CDC Reported SoCC Plants Within the 5 km Study Area

Common Name / Scientific Name	Conservation Status	Habitat Preference*	Likelihood of Onsite Occurrence
Butternut *Juglans cinerea*	COSEWIC: Endangered SARA: Endangered NB SARA: Endangered AC CDC: S1	Open areas, edges of floodplains, stream shores, rich upland (NatureTrust NB, 2023)	Possible
Cardinal Flower *Lobelia cardinalis*	AC CDC: S3S4	Wet ditches, ravines, depressions, woodland edges, stream banks, roadsides, meadows, swamps, near lakes and ponds, bogs (Moore et al., 2021)	Possible
Clinton's Clubrush *Trichophorum clintonii*	AC CDC: S3S4	Ledges, gravel, open woods, shores of wetlands (Maine Department of Agriculture Conservation & Forestry, 2021)	Possible
Eastern Skunk Cabbage *Symplocarpus foetidus*	AC CDC: S3	Moist habitats, including marshy deciduous woods, wet thickets, swamps, near springs, stream edges and wetlands and bogs (University of Wisconsin, 2023)	Unlikely
Large Purple Fringed Orchid *Platanthera grandiflora*	AC CDC: S3	Alder thickets, swamp woods, wet meadows, shrub border of bogs (Ohio Department of Natural Resources, 2020)	Unlikely
Long-root Smartweed *Persicaria amphibia* var. *emersa*	AC CDC: S2	Wet shorelines, ditches (University of British Columbia, 2020)	Unlikely
Marsh Mermaidweed *Proserpinaca palustris*	AC CDC: S3	Bogs, marshes, swamps, stream edges, lakeshores (Mersey Tobeatic Research Institute, 2011)	Unlikely

Common Name / Scientific Name	Conservation Status	Habitat Preference*	Likelihood of Onsite Occurrence
New England Violet *Viola novae-angliae*	AC CDC: S2S3	Gravels, wet rocks, shores of rivers or lakes, meadows (Maine Department of Agriculture, Conservation & Forestry, 2021)	Possible
Northern Arrow-Wood *Viburnum recognitum* var. *lucidum*	AC CDC: S2	Open woods, forest edges, streambanks (United States Department of Agriculture, 2017)	Possible
Roseroot *Rhodiola rosea*	AC CDC: S3	Cliffs, ridges or ledges, slopes, seaside cliffs, imperfectly drained moist areas (Aiken et al., 2007)	Unlikely
Small-spike False-nettle *Boehmeria cylindrica*	AC CDC: S3S4	Alluvial or moist, deciduous woods, swamps, bogs, marshes, wet meadows, ditches (eFloras, 2023)	Unlikely
Spotted Coralroot *Corallorhiza maculata*	AC CDC: S3S4	Forests where there is little other herbaceous cover (United States Department of Agriculture, 2023)	Unlikely
Toothed Flatsedge *Cyperus dentatus*	AC CDC: S3S4	Sandy and gravelly lakeshores (Mersey Tobeatic Research Institute, 2011)	Unlikely
Vasey Rush *Juncus vaseyi*	AC CDC: S3	Damp shores, thickets (Maine Department of Agriculture, Conservation & Forestry, 2021)	Unlikely

Table 3.2 AC CDC Report SoCC Fauna Within the 5 km Study Area

Common Name	Conservation Status	Habitat Preference*	Likelihood of Occurrence at Sites
Atlantic Salmon – Outer Bay of Fundy population *Salmo salar* pop. 7	COSEWIC: Endangered NB SARA: Endangered AC CDC: SNR	Breeds in rivers or streams that are generally clear, cool, and well-oxygenated with bottom substrates of gravel, cobble, and boulder.	Nil
Bald Eagle** *Haliaeetus leucocephalus*	COSEWIC: Not at Risk NB SARA: Endangered AC CDC: S4	Nests in forested areas located along large lakes and rivers, generally using tall conifers that extend above the canopy (Buehler, 2022).	Unlikely
Bank Swallow *Riparia riparia*	COSEWIC: Threatened SARA: Threatened AC CDC: S2B	Nests in burrows in natural and human-made sites with vertical banks such as riverbanks, lake and ocean bluffs, aggregate pits, road cuts, and soil stockpiles. Often nests close to aerial foraging habitat, such as grasslands, meadows, pastures, and agricultural cropland.	Unlikely
Barn Swallow *Hirundo rustica*	COSEWIC: Special Concern SARA: Threatened NB SARA: Threatened AC CDC: S2B	Nests in open areas with human-made structures such as barns, stables, houses, sheds, and bridges. Often nests near aerial foraging habitat such as grasslands, agricultural fields, shorelines, woodland clearings, wetlands, sand dunes, tundra, and roads.	Unlikely
Bobolink *Dolichonyx oryzivorus*	COSEWIC: Special Concern SARA: Threatened NB SARA: Threatened AC CDC: S3B	Nests in hayfields and pastures; sometimes wet prairie, grassy peatlands, alvars, abandoned fields dominated by tall grasses, and remnants of native prairie as well as sedge and grass meadows of marshes and bogs.	Possible
Canada Warbler *Cardellina canadensis*	COSEWIC: Special Concern SARA: Threatened NB SARA: Threatened AC CDC: S3S4B	Breeds in wet, mixed deciduous-coniferous forests with a well-developed shrub layer; sometimes riparian shrub forest on slopes and ravines as well as disturbed areas.	Unlikely

Common Name	Conservation Status	Habitat Preference*	Likelihood of Occurrence at Sites
Chimney Swift *Chaetura pelagica*	COSEWIC: Threatened SARA: Threatened NB SARA: Threatened AC CDC: S2S3B, S2M	Nests and roosts where chimneys and similar human-made structures are available. Have historically used large hollow trees for nesting and roosting.	Unlikely
Common Nighthawk *Chaetura pelagica*	COSEWIC: Special Concern SARA: Special Concern (change in 2023) NB SARA: Threatened AC CDC: S3B, S4M	Breeds in open / partially open habitats including forest openings and post-fire habitats, prairies, and bogs as well as rocky or sandy natural habitats or disturbed areas.	Unlikely
Eastern Cougar *Puma concolor pop. 1*	COSEWIC: Data Deficient NB SARA: Endangered AC CDC: SU***	Large forests with minimal human disturbance (NBDNRED, n.d.).	Nil
Eastern Wood-Pewee *Contopus virens*	COSEWIC: Special Concern SARA: Special Concern NB SARA: Special Concern AC CDC: S3B	Breeds in forest clearings and edges of deciduous and mixed forests; most abundant in intermediate-aged and mature stands with little understory vegetation.	Unlikely
Least Bittern *Ixobrychus exilis*	COSEWIC: Threatened SARA: Threatened NB SARA: Threatened AC CDC: S1S2B	Breeds in marshes dominated by emergent vegetation and surrounded by areas of clear open water for foraging.	Unlikely
Snapping Turtle** *Chelydra serpentina*	COSEWIC: Special Concern SARA: Special Concern NB SARA: Special Concern AC CDC: S3	Shallow freshwater habitats, nesting on sand or gravel banks.	Nil

*Species at Risk Public Registry, 2023, unless otherwise specified

**A location-sensitive species due to the concern of exploitation. This species was recorded within the 5 km Study Area, but the exact location is not provided

***Species is unrankable due to insufficient data

3.4 Socio-Economic and Cultural Environment

3.4.1 Land Use

The Project property is privately owned land in a rural area of Eastern Charlotte. Infrastructure in the immediate area includes residences, small businesses, the True North Salmon facility, and the WWTP. The proposed Site is in an unused field area near the road and some residences. There are no known reports of groundwater contamination on the properties directly adjacent to the Site.

3.4.2 Municipal Services and Infrastructure

On January 1, 2023, the Town of St. George was amalgamated with the Village of Blacks Harbour and other unincorporated contiguous areas to form the Municipality of Eastern Charlotte (Government of NB, 2022). The communities of Blacks Harbour and St. George each manage their own municipal services infrastructure, including water and sanitary sewer utilities (Municipality of Eastern Charlotte, 2023).

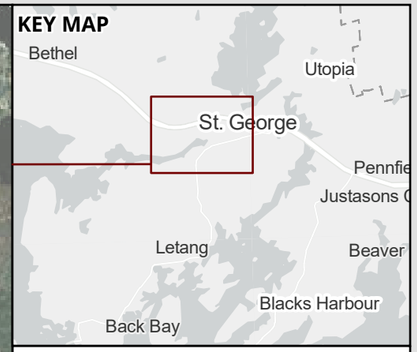
St. George municipal water is currently sourced from five production wells: Well 2, Well 3, Well 4, Well 5, and Well 6. The former Well 1 has been decommissioned. A section of the St. George municipal watermain follows L'Etete Road outward from the urban centre, along its transition to Mascarene Road and ending just 300 m east of the Site (Figure 3.6).

3.4.3 Archaeological and Heritage Resources

Archaeological predictive modeling was requested for the Project through the NB Department of Tourism, Heritage, and Culture (June 2023); the results are presented in Appendix E. The property is not rated as having archaeological potential and there are no significant features identified in the area.

WELL 3
WELL 6
WELL 2
WELL 5
WELL 4
LAKE UTOPIA
MAGAGUADAVIC RIVER
MAIN ST
ST GEORGE
BRUNSWICK ST
MAGAGUADAVIC BASIN
MT PLEASANT RD
L'ETETE RD
FUNDY BAY DR
MASCARENE RD

KEY MAP



LEGEND

- Production Well
- Exploratory Well Site
- Water Main

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

St. George Municipal Water Infrastructure

DATE: 20/12/2023	PROJ N^{O}: 212918	FIGURE: **3.6**
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Coordinate System: NAD 1983 UTM Zone 19N
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4 Potential Environmental Impacts and Mitigation

4.1 Method of Assessment

The EIA is based on the requirements of the EIA Regulation (87-83) of the NB *Clean Environment Act*. The scope of the Project includes the Project components and associated activities outlined in Chapter 2 that define the Project as an Undertaking under Schedule A of the Regulation. This EIA Registration document for the Project has been designed to follow the general report layout as outlined in the *Guide to Environmental Impact Assessment in New Brunswick* (NBDELG, 2018).

4.1.1 Identifying Issues and Selecting Valued Components

A valued component (VC) refers to a biophysical, socio-economic, or cultural component of the environment that is considered important to regulators or community. Based on the scope and location of the Project, the following information was considered to identify issues and select VCs that could be affected by the Project:

- Understanding of the characteristics of the Project and anticipated work methods
- Consultation with regulatory authorities
- Community and stakeholder concerns about the Project
- Indigenous rights and resource use
- Knowledge of the environment
- *A Guide to Environmental Impact Assessment in New Brunswick* (NBDELG, 2018)
- Characteristics of potential impacts and environmental effects of the Project
- Professional judgement and lessons learned from similar projects

4.1.2 Establishing Boundaries

Temporal and spatial boundaries refer to the time periods and geographic extent in which a project may interact with (or affect) a VC. Boundaries selected for each VC vary based on several considerations:

- Geographic range of the VC
- Zone of influence of the Project on the VC

- Timing and schedule of Project stages
- Known ranges and natural variations of each VC
- Availability and quality of data and information

4.1.3 Existing Environment

Existing baseline conditions and characteristics of the Project area were highlighted in Chapter 3. Descriptions of the physical and natural features as well as the socio-economic environment provide context for the assessment of effects by providing an understanding of the receiving environment. The approach to describing the existing (baseline) environment used desktop studies and reporting from field activities completed in June 2023.

4.1.4 Evaluation of Environmental Effects

A pathways-of-effects approach is used to describe the mechanisms by which project activities or components may lead to environmental effects on a VC. Potential interactions are identified as positive or negative, depending on whether the interaction will be beneficial or adverse for the respective VC. In some cases, there is potential for both positive and negative interactions to occur. A more detailed assessment of the potential adverse environmental effects has been presented herein.

4.1.5 Identification of Mitigation Strategies

The identification of potential environmental effects is used to develop mitigation measures to avoid or reduce adverse project effects on the VCs. Mitigation measures must be technically and economically feasible and are considered where there is a reasonable expectation that they will be effective.

4.2 Identification of Potential Project-Environment Impacts and Mitigation

The potential interactions between the Project components and VCs are presented in Table 4.1. Potential interactions that could lead to measurable adverse environmental effects have been identified for the following VCs:

- Geology and Soils
- Surface Water
- Groundwater
- Acoustic Environment
- Vegetation
- Wildlife and Migratory Birds
- Land Use
- Archaeological and Heritage Resources

Table 4.1 Potential Interactions Between Project Activities and the Environment

Project Activities	Environmental Components							
	Physical and Natural Features						Socio-Economic Environment	
	Geology and Soils	Surface Water	Groundwater	Acoustic Environment	Vegetation	Wildlife and Migratory Birds	Land Use	Archaeological and Heritage Resources
Site Access and Drilling								
Use of existing access roads and travel over ground vegetation	N			N	N	N	N	N
Hydrogeological Drilling	N		N	N	N	N	N	N
Well Testing and Installation								
Pump tests	N	N	N	N	N	N	N	
Installation of well(s)	N		N	N	N	N	N	N
Well Decommissioning								
Backfill and Plugging	N	N	N	N	N	N	N	N
Accidents and Malfunctions								
Spills	N	N	N		N	N	N	N

Legend: [Blank] = No Effect, [N]= Potential Negative Environmental Effect

4.3 Potential Effects, Mitigation, and Residual Environmental Effects

Potential environmental effects associated with Project activities and mitigation are outlined in the subsections that follow. Mitigation considers temporal or spatial procedures or changes that can be incorporated into the Project or means by which Project activities can limit or correct project-related effects on a particular VC.

4.3.1 Geology and Soils

4.3.1.1 Pathway

Well drilling and decommissioning activities can disrupt soils and geological integrity through compaction and fracture. It can also create the potential for future ground subsidence. Water discharged during step tests could cause erosion.

4.3.1.2 Impact

The footprint for use of mobile equipment and drilling diameter on Site will be isolated to the immediate area, but subsidence at the borehole location can occur long-term.

4.3.1.3 Mitigation

- Vehicles will move slowly onsite, using wide wheel bases or tracks.
- Repairs to access roads or groundcover will be completed if necessary.
- Boreholes and decommissioned wells will be back-filled and plugged using appropriate soil materials in accordance with provincial legislation.
- Should groundwater be discharged directly over surrounding land surfaces, a diffuser will be used to disperse water as a spray over groundcover to prevent ponding or creation of drainage channels.

4.3.2 Surface Water

4.3.2.1 Pathway

Discharged water during pump tests may disturb surface soils, possibly leading to erosion, suspended solids, and drainage channels. Water discharged directly to existing drainage channels / ditches may be sediment laden, resulting in a change in water quality and sediment deposition.

4.3.2.2 Impact

Pumped discharges will be temporary, isolated to step-test events.

4.3.2.3 Mitigation

- Total suspended solids (TSS) will be monitored during step tests if the discharge is directed toward a surface water feature or drainage ditch.
- Should groundwater be discharged directly over surrounding land surfaces, a diffuser will be used to disperse water as a spray over groundcover to prevent ponding or creation of drainage channels.

4.3.3 Groundwater

4.3.3.1 Pathway

In rare cases, drilling to the water table and/or well development can introduce contaminants. In addition, water withdrawal may affect groundwater quantity in nearby domestic wells. If the well is not properly sealed, surface water intrusion may occur.

4.3.3.2 Impact

Contamination at an isolated point will not impact the larger body of aquifer around it. Effects would be mild and temporary.

4.3.3.3 Mitigation

- The borehole location will meet provincially-required setback distances.
- Pumped water will be collected during step tests and after well development to assess drinking water quality.
- Step tests will be monitored to ensure withdrawal rates stay within safe yields.
- The subcontracted driller will adhere to the measures outlined in the NB Potable Water Regulation and *Guidelines for the Decommissioning (Abandonment) of Groundwater Wells and Boreholes* (Government of NB, 2021).

4.3.4 Acoustic Environment

4.3.4.1 Pathway

Equipment movement to and from the target drill location, and drilling, will produce noise at the Site. Drill rigs emit a noise level similar to that of an excavator.

4.3.4.2 Impact

Noise will be temporary, isolated to drilling events (geotechnical and well development).

4.3.4.3 Mitigation

- Idling of machinery and vehicles will be avoided, whenever possible.
- Heavy machinery and vehicles will be properly muffled and regularly checked to target the lowest possible operational noise emission levels.
- Drilling will be limited to 7 am to 9 pm daily.

4.3.5 Vegetation

4.3.5.1 Pathway

Project construction activities can disrupt groundcover vegetation (including rare plants, if present) through compaction and tearing, as well as smothering from ejected soils during borehole drilling. Water discharged during step tests could cause erosion.

4.3.5.2 Impact

Noise will be temporary, isolated to drilling events (geotechnical and well development).

4.3.5.3 Mitigation

- Use existing access roads to the extent possible.
- Vehicles will move slowly on site, using wide wheelbases or tracks.
- Should groundwater be discharged directly over surrounding land surfaces, a diffuser will be used to disperse water as a spray over groundcover to prevent ponding or creation of drainage channels.

4.3.6 Wildlife and Migratory Birds

4.3.6.1 Pathway

Project activities can disrupt wildlife, migratory birds, and nests within the immediate area through equipment movement, human presence, and noise. Water discharged during step tests could cause water drainage that disrupts ground nests.

4.3.6.2 Impact

Disruption will be temporary and isolated to the immediate area of the property.

4.3.6.3 Mitigation

- Conduct activities outside the migratory bird regional nesting period of mid-April to late August (ECCC, 2023).
- If conducting Project activities outside the regional nesting period is unavoidable, implement the following to identify the presence of migratory and SAR birds:
  - Pre-construction point counts and nest surveys by a qualified and skilled biologist or technician, using appropriate methodology.
  - If there is a period that occurs between the pre-clearing survey and the clearing activities, an additional pre-clearing survey would be required to determine if other birds moved into the area and initiated nesting.
  - If nesting birds are present, develop a management plan with measures to mitigate effects to birds. These measures should include avoiding or minimizing disturbances to birds, their nests, and eggs.
- Limit excessive noise and dust.
- Limit vehicle speed on site.
- Properly store and dispose of waste materials.
- Keep Sites clean of food scraps.
- Do not harass wildlife.
- Should groundwater be discharged directly over surrounding land surfaces, a diffuser will be used to disperse water as a spray over groundcover to prevent ponding or creation of drainage channels.

4.3.7 Land Use

4.3.7.1 Pathway

Presence of a water well exerts limits on the types of land use for a property, such as agricultural use, and requires that set-backs be established prior to construction of new sewage fields, roads, and other infrastructure.

4.3.7.2 Impact

The set-back area will be limited to those stipulated by the province and will be removed after decommissioning.

4.3.7.3 Mitigation

- Ensure that the well is constructed outside the set-backs of current infrastructure as stipulated by provincial regulation.
- Ensure that the property owner is aware of implications to having a well present at that location on their property and agrees to the installation.
- Restore property to full potential as best possible during well decommissioning.

4.3.8 Archaeological and Heritage Resources

4.3.8.1 Pathway

Borehole drilling may uncover, damage, or destroy archaeological or heritage artifacts.

