Environmental Impact Assessment Registration - Water Supply Source Assessment

Enclosure Campground Resort Ltd.

PIDs 40336141, 40336125, 40336174, 40336190, 40066508, 40336216 and 40336224

Derby Junction, New Brunswick

Prepared for:

Enclosure Campground Resort Ltd.
104 Enclosure Park Road
Miramichi, New Brunswick
E1V 5B2

Project: 21.03.242
October 14, 2022

hive ENGINEERING

Hive Engineering Limited
29 Victoria Street, Unit 102
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October 14, 2022
Project: 21.03.242

Enclosure Campground Resort Ltd.
104 Enclosure Park Road
Miramichi, New Brunswick
E1V 5B2

Attention: Rachelle Voisine, Project Coordinator, NBDELG EIA Branch

Re: EIA Registration Document – Water Supply Source Assessment
Enclosure Campground Resort Ltd., Derby Junction, New Brunswick

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Hive Engineering Limited has prepared the following EIA Registration Document for the Water Supply Source Assessment to be carried out at the existing Enclosure Campground in Derby Junction, New Brunswick. Our conclusions and recommendations are presented in the following report.

Do not hesitate to contact the undersigned with any questions regarding the information presented herein.

Sincerely,

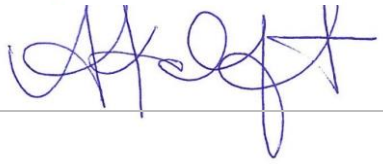
Andrea Kalafut, M.Sc.E., P.Eng.
President and Senior Environmental Engineer
Hive Engineering Limited

Professional Review

The field work, report preparation and engineering review of this document was overseen by Ms. Andrea Kalafut, M.Sc.E., P.Eng., a Professional Engineer licensed to practice in New Brunswick.

The work was completed per engineering standards and guidelines in place in 2022. If significant time lapses prior to the undertaking of additional work, the findings of this report should be reviewed by the engineer to ensure the recommendations and conclusions comply with current environmental guidelines.

Information regarding the property and history of the Site are critical for identifying environmental liabilities. If any discrepancies, inaccuracies, or data gaps are identified in the report, we request the opportunity to review them with the client.

Hive Engineering Quality System	
Project No. 21.03.242	Date: October 14, 2022
Prepared By: Katie Gillis, P.Eng.	
Reviewed By: Andrea Kalafut, M.Sc.E., P.Eng.	
December 1, 2021	

Glossary of Terms

Abbreviation	Definition
ACCDC	Atlantic Canada Conservation Data Centre
EIA	Environmental Impact Assessment
NBRED	New Brunswick Department of Natural Resources and Energy Development
NBDELG	New Brunswick Department of Environment and Local Government
PID(s)	Parcel Identifier(s)
SNB	Service New Brunswick
TRC	Technical Review Committee
WSSA	Water Supply Source Assessment

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1.0 INTRODUCTION

Hive Engineering Limited (herein "Hive") was retained by Enclosure Campground Resort Ltd. (herein "Proponent") to conduct a Water Supply Source Assessment (WSSA) and prepare an Environmental Impact Assessment (EIA) registration document for an existing campground located in Derby Junction, New Brunswick. The campground is situated on Crown Land, which is registered to the New Brunswick Department of Natural Resources and Energy Development (NBRED). Enclosure Campground Resort Ltd. currently leases a total of seven properties from NBRED; the leased properties are identified by Service New Brunswick (SNB) as Parcel Identifiers (PIDs) 40336141, 40336125, 40336174, 40336190, 40066508, 40336216 and 40336224 (herein referred to as the "Site"). A Site location map is presented in Appendix A.

This registration document was requested to comply with the New Brunswick *Environmental Impact Assessment Regulation 87-83* of the *Clean Environment Act*. There are currently four groundwater wells on-site; three of the wells are used to service the Site. It is estimated that the total capacity of the wells exceeds 50 cubic metres of water per day.

Item (s) of Schedule "A" of "A Guide to Environmental Impact Assessment in New Brunswick", indicates that an environmental impact registration is required for "all waterworks with a capacity of greater than fifty cubic metres of water daily". This undertaking is being carried out to bring the campground and its current groundwater supply wells into compliance with current regulatory requirements. We have included all required information for evaluating the existing campground; however, we have included (when available) supplementary information to allow the Proponent flexibility to further expand the facility in the future. There are currently no plans to expand the existing campground.

2.0 THE PROPONENT

The Proponent details for this registration document are as follows:

Table 1 Proponent Information

Name of Undertaking:	Environmental Impact Assessment Registration, Water Supply Source Assessment – Enclosure Campground Resort Ltd., Derby Junction, New Brunswick
Name of Proponent:	Enclosure Campground Resort Ltd.
Address of Proponent:	104 Enclosure Park Road, Miramichi, New Brunswick, E1V 5B2
Principal Proponent Contact:	Contact: Tracey Clark, Owner Phone: 506.627.6480 Email: enclosurecampground92@gmail.com
Principal Contact for EIA:	Company: Hive Engineering Limited Contact: Ms. Andrea Kalafut, M.Sc.E., P.Eng. Address: 29 Victoria Street, Unit 102, Moncton, NB, E1C 9J6 Office 506.386.4897 Email: andrea.kalafut@hiveeng.ca
Property Ownership:	New Brunswick Department of Natural Resources and Energy Development
Property Lessee	Enclosure Campground Resort Ltd.

The campground is situated on Crown Land, which is currently owned by NBRED. The lease dated March 9, 2010, indicates that the duration of the lease is 20 years and will terminate on February 28, 2030; the lease agreement is presented in Appendix B. An authorization letter from NBRED to conduct the WSSA and prepare the EIA for this Project has been presented in Appendix C.

3.0 PROJECT DESCRIPTION

3.1 Project Name

Environmental Impact Assessment Registration, Water Supply Source Assessment - Enclosure Campground Resort Ltd., Derby Junction, New Brunswick

3.2 Project Overview

The Site has operated as a seasonal campground since the 1960s; the Site is and has historically been serviced potable water from private, drilled groundwater wells. There are four drilled wells on the Site; three of the wells are currently connected to the campground's water supply distribution system. It is our understanding that the three active wells have not been subjected

to a pumping test (i.e. WSSA) to confirm that they have adequate capacity to service the Site. Therefore, the NBDELG requested the completion of a WSSA to evaluate the existing active wells. The scope of work for the Project is limited to the completion of a WSSA to bring the existing campground into compliance with current requirements under item (s) of Schedule "A". The WSSA will assess the sustainable yield and water quality by pump testing the three active wells and utilizing the fourth as an observation well. Additional details regarding the potable wells on-site and the WSSA to be carried out as part of the EIA are presented in the Step One WSSA Application prepared by EXP (the hydrogeologist) in Appendix D.

The campground is situated on Crown Land (NBRED); Enclosure Campground Resort Ltd. currently leases the seven land parcels. The current developed area is limited to four of the land parcels (approximately 15 hectares), which contain an administrative office with laundry facilities, seasonal restaurant, kitchen shelter, playground, swimming pool, washroom facilities, cabins and 119 camping lots (96 of which are serviced with water). The remainder of the Site is vacant and wooded.

There are currently no plans to expand the footprint or do any upgrades to the existing campground. However, the Proponent would like the flexibility to expand the campground (with applicable approvals). Preliminary consultation with the NBDELG indicated that the scope of the EIA should focus on the completion of the WSSA and a desktop review of environmental features on and within proximity to the Site to ensure the existing facility is currently in compliance. Due to the fact that the Project will not include any changes to existing environmental features, biological and other field studies (aside from the WSSA) were not included as part of the scope of work. In the event that the Proponent looks to expand the facility in the future, the EIA registration submitted herein could be revisited and re-evaluated.

3.3 Purpose/Rationale/Need for Undertaking

The Site is leased by Enclosure Campground Resort Ltd. for the operation of a family-owned campground, which currently occupies four of the seven parcels (PIDs 40336141, 40336125, 40336174 and 40336190). The campground was developed in the 1960s and was originally operated by the provincial government. Since its development, the campground has provided recreation and tourism opportunities for the Miramichi region. The operation of campgrounds in New Brunswick allow tourism in rural areas of the province, creating a positive impact on the local economy for small communities such as Derby Junction.

The campground is currently and has historically been serviced potable water from private drilled groundwater wells. A WSSA has not been completed at the Site. Therefore, the purpose of the EIA is to bring the existing campground into compliance with current provincial regulations (i.e. the WSSA will establish pumping rates for the wells to ensure sustainability of the aquifer). Additional details of the Step One WSSA Application is presented in Appendix D.

The only alternative to Project approval will result in the likely closure of the existing campground. This would result in the loss of recreation and tourism opportunities in the Miramichi area, and consequently, a loss in the local economy and operation of a small business in New Brunswick.

3.4 Project Location

A map presenting the location of the Site is presented in Appendix A and in Figure 1 below. The entire Site leased by Enclosure Campground is approximately 26.3 hectares of land (PIDs 40336141, 40336125, 40336174, 40336190, 40066508, 40336216 and 40336224); the current campground occupies approximately 15 hectares of these seven PIDs. The approximate coordinate for the centre of the Site is Latitude: 46° 57’ 44.26” N and Longitude: 65° 35’ 21.63” W. The Site PIDs do not have civic addresses. SNB indicates that all seven PIDs are located on Route 8 in Derby Junction in Northumberland County. The roadway adjoining the Site immediately to the west is Enclosure Road.

The properties immediately adjoining the Site to the north, south, east and west are all Crown Land. The properties to the north, east and south are currently vacant woodland. A roadway (Enclosure Road) adjoins the Site to the west. The Miramichi Valley Bible Camp is present beyond the vacant woodland south of the Site.

Figure 1 - Map of Site (SNB aerial photograph, 2020).

3.5 Siting Considerations

A campground has operated at the Site since the 1960s; NBRED recently signed a lease with Enclosure Campground Resort Ltd. to operate from March 1, 2010, to February 28, 2030. The Site has not been recently selected for development; the objective of the work is to get a campground that has been established for almost 60 years into compliance with current provincial requirements. No other alternatives for the siting were considered as part of our assessment.

The Project will not involve any development or disturbance of the Site. Based on the limited scope of the Project described herein (i.e., WSSA to bring existing campground into compliance), we offer the following statements:

- It is anticipated that no ecological or cultural impacts will occur. There will also be no disturbance of any potential archaeological resources.
- According to the SNB Land Gazette information, the Site is considered a Provincial Heritage Place under the Heritage Conservation Act. However, the Project will not involve the disturbance of any of the land or structures; therefore, no impact or disturbance of any heritage buildings is anticipated.
- The Site is not located within a protected wetland area or in a protected coastal area. The Site is also not situated with a 30-metre buffer of a wetland or coastal area.
- The Site is located in a rural area in Derby Junction, New Brunswick; therefore, there is no zoning mapping available for the Site or surrounding areas.

3.6 Physical Components and Dimensions of Project

The Site occupies a total area of 26.3 hectares of Crown Land; the land is currently leased to Enclosure Campground Resort Ltd. The dimensions of the Site (at its largest width (west to east) and length (north to south) are approximately 1,450 meters by 945 meters. The developed portion of the Site (existing campground and associated infrastructure) is approximately 15 hectares. An overview of the Site is presented in Figure 2.

Figure 2 provides a map of the campground, including approximate locations of drilled groundwater wells. Wells 1 and 2 are currently used to supply potable water to the campground and Well 3 supplies potable water to the associated restaurant (Flo's Hideaway), which operates on a seasonal basis; Well 4 is currently not in use. The Proponent has considered expanding the area of the campground in the future. Although there are currently no plans for expansion, we have included a possible location for a future well (i.e. Proposed Well). The Proponent understands that the registration would need to be re-evaluated for another approval in the event that they intend to move forward with any expansions to the campground and additional studies may be required.

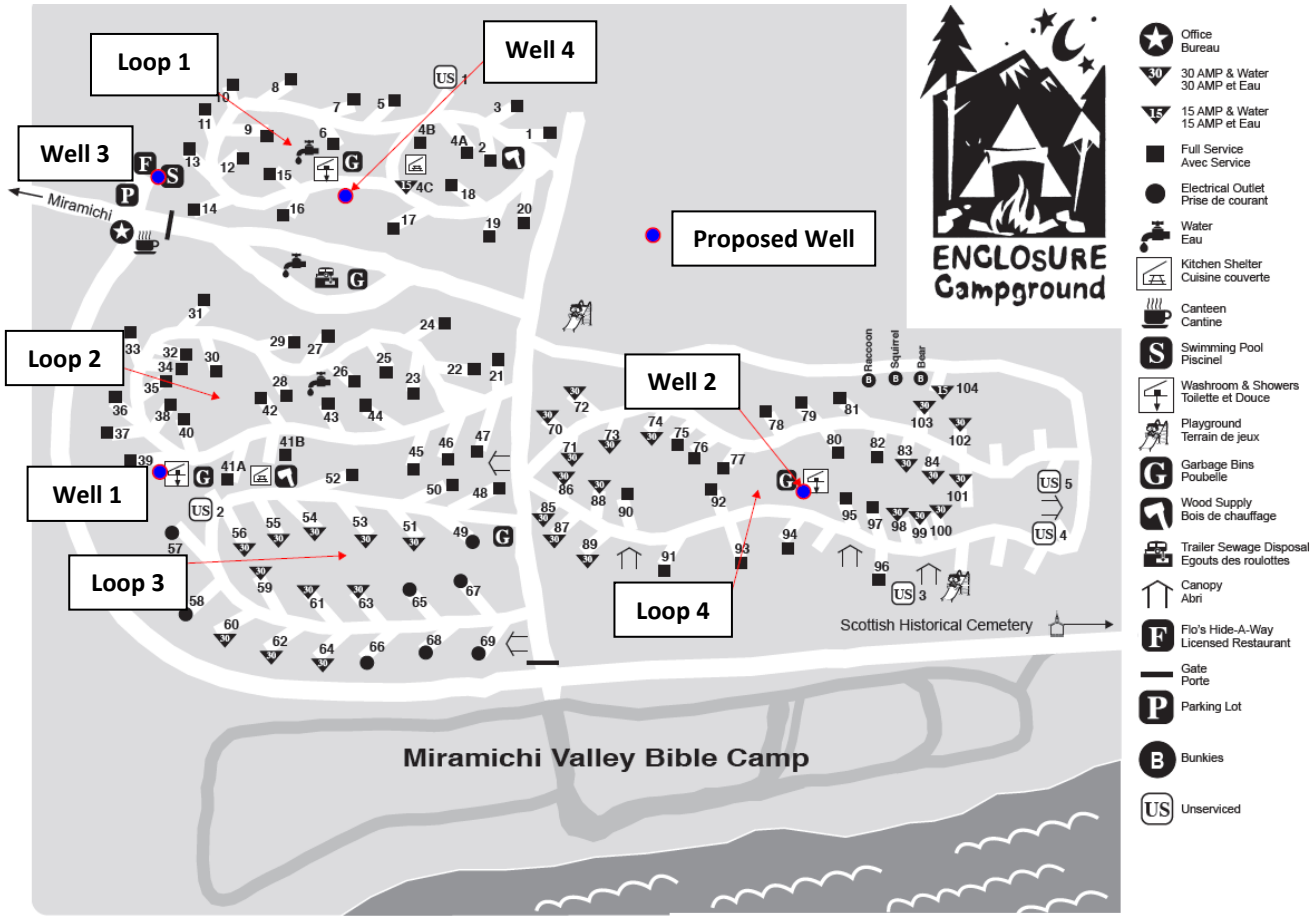

Figure 2 – Map of Existing Campground (EXP Step One WSSA Application)

3.7 Construction Details

The Project will not include the construction or installation of any new infrastructure, roads, utilities or buildings on-site.

3.8 Operation and Maintenance Details

Upon the completion of the WSSA and preparation of the EIA, the Site will continue to operate as a campground. Potable water for the campground will be provided by the three existing potable wells that are currently on-site (Well 1, Well 2 and Well 3 shown in Figure 2). The capacity of the wells will be assessed during the WSSA.

The campground currently contains a private septic system for disposal of domestic sewage generated on-site. The system contains two holdings tanks that collect sewage from 69 sites; the holding tanks are situated on the western portion of the campground and discharge into a

trickling filter with a 150 mm exposed discharge pipe that reportedly discharges toward the Northwest Miramichi River. The holding tanks are maintained on a weekly basis during the operational season for the campground. Maintenance includes the cleaning of rotating arms and adding chlorine to the system. Solids that accumulate in the holding tanks are removed once per year by a qualified contractor.

A septic field is also present on-site and is used to service 14 sites during the operational season. The septic system used at the campground is approved by the government of New Brunswick pursuant to paragraph 8(1) of the *Water Quality Regulation – Clean Environment Act.* There are no modifications currently being proposed to the septic system that is currently present on-site.

3.9 Future Modifications, Extensions or Abandonment

The Proponent has indicated that they may consider expanding the campground to include additional serviced lots (i.e., sewer and water services). However, this expansion is not included as part of this EIA registration document. The Step One WSSA Application presented herein is limited to the current potable wells/groundwater to supply the existing operations only; in the event of future expansion (including the installation/use of additional potable wells), any requirements for additional water supply source assessment can be done so as an amendment to this current EIA registration.

The campground currently contains a septic system for sewage collection on-site. Future expansion and/or installation of additional infrastructure on the Site may also require an increase in the capacity of the septic system. Consultation with the NBDELG EIA Branch has also indicated that any consideration of future alterations to the septic system at the campground can be done so as an amendment to this current EIA.

In the event that the campground is abandoned, all water and sewer infrastructure no longer in use would be decommissioned.

3.10 Documents Related to the Undertaking

Documents relevant to the Project have been presented in Appendices A through G, including the following:

- Site Location Plan (Appendix A).
- Lease agreement obtained from SNB (Appendix B).

- New Brunswick Department of Natural Resources and Energy Development's *"Landowner Authorization for Environmental Impact Assessment Registration, Enclosure Campground Resort Ltd., Derby Junction, New Brunswick"* (Appendix C).
- EXP's "Proposed Assessment of the Existing Enclosure Campground Development, Water Supply Source Assessment, Step One Application" (Appendix D).
- Topographic Map, sourced from the Atlas of Canada in September of 2022 (Appendix E).
- Atlantic Canada Conservation Data Centre's "Data Report 7434 Derby Junction, NB" dated September 20, 2022 (Appendix F).
- Wetland Mapping (Appendix G)
- Predictive Archaeology Map (Appendix H).

No other applications to municipal, provincial or federal agencies have been submitted concurrently with this EIA registration.

4.0 DESCRIPTION OF EXISTING ENVIRONMENT

4.1 Physical and Natural Features

4.1.1 Topography

The Site is located on a peninsula near the eastern end of Wilson's Point in Derby Junction, New Brunswick. The confluence of the Northwest Miramichi River and Southwest Miramichi River is present approximately 300 east/northeast of the Site. A topographic plan of the Site and surrounding area provided by the Atlas of Canada is presented in Appendix E. The Site is situated at an approximately elevation of 15 meters above sea level as referenced to the Canadian Geodetic Datum. The Site is situated near a local high point of elevation; the northern portion of the Site generally slopes to the north and the eastern and southern portions of the Site generally slope to the east and south, respectively.

The Site consists predominantly of pervious surfaces (i.e. unsurfaced vegetated areas). It is anticipated that surface water will infiltrate pervious surfaces or flow overland, ultimately discharging to the Northwest or Southwest branches of the Miramichi River.

4.1.2 Watercourses

There are no watercourses present on the Site or immediate adjoining properties. The Site is located on a peninsula near the eastern end of Wilson's Point. The confluence of the Northwest Miramichi River and Southwest Miramichi River is present approximately 300 meters

east/northeast of the Site. The nearest water body is the Northwest Miramichi River located approximately 40 metres northeast of the easternmost boundary of the Site (at its nearest point).

4.1.3 Coastal Features

The Site is located in a rural area in Derby Junction, New Brunswick. According to GeoNB mapping, there are no beaches, dunes, rock platforms, coastal marshes or diked lands on the Site or within 30 metres of the Site. There are no features in the area protected under *A Coastal Protection Policy for New Brunswick*.

4.1.3.1 General Geology

Surficial geological mapping indicates that the area is covered with undifferentiated blankets and plains (generally one to ten metres thick) of Late Wisconsinan and/or Early Holocene age lacustrine and marine sediments that consist of sand, silt, minor clay and gravel with patchy thin veneer of organic sediment.

Bedrock geological mapping indicates that the bedrock in the area consists of Late Carboniferous-aged sedimentary bedrock.

4.1.4 Groundwater

The campground currently receives potable water from three existing drilled, private groundwater wells. A Step 1 WSSA application has been submitted as part of this EIA; additional information regarding the wells and groundwater use at the Site is presented in the application in Appendix D.

4.1.5 Protected Wellfields/Watersheds

According to NBDELG records, the Site is not located within a watershed or wellfield protected area.

4.1.6 Ambient Air Quality

The Site is situated in a rural area in Debry Junction, New Brunswick. Air quality is consistent with ambient conditions expected to be present within a rural area. There is currently no significant generation of dust or other emissions in the area surrounding the Project location.

4.1.7 Existing Ambient Noise Levels

The Site is situated in a rural area. Ambient noise levels are consistent with conditions expected to be present in a rural area (i.e., minor traffic noise, children playing, lawnmowers, snowblowers, etc.).

4.1.8 Fish Habitat

There are no open surface water bodies on-site. There is no fish habitat on-site and the proposed project is not anticipated to impact fish or fish habitat. The Northwest and Southwest branches of the Miramichi River located in proximity to the Site are known to be fish habitat.

4.1.9 Rare Flora and Fauna

Information from the ACCDC was obtained to provide desktop data of potentially rare species that may be present within five kilometres of the Site. According to the ACCDC data, 48 records of 17 nonvascular flora were identified within five kilometres of the Site. There are also 637 records of 53 vertebrate fauna and 12 records of 2 invertebrate fauna within five kilometres of the Site. The ACCDC data is presented in Appendix F.

Based on consultation with the NDBELG EIA Branch, it was determined that field studies were not required as part of this EIA due to the fact that tree clearing, ground disturbance, or development will not be carried out as part of the Project. The Project is limited to getting the existing campground into compliance with current regulatory requirements.

4.1.10 Wetlands and Existing Vegetation

According to GeoNB mapping, there are no regulated wetlands on the Site or on any immediate adjoining properties. GeoNB wetland mapping is included in Appendix G. A field survey for wetlands was not completed prior to submission of this document.

4.1.11 Environmentally Sensitive Areas

The Site is situated on Crown Land. According to the ACCDC data, two biologically significant sites were identified within a five kilometres radius of the Site; however, no environmentally sensitive areas were identified on the Site.

The Project will not involve the disturbance of the land surrounding the existing development. Therefore, no environmentally sensitive areas (i.e., national wildlife areas, migratory bird sanctuaries, game reserves, wetland of international significance, etc.) will be impacted as a result of the Project.

4.2 Cultural Features

4.2.1 Traditional Use

The Site is situated on Crown Land. According to the SNB Land Gazette information, the Site is considered a Provincial Heritage Place under the Heritage Conservation Act. However, the Project will not involve the disturbance of any of the land or structures.

4.2.2 Archaeology and Heritage Resources

A map of the Site and surrounding area was obtained from the New Brunswick Heritage and Archaeological Services Branch to determine whether any known or suspected archaeological sites may be present in the area. The map indicates that there is potential for archaeological sites in the area. However, there will be no disturbance of the land as part of this Project. The map is presented in Appendix H.

4.2.3 Existing and Historic Land Uses

The Site is situated in a predominantly rural area in Derby Junction, New Brunswick. The campground was first developed on the Site in the 1960s and was originally operated by the provincial government. The existing owner's family acquired the campground in the 1990s and has since leased seven properties (Crown Land) from NBRED for operating the campground.

The adjoining properties immediately surrounding the Site are Crown Land owned by NBRED and currently and have historically been vacant woodland. The Miramichi Valley Bible Camp has historically been present south of the Site (beyond the immediate adjoining woodland). The Enclosure Park and Wilson's Point Historic Site are present to the east of the Site. Enclosure Park Road adjoins the Site to the west; residential dwellings are present beyond the roadway.

The Site is not registered within the provincial contaminated sites management database and does not have any records of petroleum storage. Based on our review of the historical land use of the property and other supplementary records, the Site and adjoining lands are not suspected to be contaminated sites. The Site is also not registered in the directory of federal contaminated sites.

4.3 Socio-Economic Considerations

The Project will continue to have an overall positive effect on the local economy. The campground on-site has operated since the 1960s, which provides opportunities for employment, recreation and tourism in the greater Miramichi region. The continued operation

of a small, family-owned business such as Enclosure Campground Resort Ltd. will also contribute positively to economic growth in rural New Brunswick.

