

# Environmental Impact Assessment Registration Document

Moncton Industrial Park (MIP) West Phase 2 Development  
(PID Nos. 01023076 and 70518634) - Moncton Industrial  
Park, Moncton NB

Moncton Industrial Development Ltd.

EIA Registration Document - Version 0A

December 6, 2022  
2111247



**ENGLOBE**

# MIP West Phase 2 Development

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## Moncton Industrial Park West, Phase 2 Development

Moncton Industrial Development Ltd.

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# Table of Contents

Registration Form.....	1
<b>1 The Proponent.....</b>	<b>1</b>
<b>2 Project Description.....</b>	<b>2</b>
2.1 Project Name.....	2
2.2 Project Overview.....	2
2.3 Purpose / Rationale / Need for the Undertaking.....	3
2.4 Project Location.....	3
2.5 Siting Considerations.....	4
2.5.1 General Site Considerations.....	4
2.5.2 Wetlands and Watercourses.....	4
2.5.3 Species at Risk and Wildlife.....	5
2.5.4 Other Location(s) Considered.....	5
2.5.5 Zoning.....	5
2.6 Physical Components and Dimensions of the Project.....	5
2.6.1 Land Requirements.....	5
2.6.2 Physical Components and Infrastructure.....	6
2.6.3 Additional Features.....	6
2.7 Construction Details.....	7
2.8 Storm Management Details.....	10
2.9 Operation and Maintenance Details.....	10
2.10 Future Modification, Extensions, or Abandonment.....	11
2.11 Project-Related Documents.....	11
<b>3 Description of the Existing Environment.....</b>	<b>12</b>
3.1 Physical and Natural Features.....	12
3.1.1 Site Topography and General Surface Drainage Regime.....	12
3.1.2 Significant Natural and Managed Areas.....	13
3.1.3 Protected Watersheds and Wellfields.....	14
3.1.4 Species at Risk (SAR).....	14
3.2 Cultural Features.....	14
3.3 Existing and Historic Land Uses.....	14
<b>4 Summary of Environmental Impacts.....</b>	<b>16</b>
4.1 Air Quality.....	16
4.2 Biology and Ecology (Aquatic & Terrestrial).....	17
4.3 Physical.....	19
4.4 Community Structure.....	21

5	<b>Summary of Proposed Mitigation</b> .....	21
5.1	Other Considerations .....	22
6	<b>Public and First Nations Involvement Process</b> .....	22
7	<b>Approval of Undertaking</b> .....	22
8	<b>Funding</b> .....	23
9	<b>Signature</b> .....	24

## APPENDICES

- Appendix A Property Map, Parcel Information and Aerial Photographs
- Appendix B Figures: Figure 1 - Overall Location Plan Figure 2 - Site Area and Surrounding Land Use Figure 3 - Development Area and Delineated Wetlands Figure 4 - Proposed Infrastructure
- Appendix C Wetland Delineation Report - Hive Engineering
- Appendix D Atlantic Canada Conservation Data Centre (ACDC) Report - April 2022
- Appendix E Fauna, Flora and Habitat Description

# Registration Form

PURSUANT TO SECTION 5 (2) OF  
THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATION 87-83  
CLEAN ENVIRONMENT ACT

## 1 The Proponent

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### **Property Ownership**

This project is located on PID No. 01023076 and PID No. 70518634, in Moncton, NB. The land is owned by Moncton Industrial Development Limited. Property Ownership information is attached in Appendix A.

# 2 Project Description

## 2.1 Project Name

Moncton Industrial Park West, Phase 2 Development - Moncton Industrial Development Ltd.

## 2.2 Project Overview

The Proponent (Moncton Industrial Development Ltd.) proposes to develop an Industrial Park over a total footprint of approximately 105 hectares (259 acres) on two vacant land parcels (PID No. 01023076 and PID No. 70518634) within an industrial area of Moncton, known as the Moncton Industrial Park. The site has been undeveloped since at least 1945, except for one gravel service road that appears to have been cleared and constructed between PID Nos. 01023076 and 70518634 in 1976.

The proposed park will provide approximately 54 new industrial lots ranging in size from 0.65 ha to 7.3 ha, plus two larger reserved lots that cover areas of 20 ha and 17 ha, respectively. The development will include construction of a road extending from Delong Drive to Horsman Road, three additional interconnecting roads within the park, a bridge over the CN Railway tracks to the north of the park, and water, storm and sanitary servicing.

Water service would come from an existing 300 mm diameter PVC water main with the connection point located south of the intersection between Horsman Road and Desbrisay Road and from an existing 500 mm diameter water main on English Drive through a future easement at the south end of PID 70424692.

The new sanitary collection piping will be connected to the existing network through a future easement between English Drive and the proposed development at the south end of PID 70424692 on English Drive. Downstream sanitary sewer piping will require upsizing from English Drive to west of Wheeler Boulevard and through the Findlay Boulevard Traffic Circle, the infrastructure for the two required sanitary sewer upgrades is owned by the City of Moncton. Even if this development was not to go ahead, the City of Moncton would be required to upgrade this infrastructure in the future in order to continue and improve the sanitary sewer collection services it provides to tenants and residents of the City of Moncton.

While these properties are owned by Moncton Industrial Development, the Proponent is expecting to build the roads and install the supporting water, sanitary and storm infrastructure but sell the proposed lots “as-is” for future development by prospective buyers.

This EIA Registration Document is being submitted in accordance with Schedule A of the NBDELG Guide to Environmental Assessment as the proposed development site is partially situated on wetlands covering areas greater than 2 ha in size. Mapped wetlands are present throughout the site, covering approximately 50 hectares, with approximately 9.71 hectares of wetlands located within the proposed development boundary.

Several Figures have been included in Appendix B of this EIA Registration Document to outline the project, and they are as follows:

- Figure 1 shows the site with respect to its location in the Province of NB
- Figure 2 is an aerial overview with the parcel boundaries and neighbouring community
- Figure 3 is a detailed development plan showing the delineated wetlands at the site.
- Figure 4 is a detailed development plan showing the proposed infrastructure at the site, including the proposed water main, proposed sanitary sewer and proposed stormwater sewer.



The proposed project is currently in the pre-design phase, and as such there are several studies underway that will be provided under separate cover once complete. These studies include; Wetland Functional Assessments and Species at Risk Survey (field work has been completed, report underway), Traffic Impact Analysis, Services Study, and Preliminary Site Servicing plans.

This development would provide opportunities for new and growing businesses and employment opportunities for the community. In summary, the project will generally include the following:

- 56 industrial lots;
- Construction of three streets and one bridge;
- Extension of the watermain from Horsman Rd. and English Rd. into the park; and water services to each lot;
- New sanitary sewer servicing throughout the development and connection to existing sanitary sewer network; and,
- Storm water collection and management infrastructure throughout the park.

## 2.3 Purpose / Rationale / Need for the Undertaking

Moncton Industrial Development Ltd. (MID) has been fostering industrial and commercial growth in the City for over 60 years. Commercial and industrial land availability is reducing, and existing landowners are outgrowing their current lots. Furthermore, MID is seeking to attract new businesses in order to continue economic growth for the City of Moncton. As such, MID has identified undeveloped land directly west of the existing Moncton Industrial Park West and south of the Moncton Industrial Park development on Horsman Rd. as an opportunity to attract businesses that are outgrowing their existing space and new businesses as possible tenants to this expansion of the Moncton Industrial Park West.

Wetlands and watercourses are present at the site and were field delineated by Hive Engineering in 2020. The proposed development was designed to minimize the impact on existing wetlands and unmapped tributary watercourses, and avoid the larger wetlands along the northeast (9.91 ha) and southwest boundaries (29.2 ha) of the site, however it is anticipated that up to 9.71 hectares of wetland environment located centrally at the site could be permanently lost.

Alternative site layouts were originally explored on the subject parcels, however, these original layouts extended further into the wetlands to the northeast and southwest, therefore these layouts were revised because of their increased impacts on the wetlands and unmapped tributary watercourses.

A “do-nothing” approach would hinder the industrial and commercial growth of Moncton, thus limiting the economic benefit of development for the City of Moncton.

## 2.4 Project Location

The proposed project is located within an industrial area of Moncton, Westmorland County, New Brunswick and is zoned as Industrial Park, as shown on Figure 1, Appendix B. Specifically, the proposed development is located on PID Nos. 01023076 and 70518634.

The land under consideration is located within the City limits but outside of the City of Moncton’s Serviceable Boundary as defined in the City of Moncton’s General Municipal Plan.

The site is bound by MIP West to the north and east, CN Gordon Yard to the south and partially undeveloped land owned by Greater Moncton Wastewater Commission to the west.

The site and surrounding land use is shown on the attached Figure 2, and a detailed site plan showing the proposed development is presented on Figure 3 (Appendix B). The coordinates for the site are:

Latitude: 46.085144°, Longitude: -64.862905°  
Easting: 355973.26 m E, Northing: 5105194.60 m N

## 2.5 Siting Considerations

### 2.5.1 General Site Considerations

The site is primarily tree-covered and includes wetlands and watercourses. Construction methods that minimize impacts to wetlands, watercourse and surrounding environment will be implemented during the project and are outlined in section 2.7, below. Some general considerations are summarized as follows:

- All tree clearing activities are to take place outside of the migratory/nesting bird season as per the *Migratory Birds Convention Act* (MBCA).
- If any archaeologically significant artifacts are uncovered during development activities, all work will stop, and an archaeologist will be brought on site.
- The Land Gazette status of PID Nos. 01023076 and 70518634 was reviewed to verify the potential existence of land related notices or restrictions (such as petroleum storage, dump sites, etc.) that may have an impact on land use. No records were shown for these parcels.

The proposed work will take place in stages.

- Winter 2023 (prior to end of March 2023): Clearing activities associated with the proposed roads at the site.
- Construction Season 2023: Installation of the water main, sanitary and storm water infrastructure along the main access road at the site.
- 2024-2025: Installation of the water main, sanitary and storm water infrastructure along all secondary roads at the site.
- 2024-2025: Construction of remainder of main access road and main access road bridge or structure over CN train tracks to the north of the proposed development.

Once the roads, water main, sanitary main, and storm water infrastructure have been constructed at the site, each lot will be sold undeveloped to future developers. MID will obtain WAWA permits in order to develop the roads and infrastructure at the site, and will cover the wetland compensation for the entire site upfront (approximately 9.71 hectares of wetlands to be compensated). Individual WAWA permits will be obtained by developers and these developers will be under contract with MID to abide by all stipulations of the EIA determination and WAWA permits.

### 2.5.2 Wetlands and Watercourses

The proposed MIP West Phase 2 development is located within an area with mapped wetlands. Between October 9-13, 2020, Derrick Mitchel, R.P.F. assessed the site to confirm the boundaries of the mapped wetlands, and to identify and delineate any unmapped wetlands at the site. The wetland delineation was conducted in accordance with the Corps of Engineers Wetland Delineation Manual (2006) and Regional Supplement (2012). Wetland boundaries were delineated through paired point wetland analysis and will be discussed further in Section 3.0. Approximately 48.82 hectares of wetland were identified during the assessment, and the field delineated boundaries are presented on Figure 3 in Appendix B.

The park was designed to avoid approximately 40 hectares of wetland, however it is expected that up to 9.71 hectares of wetland will be permanently lost within the project area by the time the park is fully developed. Compensation plan(s) will be developed for NBDELG approval prior to the alteration of any wetlands, and a wetland monitoring program will be executed at the site on an annual basis.

Two unmapped watercourses were also identified at the site. An unnamed tributary to Jonathan Creek is located along the north and northeast boundaries of the site (eventually discharging to Jonathon Creek approximately 1km to the northwest) and an unmapped tributary to Michaels Creek is located along the southwest portion of the site (discharging to Michaels Creek approximately 600m to the south). The watercourses will not be altered, with the exception of a small arm of the Jonathon Creek tributary that extends into the development area. The proposed main road extending from Delong Road to Horsman Road is intersected by the tributary to Jonathon Creek, and a culvert will be installed. The culvert will be designed to allow for fish passage, if fish occur within this tributary.

WAWA Permits will be obtained prior to any alteration(s) to the watercourses.