4.3.8.2 Impact

Adverse effects will be isolated to the immediate location of the boreholes, or possibly in vegetated areas that are traversed to reach the borehole.

4.3.8.3 Mitigation

- Results of Indigenous engagement will be considered.
- Should the presence of artifacts be observed during construction activities, the provincial Archaeological Services division will be contacted.

4.4 Accidents and Malfunctions

Accidental events and malfunctions are unplanned events with a low probability for occurrence. A hazardous materials spill has the potential to cause significant adverse environmental effects depending on the size and location of the spill. A certified driller with established safety standards will be subcontracted. Transportation of the drill rig will occur via flatbed; only the drill rig itself entering the property. The drill rig is a small vehicle equipped with either tracks or broad tires for traversing rough terrain. There is therefore a low probability for occurrence of accidental release and the magnitude will be limited to the volume of petroleum, oil, and lubricant (POL) used in the onsite equipment.

4.5 Effects of the Environment on the Project

4.5.1 Flooding

As discussed in Section 3.2, flooding within the lower Magaguadavic watershed has become more frequent as a result of climate change and has already threatened the viability of two production wells, #2 and #3, sourced for the St. George municipal water supply.

The proposed Site for the hydrogeological exploratory well is located at a higher elevation than that of the five current production wells (Table 4.2) and a significantly farther set-back from the provincial flood zone (Figure 4.1). The Site is located 435 m from the 1:100 year Flood Hazard Mapping.

Table 4.2 Production and Exploratory Well Elevations

Well ID	Elevation (m)
2	22.8
3	21.2
4	24.2
5	24.3
6	23.2
Exploratory Well Site	32.2

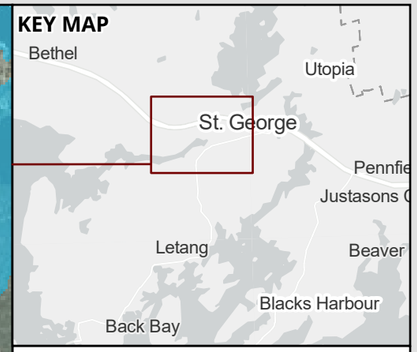
Note: former production Well 1 has been decommissioned

4.5.2 Extreme Weather

Extreme summer and autumn weather in NB typically occurs in the form of severe thunderstorms, high winds, and tropical storms. Intense rain and winds during such events could result in the dispersion of soils removed from boreholes and additive effects of groundwater discharged during step tests. To protect the immediate environment, equipment, and onsite personnel, Project activities should be paused or rescheduled to avoid working under such conditions. Should the well be developed and commissioned, proper sealing and maintenance will be required to prevent surface water intrusion during operations.

WELL 3
WELL 6
WELL 2
WELL 5
WELL 4
MAGAGUADAVIC RIVER
LAKE UTOPIA
MAIN ST
BRUNSWICK ST
ST GEORGE
MAGAGUADAVIC BASIN
MT PLEASANT RD
L'ETETE RD
FUNDY BAY DR
MASCARENE RD

KEY MAP



LEGEND

- Production Well
- Exploratory Well Site

2010 Flood Extent

- 1 in 100 yr Flood Extent

CBCL

TOWN OF ST. GEORGE
WATER SUPPLY EXPLORATION
ENVIRONMENTAL IMPACT ASSESSMENT

Vulnerability of Groundwater Wells to Flooding

DATE: 20/12/2023	PROJ N°: 212918	FIGURE: **4.1**
DRAWN BY: SF	CHECKED BY: CD	APPROVED: CD

NOTES:

0 165 330 660 m

SCALE:1:12,500 @ 11 X 17

Coordinate System: NAD 1983 UTM Zone 19N
Units: Meter

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5 Public and First Nations Involvement

5.1 Public Engagement

This EIA document will be available online for review by the general public on the NBDELG website Projects Under Determination Review:

https://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/environmental_impactassessment/registrations.html

Through consultation with NBDELG, a best approach for providing notice to landowners and stakeholders will be determined. Hard copies of the Registration document will be provided to individuals upon request.

5.2 Indigenous Engagement

First Nations organisations will be notified of the Project as per the New Brunswick Duty to Consult Policy. Prior to Registration, Public Notices will be distributed to contacts provided by the NB Aboriginal Affairs Department.

6 Conclusion

This EIA has been prepared on behalf of the Municipality of Eastern Charlotte to complete exploratory hydrogeological drilling. The assessment presented in this report has considered potential effects on the environment resulting from the Project activities described in Chapter 2. Desktop study and field work was used to examine components of the existing environment in the Project Area, the results for which are presented in Chapter 3. The VCs identified in Chapter 4 through issues scoping and pathway analysis where potential effects may be a concern include:

- Geology and Soils
- Surface Water
- Groundwater
- Acoustic Environment
- Vegetation
- Wildlife and Migratory Birds
- Land Use
- Archaeological and Heritage Resources

Although one wetland was field identified near the targeted borehole Site, it is greater than 30 m from the Project activities and will be avoided. Hydrogeological exploration is performed to mitigate impacts to geology, surface water, and groundwater resources. There were no SAR or SoCC identified during field studies in June 2023 and there are no archaeological features identified in predictive modeling.

Given the limited scope of the Project, few residual environmental effects have been identified. Should the Project successfully identify a groundwater source that can supplement the St. George municipal water system, the community will have the resources to meet increasing demand for safe, potable water and to allow community growth. The drilling area is well beyond the provincial flood zone, allowing the community services to adapt to climate change. The assessment has indicated that no significant adverse residual environmental effects on the VCs identified are likely.

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APPENDIX A

Wetland Delineation Data Sheet and Photolog

Photo 1: Project Site

Photo 2: WL 4 vegetation viewed north east from within wetland.

Photo 3: Representative herbaceous vegetation within WL 4 wetland data point.

Photo 4: Standing water at the WL 4 data point.

Photo 5: Upland shrub and herbaceous stratum at WL 4 upland data point.

Photo 6: Herbaceous stratum in old field for WL 4 upland data point.

Photo 7: Upland soil profile for WL 4 upland data point.

WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: St. George Water Supply Evaluation Municipality/County: Charlotte County Sampling Date: July 5, 2023

Applicant/Owner: CBCL / Town of St. George Sampling Point: WL 4 up

Investigator(s): Ryan Power and Derrick Mitchell Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA

Local relief (concave, convex, none): _____ Slope (%): 2 Lat 45.116843 Long -66.838115

Datum: WGS 84 Soil Map Unit Name/Type: _____ Wetland Type: _____ Are climatic /

hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes _____ No X**
Hydric Soil Present? Yes _____ No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No X	

Remarks: (Explain alternative procedures here or in a separate report.) Rained the day prior and old field is still saturated.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. Alnus incana	2	YES	FACW
2.			
3.			
4.			
5.			
6.			
	2 = Total Cover		
Herb Stratum (Plot size: 1)			
1. Solidago rugosa	40	YES	FAC
2. Solidago canadensis	20	YES	FAC
3. Rosa virginiana	10		FAC
4. Phleum pratense	10		FACU
5. Carex projecta	5		FACW
6. Trifolium pratense	5		FACU
7. Poa annua	5		FACU
8.			
9.			
10.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. No woody vines			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 7	x 2 = 14
FAC species 70	x 3 = 210
FACU species 20	x 4 = 80
UPL species _____	x 5 = _____
Column Totals: 97 (A)	304 (B)

Prevalence Index = B/A = 3.13

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No _____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL 4 up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (cm)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
40	7.5YR/5/3						silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surfaces (S7)
___ Polyvalue Below Surface (S8)
___ Thin Dark Surface (S9)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ 5 c Mucky Peat or Peat (S3)
___ Iron-Manganese Masses (F12)
___ Piedmont Floodplain Soils (F19)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: **NA**
Depth (cm): **NA**

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
X Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (cm): _____
Water Table Present? Yes _____ No X Depth (cm): _____
Saturation Present? (includes capillary fringe) Yes X No _____ Depth (cm): 0

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The field is saturated from recent precipitation.

WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: St. Geroge Water Supply Evaluation Municipality/County: Charlotte County Sampling Date: July 5, 2023

Applicant/Owner: CBCL / Town of St. George Sampling Point: WL 4 wet

Investigator(s): Ryan Power and Derrick Mitchell Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA

Local relief (concave, convex, none): _____ Slope (%): _____ Lat 45.116833 Long -66.837986

Datum: WGS 84 Soil Map Unit Name/Type: _____ Wetland Type: Graminoid basin swamp

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____	**Is the Sampled Area within a Wetland?** **Yes X No _____**
Hydric Soil Present? Yes X No _____	
Wetland Hydrology Present? Yes X No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1.			
2.	20		
3.			
4.			
5.			
6.			
	90 = Total Cover		
Herb Stratum (Plot size: 1)			
1. Veronica scutellata	15	YES	OBL
2. Carex scoparia	10		FAC
3. Juncus filiformis	30	YES	OBL
4. Scirpus cyperinus	5		FACW
5. Symphyotrichum puniceum	2		FACW
6. Hypericum mutilum	10		FACW
7. Viola macloskeyi	5		FACW
8. Eleocharis obtusa	5		OBL
9.			
10.			
	82 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. No woody vines			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 50	x 1 =	50
FACW species 22	x 2 =	44
FAC species 10	x 3 =	30
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 82 (A)		124 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No _____**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL4 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (cm)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surfaces (S7)
___ Polyvalue Below Surface (S8)
___ Thin Dark Surface (S9)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ 5 c Mucky Peat or Peat (S3)
___ Iron-Manganese Masses (F12)
___ Piedmont Floodplain Soils (F19)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: **NA**
Depth (cm): **NA**

Hydric Soil Present? Yes X____ No _____

Remarks: Standing water over graminoid basin swamp, wetland conditions obvious.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X____ No ____ Depth (cm): 5
Water Table Present? Yes X____ No ____ Depth (cm): ____
Saturation Present? (includes capillary fringe) Yes X____ No ____ Depth (cm): ____

Wetland Hydrology Present? Yes X____ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX B

Online Well Log System (OWLS), 1.0 km Radius

New Nouveau Brunswick

Environment

Report Number **1190**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/14/2003

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
1190	**Steel**	**15.24cm**	**0m**	**12.19m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	18.29m	0 lpm	1hr	121.92m	227.5 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
1190	**0m**	**9.45m**	**Brown**	**Mud and Gravel**
1190	**9.45m**	**121.92m**	**Red**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
9.45m

Water Bearing Fracture Zone

Well Log	Depth	Rate
1190	**22.86m**	**13.65 lpm**
1190	**30.48m**	**45.5 lpm**
1190	**60.96m**	**45.5 lpm**
1190	**85.34m**	**91 lpm**
1190	**106.68m**	**31.85 lpm**

Setbacks

Well Log	Distance	Setback From
1190	**60.96m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **1191**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/15/2003

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
1191	**Steel**	**15.24cm**	**0m**	**10.67m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	9.14m	0 lpm	1hr	30.48m	15.92 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
1191	**0m**	**5.79m**	**Brown**	**Mud and Gravel**
1191	**5.79m**	**121.92m**	**Red**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
5.79m

Water Bearing Fracture Zone

Well Log	Depth	Rate
1191	**30.48m**	**4.55 lpm**
1191	**67.06m**	**4.55 lpm**

Setbacks

Well Log	Distance	Setback From
1191	**21.34m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **25236**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/25/2009

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
25236	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m	31.85 lpm	1hr	5.49m	31.85 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
39.62m

Driller's Log

Well Log	From	End	Colour	Rock Type
25236	**0m**	**5.18m**	**Other**	**Till**
25236	**5.18m**	**19.81m**	**Black**	**Slate**

Overall Well Depth
19.81m

Bedrock Level
5.18m

Water Bearing Fracture Zone

Well Log	Depth	Rate
25236	**8.53m**	**13.65 lpm**
25236	**42.67m**	**18.2 lpm**

Setbacks

Well Log	Distance	Setback From
25236	**76.20m**	**Right of any Public Way Road**

no septic tank on property when drilled

New Nouveau Brunswick

Environment

Report Number **26462**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	06/02/2011

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
26462	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m	54.6 lpm	1hr	5.49m	54.6 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
38.10m

Driller's Log

Well Log	From	End	Colour	Rock Type
26462	**0m**	**3.05m**	**Brown**	**Till**
26462	**3.05m**	**24.38m**	**Brown**	**Sandstone**
26462	**24.38m**	**44.20m**	**Red and grey**	**Granite**

Overall Well Depth
44.20m

Bedrock Level
3.05m

Water Bearing Fracture Zone

Well Log	Depth	Rate
26462	**23.77m**	**31.85 lpm**
26462	**39.62m**	**22.75 lpm**

Setbacks

Well Log	Distance	Setback From
26462	**18.29m**	**Septic Tank**
26462	**22.86m**	**Leach Field**
26462	**36.58m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **30648**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well		10/22/2014

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
30648	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m	79.62 lpm	1hr	5.49m	81.9 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Jet

Intake Setting (BTC)
39.62m

Driller's Log

Well Log	From	End	Colour	Rock Type
30648	**0m**	**5.18m**	**Brown**	**Sand**
30648	**5.18m**	**44.20m**	**Black**	**Slate**

Overall Well Depth
44.20m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
30648	**14.33m**	**6.82 lpm**
30648	**18.29m**	**4.55 lpm**
30648	**35.05m**	**68.25 lpm**

Setbacks

Well Log	Distance	Setback From
30648	**27.43m**	**Septic Tank**
30648	**24.38m**	**Leach Field**
30648	**274.32m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **35762**

Well Driller's Report

Date printed 12/19/2023

Drilled by			
Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/24/2017

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35762	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m *(BTC - Below top of casing)*	15.92 lpm	3hrs 03min	6.40m	15.92 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
118.87m

Driller's Log

Well Log	From	End	Colour	Rock Type
35762	**0m**	**0.61m**	**Brown**	**Gravel**
35762	**0.61m**	**121.92m**	**Grey**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
0.61m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35762	**14.63m**	**2.28 lpm**
35762	**42.37m**	**4.55 lpm**
35762	**91.44m**	**4.55 lpm**
35762	**109.73m**	**4.55 lpm**

Setbacks

Well Log	Distance	Setback From
35762	**79.25m**	**Right of any Public Way Road**
35762	**89.31m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35763**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/26/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35763	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	129.54m *(BTC - Below top of casing)*	227.5 lpm	3hrs 01min	7.62m	227.5 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35763	**Bentonite**	**0m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
121.92m

Driller's Log

Well Log	From	End	Colour	Rock Type
35763	**0m**	**2.13m**	**Brown**	**Clay and Stone**
35763	**2.13m**	**129.54m**	**Grey**	**Granite**

Overall Well Depth
129.54m

Bedrock Level
2.13m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35763	**27.43m**	**2.28 lpm**
35763	**51.51m**	**63.7 lpm**
35763	**59.44m**	**182 lpm**
35763	**118.87m**	**13.65 lpm**

Setbacks

Well Log	Distance	Setback From
35763	**91.44m**	**Right of any Public Way Road**
35763	**101.50m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35764**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/01/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35764	**Steel**	**15.24cm**	**0m**	**7.92m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	137.16m *(BTC - Below top of casing)*	63.7 lpm	1hr 54min	6.40m	61.42 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
132.59m

Driller's Log

Well Log	From	End	Colour	Rock Type
35764	**0m**	**6.40m**	**Brown**	**Clay and Stone**
35764	**6.40m**	**137.16m**	**Grey**	**Granite**

Overall Well Depth
137.16m

Bedrock Level
6.40m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35764	**47.24m**	**27.3 lpm**
35764	**83.82m**	**27.3 lpm**
35764	**118.57m**	**9.1 lpm**

Setbacks

Well Log	Distance	Setback From
35764	**45.72m**	**Right of any Public Way Road**
35764	**55.78m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35765**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/31/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35765	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	129.54m *(BTC - Below top of casing)*	218.4 lpm	2hrs 02min	3.35m	218.4 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35765	**Bentonite**	**0m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
121.92m

Driller's Log

Well Log	From	End	Colour	Rock Type
35765	**0m**	**3.96m**	**Grey**	**Clay**
35765	**3.96m**	**67.06m**	**Grey**	**Granite**
35765	**67.06m**	**78.64m**	**Black**	**Granite**
35765	**78.64m**	**129.54m**	**Grey**	**Granite**

Overall Well Depth
129.54m

Bedrock Level
3.96m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35765	**19.81m**	**22.75 lpm**
35765	**23.16m**	**22.75 lpm**
35765	**32.00m**	**27.3 lpm**
35765	**53.34m**	**45.5 lpm**
35765	**68.58m**	**22.75 lpm**
35765	**92.96m**	**13.65 lpm**
35765	**114.30m**	**31.85 lpm**
35765	**121.92m**	**31.85 lpm**

Setbacks

Well Log	Distance	Setback From
35765	**304.80m**	**Right of any Public Way Road**
35765	**314.55m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35766**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/01/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35766	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m *(BTC - Below top of casing)*	20.48 lpm	3hrs 01min	3.35m	20.48 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
118.57m

Driller's Log

Well Log	From	End	Colour	Rock Type
35766	**0m**	**1.83m**	**Brown**	**Mud and Gravel**
35766	**1.83m**	**102.41m**	**Grey**	**Granite**
35766	**102.41m**	**121.92m**	**Brown**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
1.83m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35766	**12.19m**	**9.1 lpm**
35766	**47.85m**	**9.1 lpm**
35766	**91.44m**	**2.28 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **35767**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/02/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35767	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m *(BTC - Below top of casing)*	182 lpm	1hr 01min	2.13m	182 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35767	**Bentonite**	**0m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
118.87m

Driller's Log

Well Log	From	End	Colour	Rock Type
35767	**0m**	**1.83m**	**Brown**	**Mud and Stones**
35767	**1.83m**	**47.55m**	**Brown**	**Granite**
35767	**47.55m**	**67.06m**	**Black**	**Granite**
35767	**67.06m**	**74.68m**	**Grey**	**Granite**
35767	**74.68m**	**91.44m**	**Black**	**Granite**
35767	**91.44m**	**121.92m**	**Grey**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
1.83m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35767	**47.55m**	**68.25 lpm**
35767	**56.69m**	**40.95 lpm**
35767	**67.06m**	**22.75 lpm**
35767	**74.68m**	**13.65 lpm**
35767	**94.49m**	**20.48 lpm**
35767	**121.92m**	**15.92 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **35768**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/06/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35768	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m *(BTC - Below top of casing)*	15.92 lpm	3hrs 01min	0m	15.92 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35768	**Bentonite**	**1.83m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
118.87m

Driller's Log

Well Log	From	End	Colour	Rock Type
35768	**0m**	**1.83m**	**Brown**	**Mud and Stones**
35768	**1.83m**	**121.92m**	**Grey and black**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
1.83m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35768	**16.76m**	**2.28 lpm**
35768	**88.39m**	**9.1 lpm**
35768	**96.01m**	**4.55 lpm**

Setbacks

Well Log	Distance	Setback From
35768	**152.40m**	**Right of any Public Way Road**
35768	**161.85m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35769**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/07/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35769	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	83.82m *(BTC - Below top of casing)*	13.65 lpm	4hrs 01min	3.35m	13.65 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35769	**Bentonite**	**4.88m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
76.20m