5.0 IDENTIFICATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The Project will not involve any development, vegetation removal or construction of infrastructure on-site. The work associated with the EIA includes the completion of a pump test to confirm sustainable yields of the existing drilled groundwater wells on-site.

The Project's potential environmental impact will be limited to the presence of equipment on-site during the initial short-term step-drawdown and follow-up 48-hour pumping tests and the discharge of groundwater onto the ground surface for the duration of the pumping test.

Potential environmental impact considerations associated with the field program for the WSSA could include the following:

- Minor releases of hydraulic/diesel spills from equipment and vehicles operating on-site during pumping test. The **impact avoidance** used to mitigate potential fuel spills during the pumping test are discussed in further detail in Section 6.0.
- Noise and airborne emissions (volatile organics) associated with the operation of machinery, vehicles and equipment during the WSSA (i.e. pump testing). The **impact reduction** used to mitigate the effects of noise and airborne emissions during the assessment are discussed in further detail in Section 6.0.
- Erosion and sedimentation associated with runoff during the discharge of groundwater during the pump testing program. The **impact reduction** used to mitigate sediment runoff and erosion during the pump test are discussed in further detail in Section 6.0.

6.0 SUMMARY OF PROPOSED MITIGATION

A summary of the proposed mitigation efforts associated with the Undertaking are outlined herein. For purposes of this Project, there are no environmental impacts that cannot be mitigated with proper management and operational practices. The mitigation measures to avoid, reduce and compensate for any potential impacts to the surrounding environment are presented in the following sections.

6.1 Impact Avoidance

6.1.1 Leak/Spill Prevention Plans

The operators of equipment required for the pump tests will ensure that the equipment is in good working condition. Bulk storage of fuel for vehicles/equipment will not be present on-site at any point in time and vehicles will not be fuelled or maintained on-site.

6.1.2 Environmental and Safety Training for Personnel On-Site

All equipment operation personnel for the pump tests will have the appropriate health and safety training prior to working on-site. In addition, all equipment operating on-site will be equipped with emergency spill kits in the event of a minor fuel release (i.e., hydraulic oil, diesel). Any minor leaks will be immediately reported to the site supervisor and the NBDELG.

6.2 Impact Reduction

6.2.1 Noise and Airborne Emissions

Any minor increase in noise levels or airborne emissions will only take place during the pump tests for the WSSA, which run for approximately 48 hours; therefore, there will be no long-term increase in noise or airborne emissions on the Site in comparison to surrounding areas, as the land use will be the same as surrounding areas.

6.2.2 Groundwater Discharge and Sedimentation

During the pump tests for the WSSA, clean groundwater pumped from the wells (at a relatively low flow rate) will be directed into storm sewer infrastructure (if available in the area) via a discharge line. If storm sewer infrastructure is not present in the area, clean groundwater will be discharged via a discharge line at grade, where the groundwater discharge would generally be expected to follow the existing topography before ultimately infiltrating pervious surfaces and returning to the ground. The discharge line will direct water a sufficient distance away from the well in order to mitigate the possibility of artificial groundwater recharge to the well undergoing the pump test.

In the event that clean groundwater from the wells is discharged at grade, erosion and sediment control (ESC) structures (i.e. check dams) will be installed as and where required to reduce or eliminate potential for erosion and/or sedimentation to area watercourses.

6.3 Impact Compensation

There is no compensation required for the potential environmental impacts identified as part of this Project.

7.0 PUBLIC AND FIRST NATIONS ENGAGEMENT

It is understood that the Project will require engagement with the public and First Nations communities in the area. Once this EIA registration document has been posted on the Government of New Brunswick website for public access, Hive will conduct engagement with the public and First Nations communities in accordance with provincial requirements.

8.0 APPROVAL OF PROJECT

The following approval is required for the proposed project:

- Authorization to proceed with the WSSA as described in the Step One WSSA Application in Appendix D.
- Authorization/conditional approval of the undertaking under the provincial EIA requirements outlined in NB Regulation 87-83.

No other permits or approvals are known to be required at this time.

9.0 FUNDING

The project is solely funded by the Proponent and does not include any municipal, provincial, or federal funding.

10.0 SIGNATURE

This EIA registration document was prepared by a team of professionals from Hive Engineering Limited on behalf of the Proponent.

Date: October 14, 2022

_____

Andrea Kalafut, P.Eng.
Environmental Engineer
Hive Engineering Limited

11.0 CLOSURE

This report has been prepared for the sole benefit of Enclosure Campground Resort Ltd. This report and any of its content cannot be relied upon by any other person or entity without the express written consent of Hive Engineering Limited and Enclosure Campground Resort Ltd. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Hive Engineering Limited accepts no responsibility for damages incurred by any third party resulting from decisions or actions based on the content of this report.

The conclusions presented herein represent the best technical judgement of Hive Engineering personnel based on current engineering and scientific practices and environmental standards at the time the work was performed. The conclusions are based on the site conditions encountered at the time the work was performed at the locations presented in this report.

12.0 REFERENCES

Atlantic Canada Conservation Data Centre. “Data Report 7434 Derby Junction, NB”. September 20, 2022.

Atlas of Canada. Toporama Map, obtained by Hive Engineering on September 27, 2022.

New Brunswick Department of Environment and Local Government’s *“A Guide to Environmental Impact Assessment in New Brunswick”* dated January 2018.

New Brunswick Department of Environment and Local Government, Watershed Protected Area Designation Order. Clean Water Act. November 2001.

New Brunswick Department of Environment, Wellfield Protection Area Designation Order. Clean Water Act. September 2000.

New Brunswick Department of Tourism, Heritage and Culture (Heritage and Archaeological Services Branch). Archaeology mapping. September 2022.

New Brunswick Department of Natural Resources. “Bedrock Geology of New Brunswick”. Minerals, Policy and Planning Division. Map NR-1 (2008 Edition). Scale 1:500,000 (Revised December 2008).

Rampton, V.N., 1984. “Generalized surficial geology map of New Brunswick” Department of Natural Resources and Energy, Minerals, Policy and Planning Division. NR-8 Scale 1:500,000.

Service New Brunswick. Registry and Mapping Services. (www.planetsnb.ca).

Treasury Board Secretariat. Federal Contaminated Site Inventory. (www.tbs-sct.gc.ca)

APPENDIX A

Site Location Plan

hive ENGINEERING

Service New Brunswick **Service Nouveau-Brunswick**

Scale/Échelle 1:4296

Date: 2022/09/27 10:10:35

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While this map may not be free from error or omission, care has been taken to ensure the best possible quality. This map is a graphical representation of property boundaries which approximates the size, configuration and location of properties. It is not a survey and is not intended to be used for legal description or to calculate exact dimensions or area.

Même si cette carte n'est peut-être pas libre de toute erreur ou omission, toutes les précautions ont été prises pour en assurer la meilleure qualité possible. Cette carte est une représentation graphique approximative des terrains (limites, dimensions, configuration et emplacement). Elle n'a aucun caractère officiel et ne doit donc pas servir à la rédaction de la description officielle d'un terrain ni au calcul de ses dimensions exactes ou de sa superficie.

APPENDIX B

SNB Lease Document

hive ENGINEERING

I certify that this instrument is registered or filed in the Northumberland County Registry Office, New Brunswick

MAR 3 1 2010
date

28545722
number-numéro

J'atteste que cet instrument est enregistré ou déposé au bureau d'enregistrement du comté de Northumberland, Nouveau-Brunswick

13:03
Time-Heure

Deputy Registrar-Conservateur Adjoint

28545722
MAR 3 1 2010
13:03

Lease No. 688 46 0002

Form A19
LEASE

Standard Forms of Conveyances Act, S.N.B. 1980, c. S-12.2, s.2

The parties to this lease are:

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF NEW BRUNSWICK as represented by the Minister of Natural Resources for the Province of New Brunswick, having an office at the Hugh John Flemming Forestry Center, Fredericton, New Brunswick, **the "Lessor"**

and

ENCLOSURE CAMPGROUND RESORT LTD., being a duly constituted corporation under the laws of New Brunswick and having its head office at the City of Miramichi, in the County of Northumberland and New Brunswick, **the "Lessee"**

If more than one Lessee, the Lessee shall hold the land and premises hereby demised as joint tenants and not as tenants in common.

The Lessor leases to the Lessee the premises described in Schedule "A" attached hereto on the following conditions:

Duration:	20 years
Date of Commencement:	March 1, 2010
Date of Termination:	February 28, 2030
Rent:	As per Schedule "C"

This lease contains the covenants and conditions which are set out in Schedule "C" attached hereto.

Dated on March 9, 2010.

SIGNED, SEALED AND DELIVERED in the presence of

) HER MAJESTY THE QUEEN
) IN RIGHT OF THE PROVINCE OF
) NEW BRUNSWICK AS REPRESENTED
) BY THE MINISTER OF NATURAL
) RESOURCES PER:

) Janet Lynch, Designate

) ENCLOSURE CAMPGROUND
) RESORT LTD

) Per: Florence McGraw, Owner/Operator

SCHEDULE "A"
File No.: 688 46 0002

All that certain Lot, Piece or Parcel of Land situate, lying and being in the Parishes of Derby and Southesk, County of Northumberland and Province of New Brunswick and being comprised of lands which were reconveyed to Her Majesty The Queen, said lot being more particularly described as follows:

Being all of those lands forming portions of The Enclosure Provincial Park described and shown as Parcels A, B and C on a plan forming Schedule "D-1A" in the agreement between Her Majesty the Queen in Right of the Province of New Brunswick as represented by the Minister of Natural Resources and Energy and Enclosure Campground Resort Ltd., said lands also being shown on Drawing Number ENCBNDRY.DWG 109-45 in the records of the Minister of Natural Resources (formerly Parks Branch).

Containing a total of 25.99 hectares, more or less.

SCHEDULE "C"

File No.: 688 46 0002

1. This lease is subject to the terms specified in the *Lands Administration Regulation-Crown Lands and Forests Act*, as the same may be amended from time to time.

2. For the purposes of the *Crown Lands and Forests Act*, its Regulations and amendments thereto, this lease has been designated as a Commercial Land Lease to operate and maintain a campground on Crown land which encourages tourism and provides recreational opportunities at Enclosure Park.

3. The lease will include an area of approximately 25.99 hectares, more or less and the Lessee covenants to pay an annual rental, set in accordance with the *Lands Administration Regulation-Crown Lands and Forests Act*, currently fixed at $2332.32 ($2064 plus HST) and shall be subject to any future rental increases that may apply.

4. The Lessee acknowledges and agrees to make monthly equal payments in the amount of **$938.24** (plus interest) for a period of 48 months beginning May 1, 2010 to cover the arrears in rental fees associated with Enclosure Park Campground. Failure to comply with this payment agreement will result in the cancellation of this lease without further notice and you will be required to deliver vacant possession. For your first year of payments, please submit post dated cheques for one year to Financial Services Branch of the Department of Natural Resources.

5. The Lessee shall pay all taxes, rates, duties, and assessments, imposed by any government or authority, whether Municipal, Provincial or Federal, charged with respect to the occupation and operation of the property, or any chattels on the demised land.

6. The Lessee acknowledges that the demised lands are being leased on an "as is" basis and that the Lessor shall not be responsible for the maintenance and repair of the demised lands, or for any buildings, outbuildings, or other structures, including all services whether above or below ground that may be situated on the demised lands.

7. The Lessee assumes all responsibility and liability for any damages to the demised lands and to adjoining property occurring as a result of the Lessee's use and occupation of the demised lands and occupation of the demised lands shall be entirely at the Lessee's own risk. Any such damage must be addressed and remedied in a timely fashion by the Lessee.

8. Before any work occurs on the demised lands the Lessee must obtain a work permit from the DNR

District Office as authorized under the *Forest Fires Act* (this applies during the fire season as declared by the Minister).

9. Before any trees shall be harvested on the demised lands, the Lessee must obtain a harvesting permit from the DNR District Office.

10. The Lessee shall be responsible for undertaking boundary line maintenance annually to delineate the extent of the lease, and must ensure survey pins and other boundary line evidence are not disturbed or altered when undertaking boundary line maintenance and inspections.

11. The Lessee shall save harmless the Lessor from any damages or legal action associated with litigation arising from this occupation and lease. However, the Lessee must inform the Lessor of any claim, suit or proceeding against the Lessee immediately.

12. The DNR Regional Director shall be contacted prior to the commencement of construction activities which will enable staff to monitor the work and ensure that all relevant terms and conditions are adhered to. The DNR Regional Director in the area is: Brian Hatch, 80 Pleasant Street, Miramichi (506) 627-4049.

13. The Lessee agrees that should remains of archaeological significance be found on the demised land during construction, maintenance or repair activities, all activities in the area must cease and the Lessee shall immediately contact the appropriate provincial agency (at the time of signing - Archaeological Services Unit of the Department of Wellness, Culture and Sport).

14. All construction, maintenance and repairs undertaken by the Lessee shall be carried out in accordance with the Provincial Building Regulation. The Lessee shall obtain a building permit before any work commences on the demised lands. To apply for a building permit the Lessee must contact the District Planning Commission office or the appropriate Municipality serving the area. The permit must be displayed on the property where the construction is to take place and a copy of the permit provided to the Lessor upon request.

15. If the total storage capacity of petroleum products stored on the demised lands is 2,000 litres or more, the Lessee must obtain a permit from the Department of Environment. A copy of the permit must be provided to the Lessor upon request.

16. If more than 1,000 litres of petroleum products are stored on the demised lands, the Lessee will be required to carry $250,000.00 environmental impairment insurance naming Her Majesty the Queen in Right of the Province of New Brunswick as an

"additional insured" in the policy. A copy of the policy must be provided to the Lessor upon request.

17. The Lessee shall obtain permission from the Lessor to change the petroleum storage carrying capacity and shall inform the Lessor of all petroleum products stored on the demised lands.

18. The Lessee shall at its own expense concurrently with the execution of the lease and at all times during the continuance of the lease, maintain a liability insurance policy in the amount of $2,000,000.00 per occurrence, naming Her Majesty the Queen in Right of the Province of New Brunswick will be named as an "additional-insured" to protect against any and all claims against the Lessor. A copy of the policy must be provided to the Lessor upon request.

19. The Lessee shall at its' own expense, concurrently with the execution of the lease and at all times during the continuance of the lease, maintain fire insurance with extended coverage in such amounts and on such terms as the Minister may from time to time require. Such insurance will name Her Majesty the Queen in Right of the Province of New Brunswick as an "additional-insured" to protect against any loss or damage of property to Her Majesty's property that is covered by this lease and to any of the Lessee's property that could become the property of Her Majesty the Queen according to the terms of this lease on its termination or otherwise. Such insurance shall provide that any proceeds payable under it will be made payable in favour of the Lessee and Her Majesty the Queen in Right of the Province of New Brunswick. A copy of the policy must be provided to the Lessor upon request.

20. The Lessee shall increase the amount of insurance immediately upon receiving written direction from the Lessor in accordance with said written direction.

21. The Lessee may prohibit anyone from entering and using the demised lands for any number of reasons including refusing to abide by the "rules of conduct", do not pay the required user fee, or refuse to pay for any damage that they may have caused to the demised lands in the past.

22. The Lessee shall provide the Lessor with a list of seasonal campers on an annual basis and provide their contact information as per Lessor's request.

23. This Lease is subject to a Site Development Plan agreed by both parties.

    a) The Lessee shall provide to the Director of Crown Lands for approval, a site development plan showing:

- the boundaries and dimensions of the Enclosure Campground Resort;
- all watercourses, roads and trails within or near the campground;
- the location and dimensions of all the existing improvements and facilities;
- the location and dimensions of all new proposed improvements and facilities;
- the location of the water supply;
- the location of the sewage disposal system;
- the location of any fuel storage tanks; and
- the traffic pattern and parking space.

b) The site development plan must be submitted within 12 months from the date of the signature of this lease.

c) The Lessee shall adhere to the site development plan approved by the Director of Crown Lands.

d) This lease and associated activities are limited to the area described in Schedule "A" and are limited to the Site Development Plan, approved by the Department of Natural Resources at the Crown Lands Branch. If the Lessee wishes to deviate from the approved site development plan, a written request shall be submitted to the Director of Crown Lands for approval. The approval shall be obtained by the Lessee in writing, before any amendment to the approved site development plan comes into effects.

e) the request for change to the Site Development Plan shall include:

i. name of Lessee;
ii. file number;
iii. property location;
iv. type of activity and/or development to be changed;
v. year the change will take place;
vi. other amendments to the Site Development Plan needed to accommodate specific change request.

24. The Lessee shall keep the premises clean and free from litter, garbage and other debris, and all toilet facilities must be maintained in a sanitary condition to the satisfaction of the Lessor.

25. It is mandatory that the Lessee receives annual approval under the New Brunswick Approved Accommodation Program for the duration of the lease.

26. The Lessee must possess valid Certificates of Approval and/or Approvals to Operate from all agencies and/or Departments for the duration of the Lease and must operate the Park in accordance with the said approvals.

27. The Lessee is responsible to provide safe drinking water.

28. The Lessee must hold valid approvals to operate the wastewater treatment facility at Enclosure Park from the Department of Environment for the duration of the Lease.

29. The Lessee must obtain and maintain all licences and/or approvals from the Department of Health to operate the restaurant/canteen.

30. The Lessee shall have the use of the assets listed in Schedule "D", during the term of this Lease, provided that such use is associated with the operation of Enclosure Park.

31. The assets listed in Schedule "D" shall remain on the premises and at the use of the Lessee, at the Lessee's risk.

32. The Lessor is under no obligation to repair, maintain or replace any of the assets listed in Schedule "D".

33. The Lessee agrees that should any asset(s) become unsuitable, unusable or beyond repair that the Lessor is not responsible for cost occasioned thereby and that there shall be no reduction in rental because of the lost use of any or all assets.

34. The Lessee shall advise the Lessor in writing, before disposing of any asset that is no longer useable, and such disposition shall not occur until such time as the Lessor agrees in writing to the disposal of the said asset.

35. Upon termination or expiration of the term of this lease or nay renewal term, the Lessee is to have the option to immediately remove that portion of the Lessee's improvements which are not affixed to the Premises, all remaining Lessee's improvements shall immediately become the property of the Lessor at no cost to the Lessor.

36. The Lessee shall have the property surveyed by a N.B. Land Surveyor of her choice. The survey plan must be submitted to the Crown Lands Branch Surveyor along with an electronic version of a description (Schedule ''A'') of the surveyed area prior to June 1, 2015.

PROVINCE OF NEW BRUNSWICK

COUNTY OF YORK

I, Michelle Englehart, of the Town of Nackawic, in the County of York and Province of New Brunswick, make oath and say as follows:

1. Crown Lands Lease No. **688 46 0002** was executed in my presence by Janet Lynch, who has been duly authorized by the Minister of Natural Resources for New Brunswick to sign and seal Crown Land Leases on his behalf.

2. The signature "Janet Lynch" on Crown Lands Lease No. **688 46 0002** is the signature of Janet Lynch, the Minister's Designate.

3. That Janet Lynch is the proper officer to have charge of the Seal of the Minister of Natural Resources.

4. The seal opposite the signature of Janet Lynch on Crown Lands Lease No. **688 46 0002** is the Seal of the Minister of Natural Resources, and was affixed there by Janet Lynch.

SWORN TO BEFORE ME at the City of Fredericton in the County of York and Province of New Brunswick on this 9th day of March, 2010.

Commissioner of Oaths

Michelle Englehart

LISE LUMSDEN BIGRAS
COMMISSIONER OF OATHS
MY APPOINTMENT EXPIRES ON
DECEMBER 31, 2012

COMMISSAIRE AUX SERMENTS
MA NOMINATION EXPIRE LE
31 DECEMBRE 2012

PROVINCE OF NEW BRUNSWICK
COUNTY OF

I, Florence McGraw, of Enclosure Campground Resort Ltd., in the County of Northumberland and Province of New Brunswick, MAKE OATH AND SAY:

1. That I am the Owner and Operator of the Enclosure Campground Resort Ltd., and have a personal knowledge of the matters and things herein deposed to and have authority to make this Affidavit on behalf of the said Company.

2. That the owner and operator is the authorized signing officer to execute documents in the name and on behalf of the said Company.

3. That the signature "Florence McGraw" subscribed to the within instrument is the signature of me, the said Florence McGraw as such and was thereto subscribed by order of the duly authorized office of the said Company to and for the uses and purposes therein expressed and contained.

4. That the Corporate Seal, affixed to the said Instrument, is the corporate seal of Enclosure Campground Resort Ltd. and was so affixed by order of the said Company for the purposes of the execution of the said Instrument.

5. The said Instrument was so executed by the said Company on the 9th day of March, 2010, as and for its act and deed for the uses and purposes therein expressed and contained.

SWORN TO at the city of Fredericton, in the County of York and Province of New Brunswick on this 9th day of March, 2010.

BEFORE ME:

Commissioner of Oaths

LISE LUMSDEN BIGRAS
COMMISSIONER OF OATHS
MY APPOINTMENT EXPIRES ON
DECEMBER 31, 2012

COMMISSAIRE AUX SERMENTS
MA NOMINATION EXPIRE LE
31 DECEMBRE 2012

Florence McGraw

APPENDIX C

NBRED Landowner Authorization

hive ENGINEERING

Hive Engineering Limited
29 Victoria Street, Unit 102
Moncton, New Brunswick E1C 9J6
506.386.4897
www.hiveeng.ca

September 29, 2022
Project: 21.03.242

New Brunswick Department of Natural Resources and Energy Development
Hugh John Flemming Forestry Centre
P.O. Box 6000
Fredericton, New Brunswick
E3B 5H1

Re: Landowner Authorization for Environmental Impact Assessment Registration
Enclosure Campground Resort Ltd., Derby Junction, New Brunswick

Hive Engineering Limited (herein referred to as "Hive") has been retained by Enclosure Campground Resort Ltd. to complete a Water Supply Source Assessment (WSSA) and Environmental Impact Assessment (EIA) for the Enclosure Campground in Derby Junction, New Brunswick. Enclosure Campground Resort Ltd. currently leases seven properties from the New Brunswick Department of Natural Resources and Energy Development (NBRED); the properties are identified by Service New Brunswick (SNB) as Parcel Identifiers (PIDs) PIDs 40336141, 40336125, 40336174, 40336190, 40066508, 40336216 and 40336224 (herein referred to as the "Site").

The campground has operated at the Site since the 1960s and has historically contained private, drilled groundwater wells for their water supply. The New Brunswick Department of Environment and Local Government (NBDELG) has notified the owner of the campground that the groundwater supply wells require a WSSA to bring the campground into compliance with current regulations (herein referred to as the "Project"). The EIA registration document is required for the Project under the New Brunswick *Environmental Impact Assessment Regulation 87-83* of the *Clean Environment Act*, as per Item (s), for a water system with an estimated capacity of greater than 50 m^3/day; there are currently four drilled wells on the property, three of which are connected to the campground's water supply and have an estimated capacity of more than 50 m^3/day.

There will be no additional development carried out at the Site. The scope of the Project will be limited to an assessment (i.e. pump testing) of the existing three active potable wells on the Site. A fourth groundwater well (not currently connected to the campground's water supply system), will be used as an observation well during the pump test.

According to NBDELG requirements, the EIA registration document must include a letter of consent from the landowner to complete the pump testing on the existing wells. Hive has prepared this letter of authorization, on behalf of NBRED for signature, to indicate that the landowner 1) consents to Hive Engineering submitting an EIA registration document for the Project and 2) consents to pump testing the existing wells on the property in an effort to determine sustainable yields associated with the local aquifer. We can confirm that the NBDELG will approve the proposed methodology for the pump testing (i.e., Step One WSSA application) prior to proceeding with the pump test.

Please do not hesitate to contact the undersigned with any questions or concerns.

Sincerely,

Katie Gillis

Katie Gillis, P.Eng.
Project Engineer
Hive Engineering Limited

I, Bernie Doucet, on behalf of NBRED, the registered landowner of PIDs 40336141, 40336125, 40336174, 40336190, 40066508, 40336216 and 40336224, authorize Hive Engineering to submit an EIA registration document and complete a pump test (Water Supply Source Assessment) on existing infrastructure at the Enclosure Campground in Derby Junction, New Brunswick.

Signature: _____ Date: Oct 4 / 2022

APPENDIX D

Step One WSSA Application

hive ENGINEERING

Proposed Assessment of the Existing Enclosure Campground Development
Water Supply Source Assessment
Step One Application

Pursuant to Section 3(5) of
The Water Quality Regulation 82-126
Clean Environment Act

1) Name of proponent: Enclosure Campground and Resort Ltd. (Enclosure).