### 2.5.3 Species at Risk and Wildlife

A habitat survey was completed to identify the various habitats and wildlife present at the site, and to evaluate the potential for species at risk or their critical habitat within the development area. Results of this survey will be submitted once available; preliminary habitat descriptions, and the likelihood of the presence of SAR at the site are presented in Appendix E.

### 2.5.4 Other Location(s) Considered

In selecting the proposed site in Moncton, NB, the following factors were considered:

- Proximity to existing road network for semi trucks and trailers;
- Ability to access site with long combination vehicles such as tractor trailers;
- Proximity to services including water, sewer, and electrical;
- Distance to known features such as mapped wetlands and watercourses;
- Size of available site.

Based on these factors, no other potential sites were suitable for the required development.

### 2.5.5 Zoning

The subject properties are located in the “Industrial Park Zone (IP)” in accordance with the zoning map for the City of Moncton. The proposed work will not require rezoning of the land. Nearby properties consist of a mixture of Industrial Park, Heavy Industrial and Rail Industry Zones. One irregular shaped area covering approximately 31 acres along the southern boundary of PID No. 01023076 within wetland WL5 is designated as Open Space and Conservation Zone (P2). This P2 area and the wetland (WL 5) are located greater than 30 m from the proposed development boundary and will not be altered.

## 2.6 Physical Components and Dimensions of the Project

### 2.6.1 Land Requirements

The proposed site development will span approximately 105 ha (259 acres) with 56 lots ranging from 0.65 ha to 7.3 ha (with the exception of two reserved lots that cover areas of 20 ha and 17 ha). Approximately 9.71 ha of the total project footprint will be within wetland. Figure 3, Appendix B shows the overall proposed development plan, as well as the delineated wetlands located within the proposed development area and the wetlands that will be avoided to the northeast and southwest. The PIDs affected by this proposed development and their estimated disturbance areas are as follows:

- PID No. 01023076: Disturbed area of approximately 84 ha.

- PID No. 70518634: Disturbed area of approximately 17 ha.
- Road between PIDs: Disturbed area of approximately 4 ha.

## 2.6.2 Physical Components and Infrastructure

In order to carry out the site development, the following components and infrastructure will be required:

- **Main Access Road:** The proposed main access road will extend approximately 1.34 km from Delong Drive to the north between the two site PIDs, and cover an approximate surface area of 4 ha. Construction will consist of reinstating the existing gravel road with crushed rock in the winter/spring of 2023, and finishing with asphalt following the installation of underground municipal infrastructure which is planned for 2024. The road will also include concrete side walks, curbs and gutters. The curbs and underground piping network for storm water collection will be used to direct the storm water discharge toward the culvert(s) crossing the CN tracks to the south and east of the proposed development.
- **Secondary Roads:** The secondary roads will be constructed in 2024 and will consist of the same materials and infrastructure as the main access road.
- **Water Main and Sanitary:** The water main and sanitary installation will be completed through open-cut trenching, with the exception of crossings under CN rail where trenchless methods (jack and bore) will be utilized along the eastern (water main and sanitary) and northern (water main) boundaries.
- **Storm Water Management:** Like the watermains and sanitary sewer, municipal storm sewers will be installed under future streets in accordance with Figure 4. Storm water within the streets will be captured via catch basins (in the concrete curbs). Future private lot developers will need to limit the stormwater runoff leaving their site to prescribed amounts in accordance with the overall net-zero strategy for this development, which could include on-site storage and/or low-impact development techniques. Furthermore, treatment of the storm water runoff will be provided on private lots and municipal property alike prior to entry into downstream. For private lots, this will be completed upstream of its discharge into either the municipal storm sewers or upstream of its discharge into the existing wetlands to be maintained. In order to ensure drainage of the contiguous wetlands prior to affected lot build out, culverts crossing the roadways or inlets/ditches will direct flow into the underground storm water piping network or towards its existing downstream wetland. Finally, culverts will be installed under the roadway crossing the wetland (WL3) to the north of the proposed development where the tributary to Jonathon Creek intersects the proposed road. These culverts will allow for fish passage, if fish are to occur in this tributary. Refer to Section 2.8 for additional discussion.
- **Bridge Structure:** A bridge will be constructed over the CN tracks to the north of the proposed development. It will be approximately 40 meters in length and include a 13-meter wide curb-to-curb driveable width along with integrated sidewalk(s) to allow for pedestrian transportation.
- **Electrical Services:** The site will be serviced via NB Power pole mounted transformers that will be installed along all proposed streets.
- **Communications:** It is anticipated that underground communications infrastructure will be installed along all proposed streets for the future lot owners to connect to using underground infrastructure.
- **External Lighting:** External lighting will be installed along the proposed roads to provide safety and security at the site.

## 2.6.3 Additional Features

In addition to the new major physical features, the following should be noted:

- **Impervious surfaces:** The future streets along with future parking lots, etc. will increase the imperviousness of the development area and therefore, a net-zero approach will be taken to offset the increased storm water runoff that is produced. This will be countered through storm water detention through either natural storage upstream of the culverts crossing the CN tracks or through engineered ponds where required to limit the storm water flow in the underground piping network.
- **Set-backs or buffers:** Construction will remain a minimum of 30 m from watercourses and wetlands except as otherwise noted herein. Municipal right-of-ways will be designed and constructed in accordance with the city of Moncton Subdivision Development Document for Industrial areas. They will range between 20 m and 23 m depending on the expected traffic in the new development streets. Additionally, zoning by-law # Z-222 will be followed and COM Design Criteria Manual for Municipal Services, COM Standard Municipal Specifications will be used for construction and COM Commercial, Industrial, Institutional and Multi-Unit Residential Development will also be adhered to. The zoning by-law # Z-222 will be adhered to by the purchasers of the lots after the expansion is complete with regard to the minimum lot frontage (40 m), minimum front yard (12 m), minimum flankage yard (12 m), minimum side yard (5 m), minimum rear yard, and maximum lot coverage (80%) among others for industrial park zones. Other applicable standards and procedures will also be adhered to as required.
- **Off-site facilities:** Off-site facilities will not be required for this project.
- **Construction activities:** Various construction activities will be required as part of this project. As such, various materials and equipment will be hauled to and from site resulting in an increase of vehicular traffic in the area during construction.

Additionally, increased vehicular traffic can be expected once the industrial park has been developed. As such, a Traffic Impact Study is underway to evaluate the required transportation upgrades to minimize the impact on the operation of the road network. The Traffic Impact Study will be provided once complete.

## 2.7 Construction Details

The development will be carried out in stages; clearing activities along the main access road and secondary streets is proposed to take place before migratory/nesting bird season 2023. Installation of municipal underground infrastructure along sections of the main access road and downstream of the proposed main access road (Horsman Road extension) will be completed following clearing activities in the summer of 2023. Any infrastructure work to be completed along the sections of the main access road and downstream underground infrastructure that are located within 30 m of wetlands (WL1, WL2 and WL3) will follow the stipulations/provisions of the WAWA permit that will be obtained prior to commencing this work. Placement of crushed rock from the road structure will take place once the water and sewer infrastructure are in place.

The next stage of work will be conducted from Spring to Fall 2024-2025 and is expected to involve the installation of municipal infrastructure along the remaining secondary streets at the site, placement of subgrade gravels/crushed rock for secondary streets, connection of the main access road to Horsman Road through the construction of a bridge, and placement of asphalt on the main access road and secondary streets.

The following preliminary schedule has been developed for the EIA Registration and subsequent design, bidding, and construction work. The exact timing of each component will be refined as the project progresses depending on the actual time taken to complete the preceding task(s):

Component	Approx. duration (weeks)	Anticipated start date	Anticipated completion date
EIA Registration and Review	17	November 23, 2022	March 15, 2023

Component	Approx. duration (weeks)	Anticipated start date	Anticipated completion date
Engineering Design of Municipal Infrastructure for Main Road (Street A) from Delong Drive and downstream infrastructure (Contract no.1)	10	January 16, 2023	March 31, 2023
Clearing Activities	2	February 27, 2023	March 10, 2023
Bidding & Award (Contract no.1)	4	April 3, 2023	April 28, 2023
Construction of Municipal Infrastructure for Main Road (Street A) from Delong Drive and downstream underground infrastructure	16	May 15, 2023	September 1, 2023
Engineering Design of Municipal Infrastructure for remainder of Main Road and Secondary Roads	24	March 27, 2023	September 8, 2023
Bidding & Awards for remainder of Main Road and Secondary Roads	4	September 11, 2023	October 6, 2023
Construction of Main Access Road Bridge and Secondary Access Roads <sup>1</sup>	64	May 1, 2024	December 13, 2025

<sup>1</sup> Construction will pause from December to May, inclusively.

The estimated hours of construction will be from Monday to Friday between 7:00 A.M. and 7:00 P.M. Shorter days may periodically be required in the construction phase given the earlier sunset time during winter months.

The following equipment is anticipated to be used for the construction procedures:

- Site Clearing: Dozers, chippers, and chainsaws;
- Earthwork: Excavators, dozers, dump trucks, compaction equipment;
- Pipe Installation (water main, sanitary, and storm sewer): Excavators, dump trucks, compaction equipment;
- Road Construction: dozers for site grading, concrete trucks for concrete curb, trucks for granular material and asphalt, compaction and paving equipment;
- Sidewalk: Concrete trucks and formwork;
- Landscaping: Trucks for topsoil and hydroseed placement and spraying.

The actual work will be done by a qualified contractor and its subcontractor(s) selected following the design completion. The specific contractors who will be involved, sources of materials, etc., cannot be confirmed until the contract award has been carried out.

Imported materials where “imported” is interpreted to mean “brought in from off the construction site”, will include,

- Imported bedding for pipes;
- Imported granular material for road construction;
- Imported asphalt for road surface;
- Imported concrete for curb and sidewalk;
- Imported piping and appurtenances for pipe installation;

Potential sources of pollutants during the construction period are anticipated to include:

- Exhaust and other emissions from construction equipment.
- Noise from construction equipment.
- Runoff from disturbed surface areas during wet weather events and silt from disturbed surface areas. This will be minimized by requiring the contractor to install silt fences and other erosion protection devices prior to ground disturbance and to reinstate disturbed areas as soon as practical.
- Petroleum hydrocarbons from possible leaks, spills, or accidents from construction equipment and vehicles. This will be minimized by requiring the Contractor to have spill kits on-site and to conduct daily inspections of its equipment. No refueling or maintenance of vehicles will occur within 30 m of watercourses or wetlands.

All waste generated during construction will be stored in containers and removed off-site by the contractor and disposed of at appropriate facilities.

The following sequence and procedures are recommended during the construction process:

- Mobilization and installation of environmental protection devices;
- Clearing and grubbing along with disposal of materials off-site;
- Stripping;
- Excavation related to underground piping and structures;
- Underground municipal piping installation;
- Importing of structural fill if required to bring site up to sub-grade level;
- Site grading as required;
- Sidewalk and curb construction;
- New electrical servicing;
- Roadway lighting;
- Asphalt road construction;
- Ground restoration (where required) with topsoil/hydroseed, and granular materials.
- Sell the undeveloped lots for development.

The site will be accessed through the existing Delong Drive. No detours will be required. There may be some minor impacts to vehicular and pedestrian movement when construction vehicles are entering or exiting the site.

Merchantable timber removed during the clearing and grubbing stage will be recycled.

The origin of the required granular materials will be confirmed at the time of the contract award. However, the contractor will be required to source these materials from clean, reputable quarries.

It is noted that some of the work is necessary within three delineated wetlands, including construction of roads, and the future industrial development of the proposed lots. Such work will be subject to the conditions of the future WAWA permits to be obtained from the NBDELG, and the remainder of the wetlands will be protected from silt run-off by installing silt fencing that will be maintained for the duration of the construction. Furthermore, the contractor will be required to utilize heavy-duty mats for travel of construction equipment within the wetland area if the work is to occur outside of the winter months/when the ground is frozen. Construction equipment will be restricted to the limits of the project development and as such, no travelling of equipment will be done in the wetlands that are located outside of the project limits.