Driller's Log

Well Log	From	End	Colour	Rock Type
35769	**0m**	**4.57m**	**Brown**	**Mud and Gravel**
35769	**4.57m**	**83.82m**	**Black**	**Granite**

Overall Well Depth
83.82m

Bedrock Level
4.57m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35769	**14.02m**	**4.55 lpm**
35769	**44.20m**	**9.1 lpm**

Setbacks

Well Log	Distance	Setback From
35769	**152.40m**	**Right of any Public Way Road**
35769	**162.46m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35770**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/08/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35770	Steel	15.24cm	0m	12.19m	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m *(BTC - Below top of casing)*	27.3 lpm	1hr 01min	2.44m	27.3 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35770	Bentonite	10.97m	12.19m

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
118.87m

Driller's Log

Well Log	From	End	Colour	Rock Type
35770	0m	0.91m	Brown	Mud
35770	0.91m	11.28m	Brown	Clay
35770	11.28m	121.92m	Grey	Granite

Overall Well Depth
121.92m

Bedrock Level
11.28m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35770	22.86m	4.55 lpm
35770	95.10m	22.75 lpm

Setbacks

Well Log	Distance	Setback From
35770	182.88m	Right of any Public Way Road
35770	192.94m	Center of road

New Nouveau Brunswick

Environment

Report Number **35771**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/09/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35771	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m	91 lpm	2hrs 30min	4.27m	91 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

Well Log	Grout Type	From	End
35771	**Bentonite**	**3.96m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
118.87m

Driller's Log

Well Log	From	End	Colour	Rock Type
35771	**0m**	**3.96m**	**Brown**	**Mud and Stones**
35771	**3.96m**	**121.92m**	**Black**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
3.96m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35771	**47.55m**	**18.2 lpm**
35771	**64.01m**	**59.15 lpm**
35771	**94.49m**	**13.65 lpm**

Setbacks

Well Log	Distance	Setback From
35771	**152.40m**	**Right of any Public Way Road**
35771	**162.46m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **35772**

Well Driller's Report

Date printed 12/19/2023

Drilled by			
Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/10/2017

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
35772	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	121.92m *(BTC - Below top of casing)*	250.25 lpm	1hr 01min	7.32m	250.25 lpm	No	0 lpm

Well Grouting

Well Log	Grout Type	From	End
35772	**Bentonite**	**3.96m**	**6.10m**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
119.18m

Driller's Log

Well Log	From	End	Colour	Rock Type
35772	**0m**	**3.96m**	**Brown**	**Mud and Stones**
35772	**3.96m**	**121.92m**	**Black**	**Granite**

Overall Well Depth
121.92m

Bedrock Level
3.96m

Water Bearing Fracture Zone

Well Log	Depth	Rate
35772	**6.71m**	**2.28 lpm**
35772	**124.97m**	**18.2 lpm**
35772	**83.52m**	**109.2 lpm**
35772	**9.14m**	**116.02 lpm**
35772	**100.58m**	**4.55 lpm**

Setbacks

Well Log	Distance	Setback From
35772	**152.40m**	**Right of any Public Way Road**
35772	**162.46m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **37197**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/08/2018

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
37197	**Steel**	**15.24cm**	**0m**	**21.34m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	12.19m	136.5 lpm	1hr	12.19m	136.5 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
24.38m

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	**0m**	**5.49m**	**Grey**	**Sandstone**
37197	**5.49m**	**19.81m**	**Brown**	**Clay**
37197	**19.81m**	**36.58m**	**Grey**	**Sandstone**
37197	**36.58m**	**42.67m**	**Brown**	**Clay**

Overall Well Depth
42.67m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	**36.58m**	**136.5 lpm**

Setbacks

Well Log	Distance	Setback From
37197	**18.29m**	**Septic Tank**
37197	**24.38m**	**Leach Field**
37197	**22.86m**	**Right of any Public Way Road**
37197	**24.38m**	**Center of road**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/08/2018

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
37197	**Steel**	**15.24cm**	**0m**	**21.34m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	12.19m	136.5 lpm	1hr	12.19m	136.5 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
24.38m

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	**0m**	**5.49m**	**Grey**	**Sandstone**
37197	**5.49m**	**19.81m**	**Brown**	**Clay**
37197	**19.81m**	**36.58m**	**Grey**	**Sandstone**
37197	**36.58m**	**42.67m**	**Brown**	**Clay**

Overall Well Depth
42.67m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	**36.58m**	**136.5 lpm**

Setbacks

Well Log	Distance	Setback From
37197	**18.29m**	**Septic Tank**
37197	**24.38m**	**Leach Field**
37197	**22.86m**	**Right of any Public Way Road**
37197	**24.38m**	**Center of road**

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/08/2018

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
37197	**Steel**	**15.24cm**	**0m**	**21.34m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	12.19m	136.5 lpm	1hr	12.19m	136.5 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
24.38m

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	**0m**	**5.49m**	**Grey**	**Sandstone**
37197	**5.49m**	**19.81m**	**Brown**	**Clay**
37197	**19.81m**	**36.58m**	**Grey**	**Sandstone**
37197	**36.58m**	**42.67m**	**Brown**	**Clay**

Overall Well Depth
42.67m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	**36.58m**	**136.5 lpm**

Setbacks

Well Log	Distance	Setback From
37197	**18.29m**	**Septic Tank**
37197	**24.38m**	**Leach Field**
37197	**22.86m**	**Right of any Public Way Road**
37197	**24.38m**	**Center of road**

New Nouveau Brunswick

Environment

Report Number **38653**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/27/2015

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
38653	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m	18.2 lpm	1hr	5.49m	18.2 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
39.62m

Driller's Log

Well Log	From	End	Colour	Rock Type
38653	**0m**	**0.91m**	**Brown**	**Till**
38653	**0.91m**	**44.20m**	**Black**	**Granite**

Overall Well Depth
44.20m

Bedrock Level
0.91m

Water Bearing Fracture Zone

Well Log	Depth	Rate
38653	**35.97m**	**18.2 lpm**

Setbacks

Well Log	Distance	Setback From
38653	**18.29m**	**Septic Tank**
38653	**24.38m**	**Leach Field**
38653	**27.43m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **40191**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Industrial	New Well	Rotary	04/06/2015

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
40191	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	5.49m	13.65 lpm	1hr	5.49m	13.65 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
67.06m

Driller's Log

Well Log	From	End	Colour	Rock Type
40191	**0m**	**2.44m**	**Brown**	**Till**
40191	**2.44m**	**82.30m**	**Black**	**Slate**

Overall Well Depth
82.30m

Bedrock Level
2.44m

Water Bearing Fracture Zone

Well Log	Depth	Rate
40191	**56.39m**	**13.65 lpm**

Setbacks

Well Log	Distance	Setback From
40191	**24.38m**	**Septic Tank**
40191	**27.43m**	**Leach Field**
40191	**182.88m**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **42750**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	05/26/2021

Casing Information	Casing above ground	Drive Shoe Used?
There is no casing information.		

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m	0 lpm	0hr	0m	159.25 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0L

Pump Installed
Submersible

Intake Setting (BTC)
0m

Driller's Log

There is no rock layer information.

Overall Well Depth
0m

Bedrock Level
0m

Water Bearing Fracture Zone

There is no water bearing fracture zone information.

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **90015945**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well		01/01/1999

Casing Information	Casing above ground	Drive Shoe Used?
There is no casing information.		

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
	0m	0 lpm	0hr	0m	0 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

There is no rock layer information.

Overall Well Depth
0m

Bedrock Level
0m

Water Bearing Fracture Zone

There is no water bearing fracture zone information.

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **90482100**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well (NEW WELL)	Rotary (ROTARY)	06/07/1996

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
90482100	**Steel**	**15.24cm**	**0m**	**6.71m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
	0m	0 lpm	0hr	0m	4.55 lpm	No	0 lpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
Water

Disinfectant
N/A

Qty 4.55L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

Well Log	From	End	Colour	Rock Type
90482100	**0m**	**4.57m**	**Brown**	**Sand and Gravel Mix**
90482100	**4.57m**	**60.96m**	**Grey**	**Granite**
90482100	**60.96m**	**74.68m**	**Black**	**Shale**
90482100	**74.68m**	**91.44m**	**Grey**	**Granite**

Overall Well Depth
91.44m

Bedrock Level
4.57m

Water Bearing Fracture Zone

Well Log	Depth	Rate
90482100	**88.39m**	**4.55 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91161900**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Exploratory	Deepened (DEEPENED)		07/25/2000

Casing Information

Casing above ground	Drive Shoe Used?

There is no casing information.

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m *(BTC - Below top of casing)*	0 lpm	0hr	0m	204.75 lpm	No	0 lpm

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

There is no rock layer information.

Overall Well Depth
0m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
91161900	**121.92m**	**204.75 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91162000**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Exploratory	New Well (NEW WELL)		07/29/2000

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91162000	**Steel**	**20.32cm**	**0m**	**6.71m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m	0 lpm	0hr	0m	1.36 lpm	No	0 lpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

There is no rock layer information.

Overall Well Depth
0m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
91162000	**73.15m**	**1.36 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91162100**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Exploratory	New Well (NEW WELL)		07/28/2000

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91162100	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m	0 lpm	0hr	0m	27.3 lpm	No	0 lpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

There is no rock layer information.

Overall Well Depth
0m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
91162100	**32.00m**	**27.3 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91162200**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Exploratory	New Well (NEW WELL)		07/31/2000

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91162200	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m	0 lpm	0hr	0m	63.7 lpm	No	0 lpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
N/A

Intake Setting (BTC)
0m

Driller's Log

There is no rock layer information.

Overall Well Depth
0m

Bedrock Level
0m

Water Bearing Fracture Zone

Well Log	Depth	Rate
91162200	**30.48m**	**27.3 lpm**
91162200	**85.34m**	**36.4 lpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91594600**

Well Driller's Report

Date printed 12/19/2023

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well (NEW WELL)	Rotary (ROTARY)	06/16/1999

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91594600	**Steel**	**15.24cm**	**0m**	**6.10m**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	0m	91 lpm	0hr	3.05m	91 lpm	No	0 lpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
N/A

Qty 0L

Pump Installed
Submersible
Intake Setting (BTC)
19.81m

Driller's Log

Well Log	From	End	Colour	Rock Type
91594600	**0m**	**4.27m**	**Brown**	**Clay and Gravel**
91594600	**4.27m**	**25.91m**	**Black**	**Slate**

Overall Well Depth
25.91m

Bedrock Level
4.27m

Water Bearing Fracture Zone

Well Log	Depth	Rate
91594600	**23.77m**	**91 lpm**

Setbacks

There is no Setback information.

Sample Information

ALK_T(mg/L)	Al(mg/L)	As(µg/L)	B(mg/L)	Ba(mg/L)	Br(mg/L)	COND(µS/cm)	Ca(mg/L)	Cd(µg/L)	Cl(mg/L)	Cr(µg/L)	Cu(µg/L)	E.coli PA(/PA)	F(mg/L)	Fe(mg/L)	HARD(mg/L)	K(mg/L)	Mg(mg/L)	Mn(mg/L)	NO2(mg/L)	NO3(mg/L)	NOX(mg/L)	Na(mg/L)	Pb(µg/L)	SO4(mg/L)	Sb(µg/L)	Se(µg/L)	TC-PA(/PA)	TURB(NTU)	Ti(µg/L)	U(µg/L)	Zn(µg/L)	pH(pH)	Ir-cCOND(µS/cm)	Ir-rTDS(mg/L)	Ir-ΔB(mo units)	Ir-Δ(Dno units)	Ir-Δ(Eqm)	Ir-CAT(Eqm)	Ir-CO3(mg/L)	Ir-DIFB(%)	Ir-DIFC(%)	Ir-HCO3(mg/L)	Ir-OH(mg/L)	Ir-SIN(mo units)	Ir-DIFTDS(%)	E.coli-MPN/MPN+100ml	TC-MPN/MPN+100ml
113	< 0.025	< 1.5	0.014	< 0.01	0.229	263	44.2	< 0.5	5.05	< 10	13	Ab	< 0.1	0.081	124	1.3	3.28	0.042	< 0.05	0.18	0.23	5.68	2	7.14	< 1	< 1.5	Ab	0.65	< 1	< 0.5	5	7.58	233.821	135.966	-1.27	2.131	2.579	2.765	0.4	-3.48	5.873	112.6	0	-0.017			
103	< 0.025	< 1.5	0.02	< 0.01	< 0.1	248	36.2	< 0.5	5.16	< 10	132	Ab	< 0.1	0.01	108	2.4	3.12	0.014	< 0.05	0.82	0.87	7.28	* 12	8.95	< 1	< 1.5	Ab	< 0.2	< 1	< 0.5	130	7.64	220.632	131.287	-0.5	2.1	2.48	2.553	0.4	-1.452	5.84	102.6	0	-0.056			
73.4	< 0.025	* 23	0.024	< 0.01	< 0.1	226	28.8	< 0.5	17.5	< 10	< 10	Ab	0.133	0.014	81.7	0.7	2.38	< 0.005	< 0.05	0.23	0.23	14.9	< 1	10.7	1.7	< 1.5	Ab	< 0.2	< 1	0.6	< 5	8.14	214.35	120.33	-0.6761	0.9161	2.2077	2.3032	0.9303	-2.1164	2.6458	72.39	0.069	0.1624	-99.995		
																																												0	0
120	< 0.025	2.74	< 0.2	0.02	< 0.1	415	48.7	< 0.5	53.1	11	< 10	Ab	0.193	* 0.56	159.4	2.72	9.19	0.261	< 0.05	< 0.05	< 0.05	13.2	< 1	9.99	< 1	< 1.5	Pr	* 6.2	< 1	1.27	< 5	7.81	380.397	210.176	1.45	1.646	4.12	3.873	0	3.09	4.35	120	0	0.113	-100		

APPENDIX C

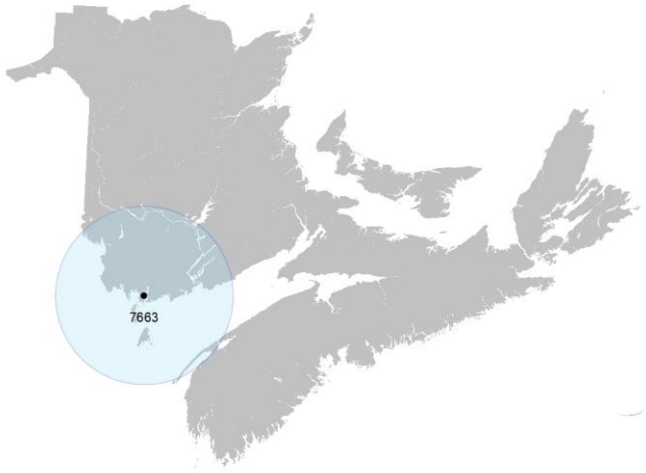
2023 AC CDC Data Report

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

DATA REPORT 7663: Caithness, NB

Prepared 3 May 2023
by J. Pender, Conservation Data Analyst

CONTENTS OF REPORT



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:

Filename	Contents
CaithnessNB_7663ob.xls	Rare or legally-protected Flora and Fauna in your study area
CaithnessNB_7663ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
CaithnessNB_7663msa.xls	Managed and Biologically Significant Areas in your study area
CaithnessNB_7663ff_py.xls	Rare 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
(506) 364-2658
sean.blaney@accdc.ca

Animals (Fauna)
John Klymko
Zoologist
(506) 364-2660
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Data Management, GIS
James Churchill
Conservation Data Analyst / Field Biologist
(902) 679-6146
james.churchill@accdc.ca

Billing
Jean Breau
Financial Manager / Executive Assistant
(506) 364-2657
jean.breau@accdc.ca

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
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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

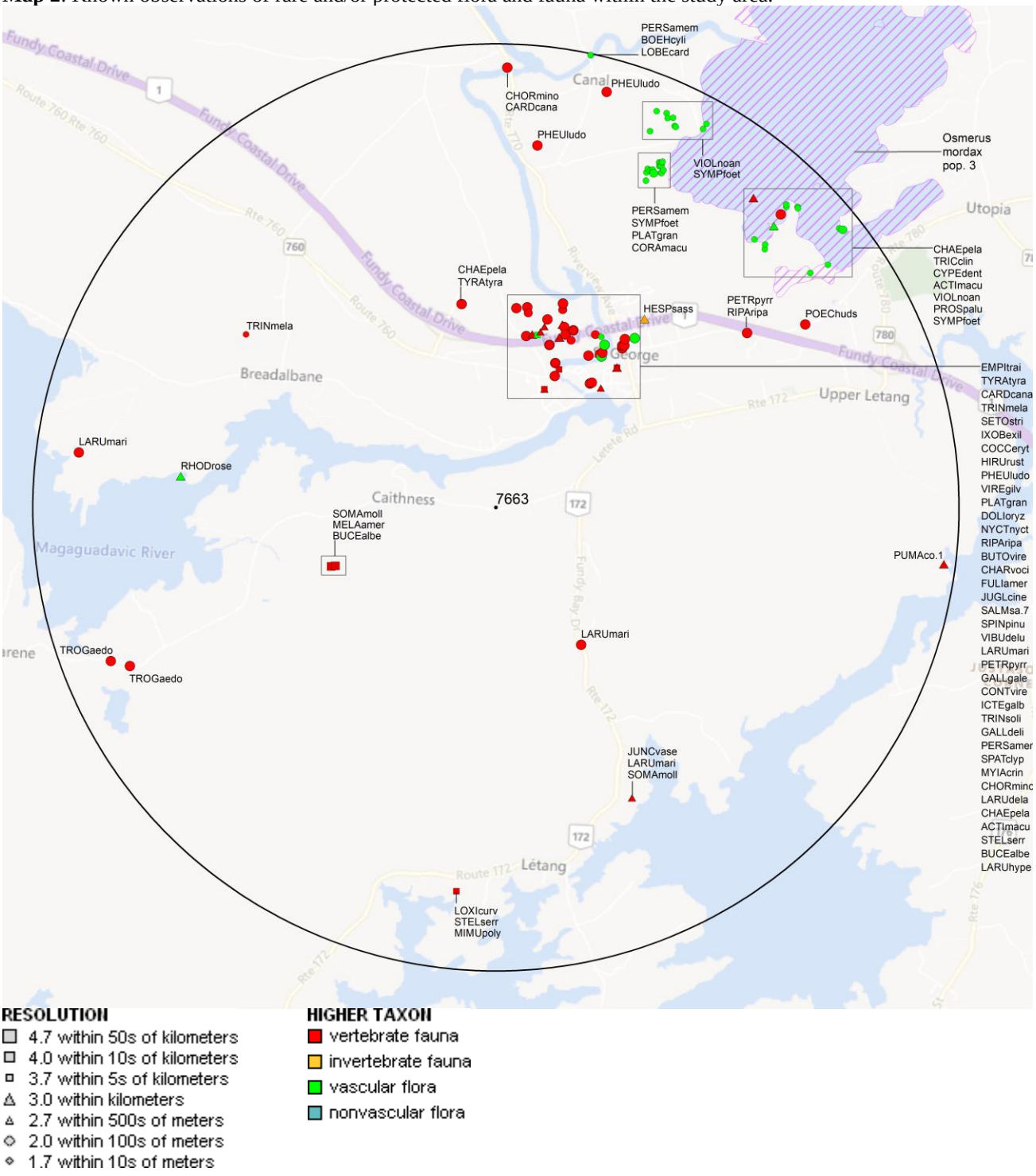
2.1 FLORA

The study area contains 50 records of 14 vascular and no records of nonvascular flora (Map 2 and attached: *ob.xls), excluding 'location-sensitive' species.