2) Location of drill targets (including property PID) and purpose of the proposed water supply: The Enclosure Campground and Resort has been a privately-owned seasonally operated facility since the early 1990s. Prior to this time, it is understood that the campground was operated by the province since circa the 1960s. The existing campground, which is understood to be leased Crown Land, is situated on the land parcels identified as PID 40336174; PID 40336190; PID 40336125; PID 40336141; PID 40066508; PID 40336216; and PID 40336224 and located in Derby Junction, NB at the confluence of the Northwest Miramichi and Southwest Miramichi Rivers. The campground, which occupies an approximate footprint area of 26.3 ha, is bounded by predominately undeveloped treed land to the north; the Enclosure Park including Wilson's Point Historic Site to the east; Miramichi Valley Bible Camp & Conference Centre to the south; and the Enclosure Road and two residential developments including a six bed special care home to the west.

An Environmental Impact Assessment (EIA) is required to bring the existing campground and its associated groundwater supply wells into compliance with NB Regulation 87-83 (EIA regulation) under the *Clean Environment Act*. It is understood that the applicable EIA "triggers" include "all waterworks with a capacity greater than fifty cubic metres of water daily" and "all major recreational and tourism developments" as defined in Schedule A of NB Regulation 87-83.

The campground is currently serviced by three (3) active groundwater wells. Each of these wells is connected to the on-site water system(s) and will be pump tested as outlined herein. A fourth inactive on-site well completed as an open hole (i.e. no submersible pump, pitless adaptor, etc.) and reportedly not connected to the on-site water piping will be utilized as a water level observation well in conjunction with the hydrogeological pump testing program. The approximate locations of the four (4) existing on-site wells and a possible future expansion well are indicated on Figure 1. A not to scale schematic of the layout of the existing campground is attached as Figure 2. It is noted that neither test well drilling nor pump testing will occur at the identified potential future well location as part of the WSSA proposed under the current EIA. However, details concerning the potential future development of this well (i.e. anticipated required well yield and test well drilling/pump testing program) have been included in this WSSA application for information purposes to minimize EIA and other related regulatory approval requirements if the campground expansion and required additional well were to proceed as a future project.

Given the limited information available on the three existing active wells (i.e. missing well logs, etc.), a local well drilling contractor (Green's Well Drilling) was retained to conduct an assessment of the wells in the company of EXP on September 6, 2022. The purpose of the assessment was to obtain basic information on well construction (e.g. casing depth, etc.) and the existing submersible pumps, as practical. The scope of work for each well included pulling the pump and completing a video survey. Unfortunately, limited information (e.g. no information on water bearing fractures, etc.) could be obtained from the

video surveys due to the presence of turbid water and the inability to pump the wells during the survey. Summary information on each active well in addition to the existing proposed observation well based on information obtained from the Proponent and/or the results of the initial well assessment work is provided below.

Table 1 – Summary Information on Existing Wells

Well ID	Casing Depth (m btoc)	Well Depth (m btoc)	Static Water Level (m btoc)	Comments
Well 1	10.5	29.3	11.3	Reportedly drilled on PID 40336174 in the 1960s when the campground was operated by the provincial government and services camping sites 1-69 (i.e. Loops 1, 2 and 3) which includes eight sites with electrical service only (no water). It is noted that three unserviced tenting sites are also included in this portion of the campground. No well log is available for this 150 mm well. The existing 100 mm submersible pump is a 1.5 HP 16.6 Igpm pump.
Well 2	9.8	31.1	10.0	This 125 mm well, which was drilled in 2011, services Loop 4 camping sites 70-104 and is situated on PID 40336190. It is noted that twelve unserviced tenting sites are also located in the Loop 4 area. A well log for this well was provided to EXP by NBDELG. Based on air lift testing at the time of drilling, the well has an estimated yield of 10 Igpm. The existing 100 mm submersible pump is a 0.5 HP 8.3 Igpm pump.
Well 3	8.0	22.9	10.2	This 125 mm well services the on-site licensed restaurant (i.e. Flo's Hideaway) on PID 40336125 which we understand operates on an intermittent basis throughout the year for special occasions. The Owner does not have a well log for this well; however, NBDELG located an additional stratigraphic log for the campground for a 125 mm well with an estimated yield of 10 Igpm that was drilled in 1991 which is suspected to be the restaurant well. However, this cannot be definitively confirmed as no Well Tag ID is provided on the well log.
Well 4	12.1	37.8	9.1	The Owners provided a well log for this 150 mm well which has an estimated yield of 20 Igpm based on air lift testing at the time of drilling. The well was drilled by Green's Well Drilling in 2020 on PID 40336174. We understand that a pump was never installed in this well and that it was never utilized by the Owners.

Concerning the proposed well indicated on Figure 1 and situated on PID 40336174, it is noted that this well would service the camping sites associated with a possible future expansion of the campground. This well is located approximately 170 m northwest of Well 2. It is estimated that the future campground expansion, if completed, would include the development of 30 new serviced lots; however, the precise number of lots to be serviced by the new well would need to be confirmed at the time of the completion of the work.

The study area is serviced by a few private potable water wells which are located within 500 m of the

campground. The approximate locations of these off-site wells are indicated on Figure 1. As indicated, the off-site wells nearest the existing campground wells service the residential dwellings along the Enclosure Road and the Miramichi Bible Camp which adjoins the south side of the subject property. The estimated nearest distance between these off-site wells and the campground wells is approximately 130 m and 195 m, respectively.

3) Required water quantity (in m^3/day) and/or required pumping rate: Unfortunately, no information is available on the existing water usage at the campground or the pumping rates of the three (3) existing active wells to be pump tested. Furthermore, the potential sustainable yield of two of these wells cannot be confirmed as the water well logs for these wells are either unavailable or have not been definitively identified as discussed above. As such, EXP has necessarily estimated the average daily water demand of the campground as outlined below. However, it must be appreciated that the existing well pumps and water system infrastructure are understood to have been in place for many years and have accommodated the actual water demand in a satisfactory manner. Furthermore, the campground's water requirements have been met in a sustainable manner, as it is our understanding that there have neither been any significant water shortages nor complaints from neighboring well users over the operational period. Therefore, the primary purpose of proposed WSSA outlined herein is to formally collect the hydrogeological pump test data required to confirm the sustainable abstraction of groundwater from the underlying fractured bedrock and thereby bring the existing campground into regulatory compliance.

With reference to Figure 2, it is noted that the existing campground is comprised of 119 sites/lots which may be broken down as 96 lots with water and/or sewer service; eight lots with electrical service only (i.e. no water); and fifteen unserviced lots (i.e. tenting sites). Other facilities include a small administrative office with limited laundry facilities; a swimming pool; three miniature rental cabins each with no dedicated bathroom/shower; three male/female public bathroom/shower facilities; and an on-site restaurant (Flo's Hideaway) which operates on an intermittent basis for special events a few times per year. It is noted that the restaurant typically seats up to 100 guests which are serviced by 8 staff members. However, it is understood that the restaurant is licensed to accommodate up to 250 guests.

The average daily water demand of the facility during its five-month duration (i.e. May to October) seasonal operation was conservatively estimated based on peak daily domestic wastewater flow estimates provided in Appendix B of the provincial technical guidelines for on-site sewage disposal systems (NBDOH, 2020). The following wastewater flow estimates were employed:

- Recreational Vehicle (RV) Park – unserviced lots with comfort stations - 200 L/day.space
- Recreational Vehicle (RV) Park – with water and/or sewer - 450 L/day.space
- Restaurant – not open 24-hrs – 125 L/day.seat + 75 L/day.staff

Based on the above-described campground facilities and peak daily wastewater flow estimates, the average daily water demand of the existing campground was conservatively estimated to be 61.0 m^3/day (9.3 Igpm). The breakdown of the total estimated average daily demand (ADD) would include 47.8 m^3/day (7.3 Igpm) for the campground (i.e. 96 serviced and 23 unserviced lots) and 13.2 m^3/day (2 Igpm) for the restaurant (when operational). It is noted that the estimated ADD of the existing campground based on the conservatively assumed water usage is less than 50 m^3/day (7.6 Igpm). Peak demand would be met through on-site storage (e.g. pressure tanks, etc.), as and if required.

As indicated under our response to Question 2 above, the approximate location of an additional future well which may service a future expansion of the existing campground has been included in this EIA/WSSA

for screening purposes only (i.e. no test well drilling/pump testing to be completed at this time). Although the details of the potential future expansion outlined herein have not finalized, at this time it is expected that fifteen additional serviced lots (assumed to be the current unserviced tenting sites) would be added in the existing developed portion of the campground and that thirty new serviced lots and related supporting infrastructure (i.e. access roads, water system, etc.) would be constructed to the north of the existing Loop 4 within the present leased-land boundary.

Based on the above discussion, conservative water usage estimates and the number of camping sites serviced, the estimated current and potential future ADD of each of the three existing wells and the estimated future ADD of the potential additional well are outlined below in Table 2.

Table 2 – Estimated Current and Future ADD of On-site Wells

Well ID	Estimated ADD (m^3/day)	Estimated ADD (lgpm)	Comments
Estimated Water Usage based on the Existing Facility			
Well 1	29.5	4.5	-Based on 61 serviced and 11 unserviced lots.
Well 2	18.3	2.8	-Based on 35 serviced and 12 unserviced lots.
Well 3	13.1	2.0	-Based on 100 seats and 8 staff.
Total	**60.9**	**9.3**	
Estimated Water Usage based on a Potential Future Expansion of the Facility			
Well 1	30.1	4.6	-Based on 64 serviced and 8 unserviced lots.
Well 2	21.0	3.2	-Based on 47 serviced and 0 unserviced lots.
Well 3	32.1	4.9	-Based on 250 seats and 15 staff.
Future Well	13.8	2.1	-Based on 30 new serviced lots.
Total	**96.9**	**14.8**	

As previously indicated, the above noted water demand estimates (i.e. *average daily demand*) were conservatively estimated based on *peak daily domestic wastewater flow estimates* provided in the provincial technical guidelines for on-site sewage disposal systems (NBDOH, 2020). As such, the actual existing and potential future water demand of the facility is expected to be much less than the estimated values provided in the above table. Furthermore, it is anticipated that the post-EIA operational monitoring program which will likely include flow monitoring requirements will confirm that the actual existing combined ADD of the campground and restaurant is less than 50 m^3/day (7.6 lgpm).

In accordance with typical practice and subject to the approval of the existing campground under the EIA process, it is assumed that the conditions of approval will be based upon the actual measured water consumption and the recommendations provided in the Step 2 WSSA report.

4) List alternate water supply sources in the area (including municipal systems): Properties in the study area, which comprise portions of the Local Service Districts (LSDs) of South Esk and Derby, rely upon individual groundwater wells for water supply. The closest existing municipal water system services the City of Miramichi and is situated across the Northwest Miramichi River from the subject property. However, it would not be economically viable to connect to the Miramichi municipal water system due to the small number of potential end users and the requirement to cross the Northwest Miramichi River. Similarly, it would not be economically viable to utilize a surface water source (e.g. Northwest Miramichi River) given the small number of potential end users; the seasonal nature of the business; and the

extensive and expensive regulatory, engineering and treatment requirements associated with a surface water supply.

5) Discuss area hydrogeology as it relates to the project requirements: A review of regional scale geological mapping indicates that the portion of the study area in close proximity to the Miramichi River system is typically underlain by 0.5 m to 3 m thick blankets and plains comprised of sand, silt, some gravel and clay (Rampton et al., 1988). Inland areas are mapped as being underlain by a 0.5 m to 3 m thick blanket of loamy lodgment till, minor ablation till, silt, sand, gravel and rubble (Rampton et al., 1984). The till layer is, in turn, overlain by a thin discontinuous veneer of sand, some gravel and silt are rare clay. Where present, the latter layer is generally <0.5 m thick.

Based on a review of regional scale bedrock geology mapping, the study area is underlain by red to grey sandstone, conglomerate and siltstone (Potter et al., 1968).

Regarding hydrogeology, it is noted that subject property occupies a narrow peninsula of land at the confluence of the Northwest Miramichi River and the Southwest Miramichi River. Therefore, the Miramichi River system would be expected to serve as a regional groundwater flow divide and discharge zone. As such, the regional groundwater flow would be expected to generally flow from the central portion of the peninsula to the northwest, northeast and southeast towards the adjoining rivers and coincident with local topographic conditions. Superimposed on this regional flow system would be intermediate and shallow groundwater flow systems whose character would be a function of topography, soil/bedrock type and geologic structure.

Based upon local geological conditions, it is expected that the underlying fractured bedrock would form the primary groundwater supply aquifer in the study area. Based upon a review of the regional bedrock geology, it is expected that the underlying sandstone units would have the greatest aquifer potential followed by the conglomerate units. The overburden soil would not be expected to be a viable aquifer due to its relatively high fines content (i.e. low permeability) and limited thickness.

To assist with the assessment of local hydrogeological conditions, water well records for a total of eighteen (18) wells located within approximately 750 m of PID 40336174 were obtained from the NBDELG On-line Well Log System (OWLS). A copy of these well records is provided in Attachment A. No well ownership information is provided for the logs obtained from the OWLS database in consideration of provincial privacy legislation. The well depth for these wells ranged from 14 m to 55 m with an average of 28 m. Similarly, the recorded casing depth for these wells ranged from 7 m to 30 m with an average of 14 m. Well yields estimated by the air lift method ranged from 66 m^3/day (10 Igpm) to 393 m^3/day (60 Igpm) with an average of 138 m^3/day (21 Igpm). Based on this information, it is concluded that typical well yields in the study area are favourable for the development of a campground water supply.

6) Outline the proposed hydrogeological testing and work schedule: As previously indicated, the proposed hydrogeological testing program for the current EIA will be limited to pump testing the three (3) currently active wells identified as Well 1, Well 2 and Well 3 (i.e. no test well drilling) such that the existing campground can be approved under the EIA process. However, the proposed scope of work for the hydrogeological assessment of the “proposed well” drilling target associated with the potential future campground expansion is also outlined below to minimize future regulatory approval requirements.

For the hydrogeological pump testing programs outlined below, the manual water level readings will be supplemented with data obtained from electronic water level dataloggers.

Assessment of Existing Wells - for project cost estimating purposes, the scope of work for the hydrogeological assessment of the existing wells as outlined herein was developed in consultation with NBDELG prior to the submission of the EIA registration document. A short-term step-drawdown test consisting of three pumping steps of 30 minutes to 60 minutes duration will initially be completed on each of the three (3) existing active facility wells. The results of this testing will be utilized to identify the pumping rates for the follow-up 48-hr constant rate test. For the constant rate test, each of the three existing wells will be pumped concurrently at a constant rate to allow for the assignment of the sustainable yield of each well and estimation of the aquifer hydrogeological parameters (e.g. transmissivity, etc.). It is noted that Well 4 will be utilized as a water level observation well during the constant rate test. Water quality samples will be collected from each of the pumping wells during the test at pumping times of 24-hrs and 48-hrs and analyzed for bacteriological (total/faecal coliforms and E. coli) and inorganic (i.e. general chemistry and trace metals including fluoride/mercury) parameters.

Following the cessation of the constant rate pumping test, water level recovery measurements will be obtained for the lesser of the time required for 100% recovery or 24 hrs as per the provincial WSSA requirements.

The results of the pump testing program will be summarized in the Step 2 WSSA report. It is assumed that one report will be prepared for the three (3) existing active wells.

The schedule for the hydrogeological field testing will be dependent upon the timing of the receipt of NBDELG approval to proceed with the work. Preferably, the work would be completed in the fall of 2022 prior to the winterization of the existing water system in October 2022. If the timing of the approval to proceed does not coincide with the preferred schedule, it is anticipated that the pump testing program would be completed later in the fall of 2022 or the winter of 2023 assuming free and clear access to the well locations. However, it is noted that the work program would only be completed under this scenario (i.e. during freezing conditions) if, in the judgement of the system operator, there would be no risk of causing any significant incidental damage to the existing campground infrastructure (e.g. freezing of water lines, etc.). Otherwise, the pump testing program would need to be implemented in the spring of 2023 prior to the initiation of the 2023 camping season.

Assessment of Potential Future Expansion – In the event of a future expansion of the campground involving the construction of additional serviced lots within the existing leased boundary north of Loop 4, a well drilling contractor would be retained to drill 150 mm test wells in the vicinity of the target drilling location identified on Figure 1. One test well would be initially drilled in this area, followed by a second test well drilled in close enough proximity to the initial well such that one of the wells can be utilized as a water level observation well during the pump testing of the test well with the highest potential yield as determined by air lift testing. Assuming that a suitable well yield is identified, the drilling program would be followed by the completion of step-drawdown and follow-up 48-hr constant rate pumping tests on the proposed new well as described above. During the constant rate test, the lower yielding test well in the expansion area and Well 4 would be utilized as water level observation wells. The scope of the water quality sampling program for the proposed new well would also be as described above.

Water level recovery measurements would be recorded for the lesser of the time required for 100% recovery or 24-hrs as stipulated in the provincial WSSA guidelines.

7) Identify any existing pollution or contamination hazards within a minimum radius of 500 m from the proposed drill targets. Historical land use that might pose a contamination hazard (i.e. tannery, industrial, waste disposal, etc.) should also be discussed: The Land Gazette feature of the Service New Brunswick (SNB) real property information website was used to screen the subject property and adjoining properties for the presence of any environmental related notices to assist with the assessment of potential sources of contamination in the study area. Based on this screening exercise, no environmental notices (e.g. NBDELG petroleum storage database; NBDELG remediation database; former dumpsites; etc.) were identified.

As previously indicated, it is understood based on interviews with the proponent and review of selected historical aerial photographs that the existing campground was acquired by the current owners in the early-1990s and that, prior to this time, the campground had been operated by the provincial government since circa the 1960s.

Existing land use in the study area is interpreted to be predominately residential or undeveloped woodland. As indicated in the response to Question 2, the subject property is bounded by predominately undeveloped treed land to the north; the Enclosure Park including Wilson's Point Historic Site to the east; Miramichi Valley Bible Camp & Conference Centre to the south; and the Enclosure Road and two private residences to the west.

A 500 m radius from each of the four existing campground wells in addition to a potential future well location is shown on Figure 1 (see below). As indicated on this figure, no potential sources of water supply contamination were identified within 500 m of the existing and proposed wells.

8) Identify any groundwater use problems (quantity or quality) that have occurred in the area: None currently known. As outlined below, expected well yields are adequate for the existing and proposed future development and the anticipated water quality is generally similar to that typically encountered in fractured bedrock aquifers at other locations in the province, with occasional iron and/or manganese exceedances interpreted to be related to natural background water quality.

Based on the review of data in the NBDELG OWLS Database for eighteen (18) wells located within about 750 m of the subject property as previously detailed in Question 5, the average well yield was 138 m^3/day (21 lgpm) which is more than adequate for residential developments. Furthermore, this "typical" well yield also suggests generally favourable conditions for campground developments, as evidenced by the presence of the existing facility and the adjoining Miramichi Bible Camp and Conference Centre development.

Utilizing the NBDELG OWLS Database, inorganic water quality results were obtained for eighteen (18) samples collected from selected wells within 1 km of the subject property. Bacteriological results were also obtained for sixteen (16) samples. Based on a review of this data, concentrations in excess of the New Brunswick Department of Health (NBDOH) Drinking Water Guidelines were identified for ≥15% of samples for manganese (78%) and turbidity (33%). Concerning bacteriological water quality, total coliforms were identified in 38% of samples but no E. coli detections were observed.

It is noted that the water quality results in the provincial water well database are typically reflective of samples collected at or shortly after the time of drilling and prior to adequate well disinfection and/or well development. As such, this can lead to elevated turbidity levels and total coliform detections that are not necessarily representative of the quality of the raw groundwater source.

9) Identify any watercourse(s) (stream, brook, river, wetland, etc.) within 60 m of the proposed drill targets: There are no watercourses or wetlands located within 60 m of the four existing on-site wells or the proposed future target drilling location based on an on-line review of study area mapping on GeoNB Mapviewer. As previously indicated, the subject property is located on a peninsula situated at the confluence of the Northwest Miramichi River and the Southwest Miramichi River. It is noted that the Northwest Miramichi River is situated approximately 185 m north-northwest of Well 4 and that the Southwest Miramichi River is located about 245 m southeast of Well 2. The latter watercourses flow to the northeast past the peninsula and discharge to the Miramichi River situated at the northeastern tip of the peninsula.

10) Identify site supervisory personnel involved in the source development (municipal officials, consultants and drillers): The following persons will be involved in the supervision of the proposed groundwater supply investigation:

Tracey Clark	- Owner/Administrator, Enclosure Campground (506-627-6480)
Mark Lebel	- Maintenance and Operations Manager, Enclosure Campground (506-871-4044)
Katie Gillis	- Project Manager, Hive Engineering (506-386-4897)
Robert Gallagher	- Project Hydrogeologist – EXP Services Inc. (506-857-8889)
Andy Green	- Licensed Well Driller, Green's Well Drilling Ltd. (506-262-9355)

11) Attach a 1:10,000 map and/or recent air photo clearly identifying the following: proposed location of drill targets and property PID; domestic or production wells within a 500 m radius of the drill target(s); any potential hazards identified in Question 7: See attached Figure 1.

12) Attach a land use/ zoning map of the area (if any). Superimpose drill targets on this map: The subject property is situated within the boundaries of the LSDs of South Esk and Derby within the administrative boundaries of the Greater Miramichi Regional Service Commission (GMRSC) – Planning and Building Services division. As noted on the GMRSC website, zoning maps are not available for the LSDs.

13) Contingency plan for open loop earth energy systems: Not applicable.

References

New Brunswick Department of Health, 2020. New Brunswick Technical Guidelines for On-site Sewage Disposal Systems, Version 6, April 2020.

Potter, R. R., E. V. Jackson and J. L. Davies, 1968. Geological Map of New Brunswick, Map Number N.R.-1.

Rampton, V. N., R. C. Gauthier, J. Thibault and A. A. Seaman, 1984. Quaternary Geology of New Brunswick, Geological Survey of Canada, Memoir 416.