## 2.8 Storm Management Details

The storm water servicing and management was preliminarily evaluated through a municipal servicing study in accordance with the City of Moncton's design criteria and industrial development guidelines which include a net-zero peak runoff requirement for new developments. This study identified the preliminary storm water infrastructure that is recommended to adhere to such guidelines and the site's particularities as summarized below:

Like the watermains and sanitary sewer, municipal storm sewers will be installed under future streets in accordance with Figure 4. Storm water within the streets will be captured via catch basins (in the concrete curbs). Future private lot developers will need to limit the stormwater runoff leaving their site to prescribed amounts in accordance with the overall net-zero strategy for this development, which could include on-site storage and/or low-impact development techniques. The stormwater management strategy for the development includes three (3) separate storm sewer systems to maintain (as much as possible) the existing overall watersheds. Each of these storm sewer systems discharge to locations which ultimately drain to existing wetland areas (WL3 and WL5). Please see Figure 4 for more information.

Each of these wetland areas drain through existing culverts at the limits of the property. Under existing conditions, the combination of existing wetlands and culverts appears to provide substantial peak flow buffering. The proposed stormwater management strategy aims to leverage these natural assets to detain runoff and mitigate impacts on downstream infrastructure.

Preliminary storm water modelling was conducted and indicated the proposed development would result in a short-term increase in water levels in each wetland. This increase is anticipated to be between 0.52 m and 1.20 m during a 24-hr duration 1:100-year storm event and an additional 20% for climate change purposes. Outside of the larger precipitation event and during dry weather, the water levels would remain unchanged from current conditions.

Meanwhile, the current water level in WL3 is set by the culverts that penetrate the CN rail embankment to the east. To maintain long-term control over the discharge of water from this wetland, and to protect the downstream CN rail embankment, a new embankment is being considered upstream (parallel with the CN rail).

Furthermore, treatment of the storm water runoff will be provided on private lots and municipal property alike prior to entry into WL3 and WL5. For private lots, this will be completed upstream of its discharge into either the municipal storm sewers or upstream of its discharge into the existing wetlands to be maintained.

In order to ensure drainage of the contiguous wetlands prior to affected lot build out, culverts crossing the roadways or inlets/ditches will direct flow into the underground storm water piping network or towards its existing downstream wetland. Finally, culverts will be installed under the roadway crossing the wetland (WL3) to the north of the proposed development where the tributary to Jonathon Creek intersects the proposed road. These culverts will allow for fish passage, if fish are to occur in this tributary.

## 2.9 Operation and Maintenance Details

Civil components including municipal piping will be designed in accordance with the latest Commercial, Industrial, Institutional, and Multi-Unit Residential Development Guidelines. Maintenance of underground piping is expected to be limited, but may include flushing, removal of sediment accumulation, etc.

Minor asphalt surface maintenance is expected to occur every few years and will generally consist of asphalt patching. Meanwhile, major rehabilitation is expected to take place every  $\pm$  20 years (asphalt surface rehabilitation) and 60 years (full depth reconstruction).



Water will be supplied through the proposed water main from Horsman Road, Cooke Drive, and English Drive.

Typical waste generated on site will be recycled, and where possible, any non-recyclable waste will be disposed of at an appropriate facility.

Components of the proposed industrial park will have varying life expectancies, but generally, the underground piping has an expected life of 75 years.

Power will be provided to the site through the overhead power lines from DeLong Drive and/or Desbrisay Avenue to the proposed streets. Lights will also be installed along these streets for safety purposes.

## 2.10 Future Modification, Extensions, or Abandonment

The proposed lots located within the project boundaries will be sold by the current owner (Moncton Industrial Development Limited), for future development into industrial businesses.

## 2.11 Project-Related Documents

The following project-related documents are appended:

- Wetland Delineation of PIDs 01023076 and 70518624 prepared by Hive Engineering;
- Atlantic Canada Conservation Data Centre (ACCDC), 2022. Data Report 7237. MID West Moncton, NB.

The following project-related documents are currently underway and will be provided under separate cover once complete:

- Wetland Functional Assessment. Hive Engineering 2022.
- Species at Risk Survey. Hive Engineering 2022.
- Migratory and Nesting Bird Desktop Analysis. Hive Engineering 2022.
- Traffic Impact Analysis. Englobe 2022.
- Servicing Study. Englobe 2022.
- Preliminary Site Servicing Plans. Englobe 2022.

In addition to the project-related documents, a WAWA application will be submitted as a result of the planned work within 30 metres of a wetland.

# 3 Description of the Existing Environment

## 3.1 Physical and Natural Features

### 3.1.1 Site Topography and General Surface Drainage Regime

The location of the proposed project is shown on Figure 3 (Appendix B). The entire project will be located within the limits of a portion of PID No. 01023076 and a portion of PID No. 70518634. The project site is undeveloped and tree covered with the exception of various dirt roads that are cleared on the site extending north from DeLong Drive. One of these roads is a gravel service road located between the two PIDs, which is the location of the proposed main access road to be constructed before the end of March 2023. Various other dirt roads that appear to be logging roads are located throughout PID No. 01023076. Figure 2 shows the project site is situated in a mixed commercial/industrial area of Moncton and is bound by forested land and mapped wetlands to the west, CN railway to the south and east, with commercial/industrial properties farther east and commercial/industrial properties to the north.

The properties slope downward toward the south and east; therefore, surface runoff and groundwater flow are expected to flow in these directions.

Wetland delineations were carried out and included site reconnaissance to ground truth the boundaries of the mapped wetlands. Numerous test pits were advanced to confirm the soil and hydrology conditions, as described in the Wetland Delineation report (Appendix C). Wetland Delineation forms were produced to represent the conditions observed at these locations and can be found in the report mentioned above.

Three wetlands are located within the development boundary, and are defined in the Wetland Report (Hive, 2022) as wetland 1 (WL1), wetland 2 (WL2) and wetland 6 (WL6). A portion of a fourth wetland, wetland 3 (WL3), is located within the proposed main access road that will connect to Horsman Road.

WL1 is classified as a tall shrub swamp, covering an area of 3 ha. The dominant hydrophytic vegetation within WL includes a tree stratum of mature red maple (*Acer rubrum*) and trembling aspen (*Populus tremuloides*), while the shrub species stratum was dominated by speckled alder (*Alnus incana*), and blue-joint reedgrass (*Calamagrostis canadensis*) was the dominant species in the herbaceous stratum. Wetland hydrology indicators within WL1 included water-stained leaves and ground saturation. Wetland soils consisted of a 40 cm layer of depleted silt/sand matrix under 2 cm of organics.

WL2 is classified as a mixed forest swamp that covers an area of 3.1 ha. The WL2 tree stratum was dominated by red maple and balsam fir. The shrub species stratum was dominated by speckled alder and balsam fir. The herbaceous stratum was dominated by sensitive fern (*Onoclea sensibilis*), fowl mana grass (*Glyceria striata*), and dwarf red raspberry (*Rubus pubescens*). Wetland hydrology indicators included for WL2 included water-stained leaves and ground saturation. Wetland soils consisted of a 24 cm of depleted mucky silt over 15 cm depleted silt matrix.

WL3 is classified as a graminoid basin swamp that covers an area of 7.7 ha, 0.81 ha of which is located within the site boundaries. The tree stratum of WL3 was dominated by red maple, while the well-developed shrub stratum was dominated by speckled alder. The herbaceous stratum was dominated by blue-joint reedgrass and a nodding sedge (*Carex gynandra*). Wetland hydrology indicators within WL3 included water-stained leaves and ground saturation. Wetland soils consisted of a thin (4 cm) organic layer over three layers of depleted silt matrix, totalling 39 cm in depth with the lowest layer containing redoximorphic features.

WL6 is also classified as a mixed forest swamp, this wetland covers an area of 2.8 ha. The WL6 tree stratum was dominated by mature red maple and balsam fir. The shrub species stratum was dominated by speckled alder and balsam fir. The dominant species in the herbaceous stratum sensitive fern, blue-joint reedgrass, fowl mana grass and dwarf red raspberry. Wetland hydrology indicators included for WL6 included water-stained leaves and ground saturation. Wetland soils consisted of a 3 cm of organics over 39 cm of depleted silt matrix.

Although the results of the field surveys recently completed in August 2022 are not yet fully available, a list of the other vegetative species observed at the site was provided and is attached in Appendix E.

The remaining four wetlands that are located outside of the proposed development boundary are identified by WL4, WL5, WL7 and the majority of WL3.

WL4 is classified as a deciduous riparian swamp that covers an area of 2.7 ha. The tree stratum of WL4 was dominated by mature red maple while the shrub species stratum was dominated by speckled alder and winter berry. The herbaceous stratum was dominated by cinnamon fern, sensitive fern, and dwarf red raspberry. Wetland hydrology within WL4 was apparent with water-stained leaves and ground saturation. Wetland soils consisted of a two layers of depleted silt matrix, totalling 40 cm depth.

WL5 is classified as a coniferous bog/deciduous swamp complex that covers an area of 29.2 ha. The tree stratum of WL5 was dominated by black spruce (*Picea mariana*) while the shrub species stratum was dominated by rhodora (*Rhododendron canadense*). The herbaceous stratum was solely dominated by tussock sedge (*Carex stricta*). Wetland hydrology within WL5 was apparent with high water table and saturated substrate. Wetland soils consisted of a deep histosol.

WL7 is classified as a man-made pond that covers an area of 0.32 ha. WL7 was delineated by Boreal Environmental as it was identified on GeoNB as a provincially mapped wetland, however based on its size and that it is not contiguous with a watercourse it was unclear why this wetland was included in the provincial inventory as it does not meet the criteria to be a regulated wetland feature. WL7 formed in an exhausted or abandoned aggregate pit.

Two different wetland types were identified within the proposed development boundary, these include the tall shrub swamp (WL1) and two mixed forest swamps (WL2 and WL6). The combined area of the wetlands located within the proposed development area is approximately 9.71 ha. While the combined area of the wetlands located outside of the proposed development area that will not be altered as part of this proposed project is approximately 40 ha.

The wetlands receive water from Jonathon Creek to the north, and Michaels Creek to the south. Two watercourses and several drainage swales were also encountered during the survey. The largest watercourse (including a local seasonal tributary) is an unnamed tributary to Jonathon Creek. The tributary discharges to Jonathan Creek approximately 1 kilometre northwest of the property boundary. The other watercourse encountered on-site is an unnamed tributary to Michaels Creek; the tributary discharges to Michaels Creek at a distance of approximately 600 metres south of the property boundary. Ultimately the site and associated tributaries discharge into the Petitcodiac River to the south.

WAWA permits will be required for project activities within 30 meters of the wetlands and watercourses.

### 3.1.2 Significant Natural and Managed Areas

There is one (1) Managed Area (MA) identified by ACCDC within 5 km of the site.

— Ducks Unlimited Canada Conservation Lands

The Ducks Unlimited Canada Conservation Lands are located approximately 3 km south of the site; therefore, the project activities will not impact this managed area. No additional information was reported on the ACCDC report; however, these areas are known to attract birds.

### 3.1.3 Protected Watersheds and Wellfields

The site is located within the Petitcodiac Watershed. Project activities are not anticipated to affect the watershed.

There are no protected watersheds or wellfields within the project area. The surrounding area is serviced by municipal water infrastructure provided by the city of Moncton. The work is not anticipated to impact municipal water sources.

### 3.1.4 Species at Risk (SAR)

A background investigation was conducted to determine previous records of species at risk (SAR) in the project area. As part of this investigation, a request was made to the ACCDC who provided a report of the flora and fauna in the area.

The ACCDC report was queried for all rare flora and fauna identified within a 5km radius of the project site. For the purpose of this assessment, SAR are defined as only those species which meet one or more of the following criteria:

- Species Listed as ‘Endangered’, ‘Threatened’, ‘Vulnerable’, or ‘Special Concern’ under the *Federal Species at Risk Act* (SARA), *New Brunswick Species at Risk Act* (NBSARA) or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
- Species provincially ranked as “S1” (Critically Imperiled) or “S2” (Imperiled).

In addition to the above-mentioned protections, protection for individual and populations of birds and their nests against harm or destruction is also provided under the *Migratory Birds Convention Act* (MBCA).

Forty-three (43) vertebrate fauna were listed within a 5 km radius of the site including thirteen (13) species listed as ‘Endangered’, ‘Threatened’ or ‘Special Concern’ under COSEWIC, SARA, or NB SARA and eighteen (18) vertebrate fauna provincially ranked as “S1” or “S2”.