2.2 FAUNA

The study area contains 178 records of 41 vertebrate and 1 record of 1 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List), excluding 'location-sensitive' species. 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 1 managed area in the vicinity of the study area (Map 3 and attached file: *msa.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified 3 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *msa.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 (± 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	# recs	Distance (km)
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	1	2.4 ± 0.0
P	*Viburnum dentatum var. lucidum*	Northern Arrow-Wood				S2	2	2.1 ± 0.0
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S2	3	2.0 ± 0.0
P	*Viola novae-angliae*	New England Violet				S2S3	7	4.0 ± 0.0
P	*Rhodiola rosea*	Roseroot				S3	1	3.4 ± 1.0
P	*Proserpinaca palustris*	Marsh Mermaidweed				S3	2	4.1 ± 0.0
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3	21	4.0 ± 0.0
P	*Juncus vaseyi*	Vasey Rush				S3	1	3.5 ± 0.0
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	5	1.9 ± 5.0
P	*Lobelia cardinalis*	Cardinal Flower				S3S4	1	5.0 ± 0.0
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3S4	1	5.0 ± 0.0
P	*Cyperus dentatus*	Toothed Flatsedge				S3S4	2	4.3 ± 1.0
P	*Trichophorum clintonii*	Clinton's Clubrush				S3S4	2	4.6 ± 0.0
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	1	3.9 ± 0.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Salmo salar pop. 7*	Atlantic Salmon - Outer Bay of Fundy population	Endangered		Endangered	SNR	1	1.9 ± 1.0
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B	5	1.6 ± 5.0
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2B	27	1.8 ± 0.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	21	1.4 ± 6.0
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Threatened	S2B	6	1.7 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	1	2.0 ± 0.0
A	*Dolichonyx oryzivorus*	Bobolink	Special Concern	Threatened	Threatened	S3B	3	2.0 ± 2.0
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	9	1.7 ± 0.0
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	5	2.0 ± 0.0
A	*Fulica americana*	American Coot	Not At Risk			S1B	1	1.8 ± 0.0
A	*Puma concolor pop. 1*	Cougar - Eastern population	Data Deficient		Endangered	SU	1	4.9 ± 1.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S4S5M	2	2.2 ± 0.0
A	*Gallinula galeata*	Common Gallinule				S1B	3	1.6 ± 5.0
A	*Butorides virescens*	Green Heron				S1S2B	1	2.0 ± 0.0
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B	1	2.0 ± 0.0
A	*Empidonax traillii*	Willow Flycatcher				S1S2B	2	2.2 ± 0.0
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B	3	1.6 ± 0.0
A	*Troglodytes aedon*	House Wren				S1S2B	2	4.3 ± 0.0
A	*Melanitta americana*	American Scoter				S1S2N,S3M	2	1.8 ± 16.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2B	2	1.8 ± 0.0
A	*Mimus polyglottos*	Northern Mockingbird				S2B	1	4.2 ± 7.0
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S4S5M	1	2.0 ± 2.0
A	*Larus hyperboreus*	Glaucous Gull				S2N	1	1.4 ± 0.0
A	*Icterus galbula*	Baltimore Oriole				S2S3B	2	1.8 ± 0.0
A	*Somateria mollissima*	Common Eider				S2S3B,S2S3N,S4M	7	1.8 ± 16.0
A	*Larus delawarensis*	Ring-billed Gull				S2S3B,S4N,S5M	2	1.7 ± 0.0
A	*Larus marinus*	Great Black-backed Gull				S3	6	1.7 ± 0.0

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Loxia curvirostra*	Red Crossbill				S3	2	4.2 ± 7.0
A	*Spinus pinus*	Pine Siskin				S3	2	2.2 ± 0.0
A	*Spatula clypeata*	Northern Shoveler				S3B	1	2.0 ± 4.0
A	*Charadrius vociferus*	Killdeer				S3B	4	2.0 ± 0.0
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	1	2.1 ± 0.0
A	*Myiarchus crinitus*	Great Crested Flycatcher				S3B	1	1.7 ± 0.0
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	3	2.2 ± 0.0
A	*Bucephala albeola*	Bufflehead				S3N	9	1.7 ± 0.0
A	*Poecile hudsonicus*	Boreal Chickadee				S3S4	1	3.9 ± 0.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	27	1.4 ± 6.0
A	*Vireo gilvus*	Warbling Vireo				S3S4B	3	1.9 ± 0.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S4M	4	1.6 ± 5.0
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	1	2.0 ± 1.0
A	*Setophaga striata*	Blackpoll Warbler				S3S4B,S5M	1	2.2 ± 0.0
I	*Hesperia sassacus*	Indian Skipper				S3	1	2.6 ± 1.0

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?
Chrysemys picta picta	Eastern Painted Turtle	Special Concern		No
Chelydra serpentina	**Snapping Turtle**	**Special Concern**	**Special Concern**	**YES**
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Haliaeetus leucocephalus	**Bald Eagle**		**Endangered**	**YES**
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.		Endangered	No
Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	No
Coenonympha nipisiquit	Maritime Ringlet	Endangered	Endangered	No
Bat hibernaculum or bat species occurrence		[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
70	Berrigan, L. 2019. Maritimes Marsh Monitoring Project 2013, 2014, 2016, 2017, and 2018 data. Bird Studies Canada, Sackville, NB.
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14	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
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3	Wallace, S. 2020. Stewardship Department species occurrence data on NTNB preserves. Nature Trust of New Brunswick.
2	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
1	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
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1	Dept of Fisheries & Oceans, source unspecified.
1	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
1	Erskine, A.J. 1999. Maritime Nest Records Scheme (MNRS) 1937-1999. Canadian Wildlife Service, Sackville, 313 recs.
1	Manthorne, A. 2019. Incidental aerial insectivore observations. Birds Canada.
1	Nature Trust of New Brunswick (NTNB). 2020. Nature Preserves and Conservation Easements (Received: 18 September, 2020). NTNB.
1	Nature Trust of New Brunswick. 2021. Nature Trust of New Brunswick site inventory data submitted in April 2021. Nature Trust of New Brunswick, 2189 records.
1	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor couguar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 40585 records of 158 vertebrate and 1310 records of 72 invertebrate fauna; 7511 records of 329 vascular and 1349 records of 160 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 (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	62	35.3 ± 5.0	NB
A	*Myotis septentrionalis*	Northern Myotis	Endangered	Endangered	Endangered	S1	14	52.7 ± 1.0	NB
A	*Perimyotis subflavus*	Tricolored Bat	Endangered	Endangered	Endangered	S1	2	58.4 ± 0.0	NB
A	*Eubalaena glacialis*	North Atlantic Right Whale	Endangered	Endangered	Endangered	S1	7	15.1 ± 1.0	NB
A	*Osmerus mordax pop. 2*	Rainbow Smelt - Lake Utopia Large-bodied population	Endangered	Threatened	Threatened	S1	2	6.3 ± 1.0	NB
A	*Charadrius melodus melodus*	Piping Plover melodus subspecies	Endangered	Endangered	Endangered	S1B	27	28.5 ± 0.0	NB
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1B	21	11.2 ± 0.0	NB
A	*Dermochelys coriacea pop. 2*	Leatherback Sea Turtle - Atlantic population	Endangered	Endangered	Endangered	S1S2N	5	36.1 ± 0.0	NB
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered	Endangered	S2	7	24.3 ± 0.0	NB
A	*Salmo salar pop. 7*	Atlantic Salmon - Outer Bay of Fundy population	Endangered		Endangered	SNR	361	1.9 ± 1.0	NB
A	*Rangifer tarandus pop. 2*	Caribou - Atlantic-Gasp ├⌐sie population	Endangered	Endangered	Extirpated	SX	4	44.6 ± 1.0	NB
A	*Lanius ludovicianus*	Loggerhead Shrike	Endangered	Endangered		SXB	1	52.0 ± 1.0	NB
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B	20	17.0 ± 7.0	NB
A	*Asio flammeus*	Short-eared Owl	Threatened	Special Concern	Special Concern	S1S2B	17	43.5 ± 7.0	NB
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B	33	1.6 ± 5.0	NB
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened	Threatened	S1S2B	157	8.5 ± 7.0	NB
A	*Hydrobates leucorhous*	Leach's Storm-Petrel	Threatened			S1S2B	146	11.2 ± 0.0	NB
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B	21	5.8 ± 7.0	NB
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2B	787	1.8 ± 0.0	NB
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2S3	953	7.8 ± 0.0	NB
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	410	1.4 ± 6.0	NB
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened		Threatened	S3B,S3N	2	64.2 ± 1.0	NB
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	653	8.9 ± 0.0	NB
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S3M	95	30.9 ± 1.0	NB
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4N	61	14.1 ± 1.0	NB
A	*Coturnicops noveboracensis*	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	3	94.5 ± 7.0	NB
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	210	8.6 ± 0.0	NB
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Special Concern	Threatened	Threatened	S2B	69	8.5 ± 7.0	NB
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Threatened	S2B	1066	1.7 ± 0.0	NB
A	*Balaenoptera physalus*	Fin Whale	Special Concern	Special Concern		S2S3	19	8.6 ± 0.0	NB
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S2S3B,S3M	122	5.8 ± 7.0	NB
A	*Bucephala islandica*	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	60	8.6 ± 0.0	NB
A	*Acipenser brevirostrum*	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	11	57.4 ± 10.0	NB
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	66	2.0 ± 0.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	460	2.0 ± 0.0	NB
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	240	5.8 ± 7.0	NB
A	*Dolichonyx oryzivorus*	Bobolink	Special Concern	Threatened	Threatened	S3B	541	2.0 ± 4.0	NB
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	152	5.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	267	1.7 ± 0.0	NB
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S3M	229	7.1 ± 0.0	NB
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern	Special Concern	S3N	269	7.6 ± 22.0	NB
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	1057	2.0 ± 2.0	NB
A	*Phocoena phocoena*	Harbour Porpoise	Special Concern		Spec.Concern	S4	240	5.9 ± 5.0	NB
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern	Special Concern		S4	70	16.6 ± 0.0	NB
A	*Anarhichas lupus*	Atlantic Wolffish	Special Concern	Special Concern	Special Concern	SNR	1	24.0 ± 0.0	NB
A	*Fulica americana*	American Coot	Not At Risk			S1B	7	1.8 ± 0.0	NB
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	563	8.8 ± 1.0	NB
A	*Falco peregrinus*	Peregrine Falcon	Not At Risk	Special Concern		S1B,S3M	1	46.6 ± 0.0	NB
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	33	20.3 ± 0.0	NB
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1S2B	19	16.7 ± 0.0	NB
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk			S1S2B	50	15.5 ± 7.0	NB
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B,SUM	5	43.7 ± 1.0	NB
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk			S2	2	63.9 ± 1.0	NB
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B	347	51.0 ± 0.0	NB
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S2N,S3M	720	7.0 ± 0.0	NB
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3	3	24.0 ± 1.0	NB
A	*Desmognathus fuscus pop. 2*	Northern Dusky Salamander - Quebec / New Brunswick population	Not At Risk			S3	64	23.3 ± 1.0	NB
A	*Megaptera novaeangliae*	Humpback Whale	Not At Risk			S3	35	11.1 ± 0.0	NB
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	380	11.2 ± 0.0	NB
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4	2	55.1 ± 0.0	NB
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S4	1599	1.4 ± 6.0	NB
A	*Lynx canadensis*	Canada Lynx	Not At Risk		Endangered	S4	8	24.1 ± 50.0	NB
A	*Canis lupus*	Grey Wolf	Not At Risk		Extirpated	SX	3	52.6 ± 1.0	NB
A	*Puma concolor pop. 1*	Cougar - Eastern population	Data Deficient		Endangered	SU	36	4.9 ± 1.0	NB
A	*Calidris canutus rufa*	Red Knot rufa subspecies	E,SC	Endangered	Endangered	S2M	407	17.3 ± 0.0	NB
A	*Morone saxatilis*	Striped Bass	E,SC			S3S4B,S3S4N	12	21.0 ± 1.0	NB
A	*Thryothorus ludovicianus*	Carolina Wren				S1	35	7.8 ± 0.0	NB
A	*Vireo flavifrons*	Yellow-throated Vireo				S1?B	16	39.8 ± 27.0	NB
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S4S5M	1317	2.2 ± 0.0	NB
A	*Aythya americana*	Redhead				S1B	8	41.9 ± 0.0	NB
A	*Gallinula galeata*	Common Gallinule				S1B	28	1.6 ± 5.0	NB
A	*Grus canadensis*	Sandhill Crane				S1B	9	20.3 ± 0.0	NB
A	*Bartramia longicauda*	Upland Sandpiper				S1B	49	7.5 ± 12.0	NB
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B	61	32.1 ± 1.0	NB
A	*Leucophaeus atricilla*	Laughing Gull				S1B	88	8.6 ± 0.0	NB
A	*Rissa tridactyla*	Black-legged Kittiwake				S1B	63	9.2 ± 0.0	NB
A	*Uria aalge*	Common Murre				S1B	154	9.3 ± 0.0	NB
A	*Alca torda*	Razorbill				S1B	192	9.3 ± 0.0	NB
A	*Fratercula arctica*	Atlantic Puffin				S1B	190	8.8 ± 1.0	NB
A	*Progne subis*	Purple Martin				S1B	181	18.1 ± 0.0	NB
A	*Histrionicus histrionicus*	Harlequin Duck				S1B,S1S2N,S2M	1	46.4 ± 0.0	NB
A	*Aythya marila*	Greater Scaup				S1B,S2N,S4M	40	17.6 ± 2.0	NB
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	48	20.4 ± 0.0	NB
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	207	18.5 ± 0.0	NB
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	26	9.9 ± 7.0	NB
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	153	8.8 ± 1.0	NB
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	40	7.5 ± 0.0	NB
A	*Branta bernicla*	Brant				S1N,S2S3M	541	7.8 ± 1.0	NB
A	*Calidris alba*	Sanderling				S1N,S3S4M	907	14.1 ± 1.0	NB
A	*Butorides virescens*	Green Heron				S1S2B	32	2.0 ± 0.0	NB
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B	66	2.0 ± 0.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S1S2B	94	2.2 ± 0.0	NB
A	*Stelgidopteryx serripennis*	Northern Rough-winged				S1S2B	27	1.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
		Swallow							
A	*Troglodytes aedon*	House Wren				S1S2B	32	4.3 ± 0.0	NB
A	*Calidris bairdii*	Baird's Sandpiper				S1S2M	139	31.7 ± 1.0	NB
A	*Melanitta americana*	American Scoter				S1S2N,S3M	798	1.8 ± 16.0	NB
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2B	430	1.8 ± 0.0	NB
A	*Cistothorus palustris*	Marsh Wren				S2B	394	39.1 ± 0.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S2B	139	4.2 ± 7.0	NB
A	*Pooecetes gramineus*	Vesper Sparrow				S2B	59	8.0 ± 7.0	NB
A	*Mareca strepera*	Gadwall				S2B,S3M	99	17.6 ± 3.0	NB
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S4S5M	268	2.0 ± 2.0	NB
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	27	24.0 ± 0.0	NB
A	*Phalacrocorax carbo*	Great Cormorant				S2N	321	7.5 ± 0.0	NB
A	*Somateria spectabilis*	King Eider				S2N	56	16.6 ± 0.0	NB
A	*Larus hyperboreus*	Glaucous Gull				S2N	160	1.4 ± 0.0	NB
A	*Melanitta perspicillata*	Surf Scoter				S2N,S4M	113	10.6 ± 9.0	NB
A	*Melanitta deglandi*	White-winged Scoter				S2N,S4M	44	10.6 ± 9.0	NB
A	*Asio otus*	Long-eared Owl				S2S3	21	8.4 ± 7.0	NB
A	*Picoides dorsalis*	American Three-toed Woodpecker				S2S3	10	24.4 ± 7.0	NB
A	*Toxostoma rufum*	Brown Thrasher				S2S3B	81	5.2 ± 6.0	NB
A	*Icterus galbula*	Baltimore Oriole				S2S3B	176	1.8 ± 0.0	NB
A	*Somateria mollissima*	Common Eider				S2S3B,S2S3N,S4M	2022	1.8 ± 16.0	NB
A	*Larus delawarensis*	Ring-billed Gull				S2S3B,S4N,S5M	304	1.7 ± 0.0	NB
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	289	17.8 ± 0.0	NB
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	36	44.1 ± 0.0	NB
A	*Larus marinus*	Great Black-backed Gull				S3	461	1.7 ± 0.0	NB
A	*Picoides arcticus*	Black-backed Woodpecker				S3	41	8.4 ± 7.0	NB
A	*Loxia curvirostra*	Red Crossbill				S3	101	4.2 ± 7.0	NB
A	*Spinus pinus*	Pine Siskin				S3	188	2.2 ± 0.0	NB
A	*Prosopium cylindraceum*	Round Whitefish				S3	2	65.3 ± 10.0	NB
A	*Salvelinus namaycush*	Lake Trout				S3	6	20.1 ± 0.0	NB
A	*Sorex maritimensis*	Maritime Shrew				S3	1	93.4 ± 1.0	NB
A	*Spatula clypeata*	Northern Shoveler				S3B	95	2.0 ± 4.0	NB
A	*Charadrius vociferus*	Killdeer				S3B	744	2.0 ± 0.0	NB
A	*Tringa semipalmata*	Willet				S3B	174	17.6 ± 2.0	NB
A	*Cepphus grylle*	Black Guillemot				S3B	809	6.0 ± 7.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	150	2.1 ± 0.0	NB
A	*Myiarchus crinitus*	Great Crested Flycatcher				S3B	291	1.7 ± 0.0	NB
A	*Piranga olivacea*	Scarlet Tanager				S3B	165	8.4 ± 7.0	NB
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	555	2.2 ± 0.0	NB
A	*Passerina cyanea*	Indigo Bunting				S3B	98	5.8 ± 7.0	NB
A	*Molothrus ater*	Brown-headed Cowbird				S3B	214	5.8 ± 7.0	NB
A	*Setophaga tigrina*	Cape May Warbler				S3B,S4S5M	106	5.8 ± 7.0	NB
A	*Mergus serrator*	Red-breasted Merganser				S3B,S4S5N,S5M	396	5.8 ± 7.0	NB
A	*Anas acuta*	Northern Pintail				S3B,S5M	48	34.7 ± 2.0	NB
A	*Anser caerulescens*	Snow Goose				S3M	6	44.1 ± 0.0	NB
A	*Numenius phaeopus hudsonicus*	Whimbrel				S3M	460	8.8 ± 1.0	NB
A	*Arenaria interpres*	Ruddy Turnstone				S3M	753	17.2 ± 0.0	NB
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	2608	6.4 ± 0.0	NB
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	353	23.7 ± 2.0	NB
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	862	8.9 ± 0.0	NB
A	*Phalaropus fulicarius*	Red Phalarope				S3M	127	7.1 ± 0.0	NB
A	*Bucephala albeola*	Bufflehead				S3N	1133	1.7 ± 0.0	NB
A	*Calidris maritima*	Purple Sandpiper				S3N	272	8.5 ± 10.0	NB
A	*Uria lomvia*	Thick-billed Murre				S3N,S3M	67	7.2 ± 0.0	NB