E:\MON\MON-22020597-A0\60 EXECUTION\65 DRAWINGS\FIGURE

SCOTT WELLS

9/8/2022 9:47 AM

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No.	Issue	Date

LEGEND

- SUBJECT PROPERTY
- EXISTING PROPERTY
- APPROXIMATE LOCATION OF SUBJECT WELL
- APPROXIMATE LOCATION OF OFF-SITE WELL

No.	Revision	Date

INFORMATION ONLY

Drawn By:	SW
Dwg Standards Ckd By:	
Designed By:	RG
Design Checked By:	
Scale:	1:10 000

Project Title: WATER SUPPLY SOURCE ASSESSMENT - ENCLOSURE CAMPGROUND, DERBY JUNCTION, NB

Dwg. Title

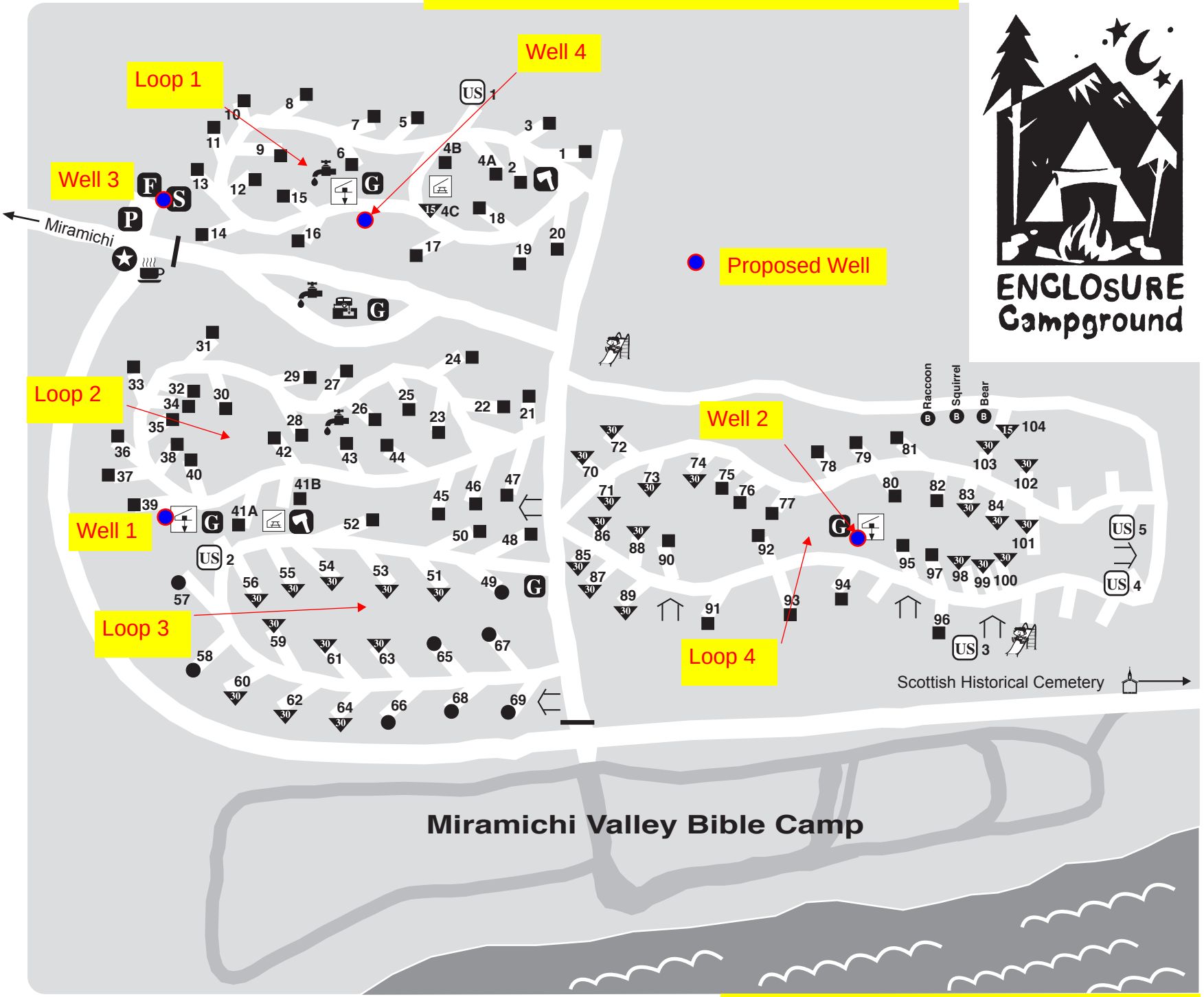
WELL LOCATION PLAN

Project No.: MON-22020597-A0

Dwg. No.: **FIG. 1**

Rev. No.:

Figure 2 - Schematic Layout of Existing Campground



LEGEND / LÉGENDE

- Office / Bureau
- 30 AMP & Water / 30 AMP et Eau
- 15 AMP & Water / 15 AMP et Eau
- Full Service / Avec Service
- Electrical Outlet / Prise de courant
- Water / Eau
- Kitchen Shelter / Cuisine couverte
- Canteen / Cantine
- Swimming Pool / Piscinel
- Washroom & Showers / Toilette et Douce
- Playground / Terrain de jeux
- Garbage Bins / Poubelle
- Wood Supply / Bois de chauffage
- Trailer Sewage Disposal / Egouts des roulottes
- Canopy / Abri
- Flo's Hide-A-Way / Licensed Restaurant
- Gate / Porte
- Parking Lot
- Bunkies
- Unserviced

Attachment A

NBDELG Water Well Records within 750 m of PID 40336174

New Nouveau Brunswick

Environment

Report Number **6608**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	10/30/2004

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
6608	Steel	6 inch	0ft	35ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	13ft	0 igpm	0hr	40ft	40 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Foam

Disinfectant
N/A

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
45ft

Driller's Log

Well Log	From	End	Colour	Rock Type
6608	34ft	48ft	Brown	Sandstone
6608	0ft	7ft	Brown	Sand and Shale
6608	7ft	14ft	Mix	Gravel
6608	14ft	34ft	Brown	Clay
6608	48ft	60ft	Grey	Sandstone

Overall Well Depth
60ft

Bedrock Level
34ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
6608	50ft	40 igpm
6608	45ft	10 igpm

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **25201**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Cable Tool	10/26/2009

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
25201	Steel	5 inch	0ft	50ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	20ft	10 igpm	1hr	20ft	10 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

Well Log	Grout Type	From	End
25201	Clay(cuttings)	5ft	50ft

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
60ft

Driller's Log

Well Log	From	End	Colour	Rock Type
25201	0ft	2ft	Brown	Topsoil
25201	2ft	12ft	Red	Clay
25201	12ft	48ft	Brown	Clay
25201	48ft	85ft	Grey	Sandstone

Overall Well Depth
85ft

Bedrock Level
48ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
25201	61ft	1 igpm
25201	82ft	10 igpm

Setbacks

Well Log	Distance	Setback From
25201	50ft	Septic Tank
25201	76ft	Leach Field
25201	40ft	Right of any Public Way Road

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Cable Tool	10/26/2009

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
25201	Steel	5 inch	0ft	50ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	20ft	10 igpm	1hr	20ft	10 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

Well Log	Grout Type	From	End
25201	Clay(cuttings)	5ft	50ft

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
60ft

Driller's Log

Well Log	From	End	Colour	Rock Type
25201	0ft	2ft	Brown	Topsoil
25201	2ft	12ft	Red	Clay
25201	12ft	48ft	Brown	Clay
25201	48ft	85ft	Grey	Sandstone

Overall Well Depth
85ft

Bedrock Level
48ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
25201	61ft	1 igpm
25201	82ft	10 igpm

Setbacks

Well Log	Distance	Setback From
25201	50ft	Septic Tank
25201	76ft	Leach Field
25201	40ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **25223**

Well Driller's Report

Date printed 9/16/2022

Drilled by			
Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Cable Tool	05/05/2010

Casing Information	Casing above ground		Drive Shoe Used?
Well Log	Casing Type	Diameter	From	End	Slotted?
25223	Steel	5 1/2 Inch	0ft	26ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	8ft	10 igpm	1hr	8ft	10 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0 ig

Pump Installed
N/A
Intake Setting (BTC)
50ft

Driller's Log

Well Log	From	End	Colour	Rock Type
25223	0ft	2ft	Brown	Soil
25223	2ft	8ft	Grey	Clay
25223	8ft	12ft	Grey	Sand
25223	12ft	24ft	Grey	Clay
25223	24ft	75ft	Grey	Sandstone

Overall Well Depth
75ft

Bedrock Level
8ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
25223	40ft	2 igpm
25223	72ft	10 igpm

Setbacks

Well Log	Distance	Setback From
25223	50ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **25770**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/20/2010

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
25770	Steel	6 inch	0ft	34ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	15ft	40 igpm	1hr	15ft	10 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Foam

Disinfectant
N/A

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
34ft

Driller's Log

Well Log	From	End	Colour	Rock Type
25770	0ft	3ft	Brown	Fill Shale
25770	3ft	13ft	Brown	Clay
25770	13ft	15ft	Mix	Gravel
25770	15ft	23ft	Red	Clay
25770	23ft	31ft	Mix	Gravel
25770	31ft	33ft	Brown	Soft Sandstone
25770	33ft	46ft	Brown	Sandstone

Overall Well Depth
46ft

Bedrock Level
33ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
25770	38ft	7 igpm
25770	45ft	40 igpm

Setbacks

Well Log	Distance	Setback From
25770	67ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **26087**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Cable Tool	12/03/2010

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
26087	**Steel**	**5 inch**	**0ft**	**22ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	16ft	10 igpm	1hr	16ft	10 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

Well Log	Grout Type	From	End
26087	**Clay(cuttings)**	**5ft**	**22ft**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
50ft

Driller's Log

Well Log	From	End	Colour	Rock Type
26087	**0ft**	**2ft**	**Brown**	**Topsoil**
26087	**2ft**	**8ft**	**Brown**	**Clay**
26087	**8ft**	**19ft**	**Grey**	**Clay**
26087	**19ft**	**62ft**	**Grey**	**Sandstone**

Overall Well Depth
62ft

Bedrock Level
19ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
26087	**42ft**	**2 igpm**
26087	**60ft**	**10 igpm**

Setbacks

Well Log	Distance	Setback From
26087	**30ft**	**Right of any Public Way Road**

New Nouveau Brunswick

Environment

Report Number **26097**

Well Driller's Report

Date printed 9/16/2022

Drilled by

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

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
26097	**Steel**	**5 inch**	**0ft**	**32ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
	27ft	10 igpm	1hr 27min	27ft	10 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

Well Log	Grout Type	From	End
26097	**Clay(cuttings)**	**5ft**	**32ft**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
70ft

Driller's Log

Well Log	From	End	Colour	Rock Type
26097	**26ft**	**30ft**	**Brown**	**Sandstone**
26097	**0ft**	**2ft**	**Brown**	**Topsoil**
26097	**2ft**	**12ft**	**Brown**	**Clay**
26097	**12ft**	**26ft**	**Grey**	**Clay**
26097	**30ft**	**102ft**	**Grey**	**Sandstone**

Overall Well Depth
102ft

Bedrock Level
26ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
26097	**102ft**	**10 igpm**
26097	**70ft**	**2 igpm**

Setbacks

Well Log	Distance	Setback From
26097	**50ft**	**Septic Tank**
26097	**80ft**	**Leach Field**

New Nouveau Brunswick

Environment

Report Number **26123**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Cable Tool	08/28/2010

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
26123	**Steel**	**5 inch**	**0ft**	**40ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	9ft	10 igpm	1hr	9ft	10 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

Well Log	Grout Type	From	End
26123	**Clay(cuttings)**	**5ft**	**40ft**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0 ig

Pump Installed
N/A
Intake Setting (BTC)
60ft

Driller's Log

Well Log	From	End	Colour	Rock Type
26123	**16ft**	**36ft**	**Grey**	**Clay**
26123	**0ft**	**2ft**	**Red**	**Topsoil**
26123	**2ft**	**16ft**	**Red**	**Clay**
26123	**36ft**	**82ft**	**Grey**	**Sandstone**

Overall Well Depth
82ft

Bedrock Level
36ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
26123	**55ft**	**2 igpm**
26123	**78ft**	**10 igpm**

Setbacks

Well Log	Distance	Setback From
26123	**189ft**	**Right of any Public Way Road**

Setbacks measured 39 (New Construction)

New Nouveau Brunswick

Environment

Report Number **29539**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	05/21/2013

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
29539	Steel	6 inch	0ft	60ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	30ft	40 igpm	1hr	30ft	40 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
12% NaOCl
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
50ft

Driller's Log

Well Log	From	End	Colour	Rock Type
29539	0ft	5ft	Grey	Gravel
29539	5ft	15ft	Grey	Gravel
29539	15ft	52ft	Grey	Clay
29539	52ft	105ft	Grey	Sandstone

Overall Well Depth
105ft

Bedrock Level
52ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
29539	82ft	10 igpm
29539	95ft	30 igpm

Setbacks

Well Log	Distance	Setback From
29539	80ft	Septic Tank
29539	95ft	Leach Field
29539	400ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **31961**

Well Driller's Report

Date printed 9/16/2022

Drilled by			
Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/14/2014

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
31961	Steel	6 inch	0ft	40ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	16ft	15 igpm	0hr	16ft	15 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
12% NaOCl

Qty 0 ig

Pump Installed
Jet

Intake Setting (BTC)
65ft

Driller's Log

Well Log	From	End	Colour	Rock Type
31961	0ft	31ft	Brown	Clay and Sand
31961	31ft	82ft	Grey	Sandstone

Overall Well Depth
82ft

Bedrock Level
31ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
31961	70ft	15 igpm

Setbacks

Well Log	Distance	Setback From
31961	95ft	Center of road
31961	65ft	Septic Tank
31961	85ft	Leach Field

New Nouveau Brunswick

Environment

Report Number **32764**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	07/05/2013

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
32764	Steel	6 inch	0ft	40ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	19ft	15 igpm	1hr	19ft	10 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Foam

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
90ft

Driller's Log

Well Log	From	End	Colour	Rock Type
32764	16ft	21ft	Brown	Sandstone
32764	0ft	11ft	Brown	Sand and Gravel
32764	11ft	14ft	Brown	Clay
32764	14ft	16ft	Grey	Mud
32764	21ft	27ft	Grey	Granite
32764	27ft	28ft	Brown	Clay
32764	28ft	31ft	Grey	Granite
32764	31ft	37ft	Grey	Clay
32764	37ft	102ft	Grey	Sandstone

Overall Well Depth
102ft

Bedrock Level
16ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
32764	46ft	3 igpm
32764	81ft	10 igpm
32764	98ft	15 igpm

Setbacks

Well Log	Distance	Setback From
32764	172ft	Center of road

New Nouveau Brunswick

Environment

Report Number **33660**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/17/2012

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
33660	Steel	6 inch	0ft	40ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	12ft	80 igpm	1hr	12ft	60 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
Foam

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
40ft

Driller's Log

Well Log	From	End	Colour	Rock Type
33660	12ft	32ft	Brown	Clay
33660	0ft	7ft	Mix	Fill
33660	7ft	10ft	Brown	Soil
33660	10ft	12ft	Mix	Gravel
33660	32ft	36ft	Brown	Sandstone
33660	36ft	37ft	Brown	Clay
33660	37ft	46ft	Brown	Sandstone
33660	46ft	98ft	Grey	Sandstone

Overall Well Depth
98ft

Bedrock Level
32ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
33660	56ft	3 igpm
33660	76ft	10 igpm
33660	96ft	80 igpm

Setbacks

Well Log	Distance	Setback From
33660	92ft	Center of road

New Nouveau Brunswick

Environment

Report Number **37197**

Well Driller's Report

Date printed 9/16/2022

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	6 inch	0ft	70ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	40ft	30 igpm	1hr	40ft	30 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
80ft

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	120ft	140ft	Brown	Clay
37197	0ft	18ft	Grey	Sandstone
37197	18ft	65ft	Brown	Clay
37197	65ft	120ft	Grey	Sandstone

Overall Well Depth
140ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	120ft	30 igpm

Setbacks

Well Log	Distance	Setback From
37197	60ft	Septic Tank
37197	80ft	Leach Field
37197	75ft	Right of any Public Way Road
37197	80ft	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	6 inch	0ft	70ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	40ft	30 igpm	1hr	40ft	30 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
80ft

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	120ft	140ft	Brown	Clay
37197	0ft	18ft	Grey	Sandstone
37197	18ft	65ft	Brown	Clay
37197	65ft	120ft	Grey	Sandstone

Overall Well Depth
140ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	120ft	30 igpm

Setbacks

Well Log	Distance	Setback From
37197	60ft	Septic Tank
37197	80ft	Leach Field
37197	75ft	Right of any Public Way Road
37197	80ft	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	6 inch	0ft	70ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	40ft	30 igpm	1hr	40ft	30 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
80ft

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	120ft	140ft	Brown	Clay
37197	0ft	18ft	Grey	Sandstone
37197	18ft	65ft	Brown	Clay
37197	65ft	120ft	Grey	Sandstone

Overall Well Depth
140ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	120ft	30 igpm

Setbacks

Well Log	Distance	Setback From
37197	60ft	Septic Tank
37197	80ft	Leach Field
37197	75ft	Right of any Public Way Road
37197	80ft	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	6 inch	0ft	70ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	40ft	30 igpm	1hr	40ft	30 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
80ft

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	120ft	140ft	Brown	Clay
37197	0ft	18ft	Grey	Sandstone
37197	18ft	65ft	Brown	Clay
37197	65ft	120ft	Grey	Sandstone

Overall Well Depth
140ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	120ft	30 igpm

Setbacks

Well Log	Distance	Setback From
37197	60ft	Septic Tank
37197	80ft	Leach Field
37197	75ft	Right of any Public Way Road
37197	80ft	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	6 inch	0ft	70ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	40ft	30 igpm	1hr	40ft	30 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Chlorine pellets
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
80ft

Driller's Log

Well Log	From	End	Colour	Rock Type
37197	120ft	140ft	Brown	Clay
37197	0ft	18ft	Grey	Sandstone
37197	18ft	65ft	Brown	Clay
37197	65ft	120ft	Grey	Sandstone

Overall Well Depth
140ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
37197	120ft	30 igpm

Setbacks

Well Log	Distance	Setback From
37197	60ft	Septic Tank
37197	80ft	Leach Field
37197	75ft	Right of any Public Way Road
37197	80ft	Center of road

New Nouveau Brunswick

Environment

Report Number **40998**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	08/26/2020

Casing Information — Casing above ground — Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
40998	Steel	6 inch	0ft	40ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	30ft	20 igpm	1hr	30ft	20 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
110ft

Driller's Log

Well Log	From	End	Colour	Rock Type
40998	55ft	118ft	Grey	Sandstone
40998	0ft	7ft	Brown	Sand
40998	7ft	25ft	Grey	Clay
40998	25ft	55ft	Brown	Sandstone
40998	118ft	124ft	Red	Claystone

Overall Well Depth
124ft

Bedrock Level
0ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
40998	70ft	10 igpm
40998	105ft	10 igpm

Setbacks

Well Log	Distance	Setback From
40998	2000ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **42692**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well	Rotary	11/12/2018

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
42692	Steel	6 inch	0ft	58ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	19ft	59 igpm	1hr 30min	19ft	50 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
0ft

Driller's Log

Well Log	From	End	Colour	Rock Type
42692	25ft	33ft	Brown	Clay
42692	0ft	6ft	Brown	Fill Shale
42692	6ft	22ft	Red	Clay
42692	22ft	25ft	Brown	Sandstone
42692	33ft	40ft	Grey	Sandstone
42692	40ft	51ft	Red	Clay
42692	51ft	55ft	Grey	Sandstone
42692	55ft	56ft	Red	Clay
42692	56ft	78ft	Grey	Sandstone

Overall Well Depth
78ft

Bedrock Level
22ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
42692	74ft	59 igpm

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **44938**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Industrial	New Well	Rotary	11/03/2020

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
44938	Steel	6 inch	0ft	100ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	18ft	28 igpm	1hr	18ft	20 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0 ig

Pump Installed
Submersible
Intake Setting (BTC)
100ft

Driller's Log

Well Log	From	End	Colour	Rock Type
44938	30ft	35ft	Dark brown	Soil
44938	0ft	12ft	Mix	Fill
44938	12ft	19ft	Red	Clay
44938	19ft	30ft	Brown	Sandstone
44938	35ft	45ft	Grey	Sandstone
44938	45ft	50ft	Brown	Sandstone
44938	50ft	78ft	Grey	Sandstone
44938	78ft	95ft	Red	Clay
44938	95ft	205ft	Grey	Sandstone

Overall Well Depth
205ft

Bedrock Level
19ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
44938	138ft	4 igpm
44938	182ft	8 igpm
44938	202ft	28 igpm

Setbacks

Well Log	Distance	Setback From
44938	66ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **44939**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Non-Drinking Water, Industrial	New Well	Rotary	11/04/2020

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
44939	Steel	6 inch	0ft	48ft	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Air	28ft	30 igpm	1hr	28ft	15 igpm	No	0 igpm
	(BTC - Below top of casing)						

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
Submersible

Intake Setting (BTC)
55ft

Driller's Log

Well Log	From	End	Colour	Rock Type
44939	0ft	13ft	Mix	Fill
44939	13ft	18ft	Red	Clay
44939	18ft	30ft	Brown	Sandstone
44939	30ft	35ft	Dark brown	Soil
44939	35ft	42ft	Brown	Sandstone
44939	42ft	46ft	Dark brown	Soil
44939	46ft	55ft	Brown	Sandstone
44939	55ft	62ft	Grey	Sandstone

Overall Well Depth
62ft

Bedrock Level
18ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
44939	61ft	30 igpm

Setbacks

Well Log	Distance	Setback From
44939	86ft	Right of any Public Way Road

New Nouveau Brunswick

Environment

Report Number **91141400**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well (NEW WELL)	Cable Tool (CABLE TOOL)	06/18/1998

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91141400	**Steel**	**5 inch**	**0ft**	**26ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	25ft	12 igpm	1hr	25ft	12 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

There is no Grout information.

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)

Qty 0 ig

Pump Installed
N/A

Intake Setting (BTC)
60ft

Driller's Log

Well Log	From	End	Colour	Rock Type
91141400	**24ft**	**84ft**	**Grey**	**Sandstone**
91141400	**0ft**	**4ft**	**Brown**	**Fill**
91141400	**4ft**	**18ft**	**Brown**	**Sand**
91141400	**18ft**	**24ft**	**Brown**	**Sandstone**

Overall Well Depth
84ft

Bedrock Level
22ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
91141400	**80ft**	**12 igpm**
91141400	**48ft**	**2 igpm**

Setbacks

There is no Setback information.

New Nouveau Brunswick

Environment

Report Number **91496900**

Well Driller's Report

Date printed 9/16/2022

Drilled by

Well Use	Work Type	Drill Method	Work Completed
Drinking Water, Domestic	New Well (NEW WELL)	Cable Tool (CABLE TOOL)	02/26/1999

Casing Information

Casing above ground

Drive Shoe Used?

Well Log	Casing Type	Diameter	From	End	Slotted?
91496900	**Steel**	**5 inch**	**0ft**	**46ft**	

Aquifer Test/Yield

Method	Initial Water Level (BTC)	Pumping Rate	Duration	Final Water Level (BTC)	Estimated Safe Yield	Flowing Well?	Rate
Bailer	22ft	10 igpm	1hr	22ft	10 igpm	No	0 igpm

(BTC - Below top of casing)

Well Grouting

Well Log	Grout Type	From	End
91496900	**Clay(cuttings)**	**0ft**	**46ft**

Drilling Fluids Used
None

Disinfectant
Bleach (Javex)
Qty 0.5 ig

Pump Installed
N/A
Intake Setting (BTC)
80ft

Driller's Log

Well Log	From	End	Colour	Rock Type
91496900	**22ft**	**26ft**	**Brown**	**Sand**
91496900	**0ft**	**2ft**	**Brown**	**Topsoil**
91496900	**2ft**	**14ft**	**Brown**	**Clay**
91496900	**14ft**	**22ft**	**Red**	**Clay**
91496900	**26ft**	**41ft**	**Brown**	**Sandstone**
91496900	**41ft**	**94ft**	**Grey**	**Sandstone**

Overall Well Depth
94ft

Bedrock Level
26ft

Water Bearing Fracture Zone

Well Log	Depth	Rate
91496900	**62ft**	**2 igpm**
91496900	**90ft**	**10 igpm**

Setbacks

There is no Setback information.