Three (3) invertebrate fauna were listed within a 5 km radius of the site including one (1) species listed as ‘Endangered’ under COSEWIC and ‘Special Concern’ under SARA and NB SARA.

Six (6) vascular flora plants were listed within a 5 km radius of the site including one (1) species listed as ‘Threatened’ under COSEWIC, and three (3) flora species provincially ranked as “S1” or “S2”

The ACCDC report is provided in Appendix D and the habitat descriptions for the identified SAR are included in Appendix E. A field survey was completed by a qualified biologist in August 2022 and includes a Species at Risk Survey and Wetland Functional Assessment. Desktop analysis of historical migratory activities, nesting, spawning breeding, and feeding within the project site was also completed. The information collected from this field survey and desktop analysis will be provided under separate cover.

## 3.2 Cultural Features

There are no known cultural features at or in the immediate vicinity of the proposed project. The project site is located within the limits of an industrial park, and various buildings and expansion constructed has occurred nearby. Likewise, there are no know heritage features within the project area.

## 3.3 Existing and Historic Land Uses

As previously noted, the subject parcels (PID Nos. 01023076 and 70518634) are located within the Moncton Industrial Park. These subject parcels are currently owned by Moncton Industrial Development

Limited and are currently undeveloped with the exception of the gravel road between the two PIDs and trails through PID No. 01023076.

The site is bound by forested land and mapped wetlands to the west, CN railway to the south, east and north, with commercial/industrial properties further east and commercial/industrial properties further north.

Aerial photographs for the years 1945, 1953, 1963, 1976, 1982, 1993 and 2001 were available for review. Google Earth aerial imagery from 2005 to 2022 was reviewed. Copies of the photographs for the years 1945 and 1982 and imagery for the years 2005 and 2021 are provided in Appendix A.

Historical land use observed through aerial photographs and Google Earth imagery is summarized in the following table.

Date	Source	Observations
1945	Aerial Photograph	The subject property is vacant and tree-covered. The railway is present to the north, east, and south of the subject property. Neighbouring properties to the north, east, and south are either vacant and tree-covered or developed as agricultural land with residential dwellings.
1953	Aerial Photograph	No significant changes have occurred to the visible portions of the subject properties or neighbouring properties to the east or south.
1963	Aerial Photograph	No significant changes have occurred to the subject properties. The logging road along the west side of PID No. 01023076 is present, indicating the site has been used for harvesting/logging purposes since at least 1963. CN Gordon Yard has been constructed on the neighbouring property to the south. No other significant changes have occurred on neighbouring properties.
1976	Aerial Photograph	No significant changes have occurred to the subject properties or neighbouring properties to the north and south, with the exception of the gravel road that appears to be cleared from Delong Drive to the north between PID Nos. 01023076 and 70518634. Commercial structures have been constructed on the neighbouring properties to the east. Other neighbouring properties to the east remain vacant and tree covered. Significant commercial and residential development has occurred in the surrounding area.
1982	Aerial Photograph	No significant changes have occurred to the visible portions of the subject properties or neighbouring properties to the north. A portion of the neighbouring property to the southeast has been cleared and filled in. No other significant changes have occurred on neighbouring properties to the north and east. Additional commercial development can be seen further to the north and east.
1993	Aerial Photograph	No significant changes have occurred to the subject properties or neighbouring properties to the north. The site is densely wooded, and the man-made pond (WL7) is visible.
2001	Aerial Photograph	No significant changes have occurred to the visible portion of PID No. 01023076. The southwestern portion of PID No. 70518634 appears to be utilized to store fill. The neighbouring property to the southeast of PID No. 70518634 appears to have been cleared and a ballpark has been developed on the neighbouring property to the south. Additional commercial and residential development can be seen in the surrounding area.
2005-2022	Google Earth Imagery	In 2005, the neighbouring property to the west is vacant and tree covered and a waste management facility can be seen farther to the northwest. In 2011, the southern portion of the neighbouring property to the west appears to be used to store fill and gravel roadways have been developed on neighbouring properties to the north. Between 2013 and 2015, commercial development can be seen on the neighbouring properties to the north. No other significant changes appear to have occurred on the subject properties or neighbouring properties.

Date	Source	Observations
		Additional residential and commercial development can be seen in the surrounding area.

The Land Gazette status of PID Nos. 01023076 and 70518634 was reviewed to verify the potential existence of land related notices or restrictions (such as petroleum storage, dump sites, etc.) that may have an impact on land use. No records were shown for these parcels.

# 4 Summary of Environmental Impacts

The proposed project is currently in the pre-design phase, and as such there are studies currently underway that will be provided under separate cover once complete. These studies include; Wetland Functional Assessments and Species at Risk Survey (field work has been completed, report underway), Traffic Impact Analysis, Services Study, and Preliminary site servicing plans. This development would provide opportunities for new businesses and employment opportunities for the community.

Anticipated environmental impacts as a result of this project are identified below in accordance with headings included in Appendix B of the Guide to Environmental Impact Assessment in New Brunswick (2018).

In order to expedite the review of information presented in this Registration Document, the proposed avoidance, mitigation/reduction, and compensation measures for each of the possible impacts described below will be indicated immediately following.

## 4.1 Air Quality

**Dust:** Dust will likely be generated during the construction phase when soil is exposed, pipelines are being installed, backfilling activities and when the roads are being constructed.

- **Avoidance / Mitigation / Compensation:** Construction contracts will require the contractor to apply water to control dust when performing these activities. The exact locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied will be determined on-site based on conditions. Waste oil will not to be used for dust control under any circumstances. Local streets will be swept if necessary.

**Odours/Fumes:** Odours are possible during the construction phase, primarily from exhaust fumes expelled from trucks and equipment. An increase in emissions from heavy equipment and trucks is expected during the project, however the anticipated impact to air quality is minor.

- **Avoidance / Mitigation / Compensation:** Work will be limited to within 7:00 AM to 7:00 PM. During the project, emissions will be kept to a minimum by limiting idle time of vehicles and heavy equipment onsite.

## 4.2 Biology and Ecology (Aquatic & Terrestrial)

**Wetland Habitat:** Three delineated wetlands with a total area of approximately 8.9 ha as well as a portion of a fourth wetland covering 0.81 ha, are present within the proposed development area. As such, the wetlands will be disturbed. Sediment runoff from construction work and contamination of the wetland soil are other potential impacts to the wetland habitat.

### — Avoidance / Mitigation / Compensation:

No work will take place outside of the proposed development boundary, therefore approximately 40 ha of delineated wetlands will not be impacted as part of this proposed project. The proposed development was designed in order to maintain at least the 30 meter buffer from these wetlands. Any work being conducted within 30 m of a wetland will use heavy mats, and silt fencing in order to prevent any impacts to the wetlands outside of the project boundaries. Construction equipment will be restricted to the limits of the project footprint and as such, no travelling of equipment will be done in the wetlands that are located outside of the project limits. Furthermore, the stipulations/provisions of the WAWA permit will be adhered to, for work within the wetlands that will be altered within the project boundaries.

Runoff protection such as sediment/silt fencing will be placed and maintained during construction. Any exposed soil areas will also have its cover re-established prior to sediment/silt fencing removal. The contractor will be required to wash equipment prior to it being brought to the site.

Weather conditions are to be assessed on a daily basis to determine the potential risk of weather on the wetland habitat. Work will be scheduled to avoid periods of heavy precipitation.

Machinery and equipment will be checked for leakage of lubricants and fuel prior to beginning work each day. Basic petroleum spill clean-up equipment will be kept on site. All spills or leaks will be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633).

Hazardous materials (e.g., fuels, lubricants, hydraulic oil) and wastes (e.g., waste oil) will be managed so as to minimize the risk of chronic and/or accidental releases. A designated storage area for hazardous materials will be identified and will be at least 30m from the delineated and mapped watercourses and wetlands.

The site layout of the development area has been adjusted to minimize the wetland disturbance to 9.71 ha. As such, the proponent will develop wetland compensation plans to offset the net loss of wetland habitat.

Monitoring of the wetlands will be conducted for the 5 years following completion of the construction work in order to determine if neighboring wetland habitat is disturbed as a result of the development. Monitoring events will be collected in years 1, 3, and 5 following the initial construction expected to take place in 2023. Sample vegetation plots will be selected prior to beginning development in the appropriate season in order to establish a baseline for monitoring the impact to the wetlands outside of the proposed development.

**Populations/Communities of Aquatic Species (including flora, fish, birds, marine mammals, etc.):** The habitat within the site boundaries consists of forested land with dirt roads and logging or ATV trails, a tall shrub swamp wetland and two mixed forest swamp wetlands. One watercourse, a tributary to Jonathon Creek is located over 30 meters from the proposed development boundary to the north and northeast; however a small channel that branches from this watercourse drains from WL2 within the project boundary into WL3 to the northeast. This small section of watercourse will be altered by the proposed development, no fish habitat is present within this channel. A section of this tributary also intersects the proposed road extending to Horsman Rd; a culvert will be installed at this watercourse and will be designed to allow for fish passage, if fish are to occur within this tributary. Furthermore, the stipulations of the WAWA permit will be adhered to for any work within the watercourse. The dominant hydrophytic vegetation observed includes various tree species (i.e. red maple, trembling aspen, balsam

fir) and a shrub stratum and herbaceous stratum. Disturbance to the wetland habitat outside of the project boundaries is not anticipated. Birds that prefer wetland habitats may occasionally occur onsite (refer to migratory bird discussion below).

- **Avoidance / Mitigation / Compensation:** A habitat survey will be conducted to determine not only species at risk, but also other species on site. Mitigative measures will be established depending on the results of the survey. However, where feasible, activities will be limited to the time between dawn and dusk to avoid using artificial lighting which can potentially affect bird and bat use of nearby habitats (Canada, 2017). If construction timing restrictions are not possible, Environment and Climate Change Canada’s Canadian Wildlife Service (CWS) Guidelines for Migratory Birds and the Province of New Brunswick’s Fish and Wildlife Act which provides guidance for species not protected under the MBCA will be followed.

**Natural Vegetation Cover:** The existing vegetation consists of forested land and cleared gravel roads and dirt trails. A field habitat survey was completed, and the report is currently underway, however a list of plant species observed at the site during the survey is attached in Appendix E.

- **Avoidance / Mitigation / Compensation:** Vegetative cover must be removed for construction of the roads and lots. Stripped materials will be stockpiled and re-used on-site for restoration where possible and exposed soils will be seeded to restore growth and prevent soil erosion. As the lots within the development area are purchased for development, clearing and grubbing will be limited to only the areas required for the development.

### **Migratory Birds:**

Migratory birds may occasionally occur at the site; however, this is to be confirmed through desktop analysis that is currently underway combined with a field assessment of habitat that was completed in August 2022. The results of the migratory / nesting bird desktop analysis will be provided once available.

### **Spawning, Nesting, Breeding, Feeding sites**

A migratory and nesting bird desktop assessment is underway to assess the potential for spawning, nesting, breeding, and feeding areas within the site boundaries. This desktop analysis is supported by a field survey (habitat assessment) that was completed in August 2022 to determine if suitable habitat for spawning, nesting, breeding or feeding is present at the site. The results of this survey will be provided once available.

### **Species at risk and other species of conservation concern**

The ACCDC data report identified the following SAR within a 5km radius of the subject site;

- thirteen (13) vertebrate fauna species listed as ‘Endangered’, ‘Threatened’ or ‘Special Concern’ under COSEWIC, SARA, or NB SARA and eighteen (18) vertebrate fauna species provincially ranked as “S1” or “S2”
- one (1) invertebrate fauna species listed as ‘Endangered’ under COSWEIC.
- one (1) vascular flora species listed as ‘Threatened’ under COSEWIC and three (3) flora species provincially ranked as “S1” or “S2”

Preliminary habitat descriptions and the likelihood of their occurrence at the site based on habitat requirements are available in Appendix E. A field survey was conducted in August 2022 to confirm the presence/absence of habitat for the identified SAR. Results of this survey will be provided once available.