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A	*Perisoreus canadensis*	Canada Jay				S3S4	200	5.8 ± 7.0	NB
A	*Poecile hudsonicus*	Boreal Chickadee				S3S4	179	3.9 ± 0.0	NB
A	*Eptesicus fuscus*	Big Brown Bat				S3S4	50	8.5 ± 1.0	NB
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	18	64.4 ± 1.0	NB
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	515	1.4 ± 6.0	NB
A	*Vireo gilvus*	Warbling Vireo				S3S4B	232	1.9 ± 0.0	NB
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S4M	1057	1.6 ± 5.0	NB
A	*Melospiza lincolnii*	Lincoln's Sparrow				S3S4B,S4M	217	5.8 ± 7.0	NB
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	835	2.0 ± 1.0	NB
A	*Setophaga striata*	Blackpoll Warbler				S3S4B,S5M	95	2.2 ± 0.0	NB
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	1143	8.9 ± 0.0	NB
A	*Morus bassanus*	Northern Gannet				SHB	851	8.8 ± 1.0	NB
C	*Quercus macrocarpa - Acer rubrum / Onoclea sensibilis - Carex arcta Forest*	Bur Oak - Red Maple / Sensitive Fern - Northern Clustered Sedge Forest				S2	1	99.0 ± 0.0	NB
C	*Acer saccharinum / Onoclea sensibilis - Lysimachia terrestris Forest*	Silver Maple / Sensitive Fern - Swamp Yellow Loosestrife Forest				S3	1	65.2 ± 0.0	NB
C	*Acer saccharum - Fraxinus americana / Polystichum acrostichoides Forest*	Sugar Maple - White Ash / Christmas Fern Forest				S3S4	2	84.2 ± 0.0	NB
I	*Bombus bohemicus*	Ashton Cuckoo Bumble Bee	Endangered	Endangered		S1	8	17.2 ± 5.0	NB
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	243	5.8 ± 7.0	NB
I	*Bombus affinis*	Rusty-patched Bumble Bee	Endangered	Endangered		SH	1	95.4 ± 5.0	NB
I	*Bombus suckleyi*	Suckley's Cuckoo Bumble Bee	Threatened			SH	1	70.2 ± 5.0	NB
I	*Gomphurus ventricosus*	Skillet Clubtail	Special Concern	Endangered	Endangered	S2	94	89.1 ± 0.0	NB
I	*Cicindela marginipennis*	Cobblestone Tiger Beetle	Special Concern	Endangered	Endangered	S2S3	14	98.3 ± 0.0	NB
I	*Ophiogomphus howei*	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2S3	17	11.0 ± 0.0	NB
I	*Alasmidonta varicosa*	Brook Floater	Special Concern	Special Concern	Special Concern	S3	1	64.7 ± 0.0	NB
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S3	79	65.1 ± 0.0	NB
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern		S4	82	7.2 ± 0.0	NB
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern			SH	15	55.2 ± 0.0	NB
I	*Appalachina sayana sayana*	Spike-lip Crater Snail	Not At Risk			S3?	1	68.8 ± 1.0	NB
I	*Conotrachelus juglandis*	Butternut Curculio				S1	3	91.7 ± 0.0	NB
I	*Haematopota rara*	Shy Cleg				S1	1	91.7 ± 1.0	NB
I	*Tharsalea dorcas*	Dorcas Copper				S1	1	41.1 ± 0.0	NB
I	*Erora laeta*	Early Hairstreak				S1	6	68.6 ± 7.0	NB
I	*Somatochlora septentrionalis*	Muskeg Emerald				S1	1	89.0 ± 1.0	NB
I	*Polites origenes*	Crossline Skipper				S1?	8	87.4 ± 0.0	NB
I	*Icaricia saepiolus*	Greenish Blue				S1S2	4	16.9 ± 0.0	NB
I	*Pachydiplax longipennis*	Blue Dasher				S1S2	3	15.3 ± 1.0	NB
I	*Encyclops caeruleus*	Cerulean Long-horned Beetle				S2	1	94.1 ± 0.0	NB
I	*Scaphinotus viduus*	Bereft Snail-eating Beetle				S2	1	80.9 ± 0.0	NB
I	*Brachyleptura circumdata*	Dark-shouldered Long-horned Beetle				S2	6	92.7 ± 0.0	NB
I	*Satyrium calanus*	Banded Hairstreak				S2	24	53.3 ± 0.0	NB
I	*Satyrium calanus falacer*	Falacer Hairstreak				S2	1	94.5 ± 1.0	NB
I	*Strymon melinus*	Gray Hairstreak				S2	4	40.3 ± 2.0	NB
I	*Hybomitra frosti*	Frost's Horse Fly				S2S3	1	79.0 ± 0.0	NB
I	*Tabanus vivax*	Vivacious Horse Fly				S2S3	1	57.7 ± 0.0	NB
I	*Ophiogomphus colubrinus*	Boreal Snaketail				S2S3	40	29.4 ± 1.0	NB
I	*Sphaeroderus nitidicollis*	Polished Snail-eating Beetle				S3	1	97.2 ± 0.0	NB
I	*Lepturopsis biforis*	Two-spotted Long-horned Beetle				S3	1	64.7 ± 1.0	NB
I	*Elaphrus americanus*	Boreal Elaphrus Beetle				S3	1	92.8 ± 0.0	NB

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I	*Semanotus terminatus*	Light Long-horned Beetle				S3	1	83.1 ± 0.0	NB
I	*Desmocerus palliatus*	Elderberry Borer				S3	9	64.7 ± 1.0	NB
I	*Agonum excavatum*	Excavated Harp Ground Beetle				S3	1	92.8 ± 0.0	NB
I	*Clivina americana*	America Pedunculate Ground Beetle				S3	1	92.8 ± 0.0	NB
I	*Olisthopus parmatus*	Tawny-bordered Harp Ground Beetle				S3	1	97.2 ± 0.0	NB
I	*Tachys scitulus*	Handsome Riverbank Ground Beetle				S3	1	92.8 ± 0.0	NB
I	*Carabus maeander*	Meander Ground Beetle				S3	1	50.8 ± 0.0	NB
I	*Coccinella hieroglyphica kirbyi*	a Ladybird Beetle				S3	1	64.7 ± 1.0	NB
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	4	64.7 ± 1.0	NB
I	*Stenocorus vittiger*	Shrub Long-horned Beetle				S3	1	92.8 ± 0.0	NB
I	*Gnathacmaeops pratensis*	Meadow Flower Longhorn Beetle				S3	5	64.7 ± 1.0	NB
I	*Pogonocherus mixtus*	Mixed-spotted Flatface Sawyer				S3	1	64.7 ± 1.0	NB
I	*Badister neopulchellus*	Red-black Spotted Beetle				S3	1	92.8 ± 0.0	NB
I	*Gonotropis dorsalis*	Birch Fungus Weevil				S3	1	83.1 ± 0.0	NB
I	*Naemia seriata*	Seaside Lady Beetle				S3	2	16.7 ± 0.0	NB
I	*Saperda lateralis*	Red-edged Long-horned Beetle				S3	2	52.2 ± 0.0	NB
I	*Epargyreus clarus*	Silver-spotted Skipper				S3	15	29.7 ± 1.0	NB
I	*Hesperia sassacus*	Indian Skipper				S3	20	2.6 ± 1.0	NB
I	*Euphyes bimacula*	Two-spotted Skipper				S3	22	7.1 ± 1.0	NB
I	*Satyrium acadica*	Acadian Hairstreak				S3	15	41.7 ± 1.0	NB
I	*Plebejus idas*	Northern Blue				S3	2	24.5 ± 0.0	NB
I	*Plebejus idas empetri*	Crowberry Blue				S3	25	13.9 ± 2.0	NB
I	*Argynnis aphrodite*	Aphrodite Fritillary				S3	24	11.0 ± 0.0	NB
I	*Boloria bellona*	Meadow Fritillary				S3	55	14.3 ± 4.0	NB
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	26	35.5 ± 0.0	NB
I	*Gomphurus vastus*	Cobra Clubtail				S3	115	82.5 ± 0.0	NB
I	*Celithemis martha*	Martha's Pennant				S3	8	15.6 ± 0.0	NB
I	*Ladona exusta*	White Corporal				S3	10	17.1 ± 0.0	NB
I	*Enallagma pictum*	Scarlet Bluet				S3	10	38.7 ± 0.0	NB
I	*Ischnura kellicotti*	Lilypad Forktail				S3	19	35.2 ± 0.0	NB
I	*Arigomphus furcifer*	Lilypad Clubtail				S3	24	50.5 ± 0.0	NB
I	*Alasmidonta undulata*	Triangle Floater				S3	17	24.1 ± 1.0	NB
I	*Atlanticoncha ochracea*	Tidewater Mucket				S3	128	56.8 ± 1.0	NB
I	*Striatura ferrea*	Black Striate Snail				S3	1	91.8 ± 1.0	NB
I	*Neohelix albolabris*	Whitelip Snail				S3	2	81.2 ± 0.0	NB
I	*Spurwinkia salsa*	Saltmarsh Hydrobe				S3	34	38.3 ± 0.0	NB
I	*Pantala hymenaea*	Spot-Winged Glider				S3B	12	16.0 ± 1.0	NB
I	*Bombus griseocollis*	Brown-belted Bumble Bee				S3S4	2	94.5 ± 0.0	NB
I	*Somatochlora forcipata*	Forcipate Emerald				S3S4	19	16.0 ± 1.0	NB
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S3S4	7	43.4 ± 1.0	NB
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	SH	1	26.0 ± 1.0	NB
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	160	5.6 ± 0.0	NB
N	*Heterodermia squamulosa*	Scaly Fringe Lichen	Threatened			S1?	9	44.1 ± 0.0	NB
N	*Anzia colpodes*	Black-foam Lichen	Threatened	Threatened		S1S2	2	45.0 ± 1.0	NB
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S2	196	44.0 ± 0.0	NB
N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Special Concern	S1	400	25.5 ± 5.0	NB
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	20	11.4 ± 0.0	NB
N	*Imbribryum muehlenbeckii*	Muehlenbeck's Bryum Moss				S1	1	58.0 ± 1.0	NB

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N	*Sphagnum macrophyllum*	Sphagnum				S1	4	31.5 ± 0.0	NB
N	*Coscinodon cribrosus*	Sieve-Toothed Moss				S1	1	61.7 ± 0.0	NB
N	*Sticta fuliginosa*	Peppered Moon Lichen				S1	3	99.6 ± 0.0	NS
N	*Leptogium hirsutum*	Jellyskin Lichen				S1	26	48.3 ± 0.0	NB
N	*Coccocarpia palmicola*	Salted Shell Lichen				S1	4	5.6 ± 0.0	NB
N	*Peltigera collina*	Tree Pelt Lichen				S1	1	46.1 ± 10.0	NB
N	*Peltigera malacea*	Veinless Pelt Lichen				S1	1	91.5 ± 0.0	NS
N	*Cladonia krogiana*	Krog's Pixie Lichen				S1	1	24.1 ± 0.0	NB
N	*Pseudocalliergon trifarium*	Three-ranked Spear Moss				S1?	1	52.0 ± 0.0	NB
N	*Dichelyma falcatum*	a Moss				S1?	2	55.2 ± 1.0	NB
N	*Dicranum bonjeanii*	Bonjean's Broom Moss				S1?	1	93.9 ± 1.0	NB
N	*Oxyrrhynchium hians*	Light Beaked Moss				S1?	1	95.7 ± 1.0	NB
N	*Plagiothecium latebricola*	Alder Silk Moss				S1?	1	58.1 ± 0.0	NB
N	*Niphotrichum ericoides*	Dense Rock Moss				S1?	1	63.2 ± 3.0	NB
N	*Splachnum pensylvanicum*	Southern Dung Moss				S1?	1	88.3 ± 0.0	NB
N	*Platylomella lescurii*	a Moss				S1?	1	26.8 ± 1.0	NB
N	*Pilophorus fibula*	New England Matchstick Lichen				S1?	1	18.7 ± 0.0	NB
N	*Peltigera venosa*	Fan Pelt Lichen				S1?	2	49.6 ± 0.0	NB
N	*Cladonia oricola*	Cladonia Lichen				S1?	2	43.3 ± 0.0	NB
N	*Pallavicinia lyellii*	Lyell's Ribbonwort				S1S2	1	74.6 ± 1.0	NB
N	*Reboulia hemisphaerica*	Purple-margined Liverwort				S1S2	1	23.3 ± 1.0	NB
N	*Solenostoma obovatum*	Egg Flapwort				S1S2	1	71.5 ± 0.0	NB
N	*Brachythecium acuminatum*	Acuminate Ragged Moss				S1S2	2	95.7 ± 10.0	NB
N	*Ptychostomum salinum*	Saltmarsh Bryum				S1S2	1	25.0 ± 1.0	NB
N	*Pseudocampylium radicale*	Long-stalked Fine Wet Moss				S1S2	1	95.7 ± 1.0	NB
N	*Ditrichum pallidum*	Pale Cow-hair Moss				S1S2	1	83.0 ± 1.0	NB
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S1S2	2	52.9 ± 0.0	NB
N	*Tomentypnum falcifolium*	Sickle-leaved Golden Moss				S1S2	1	34.5 ± 1.0	NB
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1S2	2	25.0 ± 1.0	NB
N	*Hamatocaulis vernicosus*	a Moss				S1S2	1	87.2 ± 100.0	NB
N	*Pilophorus cereolus*	Powdered Matchstick Lichen				S1S2	1	18.7 ± 0.0	NB
N	*Calypogeia neesiana*	Nees' Pouchwort				S1S3	1	83.6 ± 1.0	NB
N	*Fuscocephaloziopsis connivens*	Forcipated Pincerwort				S1S3	1	73.3 ± 0.0	NB
N	*Cephaloziella elachista*	Spurred Threadwort				S1S3	1	51.9 ± 5.0	NB
N	*Porella pinnata*	Pinnate Scalewort				S1S3	2	55.1 ± 1.0	NB
N	*Amphidium mougeotii*	a Moss				S2	3	24.8 ± 8.0	NB
N	*Anomodon viticulosus*	a Moss				S2	6	59.5 ± 0.0	NB
N	*Cynodontium strumiferum*	Strumose Dogtooth Moss				S2	1	24.8 ± 8.0	NB
N	*Didymodon ferrugineus*	Rusty Beard Moss				S2	1	82.8 ± 1.0	NB
N	*Ditrichum flexicaule*	Flexible Cow-hair Moss				S2	1	70.9 ± 1.0	NB
N	*Anomodon tristis*	a Moss				S2	1	59.2 ± 1.0	NB
N	*Hypnum pratense*	Meadow Plait Moss				S2	1	55.4 ± 0.0	NB
N	*Isothecium myosuroides*	Slender Mouse-tail Moss				S2	11	21.3 ± 0.0	NB
N	*Physcomitrium immersum*	a Moss				S2	7	88.2 ± 1.0	NB
N	*Platydictya jungermannioides*	False Willow Moss				S2	1	23.3 ± 0.0	NB
N	*Seligeria calcarea*	Chalk Brittle Moss				S2	1	70.9 ± 1.0	NB
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S2	8	25.0 ± 1.0	NB
N	*Tayloria serrata*	Serrate Trumpet Moss				S2	1	94.3 ± 1.0	NB
N	*Tetraplodon mnioides*	Entire-leaved Nitrogen Moss				S2	3	25.0 ± 1.0	NB
N	*Thamnobryum alleghaniense*	a Moss				S2	1	91.2 ± 0.0	NB
N	*Tortula mucronifolia*	Mucronate Screw Moss				S2	1	61.2 ± 0.0	NB
N	*Ulota phyllantha*	a Moss				S2	4	21.8 ± 0.0	NB
N	*Anomobryum julaceum*	Slender Silver Moss				S2	1	95.7 ± 1.0	NB
N	*Usnea ceratina*	Warty Beard Lichen				S2	1	13.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Cladonia incrassata*	Powder-foot British Soldiers Lichen				S2	1	33.4 ± 0.0	NB
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S2	2	85.0 ± 1.0	NB
N	*Leptogium milligranum*	Stretched Jellyskin Lichen				S2	3	51.6 ± 0.0	NB
N	*Nephroma laevigatum*	Mustard Kidney Lichen				S2	5	46.1 ± 10.0	NB
N	*Peltigera lepidophora*	Scaly Pelt Lichen				S2	3	49.5 ± 0.0	NB
N	*Andreaea rothii*	Dusky Rock Moss				S2?	1	82.0 ± 0.0	NB
N	*Ptychostomum pallescens*	Tall Clustered Bryum				S2?	2	46.4 ± 1.0	NB
N	*Dichelyma capillaceum*	Hairlike Dichelyma Moss				S2?	2	51.5 ± 2.0	NB
N	*Dicranum spurium*	Spurred Broom Moss				S2?	3	16.2 ± 0.0	NB
N	*Schistostega pennata*	Luminous Moss				S2?	1	95.7 ± 1.0	NB
N	*Sphagnum angermanicum*	a Peatmoss				S2?	2	34.4 ± 1.0	NB
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2?	1	98.7 ± 0.0	NB
N	*Physcia subtilis*	Slender Rosette Lichen				S2?	1	76.8 ± 0.0	NB
N	*Ptychostomum cernuum*	Swamp Bryum				S2S3	2	21.8 ± 0.0	NB
N	*Buxbaumia aphylla*	Brown Shield Moss				S2S3	2	24.8 ± 8.0	NB
N	*Calliergonella cuspidata*	Common Large Wetland Moss				S2S3	5	16.5 ± 10.0	NB
N	*Drepanocladus polygamus*	Polygamous Hook Moss				S2S3	1	71.8 ± 1.0	NB
N	*Palustriella falcata*	Curled Hook Moss				S2S3	1	70.9 ± 1.0	NB
N	*Didymodon rigidulus*	Rigid Screw Moss				S2S3	3	59.5 ± 0.0	NB
N	*Ephemerum serratum*	a Moss				S2S3	1	98.1 ± 0.0	NB
N	*Fissidens bushii*	Bush's Pocket Moss				S2S3	2	59.5 ± 0.0	NB
N	*Neckera complanata*	a Moss				S2S3	4	59.5 ± 0.0	NB
N	*Orthotrichum elegans*	Showy Bristle Moss				S2S3	3	14.5 ± 2.0	NB
N	*Codriophorus fascicularis*	Clustered Rock Moss				S2S3	1	17.4 ± 0.0	NB
N	*Bucklandiella affinis*	Lesser Rock Moss				S2S3	1	89.5 ± 0.0	NS
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2S3	4	52.0 ± 0.0	NB
N	*Seligeria campylopoda*	a Moss				S2S3	1	87.2 ± 100.0	NB
N	*Sphagnum centrale*	Central Peat Moss				S2S3	2	51.4 ± 0.0	NB
N	*Sphagnum subfulvum*	a Peatmoss				S2S3	5	34.5 ± 1.0	NB
N	*Taxiphyllum deplanatum*	Imbricate Yew-leaved Moss				S2S3	1	25.0 ± 1.0	NB
N	*Zygodon viridissimus*	a Moss				S2S3	3	17.5 ± 3.0	NB
N	*Schistidium agassizii*	Elf Bloom Moss				S2S3	2	14.5 ± 2.0	NB
N	*Loeskeobryum brevirostre*	a Moss				S2S3	4	70.9 ± 1.0	NB
N	*Sphaerophorus globosus*	Northern Coral Lichen				S2S3	1	66.8 ± 0.0	NB
N	*Chaenotheca xyloxena*					S2S3	2	24.6 ± 0.0	NB
N	*Polychidium muscicola*	Eyed Mossthorns Woollybear Lichen				S2S3	3	66.8 ± 0.0	NB
N	*Cynodontium tenellum*	Delicate Dogtooth Moss				S3	1	25.0 ± 1.0	NB
N	*Hypnum curvifolium*	Curved-leaved Plait Moss				S3	1	22.6 ± 5.0	NB
N	*Schistidium maritimum*	a Moss				S3	5	21.3 ± 0.0	NB
N	*Solorina saccata*	Woodland Owl Lichen				S3	1	49.5 ± 0.0	NB
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S3	2	50.4 ± 0.0	NB
N	*Normandina pulchella*	Rimmed Elf-ear Lichen				S3	9	91.1 ± 1.0	NS
N	*Cladonia strepsilis*	Olive Cladonia Lichen				S3	3	17.8 ± 2.0	NB
N	*Hypotrachyna catawbiensis*	Powder-tipped Antler Lichen				S3	30	17.8 ± 2.0	NB
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	2	49.6 ± 0.0	NB
N	*Leptogium laceroides*	Short-bearded Jellyskin Lichen				S3	3	18.7 ± 0.0	NB
N	*Peltigera membranacea*	Membranous Pelt Lichen				S3	3	52.8 ± 0.0	NB
N	*Cladonia botrytes*	Wooden Soldiers Lichen				S3	1	51.2 ± 0.0	NB
N	*Cladonia deformis*	Lesser Sulphur-cup Lichen				S3	2	16.9 ± 0.0	NB
N	*Aulacomnium androgynum*	Little Groove Moss				S3?	9	17.3 ± 1.0	NB
N	*Dicranella rufescens*	Red Forklet Moss				S3?	2	86.5 ± 4.0	NB
N	*Rhytidiadelphus loreus*	Lanky Moss				S3?	1	59.6 ± 10.0	NB
N	*Sphagnum lescurii*	a Peatmoss				S3?	2	50.7 ± 1.0	NB
N	*Sphagnum inundatum*	a Sphagnum				S3?	2	82.0 ± 0.0	NB