Sample Information

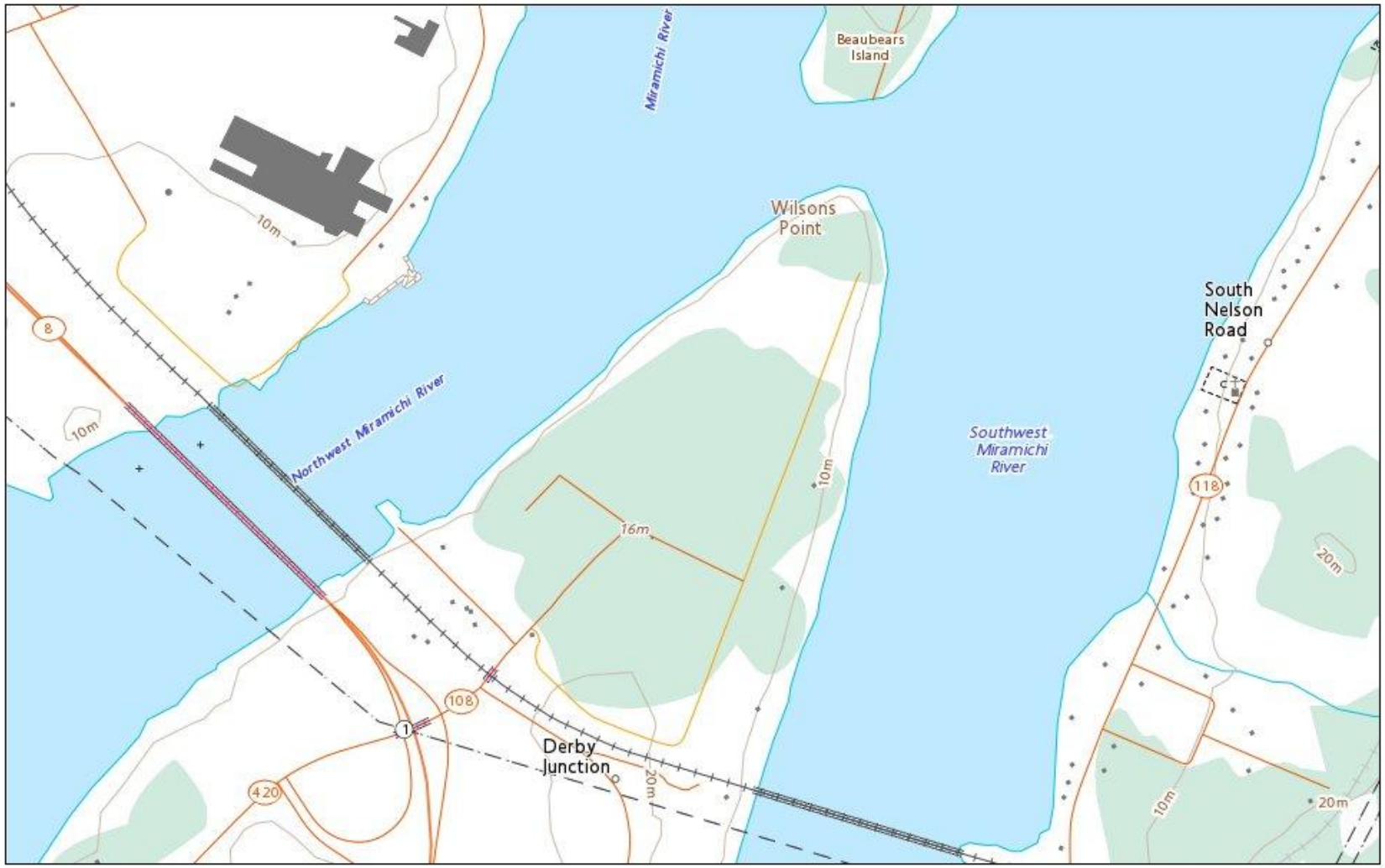
ALK_T(mg/L)	Al(mg/L)	As(µg/L)	B(mg/L)	Ba(mg/L)	Br(mg/L)	CONDc(SIE/cm)	Ca(mg/L)	Cd(µg/L)	Cl(mg/L)	Cr(µg/L)	Cu(µg/L)	F(mg/L)	Fe(mg/L)	HARD(mg/L)	K(mg/L)	Mg(mg/L)	Mn(mg/L)	NO2(mg/L)	NO3(mg/L)	NOX(mg/L)	Na(mg/L)	Pb(µg/L)	SO4(mg/L)	Sb(µg/L)	Se(µg/L)	TURB(NTU)	Ti(µg/L)	U(µg/L)	Zn(µg/L)	pH(pH)	P =CONDc(SIE/cm)	P =TDS(mg/L)	P @Bo no units)	P @C(no units)	P AN(Epm)	P CAT(Epm)	P CO3(mg/L)	P DIFB(%)	P DIFC(%)	P HCO3(mg/L)	P OH(mg/L)	P SIN(no units)	E.coli P/A(P/A)	TC-P/A(P/A)
120	< 0.0250	< 1.50	0.0320	0.25	< 0.10	279	26.50	< 0.50	11	< 10	< 10	0.2750	0.0220	80.40	1.60	3.45	0.0390	< 0.05	< 0.05	< 0.05	23.60	< 1	9.79	< 1	< 1.50	* 5.44	< 1	< 0.50	< 5	8.13	254.9560	148.5380	1.67	1.63	2.9320	2.6790	0	4.51	4.5030	120	0	0.17		
28.80	< 0.0250	< 1.50	0.0230	0.1160	< 0.10	468	20.90	< 0.50	117	< 10	69	< 0.10	* 1.73	69.60	3.90	4.26	0.0890	< 0.05	1.50	1.60	60.60	1.70	10.10	< 1	< 1.50	* 11	< 1	< 0.50	20	6.48	441.8620	243.2630	0.09	1.0850	4.2470	4.2310	0	0.1820	2.8730	28.80	0	-2.0540	Ab	Pr
99.20	< 0.0250	< 1.50	0.0330	0.1420	0.1140	235	28.50	< 0.50	2.18	< 10	< 10	0.13	0.0430	80.70	1	2.34	0.76	< 0.05	< 0.05	< 0.05	18.80	< 1	12.20	< 1	< 1.50	0.31	< 1	< 0.50	< 5	8.10	211.24	125.85	-1.27	1.8910	2.3110	2.4910	1.20	-3.7640	5.3250	98	0.10	0.2670	Ab	Ab
101	< 0.0250	< 1.50	0.0390	0.14	< 0.10	229	25.50	< 0.50	1.83	< 10	< 10	0.1060	< 0.01	73	1.20	2.24	* 0.61	< 0.05	< 0.05	< 0.05	22.40	< 1	11.80	< 1	< 1.50	0.41	< 1	< 0.50	< 5	8.03	210.0910	126.7510	-1.09	1.5120	2.3320	2.4980	1	-3.2380	4.3060	99.90	0.10	0.1580	Ab	Pr
91.60	< 0.0250	< 1.50	< 0.01	0.1410	< 0.10	485	58.10	< 0.50	81	< 10	27	< 0.10	< 0.01	183	1.40	9.12	< 0.0050	< 0.05	0.13	0.18	18.90	< 1	8.32	< 1	< 1.50	< 0.20	< 1	< 0.50	20	7.54	434.9270	232.8850	-1.16	2.1090	4.3120	4.5130	0.30	-2.2710	5.4430	91.30	0	-0.0660	Ab	Ab
108	< 0.0250	< 1.50	0.0470	0.1530	< 0.10	246	23.70	< 0.50	3.17	< 10	< 10	0.2010	0.1660	74.50	1.90	3.73	* 0.13	< 0.05	< 0.05	< 0.05	26.80	< 1	9.92	< 1	< 1.50	* 1.40	< 1	< 0.50	< 5	8.21	225.26	134.8790	-1.73	1.5640	2.47	2.7210	1.60	-4.8240	4.4010	106.30	0.10	0.3310	Ab	Ab

APPENDIX E

Topography Map

hive ENGINEERING

Toporama



September 27, 2022

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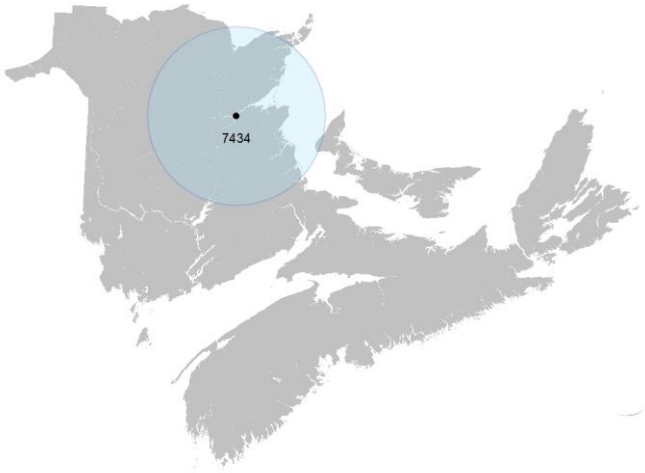
APPENDIX F

ACCDC Data

DATA REPORT 7434: Derby Junction, NB

Prepared 20 September 2022
by J. Pender, Data Manager

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
DerbyJctNB_7434ob.xls	Rare or legally-protected Flora and Fauna in your study area
DerbyJctNB_7434ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
DerbyJctNB_7434msa.xls	Managed and Biologically Significant Areas in your study area
DerbyJctNB_7434ff_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	john.klymko@accdc.ca
Data Management, GIS	James Churchill	Conservation Data Analyst / Field Biologist		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.

New Brunswick. For information about rare taxa, protected areas, game animals, deer yards, old growth forests, archeological sites, fish habitat etc., or to determine if location-sensitive species (section 4.3) occur near your study site, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

Nova Scotia. For information about Species at Risk or general questions about Nova Scotia location-sensitive species please contact the Biodiversity Program at biodiversity@novascotia.ca. For questions about protected areas, game animals, deer yards, old growth forests, archeological sites, fish habitat etc., or to determine if location-sensitive species (section 4.3) occur near your study site please contact a Regional Biologist:

DIGB, ANNA, KING	Emma Vost	(902) 670-8187	Emma.Vost@novascotia.ca
SHEL, YARM	Sian Wilson	(902) 930-2978	Sian.Wilson@novascotia.ca
QUEE, LUNE	Peter Kydd	(902) 523-0969	Peter.Kydd@novascotia.ca
HALI, HANT	Shavonne Meyer	(902) 893-0816	Shavonne.Meyer@novascotia.ca
Central Region	Jolene Laverty	(902) 324-8953	Jolene.Laverty@novascotia.ca
COLC, CUMB	Kimberly George	(902) 890-1046	Kimberly.George@novascotia.ca
ANTI, GUYS	Harrison Moore	(902) 497-4119	Harrison.Moore@novascotia.ca
INVE, VICT	Maureen Cameron-MacMillan	(902) 295-2554	Maureen.Cameron-MacMillan@novascotia.ca
CAPE, RICH, PICT	Elizabeth Walsh	(902) 563-3370	Elizabeth.Walsh@novascotia.ca

Prince Edward Island. For information about rare taxa, protected areas, game animals, fish habitat etc., please contact Garry Gregory, PEI Department of Environment, Energy and Climate Action: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

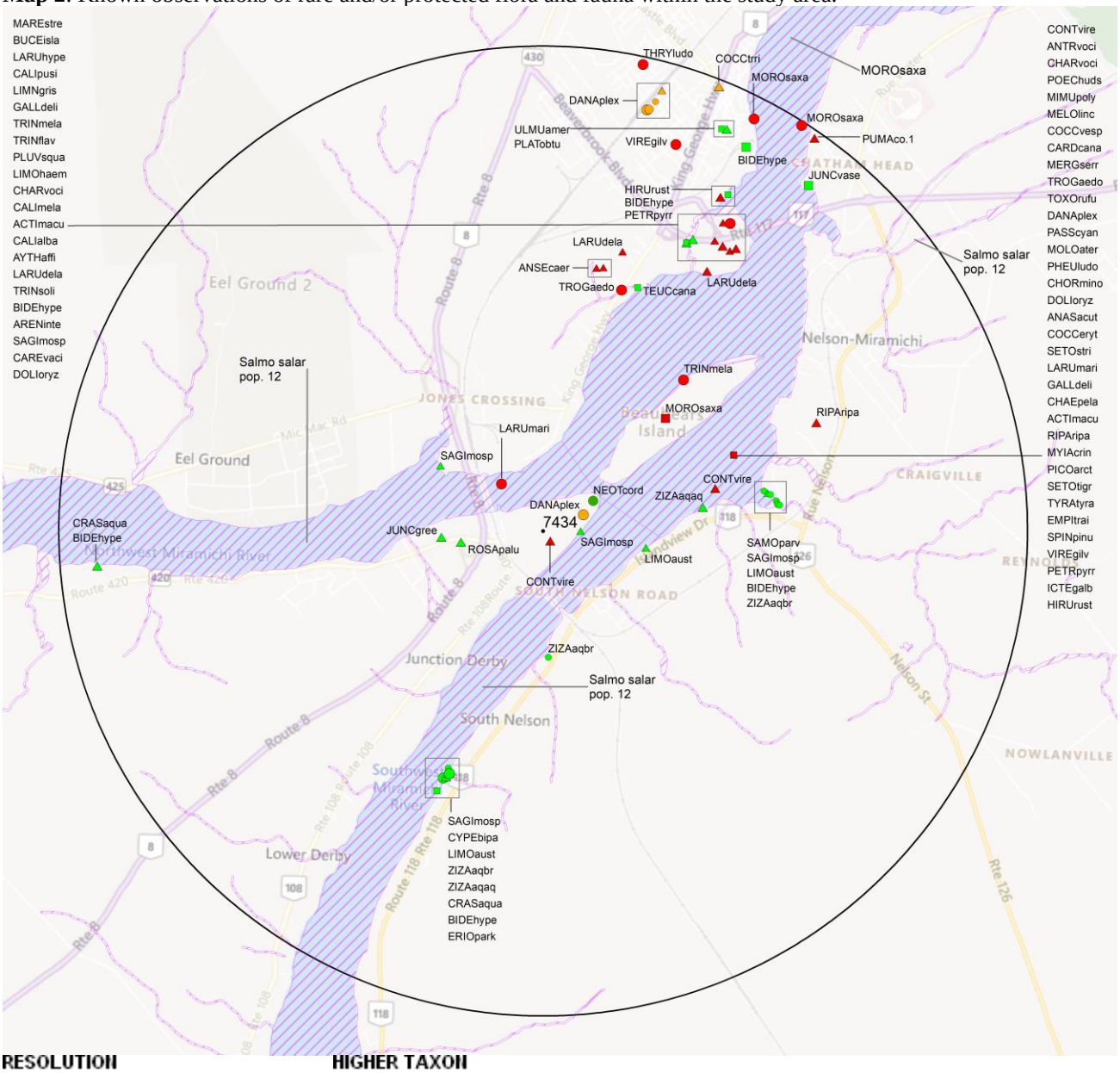
2.1 FLORA

The study area contains 48 records of 17 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls), excluding 'location-sensitive' species.

2.2 FAUNA

The study area contains 637 records of 53 vertebrate, 12 records of 2 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.



3.0 SPECIAL AREAS

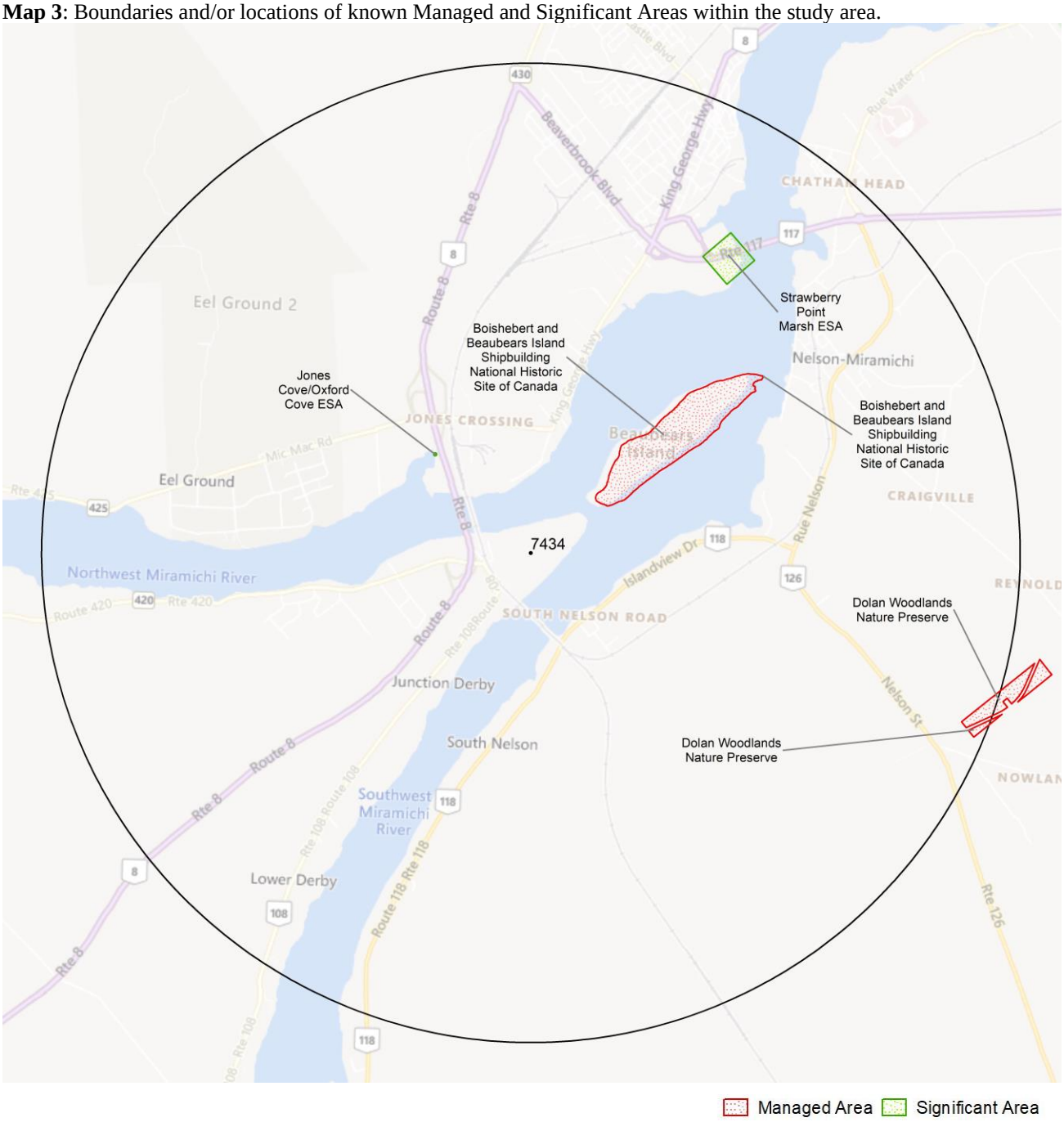
3.1 MANAGED AREAS

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

3.2 SIGNIFICANT AREAS

The GIS scan identified 2 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	*Eriocaulon parkeri*	Parker's Pipewort	Not At Risk		Endangered	S3	1	2.7 ± 1.0
P	*Juncus greenei*	Greene's Rush				S1	1	1.1 ± 1.0
P	*Zizania aquatica var. brevis*	St. Lawrence Wild Rice				S1	3	1.3 ± 0.0
P	*Carex vacillans*	Estuarine Sedge				S2S3	2	3.3 ± 1.0
P	*Cyperus bipartitus*	Shining Flatsedge				S2S3	1	2.7 ± 0.0
P	*Sagittaria montevidensis ssp. spongiosa*	Spongy Arrowhead				S3	13	0.4 ± 0.0
P	*Juncus vaseyi*	Vasey Rush				S3	2	4.5 ± 10.0
P	*Zizania aquatica var. aquatica*	Eastern Wild Rice				S3	2	1.7 ± 1.0
P	*Bidens hyperborea*	Estuary Beggarticks				S3S4	10	2.4 ± 0.0
P	*Crassula aquatica*	Water Pygmyweed				S3S4	2	2.7 ± 1.0
P	*Teucrium canadense*	Canada Germander				S3S4	1	2.7 ± 5.0
P	*Samolus parviflorus*	Seaside Brookweed				S3S4	3	2.4 ± 0.0
P	*Rosa palustris*	Swamp Rose				S3S4	1	0.9 ± 1.0
P	*Limosella australis*	Southern Mudwort				S3S4	3	1.1 ± 0.0
P	*Ulmus americana*	White Elm				S3S4	1	4.6 ± 1.0
P	*Neottia cordata*	Heart-leaved Twayblade				S3S4	1	0.6 ± 100.0
P	*Platanthera obtusata*	Blunt-leaved Orchid				S3S4	1	4.5 ± 2.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	2	2.1 ± 7.0
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2B	3	2.1 ± 7.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	4	2.1 ± 7.0
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	81	3.5 ± 0.0
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S3M	1	3.5 ± 0.0
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Threatened	S2B	6	2.1 ± 7.0
A	*Bucephala islandica*	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	3	3.7 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	6	0.1 ± 1.0
A	*Dolichonyx oryzivorus*	Bobolink	Special Concern	Threatened	Threatened	S3B	7	2.1 ± 7.0
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	1	2.1 ± 7.0
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	4	2.1 ± 7.0
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	1	2.1 ± 7.0
A	*Puma concolor pop. 1*	Cougar - Eastern population	Data Deficient		Endangered	SU	1	4.9 ± 1.0
A	*Morone saxatilis*	Striped Bass	E,SC			S3S4B,S3S4N	3	1.7 ± 10.0
A	*Thryothorus ludovicianus*	Carolina Wren				S1	1	4.9 ± 0.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S4S5M	92	2.1 ± 0.0
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	2	3.5 ± 1.0
A	*Calidris alba*	Sanderling				S1N,S3S4M	6	3.5 ± 0.0
A	*Empidonax traillii*	Willow Flycatcher				S1S2B	2	2.1 ± 7.0
A	*Troglodytes aedon*	House Wren				S1S2B	2	2.1 ± 7.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2B	5	2.1 ± 7.0
A	*Mimus polyglottos*	Northern Mockingbird				S2B	1	2.1 ± 7.0
A	*Mareca strepera*	Gadwall				S2B,S3M	1	3.7 ± 0.0
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S4S5M	9	3.5 ± 0.0

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Larus hyperboreus*	Glaucous Gull				S2N	1	3.7 ± 0.0
A	*Toxostoma rufum*	Brown Thrasher				S2S3B	1	2.1 ± 7.0
A	*Icterus galbula*	Baltimore Oriole				S2S3B	6	2.1 ± 7.0
A	*Larus delawarensis*	Ring-billed Gull				S2S3B,S4N,S5M	4	3.0 ± 0.0
A	*Larus marinus*	Great Black-backed Gull				S3	3	0.6 ± 0.0
A	*Picoides arcticus*	Black-backed Woodpecker				S3	1	2.1 ± 7.0
A	*Spinus pinus*	Pine Siskin				S3	3	2.1 ± 7.0
A	*Charadrius vociferus*	Killdeer				S3B	78	2.1 ± 7.0
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	1	2.1 ± 7.0
A	*Myiarchus crinitus*	Great Crested Flycatcher				S3B	2	2.1 ± 7.0
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	3	2.1 ± 7.0
A	*Passerina cyanea*	Indigo Bunting				S3B	1	2.1 ± 7.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B	2	2.1 ± 7.0
A	*Setophaga tigrina*	Cape May Warbler				S3B,S4S5M	1	2.1 ± 7.0
A	*Mergus serrator*	Red-breasted Merganser				S3B,S4S5N,S5M	2	2.1 ± 7.0
A	*Anas acuta*	Northern Pintail				S3B,S5M	1	2.1 ± 7.0
A	*Anser caerulescens*	Snow Goose				S3M	2	2.8 ± 0.0
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4	3.5 ± 0.0
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	51	3.5 ± 0.0
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	33	3.5 ± 0.0
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	13	3.5 ± 0.0
A	*Poecile hudsonicus*	Boreal Chickadee				S3S4	1	2.1 ± 7.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	4	2.1 ± 7.0
A	*Vireo gilvus*	Warbling Vireo				S3S4B	6	2.1 ± 7.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S4M	128	2.1 ± 7.0
A	*Melospiza lincolnii*	Lincoln's Sparrow				S3S4B,S4M	1	2.1 ± 7.0
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	27	2.1 ± 7.0
A	*Setophaga striata*	Blackpoll Warbler				S3S4B,S5M	2	2.1 ± 7.0
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	11	3.5 ± 0.0
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	11	0.4 ± 0.0
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern			SH	1	4.9 ± 2.0