- **Avoidance / Mitigation / Compensation (for migratory birds, spawning, nesting, breeding, feeding sites, Species at risk and other species of conservation concern):**

The disturbance of the vegetative cover, including clearing and grubbing activities associated with the main road construction (along the current gravel service road) is planned for late winter / early March 2023 and thus is not anticipated to impact spawning, nesting or breeding seasons. Clearing activities for the remaining access roads is planned for winter/spring of 2024, while the clearing of



individual lots will be the responsibility of the future lot purchasers. All work is to be conducted in accordance with the Migratory Birds Convention Act, which outlines that no migratory bird nests or eggs will be moved or obstructed during the construction or operational phase of the project. To ensure project activities are in compliance with the MBCA, tree clearing will take place outside of the migratory/nesting bird season, or a qualified person will be onsite to confirm the absence of nesting or migratory birds prior to and during clearing. If bird breeding activity is identified during activities, work will stop immediately.

If any nests or unfledged chicks are discovered during project activities, all work will pause and CWS will be contacted. Active nests or unfledged chicks will be protected by an appropriate-sized buffer (if required). Buffers/nests will not be marked using flagging tape (or other similar materials) in order to prevent an increased risk of nest predation.

All machinery will be well muffled (if required). Contractors will avoid any sharp or loud noises (e.g., not blow horns or whistles). If necessary, trucks may be required to avoid the use of “hammer” braking along specific sections of the site, while radio communications will replace whistle blasts and horns.

Construction activities will be limited to the time between dawn and dusk to avoid using artificial lighting which can potentially affect bird and bat use of nearby habitats. If construction timing restrictions are not possible, Environment and Climate Change Canada’s Canadian Wildlife Service (CWS) Guidelines for Migratory Birds and the Province of New Brunswick’s Fish and Wildlife Act which provides guidance for species not protected under the MBCA will be followed.

Excavated materials will be covered so that birds do not nest in the stockpiled materials.

Surveys will be completed by a qualified environmental professional, as required, as breeding periods vary from species to species.

The harassment of wildlife, littering and feeding of wildlife on the property during project activities is prohibited. Waste materials will not be buried on site. Any construction debris will be disposed of in a provincially approved manner. Wildlife habitat features will be protected by appropriate setback distances (or buffer zones) where required.

## 4.3 Physical

**Noise or Vibration:** Construction activities will result in noise caused by the use of equipment and machinery (excavator, trucks, compaction equipment, etc.)

— **Avoidance / Mitigation / Compensation:** Work will be limited to within 7:00 AM to 7:00 PM.

**Soil Erosion:** Soil erosion is possible during construction.

— **Avoidance / Mitigation / Compensation:** Disturbed areas will be reinstated as soon as is practical, silt fences and other erosion protection devices will be installed around disturbed soils, excavations and stockpiles, and maintained throughout construction and after completion of construction until the vegetation has fully grown. There will be no extreme slopes to limit potential soil erosion.

**Total Site Imperviousness:** The future streets along with future parking lots, etc. will increase the imperviousness of the development area and therefore, a net-zero approach will be taken to offset the increased storm water runoff that is produced.

**Avoidance / Mitigation / Compensation:** To offset the impervious areas created during the municipal infrastructure construction, private lot developers will need to limit the stormwater runoff leaving their site to prescribed amounts in accordance with the net-zero strategy for this development (determined through a separate servicing study), which includes on-site storage and/or low-impact development techniques. The stormwater management strategy for the development includes three (3) separate storm sewer systems to maintain (as much as possible) the existing overall watersheds. Each of these storm sewer systems discharge to locations which ultimately drain to existing wetland areas (WL 3 and WL 5). Outside of the larger precipitation event and during dry weather, the water levels

would remain unchanged from current conditions and treatment of the stormwater would be provided upstream of WL 3 and WL 5. Refer to Section 2.8 for additional discussion on the storm water management strategy.

**Soil Moisture/Drainage:** The surface drainage pattern will be modified as required to promote drainage into individual detention ponds and naturally available storm water storage to the north-east and south-west (wetlands) prior to being directed to downstream ditching and culverts.

— **Avoidance / Mitigation / Compensation:** There will be no isolated areas created by the site development, and existing surface drainage will be maintained where possible. If necessary, the private lot developers' storm detention pond location(s) will be selected to limit the modifications required to surface drainage. Storm water collection systems (gutters and catch basins) will be installed in order to collect the draining surface water before being transmitted to the storm natural storm water storage (wetlands), followed by the municipal storm water collection network further downstream. Refer to Section 2.8 for additional discussion on the storm water management strategy.

**Groundwater Quality:** Groundwater quality could be affected in the event of a spill from construction machinery.

— **Avoidance / Mitigation / Compensation:** The Contractor will be responsible to have the proper leak and spill prevention equipment onsite prior to commencement of any work. In the event of a spill, the contaminated soils will be removed from the site and disposed of at an approved decontamination site. No re-fueling will be conducted within the 30m buffer zone of a watercourse or wetland.

**Surface Water Quantity:** One section of a channel branching from the Jonathon Creek tributary between WL2 and WL3 will be altered during development.

— **Avoidance / Mitigation / Compensation:** A WAWA permit will be obtained and followed for the alteration of this small channel that connects WL2 to WL3.

**Quantity and Quality of Wetlands:** The site development will disturb approximately 9.71 ha of wetland.

— **Avoidance / Mitigation / Compensation:** Following the wetland delineation for the subject area, the proposed site development plan was revised to reduce the impact to wetlands at the site. This revision allowed the impacted wetland disturbance to be reduced to approximately 9.71 ha, completely avoiding approximately 40 ha of wetlands present on the site parcels. A compensation plan to offset the loss of habitat will be developed for NBDELG approval prior to disturbance of any wetland.

**Watercourse:** One watercourse, a tributary to Jonathon Creek is located over 30 meters from the proposed development boundary to the north and northeast; a small section that branches from this watercourse drains from WL2 within the project boundary to WL3 to the northeast. This small section of watercourse will be altered by the proposed development.

— **Avoidance / Mitigation / Compensation:** Although one section of a drainage channel will be altered by the proposed development, the watercourse provides drainage from WL3 to WL2. There is no fish habitat within this section and the small alteration is not anticipated to have any impacts to the larger tributary on the north and northeast of the site. WAWA Permits will be obtained, and any conditions will be adhered to during the development process.

**Domestic/Municipal/Industrial/Agriculture Supplies:** To service this development, there is an existing 300 mm diameter PVC water main north of the development area located on Horsman Road and a 500 mm diameter water main east of the development area located on English Drive. A new connection would be made at the end of these existing water mains in order to ensuring water main looping.

The nearest sewer infrastructure is located to the east of the proposed development area on English Drive. The new sanitary sewer connection to the existing sewer infrastructure will be made on English Drive via a municipal easement at the south end of PID 70424692 on English Drive. Sewer piping along the current downstream system will require upsizing from English Drive to west of Wheeler Boulevard and through the Findlay Boulevard Traffic Circle. The infrastructure for the two required sanitary sewer upgrades is owned by the City of Moncton. Even if this development was not to go ahead, the City of

Moncton would be required to upgrade this infrastructure in the future in order to continue and improve the sanitary sewer collection services it provides to tenants and residents of the City of Moncton.

- **Avoidance / Mitigation / Compensation:** Although this will add additional water supply for the City of Moncton and additional sanitary sewer collection for treatment, the City of Moncton will ensure the additional water supply can be accommodated based on current capacity through a design review submission prior to providing construction permission.

## 4.4 Community Structure

**Employment Opportunities:** The development of the site will positively impact employment opportunities.

- **Avoidance / Mitigation / Compensation:** No mitigation required given the positive impact on employment opportunities. Several hundred employment opportunities will be available following the completion of the park development.

**Municipal Income:** Municipal income will be increased through the lot purchase and the recurring taxes to be paid to the municipality.

- **Avoidance / Mitigation / Compensation:** No mitigation required given the positive impact on the municipal income.

**Land Use Compatibility:** The proposed project is compatible with current land uses since the land is designated for industrial usage and located in a primarily industrial area.

# 5 Summary of Proposed Mitigation

Different mitigation measures will be used throughout the project to minimize environmental impacts. Many impact avoidance, mitigation/reduction, and compensation measures were identified in Section 4 to expedite the review of information and more conveniently connect the relationship of mitigation with possible impacts presented in this Registration Document. However, general mitigation measures for this site are as follows:

- Disturbed areas will be reinstated as soon as is practical, sediment/silt fences and other erosion protection measures will also be used until disturbed vegetation is fully re-grown.
- Clearing and stripping activities will be limited to the necessary areas to complete the work.
- Construction will be restricted to the site limits and equipment requirements.
- The stipulations/provisions of the WAWA permit will be adhered to for work within 30m of wetlands and watercourses.
- A minimum setback of 30 meters from wetlands and watercourses will be respected for development activities along the boundaries of the proposed development area to ensure no impacts occur to the wetlands located outside of the proposed development.
- The Contractors will be responsible to have leak and spill prevention equipment onsite prior to commencement of any work. In the event of a spill, the contaminated soils will be removed from the site and disposed of at an approved decontamination site. Any spills will be reported to the

DELG Local Regional Office during business hours or to the Canadian Coast Guard's 24-hour reporting system after-hours.

- The Contractors will be responsible to provide machinery in good working condition.

## 5.1 Other Considerations

All work will follow the Terms and Conditions of the NBDELG WAWA, TRC letters and any other provincial or federal letters of advice.

As stated herein, 9.71 ha of wetland is expected to be impacted. As such, the proponent will develop wetland compensation plans to compensate for the net loss of wetland habitat.

# 6 Public and First Nations Involvement Process

The typical steps to involve the Public and First Nations are outlined below. Confirmation from the NBDELG will be required to ensure that the following steps are required for this specific project (or if additional steps are necessary).

The minimum public and First Nations consultation requirements outlined in Appendix C of the Provincial EIA registration guide will be followed (NBDELG, 2018). Stakeholders include the owners of all properties within a 500m radius as shown on the attached figures. A public notice containing the information specified in the registration guide will be delivered to the above noted stakeholders, in addition to the local Member of the Legislative Assembly (MLA), and the local service district, prior to concluding the EIA process.

Although no First Nation communities are located within the immediate study area, a project notification/information letter will be prepared and submitted to potentially affected First Nations if required by the Department and the Aboriginal Affairs Secretariat in accordance with provincial Duty to Consult requirements.

Following the completion of the consultation process, a summary report on the public and First Nation involvement will be prepared and submitted to NBDELG in accordance with the EIA process requirements.

# 7 Approval of Undertaking

The following technical approvals are anticipated as being required for this project:

- Approval under the EIA Legislation from the NBDELG.
- Watercourse and Wetland Alteration Permit from the NBDELG for the work in the Delineated Wetlands and its Buffer zone.

# 8 Funding

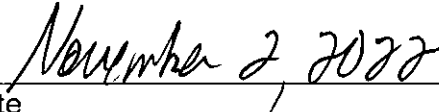
No application for a grant or loan of capital funds will be requested from government agencies. Costs will be born by the land owner (following lot purchases from Moncton Industrial Development (Limited)).