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N	*Rostania occultata*	Crusted Tarpaper Lichen				S3?	1	98.7 ± 0.0	NB
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3?	5	17.8 ± 2.0	NB
N	*Anomodon rugelii*	Rugel's Anomodon Moss				S3S4	1	51.5 ± 2.0	NB
N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3S4	1	78.9 ± 8.0	NB
N	*Brachytheciastrum velutinum*	Velvet Ragged Moss				S3S4	4	20.5 ± 0.0	NB
N	*Dicranella cerviculata*	a Moss				S3S4	3	16.7 ± 6.0	NB
N	*Dicranum majus*	Greater Broom Moss				S3S4	8	18.5 ± 0.0	NB
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	3	81.3 ± 4.0	NB
N	*Elodium blandowii*	Blandow's Bog Moss				S3S4	1	63.1 ± 0.0	NB
N	*Heterocladium dimorphum*	Dimorphous Tangle Moss				S3S4	1	14.5 ± 2.0	NB
N	*Isopterygiopsis muelleriana*	a Moss				S3S4	7	20.5 ± 0.0	NB
N	*Myurella julacea*	Small Mouse-tail Moss				S3S4	2	24.8 ± 8.0	NB
N	*Orthotrichum speciosum*	Showy Bristle Moss				S3S4	1	95.1 ± 0.0	NB
N	*Physcomitrium pyriforme*	Pear-shaped Urn Moss				S3S4	5	90.7 ± 0.0	NB
N	*Pogonatum dentatum*	Mountain Hair Moss				S3S4	2	18.5 ± 0.0	NB
N	*Sphagnum torreyanum*	a Peatmoss				S3S4	4	48.4 ± 0.0	NB
N	*Sphagnum austinii*	Austin's Peat Moss				S3S4	2	8.4 ± 1.0	NB
N	*Sphagnum contortum*	Twisted Peat Moss				S3S4	1	70.7 ± 0.0	NB
N	*Sphagnum quinquefarium*	Five-ranked Peat Moss				S3S4	2	70.9 ± 1.0	NB
N	*Splachnum rubrum*	Red Collar Moss				S3S4	1	88.2 ± 1.0	NB
N	*Tetraphis geniculata*	Geniculate Four-tooth Moss				S3S4	5	23.3 ± 0.0	NB
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3S4	2	25.0 ± 1.0	NB
N	*Weissia controversa*	Green-Cushioned Weissia				S3S4	2	71.4 ± 1.0	NB
N	*Abietinella abietina*	Wiry Fern Moss				S3S4	2	18.5 ± 0.0	NB
N	*Trichostomum tenuirostre*	Acid-Soil Moss				S3S4	4	20.5 ± 0.0	NB
N	*Rauiella scita*	Smaller Fern Moss				S3S4	1	53.4 ± 1.0	NB
N	*Pannaria rubiginosa*	Brown-eyed Shingle Lichen				S3S4	14	50.2 ± 0.0	NB
N	*Pseudocyphellaria holarctica*	Yellow Specklebelly Lichen				S3S4	58	5.3 ± 0.0	NB
N	*Hypogymnia vittata*	Slender Monk's Hood Lichen				S3S4	1	99.6 ± 0.0	NS
N	*Cladonia terrae-novae*	Newfoundland Reindeer Lichen				S3S4	5	8.4 ± 1.0	NB
N	*Cladonia floerkeana*	Gritty British Soldiers Lichen				S3S4	1	88.8 ± 0.0	NB
N	*Cladonia parasitica*	Fence-rail Lichen				S3S4	1	50.3 ± 0.0	NB
N	*Nephroma parile*	Powdery Kidney Lichen				S3S4	17	5.3 ± 0.0	NB
N	*Protopannaria pezizoides*	Brown-gray Moss-shingle Lichen				S3S4	24	13.6 ± 0.0	NB
N	*Parmelia fertilis*	Fertile Shield Lichen				S3S4	1	82.3 ± 0.0	NB
N	*Usnea strigosa*	Bushy Beard Lichen				S3S4	2	72.1 ± 0.0	NB
N	*Fuscopannaria sorediata*	a Lichen				S3S4	12	18.7 ± 0.0	NB
N	*Stereocaulon condensatum*	Granular Soil Foam Lichen				S3S4	1	24.1 ± 0.0	NB
N	*Pannaria conoplea*	Mealy-rimmed Shingle Lichen				S3S4	42	42.9 ± 0.0	NB
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	1	87.3 ± 0.0	NB
N	*Anaptychia palmulata*	Shaggy Fringed Lichen				S3S4	15	51.5 ± 0.0	NB
N	*Peltigera neopolydactyla*	Undulating Pelt Lichen				S3S4	2	17.8 ± 2.0	NB
N	*Grimmia anodon*	Toothless Grimmia Moss				SH	2	63.2 ± 10.0	NB
N	*Leucodon brachypus*	a Moss				SH	1	20.2 ± 100.0	NB
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	135	2.4 ± 0.0	NB
P	*Polemonium vanbruntiae*	Van Brunt's Jacob's-ladder	Threatened	Threatened	Threatened	S1	74	8.8 ± 0.0	NB
P	*Fraxinus nigra*	Black Ash	Threatened			S3S4	425	8.5 ± 0.0	NB
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Endangered	S1	22	59.2 ± 0.0	NB
P	*Symphyotrichum anticostense*	Anticosti Aster	Special Concern	Special Concern	Endangered	S3	6	55.0 ± 0.0	NB
P	*Pterospora andromedea*	Woodland Pinedrops			Endangered	S1	28	94.1 ± 0.0	NB
P	*Antennaria parlinii ssp. fallax*	Parlin's Pussytoes				S1	7	38.8 ± 0.0	NB
P	*Antennaria howellii ssp.*	Pussy-Toes				S1	4	55.6 ± 1.0	NB

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	petaloidea								
P	*Bidens discoidea*	Swamp Beggarticks				S1	3	96.6 ± 0.0	NB
P	*Helianthus decapetalus*	Ten-rayed Sunflower				S1	14	94.3 ± 1.0	NB
P	*Hieracium paniculatum*	Panicled Hawkweed				S1	6	19.4 ± 0.0	NB
P	*Senecio pseudoarnica*	Seabeach Ragwort				S1	18	50.7 ± 0.0	NB
P	*Barbarea orthoceras*	American Yellow Rocket				S1	2	44.6 ± 10.0	NB
P	*Cardamine parviflora*	Small-flowered Bittercress				S1	12	14.2 ± 1.0	NB
P	*Cardamine concatenata*	Cut-leaved Toothwort				S1	3	35.7 ± 0.0	NB
P	*Draba arabisans*	Rock Whitlow-Grass				S1	7	28.7 ± 0.0	NB
P	*Draba glabella*	Rock Whitlow-Grass				S1	8	53.7 ± 1.0	NB
P	*Mononeuria groenlandica*	Greenland Stitchwort				S1	5	45.4 ± 0.0	NB
P	*Chenopodiastrum simplex*	Maple-leaved Goosefoot				S1	8	55.4 ± 1.0	NB
P	*Blitum capitatum*	Strawberry-Blite				S1	3	64.2 ± 1.0	NB
P	*Callitriche terrestris*	Terrestrial Water-Starwort				S1	1	52.9 ± 0.0	NB
P	*Hypericum virginicum*	Virginia St. John's-wort				S1	15	41.0 ± 0.0	NB
P	*Viburnum acerifolium*	Maple-leaved Viburnum				S1	11	36.8 ± 1.0	NB
P	*Corema conradii*	Broom Crowberry				S1	1	62.0 ± 10.0	NB
P	*Vaccinium boreale*	Northern Blueberry				S1	1	26.9 ± 0.0	NB
P	*Vaccinium corymbosum*	Highbush Blueberry				S1	9	35.3 ± 5.0	NB
P	*Euphorbia polygonifolia*	Seaside Spurge				S1	8	47.4 ± 0.0	NB
P	*Hylodesmum glutinosum*	Large Tick-trefoil				S1	1	44.7 ± 1.0	NB
P	*Gentiana rubricaulis*	Purple-stemmed Gentian				S1	18	23.6 ± 0.0	NB
P	*Lomatogonium rotatum*	Marsh Felwort				S1	3	21.0 ± 0.0	NB
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S1	2	23.5 ± 0.0	NB
P	*Lycopus virginicus*	Virginia Bugleweed				S1	2	59.7 ± 0.0	NB
P	*Pycnanthemum virginianum*	Virginia Mountain Mint				S1	4	86.8 ± 0.0	NB
P	*Decodon verticillatus*	Swamp Loosestrife				S1	2	97.3 ± 0.0	NB
P	*Lysimachia hybrida*	Lowland Yellow Loosestrife				S1	17	37.9 ± 0.0	NB
P	*Lysimachia quadrifolia*	Whorled Yellow Loosestrife				S1	16	47.2 ± 1.0	NB
P	*Primula laurentiana*	Laurentian Primrose				S1	7	90.2 ± 1.0	NS
P	*Crataegus jonesiae*	Jones' Hawthorn				S1	5	16.7 ± 0.0	NB
P	*Potentilla canadensis*	Canada Cinquefoil				S1	1	5.6 ± 0.0	NB
P	*Rubus flagellaris*	Northern Dewberry				S1	3	25.0 ± 0.0	NB
P	*Galium brevipes*	Limestone Swamp Bedstraw				S1	4	45.1 ± 5.0	NB
P	*Saxifraga paniculata ssp. laestadii*	Laestadius' Saxifrage				S1	8	70.9 ± 1.0	NB
P	*Agalinis tenuifolia*	Slender Agalinis				S1	9	91.9 ± 0.0	NB
P	*Gratiola lutea*	Golden Hedge-hyssop				S1	2	43.5 ± 5.0	NB
P	*Pedicularis canadensis*	Canada Lousewort				S1	23	25.4 ± 0.0	NB
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S1	24	42.5 ± 0.0	NB
P	*Carex merritt-fernaldii*	Merritt Fernald's Sedge				S1	4	19.4 ± 0.0	NB
P	*Carex salina*	Saltmarsh Sedge				S1	2	59.9 ± 1.0	NB
P	*Carex waponahkikensis*	Dawn-land Sedge				S1	2	28.9 ± 0.0	NB
P	*Carex sterilis*	Sterile Sedge				S1	1	94.1 ± 0.0	NB
P	*Carex grisea*	Inflated Narrow-leaved Sedge				S1	12	91.6 ± 0.0	NB
P	*Carex saxatilis*	Russet Sedge				S1	14	61.0 ± 10.0	NB
P	*Cyperus diandrus*	Low Flatsedge				S1	7	91.8 ± 1.0	NB
P	*Eleocharis flavescens var. olivacea*	Bright-green Spikerush				S1	4	40.4 ± 1.0	NB
P	*Rhynchospora capillacea*	Slender Beakrush				S1	3	94.2 ± 0.0	NB
P	*Sisyrinchium angustifolium*	Narrow-leaved Blue-eyed-grass				S1	4	55.3 ± 0.0	NB
P	*Juncus greenei*	Greene's Rush				S1	1	13.5 ± 0.0	NB
P	*Juncus subtilis*	Creeping Rush				S1	1	85.5 ± 5.0	NB
P	*Allium canadense*	Canada Garlic				S1	11	86.8 ± 0.0	NB
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S1	1	94.5 ± 0.0	NB
P	*Malaxis monophyllos var.*	North American White				S1	3	46.1 ± 10.0	NB

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	brachypoda	Adder's-mouth							
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S1	13	30.4 ± 0.0	NB
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S1	2	46.2 ± 0.0	NB
P	*Spiranthes casei*	Case's Ladies'-Tresses				S1	6	96.6 ± 0.0	NB
P	*Bromus pubescens*	Hairy Wood Brome Grass				S1	6	98.8 ± 0.0	NB
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1	55	36.3 ± 0.0	NB
P	*Danthonia compressa*	Flattened Oat Grass				S1	1	88.4 ± 0.0	NB
P	*Dichanthelium dichotomum*	Forked Panic Grass				S1	20	36.7 ± 0.0	NB
P	*Glyceria obtusa*	Atlantic Manna Grass				S1	14	17.4 ± 5.0	NB
P	*Sporobolus compositus*	Rough Dropseed				S1	17	93.1 ± 0.0	NB
P	*Potamogeton friesii*	Fries' Pondweed				S1	6	54.7 ± 5.0	NB
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	7	90.7 ± 1.0	NB
P	*Potamogeton strictifolius*	Straight-leaved Pondweed				S1	2	77.1 ± 0.0	NB
P	*Xyris difformis*	Bog Yellow-eyed-grass				S1	11	41.0 ± 0.0	NB
P	*Asplenium ruta-muraria var. cryptolepis*	Wallrue Spleenwort				S1	4	70.8 ± 0.0	NB
P	*Sceptridium oneidense*	Blunt-lobed Moonwort				S1	4	64.3 ± 0.0	NB
P	*Sceptridium rugulosum*	Rugulose Grapefern				S1	1	44.3 ± 1.0	NB
P	*Selaginella rupestris*	Rock Spikemoss				S1	36	89.4 ± 0.0	NS
P	*Polygonum aviculare ssp. neglectum*	Narrow-leaved Knotweed				S1?	6	34.5 ± 0.0	NB
P	*Alisma subcordatum*	Southern Water Plantain				S1?	6	61.0 ± 5.0	NB
P	*Wolffia columbiana*	Columbian Watermeal				S1?	5	88.3 ± 0.0	NB
P	*Euphrasia farlowii*	Farlow's Eyebright				S1S2	1	14.1 ± 1.0	NB
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S1S2	10	46.7 ± 0.0	NB
P	*Potamogeton bicupulatus*	Snailseed Pondweed				S1S2	5	27.5 ± 0.0	NB
P	*Spiranthes cernua*	Nodding Ladies'-Tresses				S1S3	18	10.3 ± 1.0	NB
P	*Spiranthes arcisepala*	Appalachian Ladies'-tresses				S1S3	6	39.9 ± 0.0	NB
P	*Neottia bifolia*	Southern Twayblade			Endangered	S2	11	72.1 ± 0.0	NB
P	*Sanicula trifoliata*	Large-Fruited Sanicle				S2	1	91.5 ± 5.0	NB
P	*Sanicula odorata*	Clustered Sanicle				S2	1	98.7 ± 0.0	NB
P	*Atriplex glabriuscula var. franktonii*	Frankton's Saltbush				S2	3	14.1 ± 1.0	NB
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2	7	7.5 ± 1.0	NB
P	*Viburnum dentatum var. lucidum*	Northern Arrow-Wood				S2	190	2.1 ± 0.0	NB
P	*Astragalus eucosmus*	Elegant Milk-vetch				S2	10	82.6 ± 0.0	NB
P	*Quercus macrocarpa*	Bur Oak				S2	47	16.6 ± 0.0	NB
P	*Nuphar x rubrodisca*	Red-disk Yellow Pond-lily				S2	10	32.3 ± 0.0	NB
P	*Polygaloides paucifolia*	Fringed Milkwort				S2	13	7.1 ± 1.0	NB
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S2	53	2.0 ± 0.0	NB
P	*Micranthes virginiensis*	Early Saxifrage				S2	14	89.5 ± 0.0	NB
P	*Scrophularia lanceolata*	Lance-leaved Figwort				S2	3	82.4 ± 5.0	NB
P	*Carex cephaloidea*	Thin-leaved Sedge				S2	2	90.2 ± 0.0	NB
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	2	21.3 ± 0.0	NB
P	*Cyperus lupulinus ssp. macilentus*	Hop Flatsedge				S2	11	98.4 ± 0.0	NB
P	*Calypso bulbosa var. americana*	Calypso				S2	4	43.8 ± 0.0	NB
P	*Coeloglossum viride*	Long-bracted Frog Orchid				S2	5	81.5 ± 5.0	NB
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	5	44.9 ± 1.0	NB
P	*Platanthera huronensis*	Fragrant Green Orchid				S2	2	48.8 ± 1.0	NB
P	*Puccinellia nutkaensis*	Alaska Alkaligrass				S2	10	13.4 ± 1.0	NB
P	*Schizaea pusilla*	Little Curlygrass Fern				S2	25	36.9 ± 0.0	NB