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	No
Glyptemys insculpta	**Wood Turtle**	**Threatened**	**Threatened**	**YES**
Haliaeetus leucocephalus	**Bald Eagle**		**Endangered**	**YES**
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	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
501	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
52	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
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17	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
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10	Coursol, F. 2005. Dataset from New Brunswick fieldwork for Eriocaulon parkeri COSEWIC report. Coursol, Pers. comm. to C.S. Blaney, Aug 26. 110 recs.
8	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.
6	e-Butterfly. 2016. Export of Maritimes records and photos. Maxim Larrivee, Sambo Zhang (ed.) e-butterfly.org.
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4	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
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2	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
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1	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
1	Dept of Fisheries & Oceans. 1999. Status of Wild Striped Bass, & Interaction between Wild & Cultured Striped Bass in the Maritime Provinces. , Science Stock Status Report D3-22. 13 recs.
1	eBird. 2020. eBird Basic Dataset. Version: EBD_relNov-2019. Ithaca, New York. Nov 2019, Cape Breton Bras d'Or Lakes Watershed subset. Cornell Lab of Ornithology.
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1	New York Botanical Garden. 2006. Virtual Plant Herbarium - Vascular Plant Types Catalog. Sylva, S.; Kallunki, J. (ed.) International Plant Science Centre, Web site: http://sciweb.nybg.org/science2/vii2.asp. 4 recs.
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.
1	Thomas, A.W. 1996. A preliminary atlas of the butterflies of New Brunswick. New Brunswick Museum.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 28663 records of 147 vertebrate and 854 records of 55 invertebrate fauna; 8875 records of 257 vascular, 407 records of 96 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	1	51.9 ± 1.0	NB
A	*Charadrius melodus melodus*	Piping Plover melodus subspecies	Endangered	Endangered	Endangered	S1B	2705	24.6 ± 0.0	NB
A	*Dermochelys coriacea pop. 2*	Leatherback Sea Turtle - Atlantic population	Endangered	Endangered	Endangered	S1S2N	4	49.8 ± 1.0	NB
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered	Endangered	S2	425	85.1 ± 0.0	NB
A	*Salmo salar pop. 7*	Atlantic Salmon - Outer Bay of Fundy population	Endangered		Endangered	SNR	5	91.2 ± 0.0	NB
A	*Rangifer tarandus pop. 2*	Caribou - Atlantic-Gasp ├⌐sie population	Endangered	Endangered	Extirpated	SX	6	17.8 ± 5.0	NB
A	*Leucoraja ocellata pop. 5*	Winter Skate - Gulf of St. Lawrence population	Endangered		Endangered		2	80.9 ± 0.0	NB
A	*Sturnella magna*	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B	6	5.2 ± 7.0	NB
A	*Asio flammeus*	Short-eared Owl	Threatened	Special Concern	Special Concern	S1S2B	9	47.5 ± 0.0	NB
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B	1	97.5 ± 0.0	NB
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened	Threatened	S1S2B	61	9.7 ± 7.0	NB
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	49	2.1 ± 7.0	NB
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B	551	40.7 ± 7.0	NB
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened		S2B	638	2.1 ± 7.0	NB
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2S3	795	0.5 ± 0.0	NB
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	360	2.1 ± 7.0	NB
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	707	3.5 ± 0.0	NB
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S3M	167	3.5 ± 0.0	NB
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S4N	36	19.5 ± 1.0	NB
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	6	65.3 ± 0.0	NB
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Threatened	S2B	712	2.1 ± 7.0	NB
A	*Salmo salar pop. 12*	Atlantic Salmon - Gaspe - Southern Gulf of St. Lawrence population	Special Concern		Special Concern	S2S3	2094	19.5 ± 1.0	NB
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S2S3B,S3M	214	8.1 ± 7.0	NB
A	*Bucephala islandica*	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	59	3.7 ± 0.0	NB
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	3	7.5 ± 0.0	NB
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	446	0.1 ± 1.0	NB
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	646	8.1 ± 7.0	NB
A	*Dolichonyx oryzivorus*	Bobolink	Special Concern	Threatened	Threatened	S3B	606	2.1 ± 7.0	NB
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	396	2.1 ± 7.0	NB
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	404	2.1 ± 7.0	NB
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S3M	3	80.8 ± 1.0	NB
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern	Special Concern	S3N	1	73.0 ± 3.0	NB
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	498	2.1 ± 7.0	NB
A	*Phocoena phocoena*	Harbour Porpoise	Special Concern		Spec.Concern	S4	3	52.3 ± 0.0	NB
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern	Special Concern		S4	14	48.1 ± 0.0	NB
A	*Fulica americana*	American Coot	Not At Risk			S1B	9	5.8 ± 0.0	NB
A	*Falco peregrinus pop. 1*	Peregrine Falcon -	Not At Risk	Special Concern	Endangered	S1B,S3M	11	6.3 ± 20.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
		anatum/tundrius							
A	*Falco peregrinus*	Peregrine Falcon	Not At Risk	Special Concern		S1B,S3M	1	58.5 ± 0.0	NB
A	*Bubo scandiacus*	Snowy Owl	Not At Risk			S1N,S2S3M	13	61.3 ± 29.0	NB
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1S2B	4	7.7 ± 3.0	NB
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk			S1S2B	11	10.4 ± 0.0	NB
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B,SUM	12	20.5 ± 0.0	NB
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk			S2	16	71.3 ± 1.0	NB
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B	6	49.0 ± 7.0	NB
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S2N,S3M	7	11.9 ± 0.0	NB
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3	1	42.6 ± 1.0	NB
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B,SUM	656	30.1 ± 1.0	NB
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S4	435	1.3 ± 0.0	NB
A	*Lynx canadensis*	Canada Lynx	Not At Risk		Endangered	S4	43	23.8 ± 0.0	NB
A	*Canis lupus*	Grey Wolf	Not At Risk		Extirpated	SX	1	43.4 ± 100.0	NB
A	*Puma concolor pop. 1*	Cougar - Eastern population	Data Deficient		Endangered	SU	48	4.9 ± 1.0	NB
A	*Calidris canutus rufa*	Red Knot rufa subspecies - Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	239	31.7 ± 0.0	NB
A	*Morone saxatilis*	Striped Bass	E,SC			S3S4B,S3S4N	20	1.7 ± 10.0	NB
A	*Salmo salar*	Atlantic Salmon	E,T,SC			S2S3	1	42.9 ± 0.0	NB
A	*Odobenus rosmarus pop. 5*	Atlantic Walrus - Nova Scotia - Newfoundland - Gulf of St Lawrence population	X			SX	3	47.8 ± 1.0	NB
A	*Thryothorus ludovicianus*	Carolina Wren				S1	2	4.9 ± 0.0	NB
A	*Salvelinus alpinus*	Arctic Char				S1	10	69.6 ± 1.0	NB
A	*Synaptomys borealis sphagnicola*	Northern Bog Lemming				S1	3	52.0 ± 5.0	NB
A	*Tringa melanoleuca*	Greater Yellowlegs				S1?B,S4S5M	862	2.1 ± 0.0	NB
A	*Aythya americana*	Redhead				S1B	2	5.8 ± 0.0	NB
A	*Grus canadensis*	Sandhill Crane				S1B	15	24.1 ± 1.0	NB
A	*Bartramia longicauda*	Upland Sandpiper				S1B	20	30.3 ± 0.0	NB
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B	11	80.0 ± 7.0	NB
A	*Leucophaeus atricilla*	Laughing Gull				S1B	1	51.9 ± 0.0	NB
A	*Rissa tridactyla*	Black-legged Kittiwake				S1B	20	89.8 ± 0.0	NB
A	*Uria aalge*	Common Murre				S1B	3	95.5 ± 0.0	NB
A	*Alca torda*	Razorbill				S1B	19	94.8 ± 14.0	NB
A	*Fratercula arctica*	Atlantic Puffin				S1B	1	47.2 ± 0.0	NB
A	*Progne subis*	Purple Martin				S1B	20	22.8 ± 7.0	NB
A	*Aythya marila*	Greater Scaup				S1B,S2N,S4M	17	48.9 ± 1.0	NB
A	*Oxyura jamaicensis*	Ruddy Duck				S1B,S2S3M	11	48.9 ± 0.0	NB
A	*Aythya affinis*	Lesser Scaup				S1B,S4M	73	3.5 ± 1.0	NB
A	*Eremophila alpestris*	Horned Lark				S1B,S4N,S5M	112	9.7 ± 7.0	NB
A	*Sterna paradisaea*	Arctic Tern				S1B,SUM	36	30.1 ± 0.0	NB
A	*Chroicocephalus ridibundus*	Black-headed Gull				S1N,S2M	6	79.9 ± 0.0	NB
A	*Branta bernicla*	Brant				S1N,S2S3M	59	47.2 ± 0.0	NB
A	*Calidris alba*	Sanderling				S1N,S3S4M	494	3.5 ± 0.0	NB
A	*Butorides virescens*	Green Heron				S1S2B	2	80.0 ± 7.0	NB
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B	88	12.6 ± 0.0	NB
A	*Empidonax traillii*	Willow Flycatcher				S1S2B	21	2.1 ± 7.0	NB
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B	5	52.7 ± 1.0	NB
A	*Troglodytes aedon*	House Wren				S1S2B	4	2.1 ± 7.0	NB
A	*Calidris bairdii*	Baird's Sandpiper				S1S2M	13	48.5 ± 0.0	NB
A	*Melanitta americana*	American Scoter				S1S2N,S3M	131	30.1 ± 1.0	NB
A	*Microtus chrotorrhinus*	Rock Vole				S2?	29	86.4 ± 1.0	NB
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2B	327	2.1 ± 7.0	NB
A	*Cistothorus palustris*	Marsh Wren				S2B	1	97.0 ± 0.0	NB
A	*Mimus polyglottos*	Northern Mockingbird				S2B	52	2.1 ± 7.0	NB

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A	*Pooecetes gramineus*	Vesper Sparrow				S2B	83	16.1 ± 7.0	NB
A	*Mareca strepera*	Gadwall				S2B,S3M	57	3.7 ± 0.0	NB
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S4S5M	108	3.5 ± 0.0	NB
A	*Pinicola enucleator*	Pine Grosbeak				S2B,S4S5N,S4S5M	75	22.8 ± 7.0	NB
A	*Phalacrocorax carbo*	Great Cormorant				S2N	32	53.1 ± 1.0	NB
A	*Somateria spectabilis*	King Eider				S2N	2	73.0 ± 1.0	NB
A	*Larus hyperboreus*	Glaucous Gull				S2N	17	3.7 ± 0.0	NB
A	*Melanitta perspicillata*	Surf Scoter				S2N,S4M	27	29.8 ± 15.0	NB
A	*Melanitta deglandi*	White-winged Scoter				S2N,S4M	13	29.8 ± 15.0	NB
A	*Asio otus*	Long-eared Owl				S2S3	10	20.9 ± 1.0	NB
A	*Picoides dorsalis*	American Three-toed Woodpecker				S2S3	69	25.3 ± 0.0	NB
A	*Toxostoma rufum*	Brown Thrasher				S2S3B	39	2.1 ± 7.0	NB
A	*Icterus galbula*	Baltimore Oriole				S2S3B	70	2.1 ± 7.0	NB
A	*Somateria mollissima*	Common Eider				S2S3B,S2S3N,S4M	123	47.0 ± 14.0	NB
A	*Larus delawarensis*	Ring-billed Gull				S2S3B,S4N,S5M	420	3.0 ± 0.0	NB
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	64	20.4 ± 2.0	NB
A	*Calcarius lapponicus*	Lapland Longspur				S2S3N,SUM	9	10.8 ± 0.0	NB
A	*Larus marinus*	Great Black-backed Gull				S3	424	0.6 ± 0.0	NB
A	*Picoides arcticus*	Black-backed Woodpecker				S3	156	2.1 ± 7.0	NB
A	*Loxia curvirostra*	Red Crossbill				S3	127	6.2 ± 0.0	NB
A	*Spinus pinus*	Pine Siskin				S3	330	2.1 ± 7.0	NB
A	*Prosopium cylindraceum*	Round Whitefish				S3	1	99.0 ± 0.0	NB
A	*Salvelinus namaycush*	Lake Trout				S3	3	84.3 ± 0.0	NB
A	*Sorex maritimensis*	Maritime Shrew				S3	39	32.0 ± 0.0	NB
A	*Spatula clypeata*	Northern Shoveler				S3B	64	5.8 ± 0.0	NB
A	*Charadrius vociferus*	Killdeer				S3B	617	2.1 ± 7.0	NB
A	*Tringa semipalmata*	Willet				S3B	303	23.3 ± 0.0	NB
A	*Cepphus grylle*	Black Guillemot				S3B	36	71.5 ± 3.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	111	2.1 ± 7.0	NB
A	*Myiarchus crinitus*	Great Crested Flycatcher				S3B	30	2.1 ± 7.0	NB
A	*Piranga olivacea*	Scarlet Tanager				S3B	92	12.0 ± 7.0	NB
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	418	2.1 ± 7.0	NB
A	*Passerina cyanea*	Indigo Bunting				S3B	28	2.1 ± 7.0	NB
A	*Molothrus ater*	Brown-headed Cowbird				S3B	167	2.1 ± 7.0	NB
A	*Setophaga tigrina*	Cape May Warbler				S3B,S4S5M	236	2.1 ± 7.0	NB
A	*Mergus serrator*	Red-breasted Merganser				S3B,S4S5N,S5M	276	2.1 ± 7.0	NB
A	*Anas acuta*	Northern Pintail				S3B,S5M	127	2.1 ± 7.0	NB
A	*Anser caerulescens*	Snow Goose				S3M	20	2.8 ± 0.0	NB
A	*Numenius phaeopus*	Whimbrel				S3M	1	61.4 ± 5.0	NB
A	*Numenius phaeopus hudsonicus*	Whimbrel				S3M	114	47.1 ± 0.0	NB
A	*Arenaria interpres*	Ruddy Turnstone				S3M	651	3.5 ± 0.0	NB
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	911	3.5 ± 0.0	NB
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	131	3.5 ± 0.0	NB
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	373	3.5 ± 0.0	NB
A	*Phalaropus fulicarius*	Red Phalarope				S3M	6	31.7 ± 0.0	NB
A	*Bucephala albeola*	Bufflehead				S3N	43	5.7 ± 0.0	NB
A	*Calidris maritima*	Purple Sandpiper				S3N	5	54.1 ± 0.0	NB
A	*Perisoreus canadensis*	Canada Jay				S3S4	597	5.2 ± 0.0	NB
A	*Poecile hudsonicus*	Boreal Chickadee				S3S4	613	2.1 ± 7.0	NB
A	*Eptesicus fuscus*	Big Brown Bat				S3S4	1	92.0 ± 0.0	NB
A	*Synaptomys cooperi*	Southern Bog Lemming				S3S4	12	32.0 ± 0.0	NB
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	277	2.1 ± 7.0	NB
A	*Vireo gilvus*	Warbling Vireo				S3S4B	55	2.1 ± 7.0	NB
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S4M	1117	2.1 ± 7.0	NB

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A	*Melospiza lincolnii*	Lincoln's Sparrow				S3S4B,S4M	391	2.1 ± 7.0	NB
A	*Gallinago delicata*	Wilson's Snipe				S3S4B,S5M	404	2.1 ± 7.0	NB
A	*Setophaga striata*	Blackpoll Warbler				S3S4B,S5M	707	2.1 ± 7.0	NB
A	*Pluvialis squatarola*	Black-bellied Plover				S3S4M	581	3.5 ± 0.0	NB
A	*Morus bassanus*	Northern Gannet				SHB	210	6.9 ± 0.0	NB
I	*Coenonympha nipisiquit*	Maritime Ringlet	Endangered	Endangered	Endangered	S1	104	70.8 ± 7.0	NB
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	39	0.4 ± 0.0	NB
I	*Gomphurus ventricosus*	Skillet Clubtail	Special Concern	Endangered	Endangered	S2	3	83.8 ± 0.0	NB
I	*Cicindela marginipennis*	Cobblestone Tiger Beetle	Special Concern	Endangered	Endangered	S2S3	16	49.8 ± 0.0	NB
I	*Ophiogomphus howei*	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2S3	29	24.9 ± 1.0	NB
I	*Alasmidonta varicosa*	Brook Floater	Special Concern	Special Concern	Special Concern	S3	35	15.8 ± 0.0	NB
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S3	4	83.7 ± 0.0	NB
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern		S4	71	7.1 ± 0.0	NB
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle	Special Concern			SH	11	4.9 ± 2.0	NB
I	*Appalachina sayana sayana*	Spike-lip Crater Snail	Not At Risk			S3?	1	91.3 ± 1.0	NB
I	*Corythucha juglandis*	a lace bug				S1	1	44.2 ± 0.0	NB
I	*Erora laeta*	Early Hairstreak				S1	3	76.8 ± 7.0	NB
I	*Catocala neogama*	The Bride Underwing				S1	1	20.4 ± 1.0	NB
I	*Somatochlora septentrionalis*	Muskeg Emerald				S1	4	78.7 ± 0.0	NB
I	*Leucorrhinia patricia*	Canada Whiteface				S1	11	51.6 ± 0.0	NB
I	*Icaricia saepiolus*	Greenish Blue				S1S2	18	24.0 ± 7.0	NB
I	*Cicindela ancocisconensis*	Appalachian Tiger Beetle				S2	2	50.2 ± 0.0	NB
I	*Satyrium calanus*	Banded Hairstreak				S2	1	48.2 ± 7.0	NB
I	*Strymon melinus*	Gray Hairstreak				S2	11	35.1 ± 1.0	NB
I	*Aeshna juncea*	Sedge Darner				S2	1	80.7 ± 0.0	NB
I	*Somatochlora brevicincta*	Quebec Emerald				S2	9	81.0 ± 0.0	NB
I	*Chrysops delicatulus*	Delicate Deer Fly				S2S3	1	37.7 ± 1.0	NB
I	*Psyrassa unicolor*	Unicoloured Long-horned Beetle				S3	1	97.8 ± 0.0	NB
I	*Desmocerus palliatus*	Elderberry Borer				S3	2	38.8 ± 0.0	NB
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	4	53.0 ± 1.0	NB
I	*Xylotrechus quadrimaculatus*	Birch Long-horned Beetle				S3	1	80.2 ± 1.0	NB
I	*Xylotrechus undulatus*	Spruce Zebra Beetle				S3	1	88.1 ± 1.0	NB
I	*Calathus gregarius*	Gregarious Harp Ground Beetle				S3	1	83.7 ± 1.0	NB
I	*Enoclerus muttkowskii*	Muttkowski's Checkered Beetle				S3	1	88.5 ± 0.0	NB
I	*Hesperia sassacus*	Indian Skipper				S3	12	13.1 ± 0.0	NB
I	*Euphyes bimacula*	Two-spotted Skipper				S3	23	16.6 ± 0.0	NB
I	*Papilio brevicauda gaspeensis*	Short-tailed Swallowtail				S3	3	68.5 ± 0.0	NB
I	*Papilio brevicauda bretonensis*	Short-tailed Swallowtail				S3	101	47.3 ± 0.0	NB
I	*Tharsalea dospassosi*	Maritime Copper				S3	145	22.8 ± 0.0	NB
I	*Satyrium acadica*	Acadian Hairstreak				S3	6	70.8 ± 7.0	NB
I	*Callophrys eryphon*	Western Pine Elfin				S3	25	40.8 ± 10.0	NB
I	*Plebejus idas*	Northern Blue				S3	4	58.8 ± 0.0	NB
I	*Plebejus idas empetri*	Crowberry Blue				S3	27	51.4 ± 0.0	NB
I	*Argynnis aphrodite*	Aphrodite Fritillary				S3	6	22.8 ± 2.0	NB
I	*Boloria eunomia*	Bog Fritillary				S3	16	51.7 ± 2.0	NB
I	*Boloria bellona*	Meadow Fritillary				S3	14	26.6 ± 2.0	NB
I	*Boloria chariclea*	Arctic Fritillary				S3	42	24.0 ± 7.0	NB
I	*Boloria chariclea grandis*	Purple Lesser Fritillary				S3	2	40.8 ± 10.0	NB
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	5	18.9 ± 10.0	NB
I	*Ladona exusta*	White Corporal				S3	1	62.8 ± 0.0	NB
I	*Alasmidonta undulata*	Triangle Floater				S3	3	45.1 ± 1.0	NB
I	*Atlanticoncha ochracea*	Tidewater Mucket				S3	2	90.1 ± 0.0	NB

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I	*Pantala hymenaea*	Spot-Winged Glider				S3B	2	53.6 ± 0.0	NB
I	*Collops vittatus*	Banded Soft-winged Flower Beetle				S3S4	1	94.3 ± 3.0	NB
I	*Hemicrepidius memnonius*	Memnon's Click Beetle				S3S4	3	97.8 ± 0.0	NB
I	*Bolitophagus corticola*	Corticolous Darkling Beetle				S3S4	1	97.8 ± 0.0	NB
I	*Papilio brevicauda*	Short-tailed Swallowtail				S3S4	1	65.3 ± 0.0	NB
I	*Somatochlora forcipata*	Forcipate Emerald				S3S4	14	20.4 ± 0.0	NB
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S3S4	7	29.7 ± 0.0	NB
I	*Sphaerophoria pyrrhina*	Violaceous Globetail				SH	1	18.0 ± 5.0	NB
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	5	27.2 ± 0.0	NB
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S2	145	17.5 ± 0.0	NB
N	*Arrhenopterum heterostichum*	One-sided Groove Moss				S1	1	48.2 ± 0.0	NB
N	*Campylostelium saxicola*	a Moss				S1	1	47.4 ± 0.0	NB
N	*Sphagnum macrophyllum*	Sphagnum				S1	4	40.1 ± 0.0	NB
N	*Zygodon viridissimus var. viridissimus*	a Moss				S1	1	46.2 ± 0.0	NB
N	*Syntrichia ruralis*	a Moss				S1	1	95.3 ± 0.0	NB
N	*Sticta fuliginosa*	Peppered Moon Lichen				S1	1	18.1 ± 0.0	NB
N	*Leptogium hirsutum*	Jellyskin Lichen				S1	1	95.7 ± 0.0	NB
N	*Cinclidium stygium*	Sooty Cupola Moss				S1?	1	92.1 ± 0.0	NB
N	*Dicranum bonjeanii*	Bonjean's Broom Moss				S1?	1	60.6 ± 1.0	NB
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1?	1	46.3 ± 0.0	NB
N	*Paludella squarrosa*	Tufted Fen Moss				S1?	1	92.1 ± 0.0	NB
N	*Plagiothecium latebricola*	Alder Silk Moss				S1?	1	54.7 ± 0.0	NB
N	*Rhizomnium pseudopunctatum*	Felted Leafy Moss				S1?	1	51.3 ± 0.0	NB
N	*Lathagrium auriforme*	a tarpaper lichen				S1?	1	95.2 ± 0.0	NB
N	*Phaeophyscia hispidula*	Whiskered Shadow Lichen				S1?	1	95.6 ± 0.0	NB
N	*Cephaloziella spinigera*	Spiny Threadwort				S1S2	2	79.5 ± 0.0	NB
N	*Odontoschisma sphagni*	Bog-Moss Flapwort				S1S2	1	51.4 ± 0.0	NB
N	*Pallavicinia lyellii*	Lyell's Ribbonwort				S1S2	1	43.8 ± 1.0	NB
N	*Reboulia hemisphaerica*	Purple-margined Liverwort				S1S2	2	94.9 ± 0.0	NB
N	*Drummondia prorepens*	a Moss				S1S2	1	47.9 ± 0.0	NB
N	*Calypogeia neesiana*	Nees' Pouchwort				S1S3	1	71.7 ± 1.0	NB
N	*Dicranella palustris*	Drooping-Leaved Fork Moss				S2	1	28.3 ± 0.0	NB
N	*Meesia triquetra*	Three-ranked Cold Moss				S2	1	87.1 ± 10.0	NB
N	*Platydictya jungermannioides*	False Willow Moss				S2	1	96.2 ± 15.0	NB
N	*Pohlia elongata*	Long-necked Nodding Moss				S2	4	47.3 ± 0.0	NB
N	*Seligeria recurvata*	a Moss				S2	1	96.2 ± 15.0	NB
N	*Seligeria brevifolia*	a Moss				S2	4	46.3 ± 0.0	NB
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S2	1	52.4 ± 0.0	NB
N	*Sphagnum flexuosum*	Flexuous Peatmoss				S2	2	43.8 ± 0.0	NB
N	*Tayloria serrata*	Serrate Trumpet Moss				S2	1	99.8 ± 1.0	NB
N	*Tetrodontium brownianum*	Little Georgia				S2	5	47.3 ± 0.0	NB
N	*Nephroma laevigatum*	Mustard Kidney Lichen				S2	1	54.2 ± 0.0	NB
N	*Peltigera lepidophora*	Scaly Pelt Lichen				S2	3	96.6 ± 0.0	NB
N	*Barbilophozia lycopodioides*	Greater Pawwort				S2?	1	78.3 ± 1.0	NB
N	*Anacamptodon splachnoides*	a Moss				S2?	2	35.9 ± 0.0	NB
N	*Ptychostomum pallescens*	Tall Clustered Bryum				S2?	1	46.2 ± 100.0	NB
N	*Schistostega pennata*	Luminous Moss				S2?	2	77.0 ± 0.0	NB
N	*Sphagnum angermanicum*	a Peatmoss				S2?	2	49.2 ± 0.0	NB
N	*Trichodon cylindricus*	Cylindric Hairy-teeth Moss				S2?	1	96.2 ± 15.0	NB
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2?	7	22.8 ± 0.0	NB
N	*Imshaugia placorodia*	Eyed Starburst Lichen				S2?	7	40.2 ± 0.0	NB
N	*Buxbaumia aphylla*	Brown Shield Moss				S2S3	1	53.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	*Pohlia proligera*	Cottony Nodding Moss				S2S3	9	47.3 ± 0.0	NB
N	*Saelania glaucescens*	Blue Dew Moss				S2S3	4	94.9 ± 0.0	NB
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2S3	2	70.7 ± 1.0	NB
N	*Sphagnum subfulvum*	a Peatmoss				S2S3	2	51.5 ± 0.0	NB
N	*Zygodon viridissimus*	a Moss				S2S3	1	46.3 ± 0.0	NB
N	*Cetrariella delisei*	Snowbed Icelandmoss Lichen				S2S3	2	86.4 ± 0.0	NB
N	*Cladonia sulphurina*	Greater Sulphur-cup Lichen				S2S3	1	22.7 ± 0.0	NB
N	*Dendriscocaulon umhausense*	a lichen				S2S3	1	47.3 ± 0.0	NB
N	*Schistidium maritimum*	a Moss				S3	1	51.3 ± 0.0	NB
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	7	14.6 ± 0.0	NB
N	*Solorina saccata*	Woodland Owl Lichen				S3	6	95.3 ± 0.0	NB
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S3	2	47.9 ± 0.0	NB
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	1	95.0 ± 0.0	NB
N	*Leptogium laceroides*	Short-bearded Jellyskin Lichen				S3	4	14.6 ± 0.0	NB
N	*Cladonia botrytes*	Wooden Soldiers Lichen				S3	11	22.7 ± 0.0	NB
N	*Aulacomnium androgynum*	Little Groove Moss				S3?	5	48.3 ± 0.0	NB
N	*Ptychostomum inclinatum*	Blunt-tooth Thread Moss				S3?	1	48.5 ± 0.0	NB
N	*Dicranella rufescens*	Red Forklet Moss				S3?	1	72.0 ± 7.0	NB
N	*Cystocoleus ebeneus*	Rockgossamer Lichen				S3?	1	34.8 ± 0.0	NB
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3?	2	41.8 ± 0.0	NB
N	*Peltigera neckeri*	Black-saddle Pelt Lichen				S3?	2	44.6 ± 0.0	NB
N	*Barbula convoluta*	Lesser Bird's-claw Beard Moss				S3S4	1	70.7 ± 15.0	NB
N	*Dicranum majus*	Greater Broom Moss				S3S4	4	48.5 ± 0.0	NB
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	1	56.4 ± 10.0	NB
N	*Encalypta ciliata*	Fringed Extinguisher Moss				S3S4	1	97.1 ± 0.0	NB
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	1	57.4 ± 5.0	NB
N	*Heterocladium dimorphum*	Dimorphous Tangle Moss				S3S4	2	46.3 ± 0.0	NB
N	*Isopterygiopsis muelleriana*	a Moss				S3S4	1	94.9 ± 0.0	NB
N	*Myurella julacea*	Small Mouse-tail Moss				S3S4	1	97.1 ± 0.0	NB
N	*Orthotrichum speciosum*	Showy Bristle Moss				S3S4	5	46.3 ± 0.0	NB
N	*Pogonatum dentatum*	Mountain Hair Moss				S3S4	1	47.9 ± 0.0	NB
N	*Sphagnum compactum*	Compact Peat Moss				S3S4	1	47.4 ± 1.0	NB
N	*Sphagnum torreyanum*	a Peatmoss				S3S4	1	71.5 ± 0.0	NB
N	*Sphagnum contortum*	Twisted Peat Moss				S3S4	1	71.5 ± 0.0	NB
N	*Tetraphis geniculata*	Geniculate Four-tooth Moss				S3S4	3	54.7 ± 0.0	NB
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3S4	1	48.3 ± 0.0	NB
N	*Abietinella abietina*	Wiry Fern Moss				S3S4	1	95.4 ± 0.0	NB
N	*Rauiella scita*	Smaller Fern Moss				S3S4	1	48.4 ± 0.0	NB
N	*Pannaria rubiginosa*	Brown-eyed Shingle Lichen				S3S4	7	27.3 ± 0.0	NB
N	*Pseudocyphellaria holarctica*	Yellow Specklebelly Lichen				S3S4	36	15.0 ± 0.0	NB
N	*Cladonia floerkeana*	Gritty British Soldiers Lichen				S3S4	1	98.1 ± 0.0	NB
N	*Cladonia parasitica*	Fence-rail Lichen				S3S4	1	44.6 ± 0.0	NB
N	*Nephroma parile*	Powdery Kidney Lichen				S3S4	3	36.0 ± 0.0	NB
N	*Nephroma resupinatum*	a lichen				S3S4	5	15.0 ± 0.0	NB
N	*Protopannaria pezizoides*	Brown-gray Moss-shingle Lichen				S3S4	10	87.0 ± 0.0	NB
N	*Fuscopannaria sorediata*	a Lichen				S3S4	1	89.6 ± 0.0	NB
N	*Stereocaulon paschale*	Easter Foam Lichen				S3S4	1	75.1 ± 1.0	NB
N	*Pannaria conoplea*	Mealy-rimmed Shingle Lichen				S3S4	12	15.1 ± 0.0	NB
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	1	99.8 ± 0.0	PE
N	*Peltigera neopolydactyla*	Undulating Pelt Lichen				S3S4	1	44.8 ± 0.0	NB
N	*Leucodon brachypus*	a Moss				SH	9	46.2 ± 0.0	NB