# 9 Signature



---

Pierre Dupuis  
General Manager  
Moncton Industrial Development



---

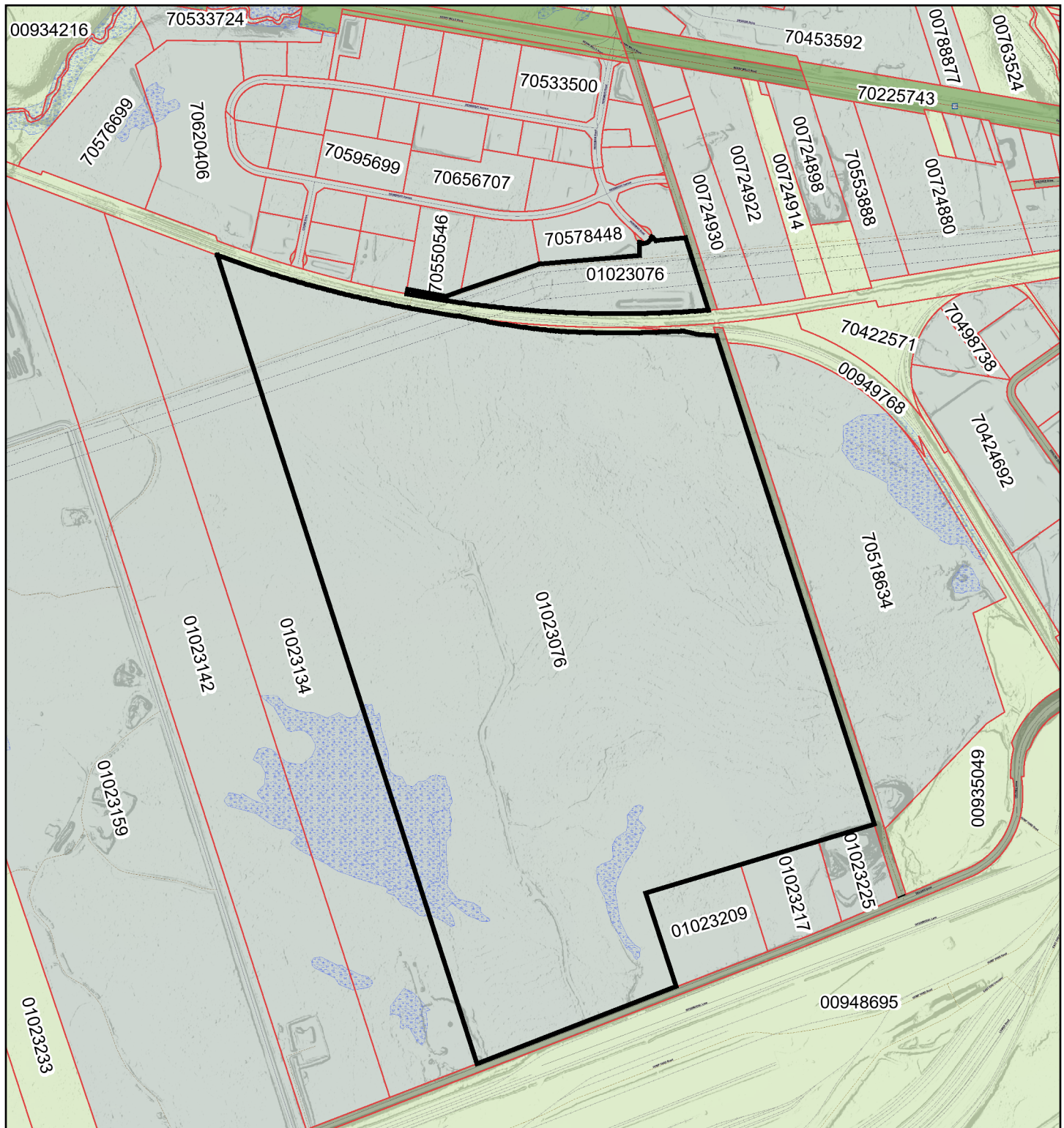
Date

# Appendix A

## Property Map, Parcel Information and Aerial Photographs



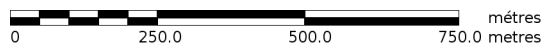
**eNGLOBE**



Property Map

Scale/Échelle 1:12610

Date: 2022/06/10 09:28:40



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.



<b>PID:</b>	1023076	<b>County:</b>	Westmorland
<b>Status:</b>	Active	<b>Active Date/Time:</b>	1970-01-01 01:01:01
<b>Land Related Description:</b>	Land	<b>Management Unit:</b>	NB1410
<b>Area:</b>	219.6	<b>Area Unit:</b>	Hectares
<b>Date Last Updated:</b>	2021-12-14 08:22:14	<b>Harmonization Status:</b>	Harmonized
<b>Land Titles Status:</b>	Land Titles	<b>Land Titles Date/Time:</b>	2008-08-27 10:25:33
<b>Date of Last CRO:</b>	2021-12-14 08:28:21	<b>Manner of Tenure:</b>	Not Applicable
<b>Land Gazette Information:</b>	NO		

**Description of Tenure:**

**Public Comments:**

MAP/CARTE 14T84 14T94 14TE1

### Parcel Interest Holders

Owner	Qualifier	Interest Type
Moncton Industrial Development Limited		Owner

### Assessment Reference

PAN	PAN Type	Taxing Authority Code	Taxing Authority
6199190		600	CITY OF/CITE DE MONCTON

### Parcel Locations

Civic Number	Street Name	Street Type	Street Direction	Place Name
1400	Berry Mills	Road		Moncton

### County Parish

County	Parish
Westmorland	Moncton

### Documents

Number	Registration Date	Book	Page	Code	Description
42100868	2021-12-08			6110	Discharge of Mortgage
26510827	2008-11-25			5110	Collateral Mortgage
26255142	2008-10-02			1100	Deed/Transfer
26056656	2008-08-27			1500	Expropriation
25198210	2008-02-14			4500	Notice of Intention to Expropriate
23425466	2007-02-07			2200	Easement

**Documents (cont.)**

Number	Registration Date	Book	Page	Code	Description
658850	1998-10-30	2833	1	101	Deed
616088	1995-12-27	2418	480	119	Other
230233	1959-08-20	S19	665	119	Other
213799	1956-06-18	A18	607	119	Other
203920	1954-06-17	A17	258	119	Other
105228	1918-01-01	E9	439	101	Deed

**Plans**

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
30871553		2011-11-23	9050	Subdivision & Amalgamations	Lot	Provincial Grid
29420867		2010-11-02	9050	Subdivision & Amalgamations	Lot	Provincial Grid
23425417		2007-02-07	9040	Retracement & Plan or Return of Survey	Lot	Provincial Grid
201082		1995-12-27	9020	Easement or Right-of-Way		Provincial Grid

**Parcel Relations**

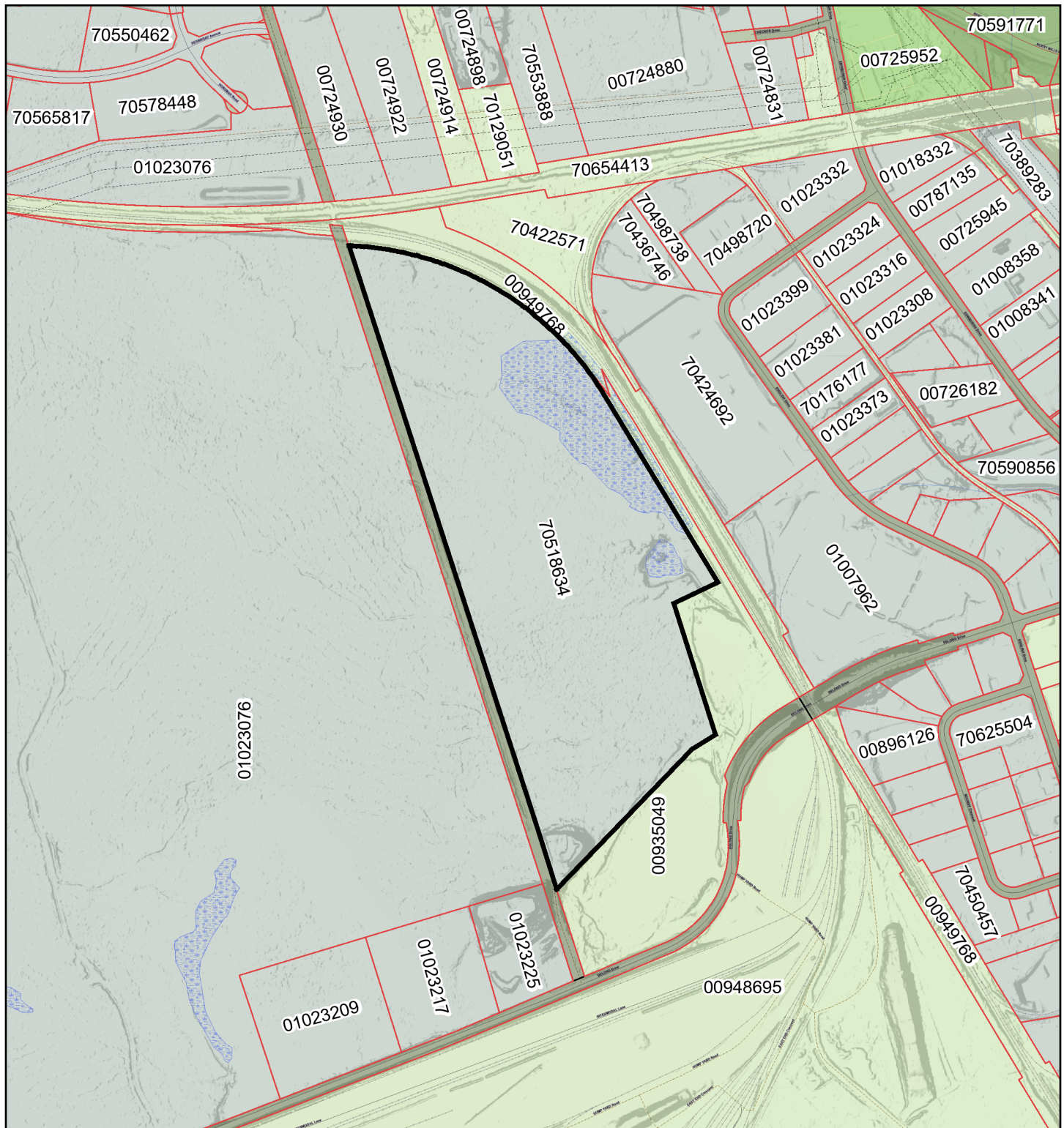
Related PID	Type Of Relation	Lot Information
70533500	Infant	Lot 10-1
70533518	Infant	Lot 10-02
70533526	Infant	Lot 10-03
70533534	Infant	Lot 10-04
70533542	Infant	Lot 10-05
70533559	Infant	Lot 10-06
70533567	Infant	Lot 10-07
70533575	Infant	Lot 10-08
70533583	Infant	Lot 10-10
70533591	Infant	Lot 10-11
70533609	Infant	Lot 10-12
70533617	Infant	Lot 10-13
70533625	Infant	Lot 10-14
70533633	Infant	Lot 10-15

## Parcel Relations

Related PID	Type Of Relation	Lot Information
70533641	Infant	Lot 10-16
70533658	Infant	Lot 10-17
70533666	Infant	Lot 10-18
70533674	Infant	Lot 10-27
70533682	Infant	Lot 10-39
70533690	Infant	Lot 10-40
70533708	Infant	Lot 10-41
70533716	Infant	Public Street Des Brisay
70533724	Infant	Lot Remant
70550371	Infant	Lot 11-08
70550389	Infant	Lot 11-09
70550397	Infant	Lot 11019
70550405	Infant	Lot 11-20
70550413	Infant	Lot 11-21
70550421	Infant	Lot 11-22
70550439	Infant	Lot 11-23
70550447	Infant	Lot 11-24
70550454	Infant	Lot 11-25
70550462	Infant	Lot 11-26
70550470	Infant	Lot 11-28
70550488	Infant	Lot 11-29
70550496	Infant	Lot 11-30
70550504	Infant	Lot 11-31
70550512	Infant	Lot 11-32
70550520	Infant	Lot 11-33
70550538	Infant	Lot 11-34
70550546	Infant	Lot 11-35
70550553	Infant	Lot 11-36
70550561	Infant	Lot 11-37
70550579	Infant	Lot 11-38
70550587	Infant	Lot 11-42
70550595	Infant	Future Street

**Parcel Relations**

<b>Related PID</b>	<b>Type Of Relation</b>	<b>Lot Information</b>
70550603	Infant	Future Street
70550611	Infant	Future Street
70550629	Infant	Future Street
70550637	Infant	Future Street
70550645	Infant	Future Street
70550652	Infant	Public Street DesBrisay



Property Map

Scale/Échelle 1:9514

Date: 2022/06/10 09:37:12



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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.