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P	*Coryphopteris simulata*	Bog Fern				S2	1	98.0 ± 0.0	NB
P	*Toxicodendron radicans var. radicans*	Eastern Poison Ivy				S2?	9	76.6 ± 0.0	NB
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	10	10.6 ± 0.0	NB
P	*Humulus lupulus var. lupuloides*	Common Hop				S2?	4	89.2 ± 0.0	NB
P	*Rubus x recurvicaulis*	arching dewberry				S2?	2	53.9 ± 1.0	NB
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2S3	3	19.6 ± 0.0	NB
P	*Symphyotrichum racemosum*	Small White Aster				S2S3	8	71.8 ± 1.0	NB
P	*Alnus serrulata*	Smooth Alder				S2S3	38	36.8 ± 1.0	NB
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S2S3	1	70.1 ± 0.0	NB
P	*Gentiana linearis*	Narrow-Leaved Gentian				S2S3	5	95.6 ± 5.0	NB
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	57	18.1 ± 1.0	NB
P	*Aphyllon uniflorum*	One-flowered Broomrape				S2S3	20	34.5 ± 0.0	NB
P	*Polygala senega*	Seneca Snakeroot				S2S3	2	90.7 ± 1.0	NB
P	*Persicaria careyi*	Carey's Smartweed				S2S3	7	20.1 ± 1.0	NB
P	*Hepatica americana*	Round-lobed Hepatica				S2S3	32	36.6 ± 0.0	NB
P	*Ranunculus sceleratus*	Cursed Buttercup				S2S3	7	36.3 ± 0.0	NB
P	*Cephalanthus occidentalis*	Common Buttonbush				S2S3	66	36.3 ± 0.0	NB
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2S3	5	59.5 ± 0.0	NB
P	*Euphrasia randii*	Rand's Eyebright				S2S3	38	14.0 ± 0.0	NB
P	*Dirca palustris*	Eastern Leatherwood				S2S3	15	94.0 ± 1.0	NB
P	*Phryma leptostachya*	American Lopseed				S2S3	4	98.3 ± 1.0	NB
P	*Verbena urticifolia*	White Vervain				S2S3	17	90.1 ± 1.0	NB
P	*Viola novae-angliae*	New England Violet				S2S3	16	4.0 ± 0.0	NB
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2S3	2	40.1 ± 0.0	NB
P	*Carex vacillans*	Estuarine Sedge				S2S3	4	13.4 ± 1.0	NB
P	*Scirpus atrovirens*	Dark-green Bulrush				S2S3	2	50.9 ± 0.0	NB
P	*Juncus ranarius*	Seaside Rush				S2S3	1	59.5 ± 0.0	NB
P	*Allium tricoccum*	Wild Leek				S2S3	27	83.9 ± 0.0	NB
P	*Corallorhiza maculata var. occidentalis*	Spotted Coralroot				S2S3	6	19.4 ± 0.0	NB
P	*Corallorhiza maculata var. maculata*	Spotted Coralroot				S2S3	2	93.3 ± 1.0	NB
P	*Elymus canadensis*	Canada Wild Rye				S2S3	19	59.5 ± 0.0	NB
P	*Piptatheropsis canadensis*	Canada Ricegrass				S2S3	6	36.8 ± 1.0	NB
P	*Puccinellia phryganodes ssp. neoarctica*	Creeping Alkali Grass				S2S3	18	8.3 ± 0.0	NB
P	*Poa glauca*	Glaucous Blue Grass				S2S3	1	61.7 ± 2.0	NB
P	*Potamogeton vaseyi*	Vasey's Pondweed				S2S3	12	45.6 ± 0.0	NB
P	*Isoetes tuckermanii ssp. acadiensis*	Acadian Quillwort				S2S3	9	14.0 ± 1.0	NB
P	*Botrychium tenebrosum*	Swamp Moonwort				S2S3	1	44.0 ± 0.0	NB
P	*Panax trifolius*	Dwarf Ginseng				S3	6	56.0 ± 0.0	NB
P	*Artemisia campestris ssp. caudata*	Tall Wormwood				S3	25	48.6 ± 0.0	NB
P	*Nabalus racemosus*	Glaucous Rattlesnakeroot				S3	70	55.9 ± 1.0	NB
P	*Solidago racemosa*	Racemose Goldenrod				S3	15	71.4 ± 0.0	NB
P	*Tanacetum bipinnatum ssp. huronense*	Lake Huron Tansy				S3	16	69.1 ± 1.0	NB
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S3	9	51.8 ± 0.0	NB
P	*Turritis glabra*	Tower Mustard				S3	1	59.5 ± 0.0	NB
P	*Arabis pycnocarpa*	Cream-flowered Rockcress				S3	12	61.2 ± 0.0	NB
P	*Cardamine maxima*	Large Toothwort				S3	26	59.5 ± 0.0	NB
P	*Boechera stricta*	Drummond's Rockcress				S3	8	61.2 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Sagina nodosa*	Knotted Pearlwort				S3	25	8.8 ± 0.0	NB
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S3	2	46.2 ± 0.0	NB
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	7	11.8 ± 0.0	NB
P	*Stellaria longifolia*	Long-leaved Starwort				S3	7	5.0 ± 0.0	NB
P	*Oxybasis rubra*	Red Goosefoot				S3	4	58.8 ± 0.0	NB
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	4	40.1 ± 0.0	NB
P	*Cornus obliqua*	Silky Dogwood				S3	183	36.3 ± 0.0	NB
P	*Lonicera oblongifolia*	Swamp Fly Honeysuckle				S3	23	43.3 ± 6.0	NB
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S3	8	90.6 ± 1.0	NB
P	*Viburnum lentago*	Nannyberry				S3	92	36.4 ± 0.0	NB
P	*Rhodiola rosea*	Roseroot				S3	55	3.4 ± 1.0	NB
P	*Astragalus alpinus*	Alpine Milk-vetch				S3	2	59.5 ± 0.0	NB
P	*Astragalus alpinus var. brunetianus*	Alpine Milk-Vetch				S3	3	87.5 ± 0.0	NB
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S3	11	70.5 ± 50.0	NB
P	*Bartonia paniculata*	Branched Bartonia				S3	1	23.7 ± 0.0	NB
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S3	19	27.8 ± 1.0	NB
P	*Gentianella amarella ssp. acuta*	Northern Gentian				S3	10	45.7 ± 0.0	NB
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	6	18.1 ± 1.0	NB
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	36	10.8 ± 0.0	NB
P	*Myriophyllum humile*	Low Water Milfoil				S3	16	42.5 ± 0.0	NB
P	*Myriophyllum quitense*	Andean Water Milfoil				S3	71	55.0 ± 0.0	NB
P	*Proserpinaca palustris*	Marsh Mermaidweed				S3	51	4.1 ± 0.0	NB
P	*Utricularia resupinata*	Inverted Bladderwort				S3	19	27.0 ± 0.0	NB
P	*Fraxinus pennsylvanica*	Red Ash				S3	125	38.6 ± 0.0	NB
P	*Rumex pallidus*	Seabeach Dock				S3	17	8.4 ± 1.0	NB
P	*Rumex occidentalis*	Western Dock				S3	1	86.1 ± 1.0	NB
P	*Podostemum ceratophyllum*	Horn-leaved Riverweed				S3	25	36.8 ± 1.0	NB
P	*Primula mistassinica*	Mistassini Primrose				S3	13	54.4 ± 0.0	NB
P	*Pyrola minor*	Lesser Pyrola				S3	2	29.9 ± 0.0	NB
P	*Anemone multifida*	Cut-leaved Anemone				S3	1	93.6 ± 0.0	NB
P	*Clematis occidentalis*	Purple Clematis				S3	16	36.7 ± 0.0	NB
P	*Ranunculus flabellaris*	Yellow Water Buttercup				S3	24	35.0 ± 0.0	NB
P	*Amelanchier canadensis*	Canada Serviceberry				S3	15	6.3 ± 1.0	NB
P	*Crataegus scabrida*	Rough Hawthorn				S3	3	70.6 ± 0.0	NB
P	*Rubus occidentalis*	Black Raspberry				S3	27	14.2 ± 0.0	NB
P	*Salix candida*	Sage Willow				S3	2	85.3 ± 1.0	NB
P	*Salix myricoides*	Bayberry Willow				S3	7	21.0 ± 0.0	NB
P	*Salix nigra*	Black Willow				S3	86	55.7 ± 1.0	NB
P	*Salix interior*	Sandbar Willow				S3	32	59.5 ± 0.0	NB
P	*Comandra umbellata*	Bastard's Toadflax				S3	1	59.5 ± 0.0	NB
P	*Agalinis purpurea var. parviflora*	Small-flowered Purple False Foxglove				S3	11	81.6 ± 1.0	NB
P	*Valeriana uliginosa*	Swamp Valerian				S3	2	36.3 ± 1.0	NB
P	*Viola adunca*	Hooked Violet				S3	4	12.8 ± 1.0	NB
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3	123	4.0 ± 0.0	NB
P	*Carex adusta*	Lesser Brown Sedge				S3	4	58.5 ± 1.0	NB
P	*Carex arcta*	Northern Clustered Sedge				S3	36	36.8 ± 1.0	NB
P	*Carex conoidea*	Field Sedge				S3	28	18.4 ± 1.0	NB
P	*Carex garberi*	Garber's Sedge				S3	4	53.6 ± 1.0	NB
P	*Carex granularis*	Limestone Meadow Sedge				S3	7	57.5 ± 0.0	NB
P	*Carex gynocrates*	Northern Bog Sedge				S3	4	47.1 ± 0.0	NB
P	*Carex hirtifolia*	Pubescent Sedge				S3	3	90.5 ± 0.0	NB
P	*Carex livida*	Livid Sedge				S3	2	61.7 ± 2.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Carex ormostachya*	Necklace Spike Sedge				S3	7	53.8 ± 0.0	NB
P	*Carex plantaginea*	Plantain-Leaved Sedge				S3	5	86.1 ± 0.0	NB
P	*Carex prairea*	Prairie Sedge				S3	1	90.6 ± 5.0	NS
P	*Carex rosea*	Rosy Sedge				S3	26	59.5 ± 0.0	NB
P	*Carex sprengelii*	Longbeak Sedge				S3	2	95.4 ± 0.0	NB
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S3	17	36.8 ± 1.0	NB
P	*Carex vaginata*	Sheathed Sedge				S3	16	39.7 ± 6.0	NB
P	*Cyperus esculentus var. leptostachyus*	Perennial Yellow Nutsedge				S3	34	59.5 ± 0.0	NB
P	*Cyperus squarrosus*	Awned Flatsedge				S3	14	88.5 ± 0.0	NB
P	*Eriophorum gracile*	Slender Cottongrass				S3	3	54.1 ± 0.0	NB
P	*Blysmopsis rufa*	Red Bulrush				S3	4	44.4 ± 0.0	NB
P	*Elodea nuttallii*	Nuttall's Waterweed				S3	11	36.8 ± 1.0	NB
P	*Juncus vaseyi*	Vasey Rush				S3	1	3.5 ± 0.0	NB
P	*Najas gracillima*	Thread-Like Naiad				S3	11	11.0 ± 0.0	NB
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	23	45.7 ± 1.0	NB
P	*Neottia auriculata*	Auricled Twayblade				S3	9	56.1 ± 1.0	NB
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	61	1.9 ± 5.0	NB
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3	15	18.8 ± 1.0	NB
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S3	11	53.7 ± 1.0	NB
P	*Agrostis mertensii*	Northern Bent Grass				S3	1	14.1 ± 1.0	NB
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	2	58.2 ± 0.0	NB
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S3	9	36.6 ± 0.0	NB
P	*Leersia virginica*	White Cut Grass				S3	41	81.5 ± 10.0	NB
P	*Muhlenbergia richardsonis*	Mat Muhly				S3	9	94.0 ± 0.0	NB
P	*Schizachyrium scoparium*	Little Bluestem				S3	18	75.6 ± 0.0	NB
P	*Zizania aquatica*	Southern Wild Rice				S3	1	59.5 ± 0.0	NB
P	*Zizania aquatica var. aquatica*	Eastern Wild Rice				S3	3	95.7 ± 5.0	NB
P	*Adiantum pedatum*	Northern Maidenhair Fern				S3	18	21.3 ± 0.0	NB
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3	11	58.8 ± 0.0	NB
P	*Anchistea virginica*	Virginia chain fern				S3	43	59.6 ± 1.0	NB
P	*Dryopteris goldieana*	Goldie's Woodfern				S3	8	93.5 ± 0.0	NB
P	*Woodsia alpina*	Alpine Cliff Fern				S3	6	70.9 ± 1.0	NB
P	*Woodsia glabella*	Smooth Cliff Fern				S3	1	91.5 ± 1.0	NB
P	*Isoetes tuckermanii ssp. tuckermanii*	Tuckerman's Quillwort				S3	21	13.6 ± 1.0	NB
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3	7	39.9 ± 1.0	NB
P	*Huperzia appressa*	Mountain Firmoss				S3	2	63.6 ± 1.0	NB
P	*Sceptridium dissectum*	Dissected Moonwort				S3	26	19.0 ± 5.0	NB
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S3	12	58.8 ± 0.0	NB
P	*Botrychium simplex*	Least Moonwort				S3	11	39.0 ± 0.0	NB
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S3	6	39.0 ± 1.0	NB
P	*Selaginella selaginoides*	Low Spikemoss				S3	4	34.8 ± 0.0	NB
P	*Crataegus submollis*	Quebec Hawthorn				S3?	19	16.5 ± 1.0	NB
P	*Crataegus succulenta*	Fleshy Hawthorn				S3?	1	95.7 ± 5.0	NB
P	*Platanthera hookeri*	Hooker's Orchid				S3?	24	36.3 ± 2.0	NB
P	*Bidens hyperborea*	Estuary Beggarticks				S3S4	1	59.5 ± 0.0	NB
P	*Solidago altissima*	Tall Goldenrod				S3S4	6	65.2 ± 0.0	NB
P	*Symphyotrichum boreale*	Boreal Aster				S3S4	20	12.6 ± 0.0	NB
P	*Betula pumila*	Bog Birch				S3S4	26	48.7 ± 16.0	NB
P	*Mertensia maritima*	Sea Lungwort				S3S4	50	8.3 ± 0.0	NB
P	*Subularia aquatica ssp. americana*	American Water Awlwort				S3S4	18	8.9 ± 0.0	NB
P	*Lobelia cardinalis*	Cardinal Flower				S3S4	395	5.0 ± 0.0	NB
P	*Callitriche hermaphroditica*	Northern Water-starwort				S3S4	6	29.5 ± 0.0	NB
P	*Viburnum edule*	Squashberry				S3S4	4	16.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Crassula aquatica*	Water Pygmyweed				S3S4	11	50.6 ± 1.0	NB
P	*Penthorum sedoides*	Ditch Stonecrop				S3S4	82	5.7 ± 0.0	NB
P	*Elatine americana*	American Waterwort				S3S4	8	53.2 ± 0.0	NB
P	*Hedysarum americanum*	Alpine Hedysarum				S3S4	3	59.5 ± 0.0	NB
P	*Fagus grandifolia*	American Beech				S3S4	162	5.5 ± 0.0	NB
P	*Geranium robertianum*	Herb Robert				S3S4	27	12.1 ± 0.0	NB
P	*Stachys hispida*	Smooth Hedge-Nettle				S3S4	12	82.4 ± 0.0	NB
P	*Stachys pilosa*	Hairy Hedge-Nettle				S3S4	6	59.5 ± 0.0	NB
P	*Teucrium canadense*	Canada Germander				S3S4	3	47.8 ± 0.0	NB
P	*Utricularia radiata*	Little Floating Bladderwort				S3S4	91	11.2 ± 0.0	NB
P	*Utricularia gibba*	Humped Bladderwort				S3S4	43	8.9 ± 0.0	NB
P	*Fraxinus americana*	White Ash				S3S4	161	8.7 ± 1.0	NB
P	*Epilobium strictum*	Downy Willowherb				S3S4	23	38.4 ± 0.0	NB
P	*Fallopia scandens*	Climbing False Buckwheat				S3S4	36	16.8 ± 0.0	NB
P	*Rumex persicarioides*	Peach-leaved Dock				S3S4	1	56.2 ± 0.0	NB
P	*Littorella americana*	American Shoreweed				S3S4	36	7.0 ± 1.0	NB
P	*Thalictrum confine*	Northern Meadow-rue				S3S4	82	12.8 ± 0.0	NB
P	*Drymocallis arguta*	Tall Wood Beauty				S3S4	32	13.1 ± 1.0	NB
P	*Rosa palustris*	Swamp Rose				S3S4	168	7.8 ± 1.0	NB
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S3S4	13	18.6 ± 3.0	NB
P	*Galium boreale*	Northern Bedstraw				S3S4	6	49.7 ± 0.0	NB
P	*Galium labradoricum*	Labrador Bedstraw				S3S4	18	16.3 ± 0.0	NB
P	*Salix pedicellaris*	Bog Willow				S3S4	70	8.8 ± 0.0	NB
P	*Geocaulon lividum*	Northern Comandra				S3S4	13	18.9 ± 0.0	NB
P	*Parnassia glauca*	Fen Grass-of-Parnassus				S3S4	2	59.5 ± 0.0	NB
P	*Agalinis neoscotica*	Nova Scotia Agalinis				S3S4	56	35.6 ± 0.0	NB
P	*Limosella australis*	Southern Mudwort				S3S4	11	36.3 ± 5.0	NB
P	*Ulmus americana*	White Elm				S3S4	134	5.2 ± 0.0	NB
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3S4	153	5.0 ± 0.0	NB
P	*Juniperus horizontalis*	Creeping Juniper				S3S4	34	12.8 ± 1.0	NB
P	*Carex capillaris*	Hairlike Sedge				S3S4	6	59.5 ± 0.0	NB
P	*Carex eburnea*	Bristle-leaved Sedge				S3S4	1	82.0 ± 0.0	NB
P	*Carex exilis*	Coastal Sedge				S3S4	109	21.6 ± 0.0	NB
P	*Carex haydenii*	Hayden's Sedge				S3S4	70	5.0 ± 0.0	NB
P	*Carex lupulina*	Hop Sedge				S3S4	108	36.3 ± 0.0	NB
P	*Carex tenera*	Tender Sedge				S3S4	51	17.8 ± 2.0	NB
P	*Carex wiegandii*	Wiegand's Sedge				S3S4	33	20.8 ± 0.0	NB
P	*Carex recta*	Estuary Sedge				S3S4	8	14.1 ± 1.0	NB
P	*Carex atratiformis*	Scabrous Black Sedge				S3S4	2	59.5 ± 0.0	NB
P	*Cladium mariscoides*	Smooth Twigrush				S3S4	118	19.7 ± 0.0	NB
P	*Cyperus dentatus*	Toothed Flatsedge				S3S4	80	4.3 ± 1.0	NB
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S3S4	10	70.5 ± 0.0	NB
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3S4	20	52.2 ± 0.0	NB
P	*Trichophorum clintonii*	Clinton's Clubrush				S3S4	26	4.6 ± 0.0	NB
P	*Bolboschoenus fluviatilis*	River Bulrush				S3S4	58	54.6 ± 1.0	NB
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	21	8.4 ± 1.0	NB
P	*Lilium canadense*	Canada Lily				S3S4	91	12.6 ± 2.0	NB
P	*Triantha glutinosa*	Sticky False-Asphodel				S3S4	10	59.5 ± 0.0	NB
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	8	3.9 ± 0.0	NB
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	18	35.5 ± 0.0	NB
P	*Neottia cordata*	Heart-leaved Twayblade				S3S4	21	11.6 ± 0.0	NB
P	*Platanthera obtusata*	Blunt-leaved Orchid				S3S4	40	18.9 ± 1.0	NB
P	*Platanthera obtusata ssp. obtusata*	Blunt-leaved Orchid				S3S4	1	59.3 ± 0.0	NB
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3S4	121	21.2 ± 0.0	NB
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	3	55.6 ± 2.0	NB
P	*Eragrostis pectinacea*	Tufted Love Grass				S3S4	16	17.1 ± 0.0	NB
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S3S4	6	61.7 ± 2.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3S4	14	42.8 ± 0.0	NB
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3S4	23	61.7 ± 1.0	NB
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3S4	30	27.0 ± 0.0	NB
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3S4	2	59.5 ± 0.0	NB
P	*Asplenium viride*	Green Spleenwort				S3S4	16	54.4 ± 0.0	NB
P	*Dryopteris fragrans*	Fragrant Wood Fern				S3S4	3	58.8 ± 0.0	NB
P	*Equisetum palustre*	Marsh Horsetail				S3S4	11	67.1 ± 0.0	NB
P	*Polypodium appalachianum*	Appalachian Polypody				S3S4	14	8.4 ± 1.0	NB
P	*Montia fontana*	Water Blinks				SH	1	19.2 ± 1.0	NB
P	*Solidago caesia*	Blue-stemmed Goldenrod				SX	2	64.2 ± 1.0	NB
P	*Celastrus scandens*	Climbing Bittersweet				SX	3	85.8 ± 100.0	NB
P	*Carex swanii*	Swan's Sedge				SX	45	50.4 ± 1.0	NB