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N	*Splachnum luteum*	Yellow Collar Moss				SH	1	46.2 ± 100.0	NB
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	58	41.9 ± 0.0	NB
P	*Symphyotrichum laurentianum*	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	63	52.9 ± 0.0	NB
P	*Fraxinus nigra*	Black Ash	Threatened			S3S4	404	6.2 ± 0.0	NB
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Endangered	S1	4	88.0 ± 0.0	NB
P	*Lechea maritima var. subcylindrica*	Beach Pinweed	Special Concern	Special Concern	Special Concern	S2	2509	46.7 ± 0.0	NB
P	*Symphyotrichum subulatum (Bathurst pop)*	Bathurst Aster - Bathurst pop.	Not At Risk		Endangered	S2	201	17.3 ± 0.0	NB
P	*Eriocaulon parkeri*	Parker's Pipewort	Not At Risk		Endangered	S3	156	2.7 ± 1.0	NB
P	*Pterospora andromedea*	Woodland Pinedrops			Endangered	S1	1	99.5 ± 0.0	NB
P	*Cryptotaenia canadensis*	Canada Honewort				S1	1	50.3 ± 1.0	NB
P	*Bidens discoidea*	Swamp Beggarticks				S1	2	7.5 ± 0.0	NB
P	*Bidens eatonii*	Eaton's Beggarticks				S1	9	6.9 ± 0.0	NB
P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S1	4	46.8 ± 0.0	NB
P	*Betula glandulosa*	Glandular Birch				S1	23	68.4 ± 0.0	NB
P	*Betula michauxii*	Michaux's Dwarf Birch				S1	3	50.4 ± 0.0	NB
P	*Andersonglossum boreale*	Northern Wild Comfrey				S1	3	58.8 ± 0.0	NB
P	*Cardamine parviflora*	Small-flowered Bittercress				S1	1	48.6 ± 0.0	NB
P	*Moehringia macrophylla*	Large-Leaved Sandwort				S1	1	95.6 ± 0.0	NB
P	*Stellaria crassifolia*	Fleshy Stitchwort				S1	1	31.3 ± 10.0	NB
P	*Stellaria longipes*	Long-stalked Starwort				S1	1	97.0 ± 1.0	NB
P	*Suaeda rolandii*	Roland's Sea-Blite				S1	11	58.7 ± 0.0	NB
P	*Vaccinium boreale*	Northern Blueberry				S1	17	68.4 ± 0.0	NB
P	*Vaccinium uliginosum*	Alpine Bilberry				S1	5	72.3 ± 0.0	NB
P	*Euphorbia polygonifolia*	Seaside Spurge				S1	5	54.7 ± 5.0	NB
P	*Hylodesmum glutinosum*	Large Tick-trefoil				S1	1	86.0 ± 0.0	NB
P	*Bartonia virginica*	Yellow Bartonia				S1	3	61.4 ± 0.0	NB
P	*Coptidium lapponicum*	Lapland Buttercup				S1	1	96.5 ± 0.0	NB
P	*Crataegus jonesiae*	Jones' Hawthorn				S1	1	73.8 ± 1.0	NB
P	*Potentilla canadensis*	Canada Cinquefoil				S1	1	91.2 ± 0.0	NB
P	*Rubus flagellaris*	Northern Dewberry				S1	2	44.9 ± 1.0	NB
P	*Salix serissima*	Autumn Willow				S1	4	91.3 ± 0.0	NB
P	*Saxifraga paniculata ssp. laestadii*	Laestadius' Saxifrage				S1	3	96.3 ± 0.0	NB
P	*Carex glareosa*	Gravel Sedge				S1	2	95.4 ± 1.0	NB
P	*Carex salina*	Saltmarsh Sedge				S1	7	62.5 ± 0.0	NB
P	*Carex viridula var. elatior*	Greenish Sedge				S1	11	91.3 ± 0.0	NB
P	*Carex saxatilis*	Russet Sedge				S1	6	89.9 ± 0.0	NB
P	*Carex bigelowii*	Bigelow's Sedge				S1	1	68.5 ± 0.0	NB
P	*Cyperus diandrus*	Low Flatsedge				S1	5	6.2 ± 0.0	NB
P	*Eleocharis flavescens var. olivacea*	Bright-green Spikerush				S1	8	5.9 ± 0.0	NB
P	*Scirpus pendulus*	Hanging Bulrush				S1	1	98.6 ± 0.0	PE
P	*Sisyrinchium angustifolium*	Narrow-leaved Blue-eyed-grass				S1	1	7.6 ± 0.0	NB
P	*Juncus greenei*	Greene's Rush				S1	2	1.1 ± 1.0	NB
P	*Juncus stygius ssp. americanus*	Moor Rush				S1	4	33.2 ± 0.0	NB
P	*Juncus subtilis*	Creeping Rush				S1	3	58.0 ± 0.0	NB
P	*Oreojuncus trifidus*	Highland Rush				S1	9	68.4 ± 0.0	NB
P	*Allium canadense*	Canada Garlic				S1	1	20.6 ± 1.0	NB
P	*Malaxis monophyllos var. brachypoda*	North American White Adder's-mouth				S1	3	91.3 ± 0.0	NB
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S1	1	96.9 ± 0.0	NB

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P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S1	1	51.4 ± 0.0	NB
P	*Bromus pubescens*	Hairy Wood Brome Grass				S1	2	5.3 ± 0.0	NB
P	*Calamagrostis stricta ssp. inexpansa*	Slim-stemmed Reed Grass				S1	2	49.4 ± 0.0	NB
P	*Dichanthelium xanthophysum*	Slender Panic Grass				S1	9	61.2 ± 0.0	NB
P	*Zizania aquatica var. brevis*	St. Lawrence Wild Rice				S1	26	1.3 ± 0.0	NB
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	5	6.5 ± 0.0	NB
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S1	1	75.0 ± 0.0	NB
P	*Huperzia selago*	Northern Firmoss				S1	3	68.5 ± 0.0	NB
P	*Cuscuta campestris*	Field Dodder				S1?	3	21.0 ± 0.0	NB
P	*Polygonum aviculare ssp. neglectum*	Narrow-leaved Knotweed				S1?	4	31.5 ± 1.0	NB
P	*Carex laxiflora*	Loose-Flowered Sedge				S1?	1	83.5 ± 2.0	NB
P	*Galium kamtschaticum*	Northern Wild Licorice				S1S2	7	87.6 ± 5.0	NB
P	*Eriophorum russeolum ssp. albidum*	Smooth-fruited Russet Cottongrass				S1S3	15	19.0 ± 0.0	NB
P	*Spiranthes cernua*	Nodding Ladies'-Tresses				S1S3	1	62.2 ± 0.0	NB
P	*Spiranthes arcisepala*	Appalachian Ladies'-tresses				S1S3	1	39.8 ± 0.0	NB
P	*Neottia bifolia*	Southern Twayblade			Endangered	S2	44	32.7 ± 0.0	NB
P	*Osmorhiza depauperata*	Blunt Sweet Cicely				S2	3	27.3 ± 1.0	NB
P	*Betula minor*	Dwarf White Birch				S2	16	68.4 ± 0.0	NB
P	*Atriplex glabriuscula var. franktonii*	Frankton's Saltbush				S2	2	47.8 ± 5.0	NB
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2	1	70.2 ± 1.0	NB
P	*Astragalus eucosmus*	Elegant Milk-vetch				S2	1	18.7 ± 0.0	NB
P	*Nuphar x rubrodisca*	Red-disk Yellow Pond-lily				S2	7	50.4 ± 0.0	NB
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S2	1	18.7 ± 0.0	NB
P	*Viola canadensis*	Canada Violet				S2	1	87.2 ± 0.0	NB
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	11	42.5 ± 0.0	NB
P	*Schoenoplectiella smithii var. leviseta*	Smith's Bulrush				S2	60	5.9 ± 0.0	NB
P	*Galearis rotundifolia*	Small Round-leaved Orchid				S2	11	70.7 ± 0.0	NB
P	*Calypso bulbosa var. americana*	Calypso				S2	6	25.4 ± 0.0	NB
P	*Coeloglossum viride*	Long-bracted Frog Orchid				S2	4	93.7 ± 5.0	NB
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	3	13.9 ± 5.0	NB
P	*Platanthera huronensis*	Fragrant Green Orchid				S2	1	57.1 ± 0.0	NB
P	*Puccinellia nutkaensis*	Alaska Alkaligrass				S2	5	46.0 ± 0.0	NB
P	*Diphasiastrum sitchense*	Sitka Ground-cedar				S2	2	68.3 ± 0.0	NB
P	*Botrychium minganense*	Mingan Moonwort				S2	1	58.7 ± 0.0	NB
P	*Coryphopteris simulata*	Bog Fern				S2	25	13.4 ± 1.0	NB
P	*Toxicodendron radicans var. radicans*	Eastern Poison Ivy				S2?	5	39.8 ± 0.0	NB
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	1	55.5 ± 0.0	NB
P	*Humulus lupulus var. lupuloides*	Common Hop				S2?	3	18.7 ± 0.0	NB
P	*Crataegus macrosperma*	Big-Fruit Hawthorn				S2?	1	61.1 ± 0.0	NB
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2S3	4	34.2 ± 0.0	NB
P	*Bidens heterodoxa*	Connecticut Beggar-Ticks				S2S3	39	53.0 ± 0.0	NB
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S2S3	30	6.2 ± 0.0	NB
P	*Gentiana linearis*	Narrow-Leaved Gentian				S2S3	22	42.1 ± 0.0	NB
P	*Aphyllon uniflorum*	One-flowered Broomrape				S2S3	3	31.4 ± 1.0	NB
P	*Persicaria careyi*	Carey's Smartweed				S2S3	4	97.6 ± 0.0	NB

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P	*Hepatica americana*	Round-lobed Hepatica				S2S3	3	25.4 ± 0.0	NB
P	*Ranunculus sceleratus*	Cursed Buttercup				S2S3	4	78.3 ± 0.0	NB
P	*Rosa acicularis ssp. sayi*	Prickly Rose				S2S3	133	48.1 ± 0.0	NB
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2S3	9	36.0 ± 1.0	NB
P	*Viola novae-angliae*	New England Violet				S2S3	2	85.3 ± 1.0	NB
P	*Carex crawei*	Crawe's Sedge				S2S3	1	67.8 ± 0.0	NB
P	*Carex rostrata*	Narrow-leaved Beaked Sedge				S2S3	6	61.0 ± 5.0	NB
P	*Carex vacillans*	Estuarine Sedge				S2S3	3	3.3 ± 1.0	NB
P	*Cyperus bipartitus*	Shining Flatsedge				S2S3	23	2.7 ± 0.0	NB
P	*Juncus ranarius*	Seaside Rush				S2S3	5	53.2 ± 0.0	NB
P	*Corallorhiza maculata var. occidentalis*	Spotted Coralroot				S2S3	7	34.5 ± 1.0	NB
P	*Piptatheropsis canadensis*	Canada Ricegrass				S2S3	8	60.9 ± 0.0	NB
P	*Poa glauca*	Glaucous Blue Grass				S2S3	4	75.0 ± 0.0	NB
P	*Piptatheropsis pungens*	Slender Ricegrass				S2S3	12	60.8 ± 1.0	NB
P	*Isoetes tuckermanii ssp. acadiensis*	Acadian Quillwort				S2S3	1	54.4 ± 0.0	NB
P	*Panax trifolius*	Dwarf Ginseng				S3	20	8.4 ± 1.0	NB
P	*Artemisia campestris ssp. caudata*	Tall Wormwood				S3	4	49.0 ± 0.0	NB
P	*Ionactis linariifolia*	Flax-leaved Aster				S3	127	7.9 ± 1.0	NB
P	*Symphyotrichum subulatum*	Annual Saltmarsh Aster				S3	172	17.6 ± 0.0	NB
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S3	40	6.8 ± 0.0	NB
P	*Turritis glabra*	Tower Mustard				S3	16	43.9 ± 0.0	NB
P	*Arabis pycnocarpa*	Cream-flowered Rockcress				S3	8	7.2 ± 0.0	NB
P	*Cardamine maxima*	Large Toothwort				S3	4	59.3 ± 0.0	NB
P	*Boechera stricta*	Drummond's Rockcress				S3	5	7.4 ± 1.0	NB
P	*Sagina nodosa*	Knotted Pearlwort				S3	3	71.9 ± 0.0	NB
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S3	1	80.0 ± 0.0	NB
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	8	5.1 ± 0.0	NB
P	*Stellaria longifolia*	Long-leaved Starwort				S3	4	50.9 ± 0.0	NB
P	*Oxybasis rubra*	Red Goosefoot				S3	55	35.0 ± 0.0	NB
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	385	35.6 ± 5.0	NB
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S3	1	55.3 ± 10.0	NB
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S3	2	50.7 ± 0.0	NB
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	12	24.2 ± 0.0	NB
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	9	6.3 ± 0.0	NB
P	*Myriophyllum humile*	Low Water Milfoil				S3	1	58.0 ± 1.0	NB
P	*Fraxinus pennsylvanica*	Red Ash				S3	3	87.0 ± 0.0	NB
P	*Rumex pallidus*	Seabeach Dock				S3	6	54.3 ± 0.0	NB
P	*Rumex occidentalis*	Western Dock				S3	3	59.2 ± 0.0	NB
P	*Podostemum ceratophyllum*	Horn-leaved Riverweed				S3	9	20.3 ± 1.0	NB
P	*Primula mistassinica*	Mistassini Primrose				S3	2	85.2 ± 0.0	NB
P	*Pyrola minor*	Lesser Pyrola				S3	19	40.9 ± 0.0	NB
P	*Clematis occidentalis*	Purple Clematis				S3	3	58.8 ± 1.0	NB
P	*Amelanchier canadensis*	Canada Serviceberry				S3	6	55.9 ± 0.0	NB
P	*Crataegus scabrida*	Rough Hawthorn				S3	3	61.2 ± 1.0	NB
P	*Rubus occidentalis*	Black Raspberry				S3	1	5.3 ± 0.0	NB
P	*Salix candida*	Sage Willow				S3	21	76.5 ± 0.0	NB
P	*Salix myricoides*	Bayberry Willow				S3	4	33.6 ± 5.0	NB
P	*Salix interior*	Sandbar Willow				S3	2	6.5 ± 0.0	NB
P	*Comandra umbellata*	Bastard's Toadflax				S3	72	35.5 ± 0.0	NB
P	*Agalinis purpurea var. parviflora*	Small-flowered Purple False Foxglove				S3	12	7.6 ± 0.0	NB
P	*Castilleja septentrionalis*	Northeastern Paintbrush				S3	2	90.1 ± 0.0	NB

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P	*Valeriana uliginosa*	Swamp Valerian				S3	8	91.3 ± 0.0	NB
P	*Viola adunca*	Hooked Violet				S3	11	50.8 ± 0.0	NB
P	*Sagittaria montevidensis ssp. spongiosa*	Spongy Arrowhead				S3	159	0.4 ± 0.0	NB
P	*Carex adusta*	Lesser Brown Sedge				S3	14	51.1 ± 0.0	NB
P	*Carex arcta*	Northern Clustered Sedge				S3	3	54.0 ± 0.0	NB
P	*Carex conoidea*	Field Sedge				S3	2	63.0 ± 10.0	NB
P	*Carex garberi*	Garber's Sedge				S3	24	20.9 ± 0.0	NB
P	*Carex granularis*	Limestone Meadow Sedge				S3	7	56.5 ± 5.0	NB
P	*Carex gynocrates*	Northern Bog Sedge				S3	9	91.3 ± 0.0	NB
P	*Carex hirtifolia*	Pubescent Sedge				S3	16	18.8 ± 0.0	NB
P	*Carex ormostachya*	Necklace Spike Sedge				S3	9	7.4 ± 1.0	NB
P	*Carex sprengelii*	Longbeak Sedge				S3	1	54.5 ± 0.0	NB
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S3	2	52.2 ± 0.0	NB
P	*Carex vaginata*	Sheathed Sedge				S3	6	91.3 ± 0.0	NB
P	*Cyperus esculentus var. leptostachyus*	Perennial Yellow Nutsedge				S3	4	21.8 ± 0.0	NB
P	*Eriophorum gracile*	Slender Cottongrass				S3	8	22.0 ± 0.0	NB
P	*Blysmopsis rufa*	Red Bulrush				S3	56	55.5 ± 0.0	NB
P	*Juncus brachycephalus*	Small-Head Rush				S3	2	91.3 ± 0.0	NB
P	*Juncus vaseyi*	Vasey Rush				S3	37	4.5 ± 10.0	NB
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	19	7.3 ± 0.0	NB
P	*Goodyera oblongifolia*	Menzies' Rattlesnake-plantain				S3	19	28.1 ± 1.0	NB
P	*Neottia auriculata*	Auricled Twayblade				S3	17	52.9 ± 0.0	NB
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	17	28.7 ± 100.0	NB
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3	34	16.7 ± 0.0	NB
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S3	8	20.4 ± 1.0	NB
P	*Agrostis mertensii*	Northern Bent Grass				S3	68	48.3 ± 0.0	NB
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	7	5.8 ± 0.0	NB
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S3	5	21.5 ± 0.0	NB
P	*Zizania aquatica var. aquatica*	Eastern Wild Rice				S3	7	1.7 ± 1.0	NB
P	*Adiantum pedatum*	Northern Maidenhair Fern				S3	2	34.2 ± 0.0	NB
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3	2	95.1 ± 0.0	NB
P	*Anchistea virginica*	Virginia chain fern				S3	31	43.2 ± 0.0	NB
P	*Dryopteris goldieana*	Goldie's Woodfern				S3	4	86.3 ± 0.0	NB
P	*Woodsia alpina*	Alpine Cliff Fern				S3	1	56.2 ± 0.0	NB
P	*Woodsia glabella*	Smooth Cliff Fern				S3	6	95.8 ± 0.0	NB
P	*Isoetes tuckermanii ssp. tuckermanii*	Tuckerman's Quillwort				S3	5	6.9 ± 0.0	NB
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3	17	47.6 ± 1.0	NB
P	*Huperzia appressa*	Mountain Firmoss				S3	15	7.4 ± 1.0	NB
P	*Sceptridium dissectum*	Dissected Moonwort				S3	3	99.7 ± 2.0	NB
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S3	5	41.1 ± 0.0	NB
P	*Botrychium simplex*	Least Moonwort				S3	8	51.5 ± 0.0	NB
P	*Selaginella selaginoides*	Low Spikemoss				S3	14	91.3 ± 0.0	NB
P	*Crataegus submollis*	Quebec Hawthorn				S3?	1	64.2 ± 1.0	NB
P	*Platanthera hookeri*	Hooker's Orchid				S3?	68	17.7 ± 0.0	NB
P	*Arnica lanceolata*	Lance-leaved Arnica				S3S4	50	24.5 ± 0.0	NB
P	*Bidens hyperborea*	Estuary Beggarticks				S3S4	189	2.4 ± 0.0	NB
P	*Symphyotrichum boreale*	Boreal Aster				S3S4	5	62.3 ± 5.0	NB
P	*Betula pumila*	Bog Birch				S3S4	181	47.5 ± 0.0	NB
P	*Mertensia maritima*	Sea Lungwort				S3S4	1	63.2 ± 0.0	NB
P	*Subularia aquatica ssp. americana*	American Water Awlwort				S3S4	1	71.0 ± 1.0	NB
P	*Callitriche hermaphroditica*	Northern Water-starwort				S3S4	4	41.2 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Viburnum edule*	Squashberry				S3S4	42	34.1 ± 0.0	NB
P	*Crassula aquatica*	Water Pygmyweed				S3S4	84	2.7 ± 1.0	NB
P	*Elatine americana*	American Waterwort				S3S4	31	5.8 ± 0.0	NB
P	*Hedysarum americanum*	Alpine Hedysarum				S3S4	5	52.9 ± 0.0	NB
P	*Fagus grandifolia*	American Beech				S3S4	83	6.8 ± 0.0	NB
P	*Geranium robertianum*	Herb Robert				S3S4	49	95.4 ± 0.0	PE
P	*Stachys pilosa*	Hairy Hedge-Nettle				S3S4	20	5.9 ± 0.0	NB
P	*Teucrium canadense*	Canada Germander				S3S4	91	2.7 ± 5.0	NB
P	*Utricularia gibba*	Humped Bladderwort				S3S4	1	51.0 ± 1.0	NB
P	*Fraxinus americana*	White Ash				S3S4	68	8.5 ± 0.0	NB
P	*Epilobium strictum*	Downy Willowherb				S3S4	3	68.1 ± 0.0	NB
P	*Fallopia scandens*	Climbing False Buckwheat				S3S4	55	7.8 ± 0.0	NB
P	*Rumex persicarioides*	Peach-leaved Dock				S3S4	69	38.8 ± 0.0	NB
P	*Littorella americana*	American Shoreweed				S3S4	2	90.0 ± 1.0	NB
P	*Samolus parviflorus*	Seaside Brookweed				S3S4	196	2.4 ± 0.0	NB
P	*Thalictrum confine*	Northern Meadow-rue				S3S4	2	42.6 ± 0.0	NB
P	*Drymocallis arguta*	Tall Wood Beauty				S3S4	6	34.4 ± 50.0	NB
P	*Rosa palustris*	Swamp Rose				S3S4	7	0.9 ± 1.0	NB
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S3S4	8	36.7 ± 0.0	NB
P	*Sanguisorba canadensis*	Canada Burnet				S3S4	46	73.2 ± 5.0	NB
P	*Galium boreale*	Northern Bedstraw				S3S4	2	64.9 ± 1.0	NB
P	*Galium labradoricum*	Labrador Bedstraw				S3S4	17	47.1 ± 0.0	NB
P	*Salix pedicellaris*	Bog Willow				S3S4	47	15.4 ± 0.0	NB
P	*Geocaulon lividum*	Northern Comandra				S3S4	84	11.9 ± 10.0	NB
P	*Parnassia glauca*	Fen Grass-of-Parnassus				S3S4	18	19.4 ± 0.0	NB
P	*Limosella australis*	Southern Mudwort				S3S4	182	1.1 ± 0.0	NB
P	*Ulmus americana*	White Elm				S3S4	63	4.6 ± 1.0	NB
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3S4	7	16.4 ± 0.0	NB
P	*Juniperus horizontalis*	Creeping Juniper				S3S4	6	71.1 ± 1.0	NB
P	*Carex capillaris*	Hairlike Sedge				S3S4	4	50.8 ± 0.0	NB
P	*Carex eburnea*	Bristle-leaved Sedge				S3S4	12	76.2 ± 3.0	NB
P	*Carex haydenii*	Hayden's Sedge				S3S4	10	6.6 ± 0.0	NB
P	*Carex lupulina*	Hop Sedge				S3S4	2	67.5 ± 1.0	NB
P	*Carex tenera*	Tender Sedge				S3S4	4	20.5 ± 1.0	NB
P	*Carex wiegandii*	Wiegand's Sedge				S3S4	128	14.5 ± 0.0	NB
P	*Carex recta*	Estuary Sedge				S3S4	17	35.2 ± 0.0	NB
P	*Carex atratiformis*	Scabrous Black Sedge				S3S4	8	44.3 ± 0.0	NB
P	*Cladium mariscoides*	Smooth Twigrush				S3S4	7	53.5 ± 0.0	NB
P	*Cyperus dentatus*	Toothed Flatsedge				S3S4	2	33.7 ± 10.0	NB
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3S4	89	6.2 ± 0.0	NB
P	*Trichophorum clintonii*	Clinton's Clubrush				S3S4	100	37.6 ± 0.0	NB
P	*Triglochin gaspensis*	Gasp├⌐ Arrowgrass				S3S4	96	18.5 ± 0.0	NB
P	*Lilium canadense*	Canada Lily				S3S4	70	6.1 ± 0.0	NB
P	*Triantha glutinosa*	Sticky False-Asphodel				S3S4	46	24.2 ± 0.0	NB
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	12	42.9 ± 0.0	NB
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	3	50.4 ± 0.0	NB
P	*Neottia cordata*	Heart-leaved Twayblade				S3S4	25	0.6 ± 100.0	NB
P	*Platanthera obtusata*	Blunt-leaved Orchid				S3S4	27	4.5 ± 2.0	NB
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3S4	46	21.9 ± 0.0	NB
P	*Calamagrostis stricta*	Slim-stemmed Reed Grass				S3S4	25	35.2 ± 0.0	NB
P	*Calamagrostis stricta ssp. stricta*	Slim-stemmed Reed Grass				S3S4	6	71.2 ± 0.0	NB
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S3S4	1	95.1 ± 1.0	NB
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3S4	1	87.5 ± 0.0	NB
P	*Potamogeton richardsonii*	Richardson's Pondweed				S3S4	5	45.5 ± 0.0	NB
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3S4	307	11.9 ± 5.0	NB
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3S4	15	7.1 ± 0.0	NB
P	*Asplenium viride*	Green Spleenwort				S3S4	23	57.1 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Dryopteris fragrans*	Fragrant Wood Fern				S3S4	62	7.1 ± 0.0	NB
P	*Polypodium appalachianum*	Appalachian Polypody				S3S4	1	86.5 ± 0.0	NB
P	*Polygonum oxyspermum ssp. raii*	Ray's Knotweed				SH	3	73.6 ± 1.0	NB
P	*Montia fontana*	Water Blinks				SH	1	19.6 ± 1.0	NB
P	*Brachyelytrum erectum*	Bearded Shorthusk				SH	1	99.7 ± 2.0	NB
P	*Agalinis maritima*	Saltmarsh Agalinis				SX	2	58.8 ± 50.0	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.