<b>PID:</b>	70518634	<b>County:</b>	Westmorland
<b>Status:</b>	Active	<b>Active Date/Time:</b>	2009-12-22 10:07:12
<b>Land Related Description:</b>	Land	<b>Management Unit:</b>	NB1410
<b>Area:</b>	33.84	<b>Area Unit:</b>	Hectares
<b>Date Last Updated:</b>	2010-01-15 13:39:35	<b>Harmonization Status:</b>	Harmonized
<b>Land Titles Status:</b>	Land Titles	<b>Land Titles Date/Time:</b>	2009-12-23 14:32:57
<b>Date of Last CRO:</b>	2009-12-23 14:32:57	<b>Manner of Tenure:</b>	Not Applicable
<b>Land Gazette Information:</b>	NO		

**Description of Tenure:**

**Public Comments:**

MAP/CARTE 14TE1

### Parcel Interest Holders

Owner	Qualifier	Interest Type
Moncton Industrial Development Limited		Owner

### Assessment Reference

PAN	PAN Type	Taxing Authority Code	Taxing Authority
6048103		600	CITY OF/CITE DE MONCTON

### Parcel Locations

Civic Number	Street Name	Street Type	Street Direction	Place Name
	Horseman	Road		Moncton

### County Parish

County	Parish
Westmorland	Moncton

### Documents

Number	Registration Date	Book	Page	Code	Description
28208685	2009-12-23			3800	Land Titles First Notice
28208677	2009-12-23			3720	Land Titles First Order
28208412	2009-12-23			3900	Land Titles First Application
28196310	2009-12-21			1100	Deed/Transfer

### Plans

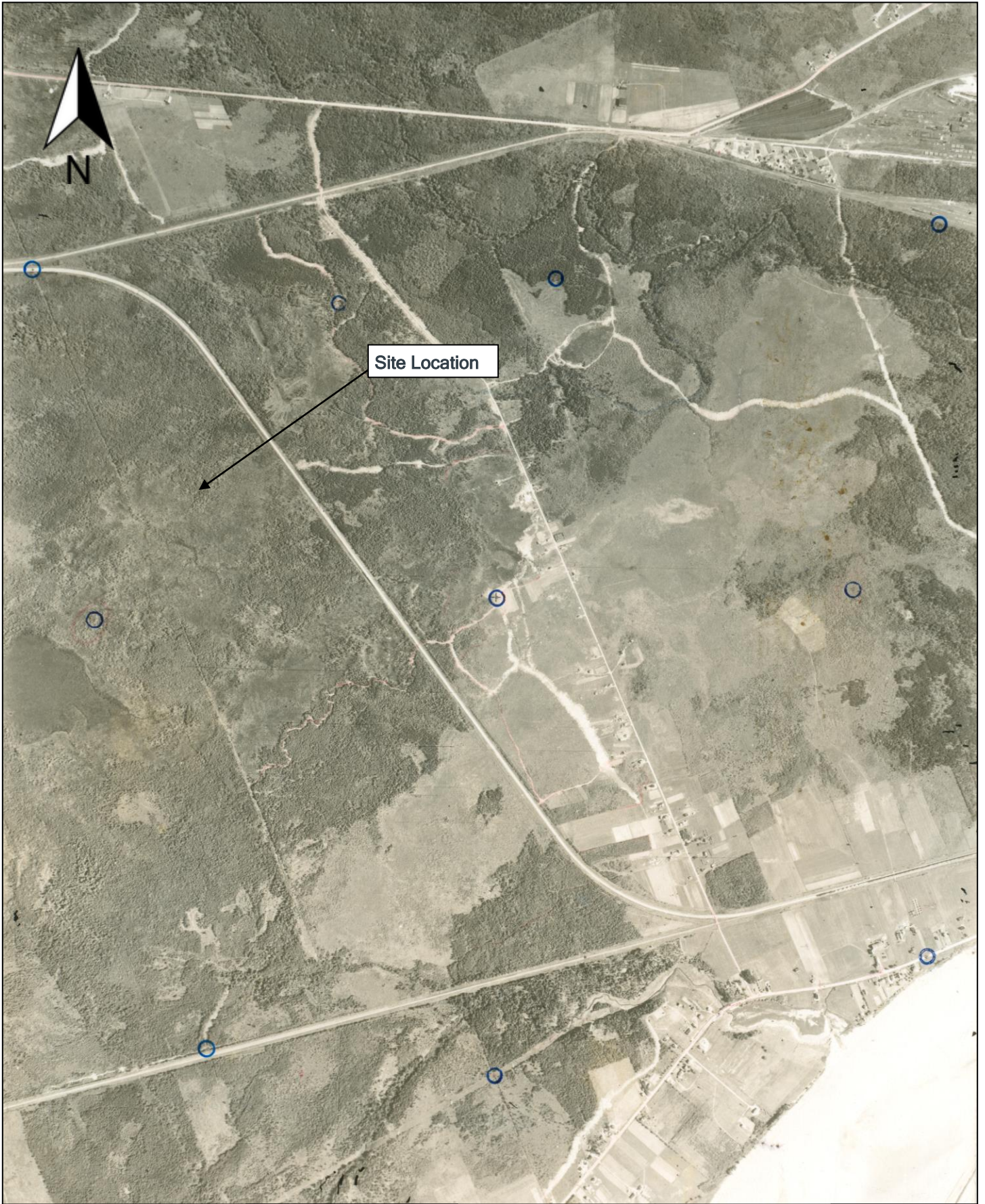
Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
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**Plans**

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
28196294		2009-12-21	9040	Retracement & Plan or Return of Survey	Lot 09- 500	Provincial Grid

**Parcel Relations**

Related PID	Type Of Relation	Lot Information
935049	Parent	Lot



Job No.: 2111247  
Date: October 2022  
Scale: approx. Unknown

1945 - Aerial Photograph  
MIP West Phase 2 Development (PID Nos.  
01023076 and 70518634), Moncton NB

Plate C-1









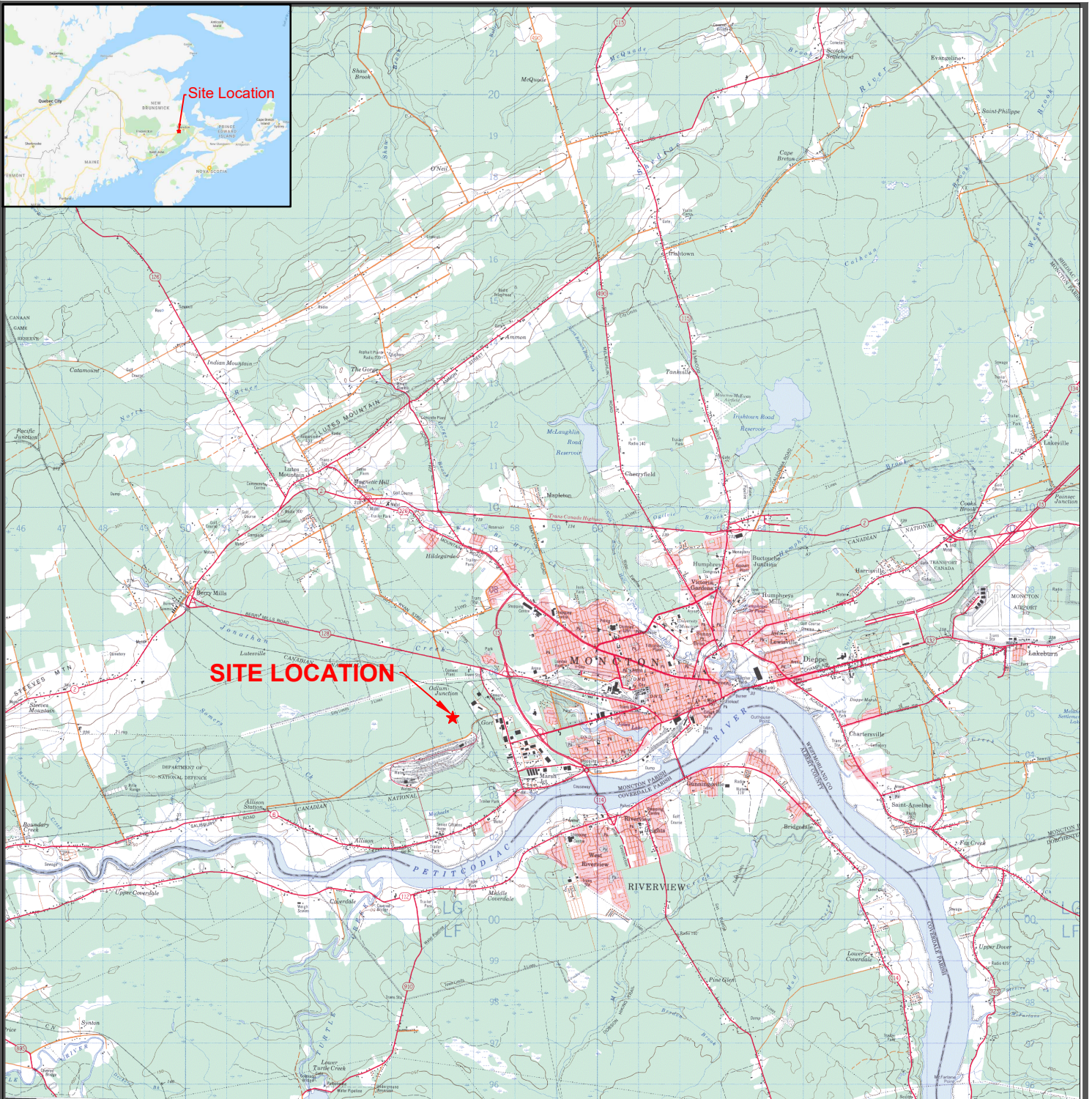
# Appendix B Figures:

Figure 1 - Overall Location Plan

Figure 2 - Site Area and Surrounding Land Use Figure 3 - Development Area and Delineated Wetlands Figure 4 - Proposed Infrastructure



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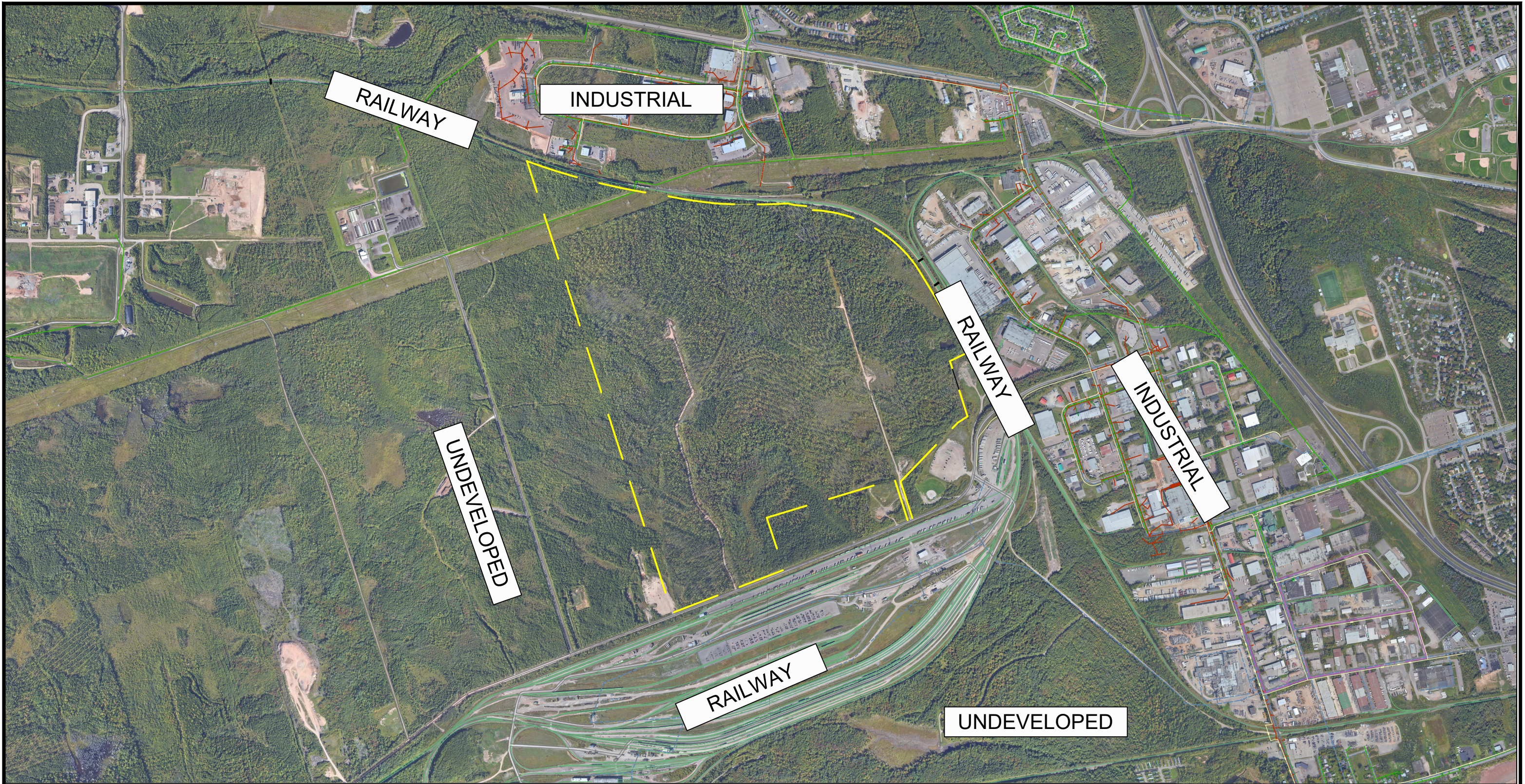
## Moncton Industrial Development