5.1 SOURCE BIBLIOGRAPHY (100 km)

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
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6484	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
4916	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
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1800	Paquet, Julie. 2018. Atlantic Canada Shorebird Survey (ACSS) database 2012-2018. Environment Canada, Canadian Wildlife Service.
1596	Berrigan, L. 2019. Maritimes Marsh Monitoring Project 2013, 2014, 2016, 2017, and 2018 data. Bird Studies Canada, Sackville, NB.
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1203	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
1055	Blaney, C.S. & Mazerolle, D.M. 2011. NB WTF Fieldwork on Magaguadavic & Lower St Croix Rivers. Atlantic Canada Conservation Data Centre, 4585 recs.
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357	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
344	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
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316	Epworth, W. 2016. Species at Risk records, 2014-2016. Fort Folly Habitat Recovery Program, 38 recs.
273	Watts, T. 2021. Fuscopannaria leucosticta, Pannaria lurida and Fraxinus nigra records from western Charlotte County, New Brunswick. Peskotomuhkati Nation at Skutik, 273 records.
253	Mazerolle, D.M. 2020. Atlantic Canada Conservation Data Centre botanical fieldwork 2019. Atlantic Canada Conservation Data Centre.
252	Blaney, C.S.; Mazerolle, D.M.; Klymko, J; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
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36	Scott, Fred W. 1998. Updated Status Report on the Cougar (Puma Concolor couguar) [Eastern population]. Committee on the Status of Endangered Wildlife in Canada, 298 recs.
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19	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
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17	Blaney, C.S.; Mazerolle, D.M. 2010. Fieldwork 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 15508 recs.
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14	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.
13	Belliveau, A.G. 2020. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2019, 2020. E.C. Smith Herbarium.
13	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2000.
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13	G.Proulx, R. Newell, A. Mills, D. Bayne. 2018. Selaginella rupestris records, Digby Co. Nova Scotia Lands and Forestry, 1387601 recs.
13	Hughes, Cory. 2020. Atlantic Forestry Centre Coccinella transversoguttata collections. Canadian Forest Service, Atlantic Forestry Centre.
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11	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
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10	Neily, T. H. 2018. Lichen and Bryophyte records, AEI 2017-2018. Tom Neily; Atlantic Canada Conservation Data Centre.
10	Noseworthy, J. 2013. Van Brunt's Jacob's-ladder observations along tributary of Dipper Harbour Ck. Nature Conservancy of Canada, 10 recs.
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5	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
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5	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
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3	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
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2	Amirault, D.L. 1997-2000. Unpublished files. Canadian Wildlife Service, Sackville, 470 recs.
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2	Clayden, S.R. 2020. Email to Sean Blaney regarding Pilophorus cereus and P. fibula at Fidele Lake area, Charlotte County, NB. pers. comm., 2 records.
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2	McIntosh, W. 1904. Supplementary List of the Lepidoptera of New Brunswick. Bulletin of the Natural History Society of New Brunswick, 23: 355-357.

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1	Clayden, S.R. 2020. Email regarding Blue Felt Lichen (Pectenia plumbea) occurrences in New Brunswick, from Stephen Clayden to Sean Blaney. pers. comm., 2 records.
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1	Dadswell, M.J. 1979. Status Report on Shortnose Sturgeon (Acipenser brevirostrum) in Canada. Committee on the Status of Endangered Wildlife in Canada, 15 pp.
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APPENDIX D

Maritime Breeding Bird Atlas Square Summary

ATLAS DES OISEAUX NICHEURS DES MARITIMES
BREEDING BIRD ATLAS

Square Summary (19FK79)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
12	37	62	111	45	10	41	96	38	20.4	15	0

Region summary (#11: Charlotte)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
67	63	59	163	186	616	251

Target number of point counts in this square: 13 road side, 2 off road (1 in Mature coniferous, 1 in Mature deciduous). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%	
	1st	2nd	1st	2nd
Canada Goose		H	12	27
Wood Duck	P	FY	38	38
Gadwall ‡			1	0
American Wigeon	H		14	8
American Black Duck	FL	FY	52	62
Mallard		FY	9	20
Blue-winged Teal	FL		23	5
Green-winged Teal	FL	P	31	13
Ring-necked Duck		FY	34	22
Greater Scaup †			0	0
Common Eider §	FL	H	26	33
Common Goldeneye			4	1
Hooded Merganser		FY	31	35
Common Merganser		FY	41	22
Red-breast Merganser	P	P	19	13
Ring-necked Pheasant			7	15
Ruffed Grouse	FL		41	54
Spruce Grouse	H		17	15
Wild Turkey †			4	8
Common Loon			39	38
Pied-billed Grebe		FY	1	5
Leach's Storm-Petrel ‡§			7	3
Double-crest Cormorant §	H	H	25	22
Great Cormorant ‡§			1	3
American Bittern	T	H	23	18
Great Blue Heron §	H	H	36	28
Green Heron †			1	1
Black-crown N.-Heron † §			14	6
Turkey Vulture ‡¤			1	30
Osprey	ON	CF	61	33
Bald Eagle ¤		NY	38	52
Northern Harrier	P		33	33
Sharp-shinned Hawk	H	H	20	33
Cooper's Hawk †			1	1
Northern Goshawk			15	11
Red-should Hawk †			12	5
Broad-winged Hawk	T		47	52
Red-tailed Hawk			15	13
Sora	H		14	5
American Coot †		H	0	1
Semipalmated Plover †			4	0
Piping Plover †			0	0
Killdeer	NE	H	47	18
Spotted Sandpiper	FL	P	60	38
Willet			4	5
Upland Sandpiper †			3	6
Wilson's Snipe	T		28	25
American Woodcock	T		44	37
Black-legged Kittiwake ‡§			0	6
Bonaparte's Gull ‡			1	0
Laughing Gull † §			1	1
Ring-billed Gull ‡§			0	1
Herring Gull §		H	28	32
Great Black-backed Gull §		H	26	28
Roseate Tern ‡§			1	1
Common Tern §			11	8
Arctic Tern ‡§			6	1
Common Murre ‡§			3	3
Razorbill ‡§			3	3
Black Guillemot ‡§			20	30
Atlantic Puffin ‡§			1	1
Rock Pigeon	NB	H	15	32
Mourning Dove	FL	H	46	71
Yellow-billed Cuckoo ‡			0	3
Black-billed Cuckoo			31	20
Eastern Screech-Owl ‡			0	3
Great Horned Owl		H	26	23
Barred Owl	T	H	23	47
Long-eared Owl †			6	6
Short-eared Owl †			3	0
North Saw-whet Owl	T		20	27
Common Nighthawk †	T	H	38	33
Whip-poor-will			17	10
Chimney Swift †	ON	H	31	16
Ruby-thr Hummingbird	H	H	44	72
Belted Kingfisher		H	41	49
Red-head Woodpecker †			1	0
Yellow-bellied Sapsucker	NY		52	40
Downy Woodpecker	NY	H	46	71
Hairy Woodpecker	T	H	50	72
Am Three-toed Woodpecker †			4	0
Black-back Woodpecker			26	13
Northern Flicker	FL	FY	66	84
Pileated Woodpecker	ON	FY	33	47
American Kestrel	ON	H	50	40
Merlin			12	33
Olive-sided Flycatcher †	T		44	27

next page >>

Maritimes Breeding Bird Atlas - Summary Sheet for Square 19FK79 (page 2 of 3)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Eastern Wood-Pewee	T	H	44	42	Winter Wren	AY	T	66	84	Chestn-sided Warbler	T	FY	55	79
Yellow-bellied Flycatcher	NE	H	53	69	Golden-crown Kinglet	FL	FY	57	81	Blackpoll Warbler	AY	S	22	16
Alder Flycatcher	T	A	61	83	Ruby-crown Kinglet	T	S	57	64	Black-thr Blue Warbler			22	71
Willow Flycatcher †			1	5	Eastern Bluebird †	ON	AE	25	40	Palm Warbler	T	S	28	57
Least Flycatcher	H		50	62	Veery	T	S	52	64	Pine Warbler †			11	28
Eastern Phoebe		S	30	64	Bicknell's Thrush †	T		15	5	Yellow-rumped Warbler	AY	FY	71	81
Gr Crested Flycatcher		H	31	13	Swainson's Thrush	AY	S	68	74	Black-thr Green Warbler	FL	FY	66	88
Eastern Kingbird	FL	FY	46	37	Hermit Thrush	AY	NY	61	83	Canada Warbler †	T	S	58	66
Blue-headed Vireo	T	FY	61	81	Wood Thrush †			25	3	Wilson's Warbler	H	S	38	33
Warbling Vireo †	H		20	8	American Robin	AY	CF	84	91	Eastern Towhee ‡			1	0
Philadelphia Vireo			6	15	Gray Catbird	AY	CF	60	72	Chipping Sparrow	AY	FY	63	72
Red-eyed Vireo	FL	A	66	86	Northern Mockingbird †	T		17	6	Field Sparrow †			4	0
Gray Jay	FL	H	30	33	Brown Thrasher †		H	6	13	Vesper Sparrow †			15	6
Blue Jay	T	H	55	74	European Starling	ON	FY	63	64	Savannah Sparrow	FL	S	52	61
American Crow	NB	AE	68	79	Cedar Waxwing	NB	FY	76	86	Nelson's Sh.-tail Sparrow	T		11	6
Common Raven	NB	AE	68	77	Ovenbird	T	S	65	77	Song Sparrow	AY	CF	76	76
Horned Lark †			4	3	North Waterthrush	T	S	42	50	Lincoln's Sparrow	T		49	42
Purple Martin			4	0	Black-white Warbler	T	FY	66	84	Swamp Sparrow	AY	AE	44	64
Tree Swallow	ON	AE	82	66	Tennessee Warbler	T		46	22	White-throat Sparrow	FL	CF	80	86
North Rgh-wing Swallow †	H		6	1	Nashville Warbler	AY	CF	61	81	Dark-eyed Junco	NE	FY	66	79
Bank Swallow §	ON		52	16	Mourning Warbler	T	H	36	28	Scarlet Tanager †			23	18
Cliff Swallow §	ON		60	30	Common Yellowthroat	AY	CF	80	86	Northern Cardinal		H	6	16
Barn Swallow	NY	FY	77	50	American Redstart	FL	DD	79	86	Rose-breast Grosbeak	NB		53	23
Black-capp Chickadee	AY	AE	66	86	Cape May Warbler	T		34	18	Indigo Bunting		H	12	25
Boreal Chickadee	AY	H	33	38	Northern Parula	AY	P	63	83	Bobolink	AY		42	28
Red-breast Nuthatch	FL	CF	52	81	Magnolia Warbler	AY	FY	68	86	Red-wing Blackbird	FL	FY	53	57
White-breast Nuthatch			19	8	Bay-breasted Warbler	AY	H	50	49	Eastern Meadowlark †			3	0
Brown Creeper	T	S	36	35	Blackburnian Warbler	T		55	66	Rusty Blackbird †	T		39	13
House Wren †			4	5	Yellow Warbler	FL	P	63	57	Common Grackle	FL	FY	60	77

<< previous page next page >>

Maritimes Breeding Bird Atlas - Summary Sheet for Square 19FK79 (page 3 of 3)

SPECIES	Code		%	
	1st	2nd	1st	2nd
Brown-head Cowbird	FL		44	16
Baltimore Oriole			17	10
Pine Grosbeak			15	1
Purple Finch	T	T	73	83
House Finch †			6	5
Red Crossbill †	H		22	11
White-winged Crossbill	FL		53	22
Pine Siskin	FL	H	53	33
American Goldfinch	T	T	61	76
Evening Grosbeak	P		57	16
House Sparrow	FL		20	6

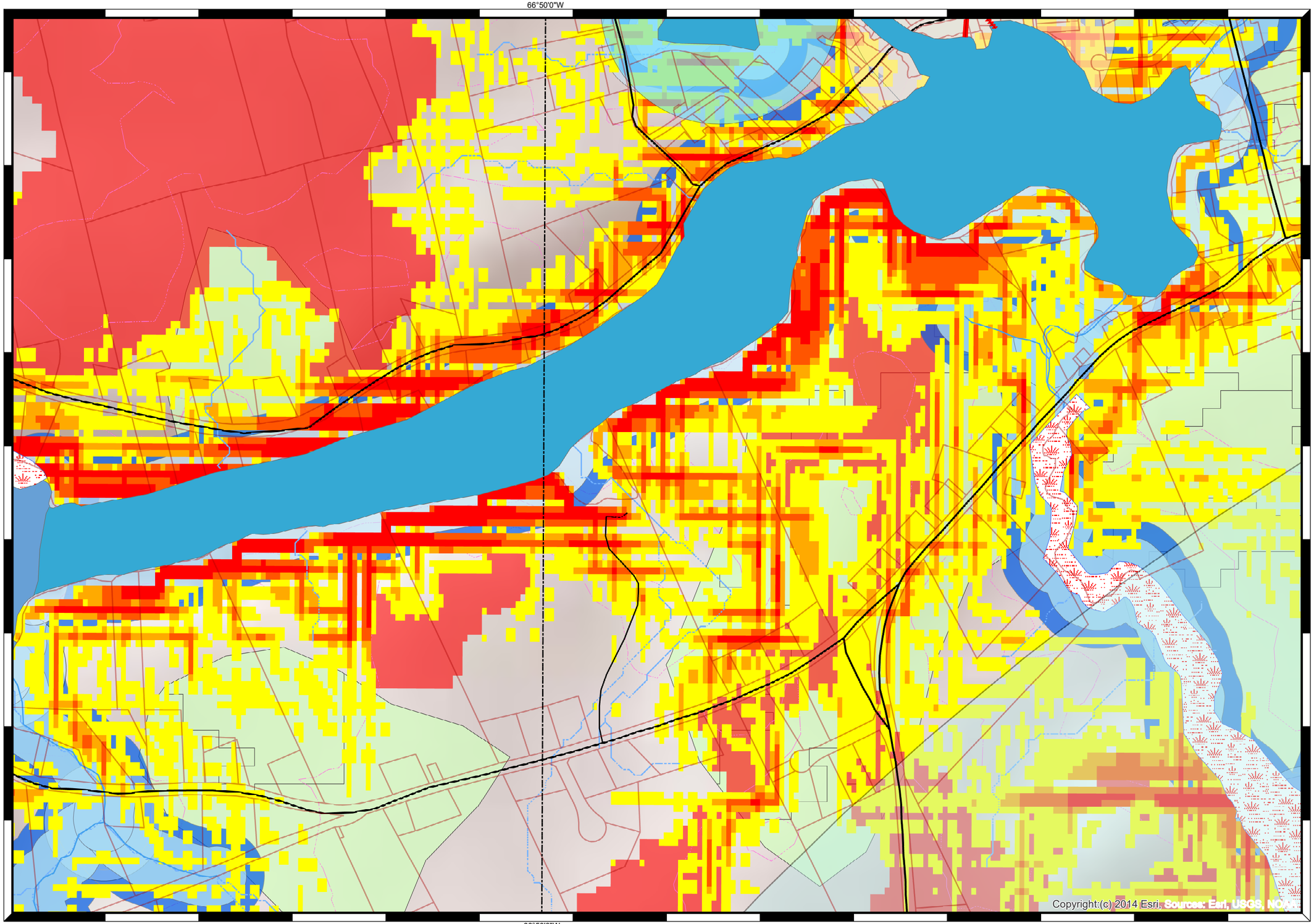
This list includes all species found during the Maritimes Breeding Bird Atlas (1st atlas: 1986-1990, 2nd atlas: 2006-2010) in the region #11 (Charlotte). Underlined species are those that you should try to add to this square (19FK79). They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. "Code" is the code for the highest breeding evidence for that species in square 19FK79 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #11). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), † (rare in the Maritimes) or ¤ (rare in the Maritimes, documentation only required for confirmed records). Current as of 17/05/2023. An up-to-date version of this sheet is available from http://www.mba-aom.ca/jsp/summaryform.jsp?squareID=19FK79?lang=en

<< previous page

APPENDIX E

Archaeological Predictive Model

66°50'0"W



66°50'0"W

0 0.05 0.1 0.2 0.3 0.4

Kilometers

N

W E

S

Legend

- HistoricOct2022 (0)
- PreContactOct2022 (0)
- UndefinedSites (0)
- SuspectedShipwrecks (0)
- Shipwrecks (0)
- SuspectedPlaneCrash (0)
- RecordedPlaneCrash (0)
- ProtoHistoricSite (0)
- RecentFinds (0)
- Cemeteries (0)
- New Brunswick Portage Routes (3)

waterbody

- <all other values> (0)

WATER_CODE

- AQ (0)
- LK (0)
- ON (1)
- PN (0)
- RV (1)
- SL (0)
- WA (0)
- PIDs (237)

Roads

- <all other values> (0)

TRANSPORTA

- 1 (1)
- 3 (0)
- 2 (13)
- PreContactApril2023_Buffer (1)
- PreContactOct2022_Buffer (1)
- HistoricOct2022b_Buffer (0)
- NBPortageRoutes_Buffer (3)
- PortageBuffer4 (0)
- PortageBuffer (0)
- wetland (2)

watercourse

- <all other values> (0)

WATERCOURS

- 1 (7)
- 2 (2)
- Predicted Flow Channel (0)

Slope_demnb2

<VALUE>

- 0 - 25.36652904
- 25.36652905 - 60.23010614
- 60.23010615 - 72.92877099
- 72.928771 - 77.50883873
- 77.50883874 - 80.67965486
- 80.67965487 - 83.85047099
- 83.850471 - 89.83979034
- High Potential1 (12)
- Medium Potential1 (2)

MarinePaleoShoreline

VALUE

- 0 - 28
- 28.00000001 - 38
- 38.00000001 - 48
- 48.00000001 - 810
- Alluvial Sediments (15)

New Nouveau Brunswick

Time: 4:22:12 PM

Date: 6/21/2023

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