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

Atlantic Canada Conservation Data Centre
Data Dictionary

Revised: July 21, 2021

I. Biodiversity Database

The following fields of data may be included (and may or may not be populated) in occurrence records.
Text fields are 255 char max. (and may truncate text).

TAXONOMY		
Field	***Type***	***Definition***
MCODE	TXT	8 character 'Museum Code' (1 to 4 = genus, 5 to 8 = sp+ssp)
ELCODE	TXT	Unique Identifier of taxon
SCINAME	TXT	Global Scientific Name of taxon
COMNAME	TXT	English Common Name of taxon
NOMCOMMUN	TXT	French Common Name
LOCATION		
Field	***Type***	***Definition***
SURVEYSITE	TXT	General locality of occurrence
DIRECTIONS	TXT	Specific locality: e.g. bearings and distance from enduring landmark
SUBNAT	TXT	Province/State: 2 character ISO code
COCODE	TXT	County Code (2 chars for province + 4 chars for county name)
MAPCODE	TXT	Map number: NTS identifier in Canada
UTME20	INT	Easting in UTM Zone 20
UTMN20	INT	Northing in UTM Zone 20
LONDEC	DEC	Decimal Longitude
LATDEC	DEC	Decimal Latitude
LOCUNCM	INT	Horizontal precision in metres
PREC	DEC	Precision in metres by power of 10 (e.g. 3 = 10 to the 3rd = 1000 m = 1 km):

prec	***common speech***	***example***	***unit size***	***literal range***
6.0	within province	province	1000.0 km	562.3 - 1778.3 km
5.7	in part of province	'NW NB'	500.0 km	281.2 - 889.1 km
5.0	within in county	county	100.0 km	56.2 - 177.8 km
4.7	within 50s of kilometres		50.0 km	28.1 - 88.9 km
4.0	within 10s of kilometres	BBA grid	10.0 km	5.6 - 17.8 km
3.7	within 5s of kilometres		5.0 km	2.8 - 8.9 km
3.0	within kilometres	topo grid	1.0 km	0.6 - 1.8 km
2.7	within 500s of metres		500.0 m	281.2 - 889.1 m
2.0	within 100s of metres	ball field	100.0 m	56.2 - 177.8 m
1.7	within 50s of metres		50.0 m	28.1 - 88.9 m
1.0	within 10s of metres	boxcar	10.0 m	5.6 - 17.8 m
0.7	within 5s of metres		5.0 m	2.8 - 8.9 m
0.0	***NOT USED***	pace	1.0 m	0.6 - 1.8 m
-1.0	within 10s of centimetres	fingernail	0.1 m	0.1 - 0.2 m

RARITY / STATUS		
Field	***Type***	***Definition***
NRANK	TXT	National Rarity Rank of taxon (in Canada)
NPROT	TXT	National Protection Status of taxon (i.e., COSEWIC in Canada)
NPROTSAR	TXT	National Protection Status of taxon (i.e., SARA in Canada):

code	***Rank and short definition***
X	Extinct in Canada and elsewhere
XT	Extirpated in Canada but surviving elsewhere
E	Endangered in Canada
T	Threatened in Canada
V	Vulnerable in Canada
SC	Special Concern in Canada
DD	Data Deficient: data inadequate for assessment
NAR	Not At Risk in Canada

SRANK — TXT — Subnational (Provincial) Rarity Rank of taxon:

code	***Rank and short definition***
SX	Extinct or extirpated in province
SH	Historically occurring but currently undetected in province
S1	Extremely rare in province
S2	Rare in province

		S3	Uncommon in province
		S4	Widespread, common and apparently secure in province
		S5	Widespread, abundant and demonstrably secure in province
		SE	Exotic in province
		SA	Accidental, infrequent and outside of range within province
		SNA	Ranking not applicable in province
		SNR	Not yet assessed in province
IUCN	TXT	International Union of Conservation Naturalists rarity rank:	
		code	***Rank and short definition***
		EX	Extinct: no individuals remaining
		EW	Extinct in the Wild: only captive or naturalised survivors
		CR	Critically Endangered: extreme risk of extinction in wild
		EN	Endangered: high risk of extinction in wild
		VU	Vulnerable: high risk of endangerment in wild
		NT	Near Threatened: likely to become endangered soon
		LC	Least Concern: lowest risk, widespread and abundant
		DD	Data Deficient: data inadequate for assessment
		NE	Not Evaluated, not yet assessed against criteria
OBSERVATION			
Field	***Type***	***Definition***	
OBSERVER	TXT	Individual(s) that observed the taxon	
OBDATE	TXT	Date of observation (YYYY MM DD)	
OBDATA	TXT	Concatenation of fields below, relating to observation	
OBEVID	TXT	Type of evidence (e.g., specimen, photo)	
OBCOUNT	TXT	Number of individuals at location	
OBABUN	TXT	Relative rarity of taxon at location, e.g. 'common', 'scattered'	
OBSIZE	TXT	Size of individual	
SIZE	TXT	Size of occurrence 'patch' (in m^2, ha or acres)	
OBDESC	TXT	Details of specimen appearance or conditions	
OBPHEN	TXT	Lifestage of individual (e.g., bud, flowering)	
OBSEX	TXT	Male/female if relevant	
OBACTIV	TXT	Activity of individual when observed (e.g., nesting, crossing road)	
OBASSP	TXT	Other taxa associated with the observation	
NOTETAX	TXT	Identifier's note on taxonomic issues	
GENDESC	TXT	Concatenation of fields below, relating to site	
HABITAT	TXT	Habitat characterization of location	
ECODIST	NUM	National Ecological Framework EcoDistrict identifier	
WSCODE	TXT	Quaternary Watershed identifier	
GENCOM	TXT	General Comments: concatenation of Notes (NOTE1, NOTE2, NOTE3)	
COLLECTION			
Field	***Type***	***Definition***	
CITATION	TXT	Primary source of data	
DATA MANAGEMENT			
Field	***Type***	***Definition***	
IDNUM	TXT	AC CDC record Unique ID	
EDITION	TXT	Last editor's initials and date (YYYY MM DD)	

II. Managed and Biologically Significant Areas (MSA) Database

The following fields of data may be included (and may or may not be populated) for Managed and Biologically Significant Areas.

IDENTITY AND DESCRIPTION		
Field	***Type***	***Definition***
msaGIS	INT	Unique GIS feature identifier
msaCode	TXT	Unique identifier for the MSA feature
msaClass	TXT	Whether the MSA feature is a Managed Area (MA) or biologically Significant Area (SA)
msaName	TXT	MSA feature name
msaNameFr	TXT	MSA feature name (French)
description	TXT	Description of the MSA feature
notes	TXT	Additional notes about the MSA feature
JURISDICTION / OWNERSHIP		
Field	***Type***	***Definition***
localJuris	TXT	Mandated agency with jurisdiction over property
owner	TXT	Property owner
ownerCom	TXT	Details of multiparty arrangements

ownerDate	TXT	Date of property possession	
CLASSIFICATION			
Field	***Type***	***Definition***	
protStat	TXT	Activities permitted or restricted (when known)	
legalAct	TXT	Title of enabling legislation	
legalDate	TXT	Year of enabling legislation	
estabDate	TXT	Year of site designation	
aichit11	TXT	Whether the site counts towards the Aichi Target 11 and Canada Target 1 biodiversity targets (yes or no)	
oecm	TXT	Other effective area-based conservation means (yes or no)	
iucnCat	TXT	IUCN protected area category. For complete category descriptions, visit https://www.iucn.org/theme/protected-areas/about/protected-area-categories. Features categorized as "YES" are sites which meet the standard definition of a protected area, but the category of protection has not yet been determined and features categorized as "N/A" are other area-based conservation measures or sites that do not meet the protected area definition (2018 Canadian Protected and Conserved Areas Database (CPCAD) User Manual).	
msaType	TXT	MSA feature type:	
		group	***Designation***
		Conservation	Conservation Area
			Conservation Easement
			Fee-Simple Ownership by Environmental Non-Governmental Conservation Organization
			Land Trust Property
			Natural Area
			Nature Preserve
			Nature Reserve
			Nature Reserve and Conservation Easement
			Nature Trail
			Other Effective Area-Based Conservation Measure
			Privately Owned Conservation Area
			Privately Owned Natural Area
			Protected Area
			Protected Beach
			Protected Natural Area
			Provincially Owned Natural Area
			To be determined
		Heritage	Heritage River
			Museum
			National Historic Event
			National Historic Site
			Provincial Heritage Site
			Provincial Historic Site
			Provincial Historic/Heritage Park
			UNESCO World Heritage Site
		Parks	Municipal Park
			National Park
			Nature Park
			Park
			Privately Owned Park
			Provincial Park
			Provincial Park Beach
		Wilderness	Ecological Reserve
			Environmentally Sensitive Area
			Significant Ecological Area
			Significant Ecological Area/International Biological Program
			Wilderness Area
			Wilderness Reserve
		Wildlife	Eastern Habitat Joint Venture
			Important Bird Area (IBA)
			Marine Protected Area
			Migratory Bird Sanctuary
			National Wildlife Area
			Privately Owned Wildlife Management Area
			Provincial Wildlife Management Area
			Wildlife Management Area
			Wildlife Park
			Wildlife Refuge
			Wildlife Reserve
			Wildlife Sanctuary
		Other	Education Area
			Experimental Area
			Federal Corrections Facility
			Fossil Site
			International Biological Program

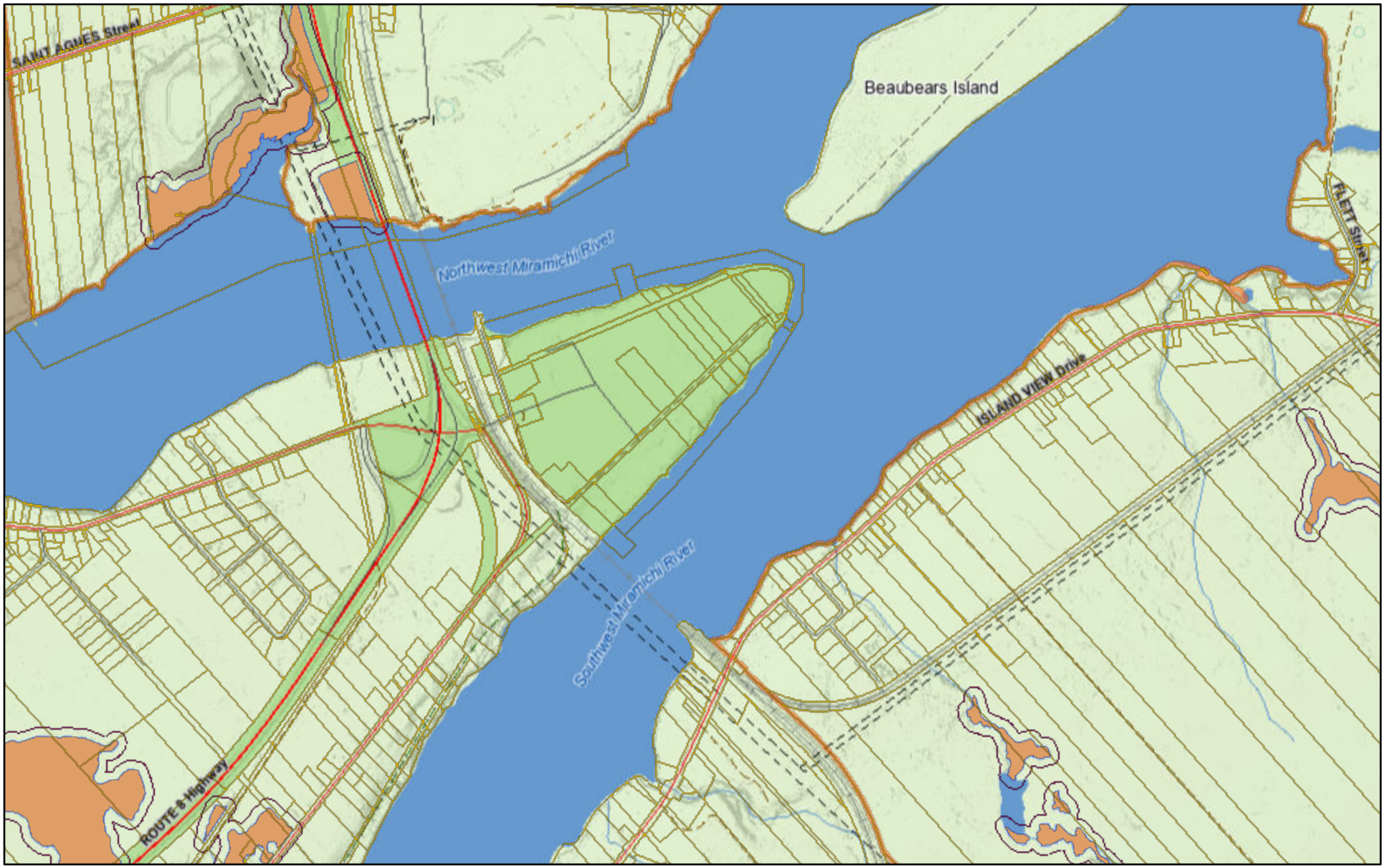
			Memorial Site
			Other Managed Area
			RAMSAR Wetland Site
			Special Management Area
			Water Supply Area
			Watershed
LOCATION AND SPATIAL ATTRIBUTES			
Field	***Type***	***Definition***	
subnat	TXT	Two-letter jurisdiction code (NB, NS, PE, NF, LB)	
location	TXT	Directions to the MSA feature	
biome	TXT	Whether an MSA feature falls within the terrestrial (T) or marine (M) environment	
mapCode	TXT	The National Topographic System (NTS) map square the centre of the MSA feature falls within	
coCode	TXT	Provincial county code (2 chars for province + 4 chars for county name)	
latDec	DEC	Latitude of the centre of the MSA feature	
lonDec	DEC	Longitude of the centre of the MSA feature	
utmE20	INT	Easting of the centre of the MSA feature (NAD83 UTM Zone 20N)	
utmN20	INT	Northing of the centre of the MSA feature (NAD83 UTM Zone 20N)	
extentN	DEC	Northern extent of the MSA feature	
extentS	DEC	Southern extent of the MSA feature	
extentE	DEC	Eastern extent of the MSA feature	
extentW	DEC	Western extent of the MSA feature	
areaHa	DEC	Area of the polygon (ha)	
SOURCE ATTRIBUTES			
Field	***Type***	***Definition***	
sourceId	TXT	Unique ID of the MSA feature in the source dataset	
jurisId	TXT	Unique ID of the MSA feature in the original dataset	
srcFeatType	TXT	Whether the feature was a point (PT) or polygon feature (PY) in the source dataset. True boundaries of point MSA features are not known. Points have been buffered by 15m to be included in this MSA database	
url	TXT	Associated website holding additional information about the source feature or database	
bestSource	TXT	Unique identifier for the source database	
citation	TXT	Primary source of data	
edition	TXT	Initials and date (YYYY MM DD) pertaining to the last edit to the MSA feature	

APPENDIX G

Wetland Map

hive ENGINEERING

GeoNB Wetland Mapping



10/14/2022, 12:46:51 PM

parcels

2

Buffer 30m

Year of Photography

Large Scale / Grande échelle

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

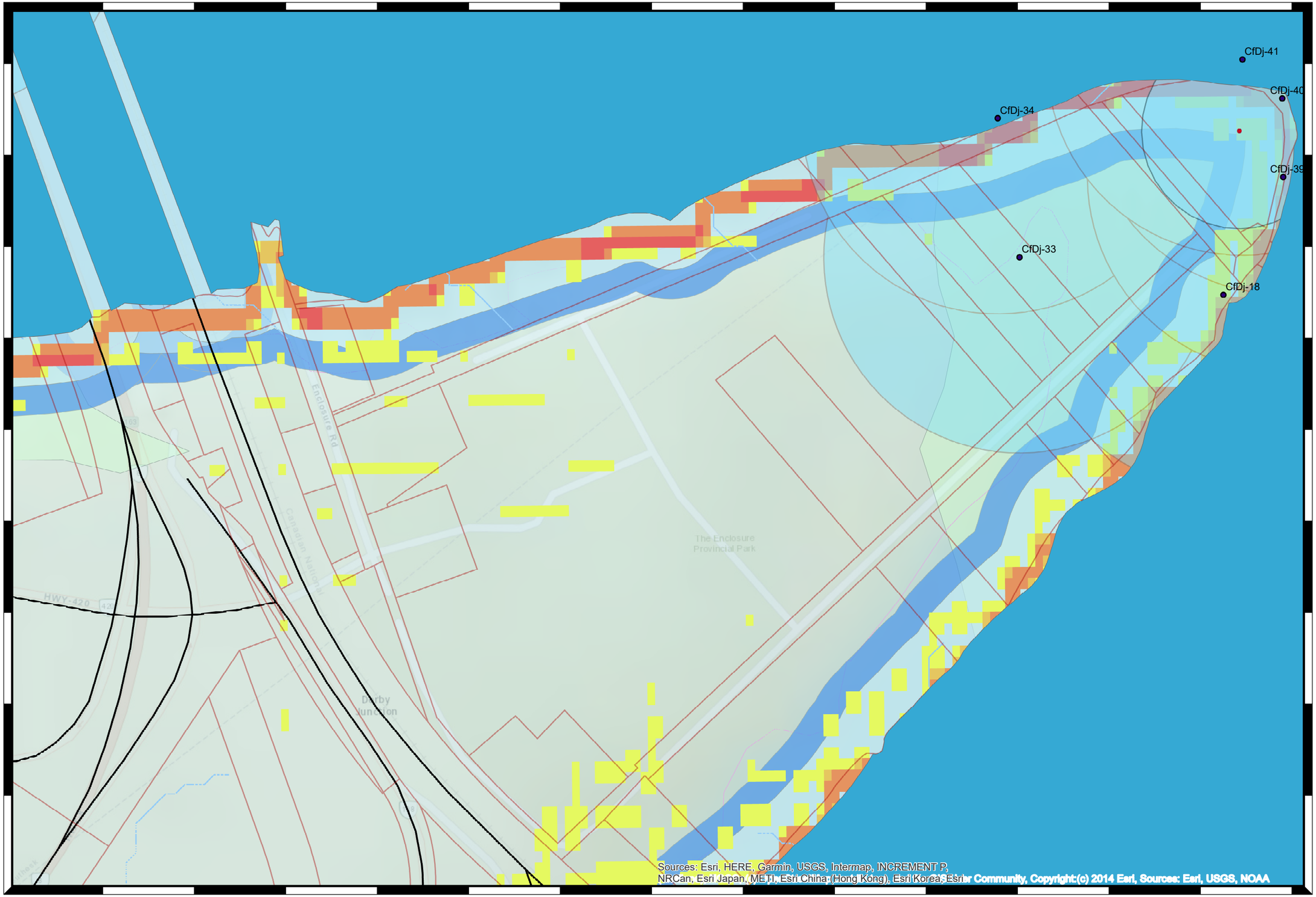
Department of Environment & Local Government/Ministère de l'Environnement et Gouvernements locaux, Service New Brunswick, GeoNB

This map is a graphical representation which approximates the size, configuration and location of features. This map is not intended to be used for legal descriptions or to calculate exact dimensions or area.

APPENDIX H

Archaeology Predictive Map

hive ENGINEERING



N
W E
S

Legend

- HistoricFeb2022
- PreContactSept2022
- UndefinedSites
- SuspectedShipwrecks
- Shipwrecks
- SuspectedPlaneCrash
- RecordedPlaneCrash
- ProtoHistoricSite
- RecentFinds
- Cemeteries
- New Brunswick Portage Routes

waterbody
- <all other values>

WATER_CODE
- AQ
- LK
- ON
- PN
- RV
- SL
- WA
- PIDs

Roads
- <all other values>

TRANSPORTA
- 1
- 3
- 2
- PreContactSept2022b_Buffer
- HistoricFeb2022_Buffer
- PortageBuffer4
- PortageBuffer
- wetland

watercourse
- <all other values>

WATERCOURS
- 1
- 2
- Predicted Flow Channel

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
- Medium Potential1

MarinePaleoShoreline

VALUE
- 0 - 28
- 28.00000001 - 38
- 38.00000001 - 48
- 48.00000001 - 810
- Alluvial Sediments

0 0.03 0.06 0.12 0.18 0.24

Kilometers

New Nouveau Brunswick

Time: 7:59:33 PM
Date: 9/28/2022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