Environmental Impact Assessment  
 Moncton Industrial Park West Phase 2  
 Moncton, New Brunswick

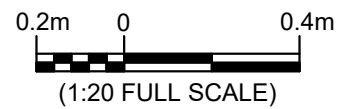
## Site Location Plan

Discipline:	Environment	Prepare by:	JM	Verify by:	JM
Scale:	1: 50,000	Draw by:	DB	Approval by:	SF
Date:	November 10, 2022	Figure no:	1		
Page setup:	Paper size:	Register no.:			
Figure 1	Letter				

Man.	Project	Otp	Project	Phase	Electronic ref.	Rev.
148	2111247	000	0	-	-	-



Moncton Industrial Development



Environmental impact Assessment  
 Moncton Industrial Park West Phase 2  
 Moncton, New Brunswick

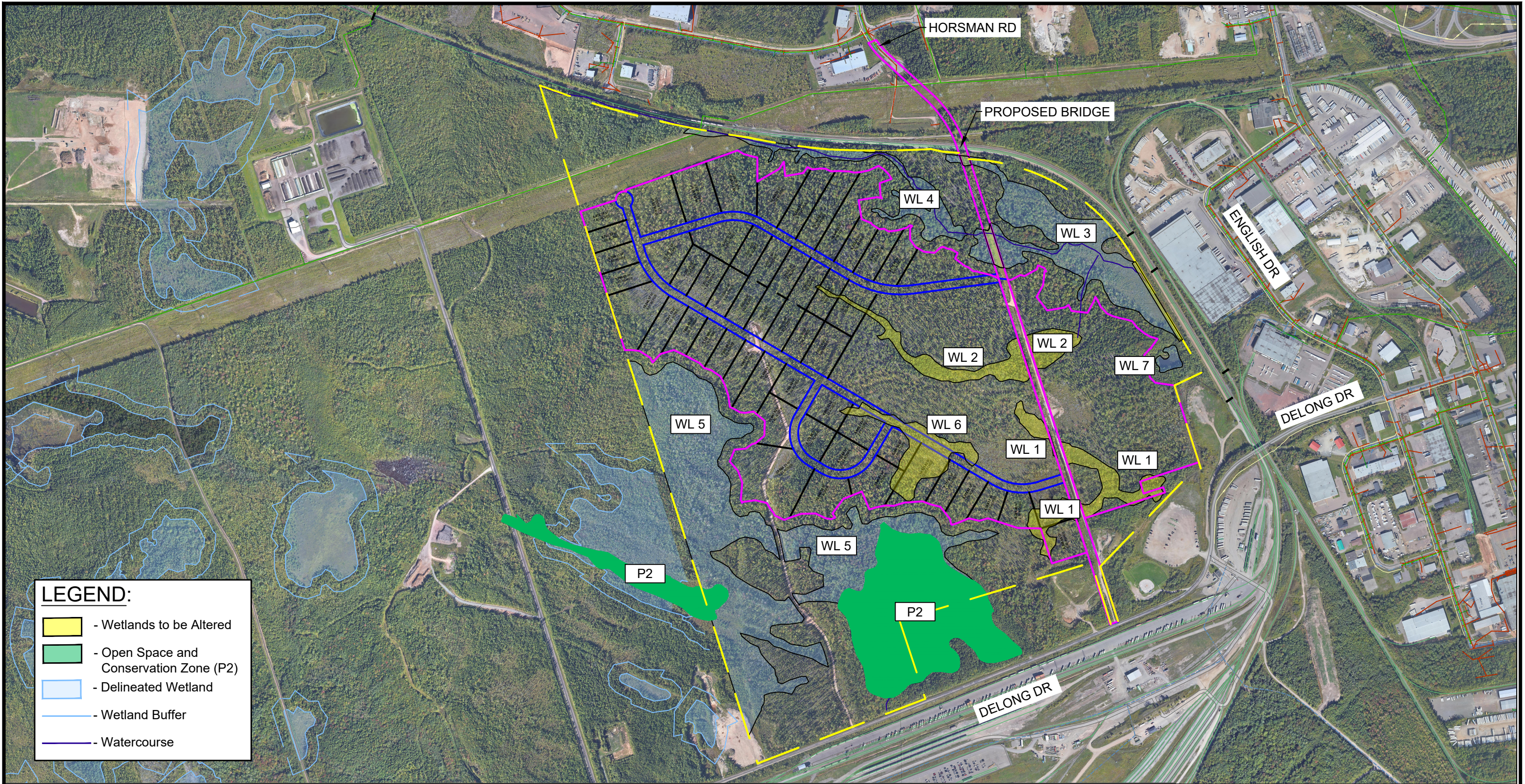
SITE PLAN



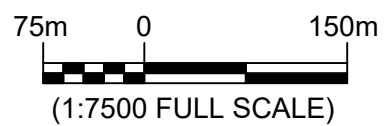
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02	Version 02	Sept. 2022	DB	AS	SF
No.	Version	Date	By	Verif	Appr.
Discipline:	Environment		Prepare by:	TM	Verify by:
Scale:	1: 10000		Draw by:	JJ	Approval by:
Date:	November 10, 2022		Figure no:	2	
Page setup:	Paper size:		Register no.:		
Figure 2 - Site Plan	ANSI full bleed B (11.00 x 17.00 inches)				
Man.	Project	Otp	Project	Phase	Electronic ref.
148	2111247	000			



Moncton Industrial Development



Environmental Impact Assessment  
 Moncton Industrial Park West Phase 2  
 Moncton, New Brunswick



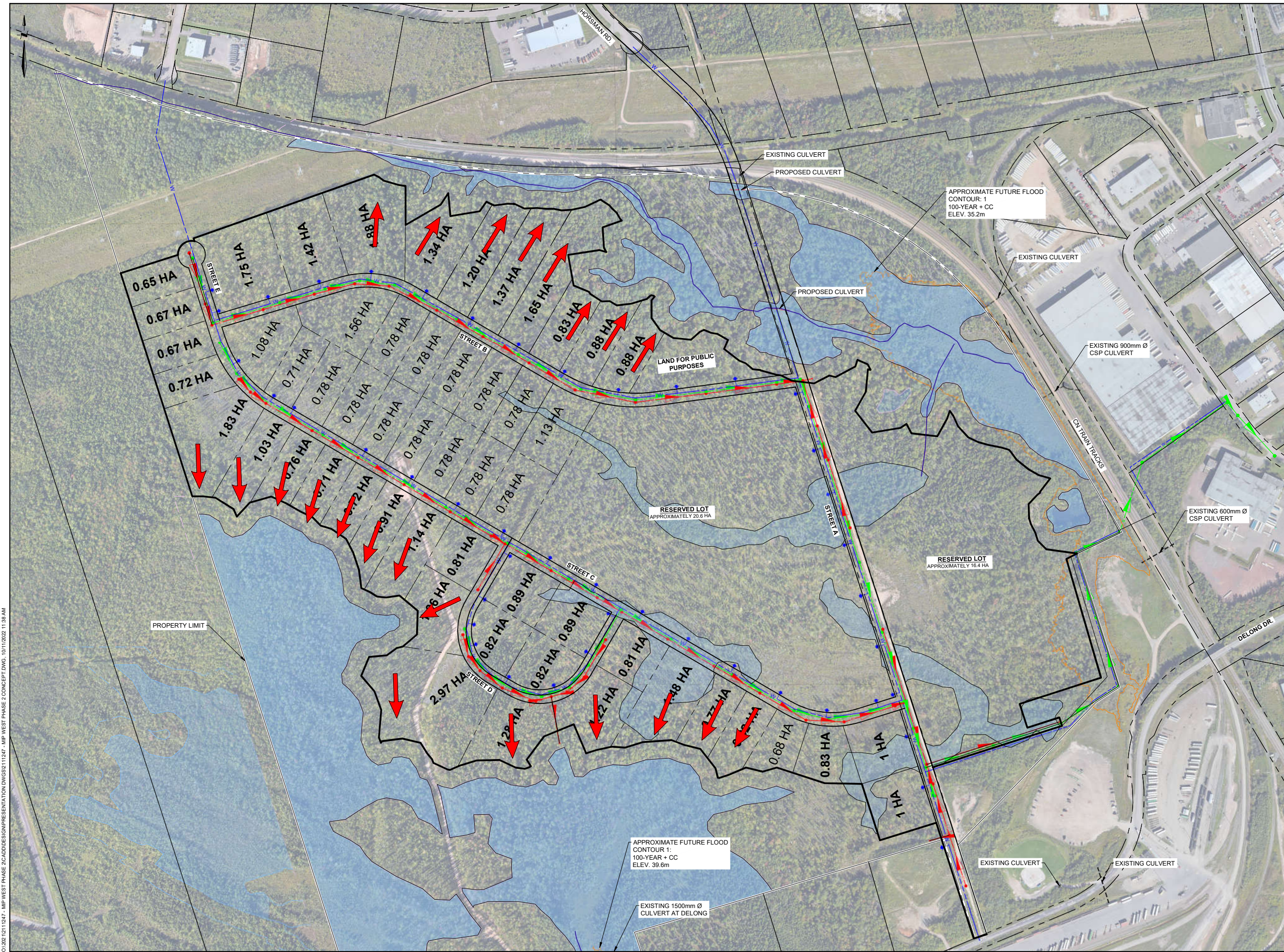
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**DEVELOPMENT PLAN**

03	Version 02	Sept. 2022	DB	AS	SF	
No.	Version	Date	By	Verif	Appr.	
Discipline:	Environment		Prepare by:	TM	Verify by:	TM
Scale:	1: 10000		Draw by:	JJ	Approval by:	SF
Date:	November 10, 2022		Figure no:			2
Page setup:	Paper size:		Register no.:			
Man.	Project	Otp	Project	Phase	Electronic ref.	Rev.
148	2111247	000				



NOTES

1. LOT CONFIGURATION IS PRELIMINARY ONLY. TO BE REFINED.

**LEGEND**

- PROPOSED STORM SEWER
- DIRECTION OF PIPE FLOW
- LOT DRAINAGE
- PROPOSED SAN SEWER
- DIRECTION OF PIPE FLOW
- PROPOSED WATER MAIN
- PROPOSED HYDRANT

TBD	ISSUED FOR REPORT	JT	
NO.	DATE	REVISIONS	BY APPR.

**Moncton Industrial Development**

**ENGLOBE**

PRELIMINARY ONLY

NOT TO BE USED FOR CONSTRUCTION

PROJECT TITLE

Environmental Impact Assessment  
Moncton Industrial Park West Phase 2  
Moncton, New Brunswick

MONCTON NB

DRAWING TITLE

Figure 4  
Proposed Infrastructure

Scale  30m 0 60m (1:3000 FULL SCALE)	Drawn By	Design By
	Checked By	Cadd Check
	Sheet	of

File Name  
2111247 - MIP WEST PHASE 2 CONCEPT.DWG

Drawing No.  
2111247-1P-C03

01/22/2022 11:24:47 - MIP WEST PHASE 2 CONCEPT.DWG - 10/11/2022 11:38 AM



# Appendix C Wetland Delineation Report - Hive Engineering



**eNGLOBE**

**Wetland Delineation Report**  
PIDs 01023076 and 70518624  
Moncton, New Brunswick

Prepared for:

**Moncton Industrial Development**  
655 Main Street  
Moncton, New Brunswick  
E1C 1E8

Project: NB22.03.093  
June 2, 2022





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

June 2, 2022  
Project: NB22.03.083

**Moncton Industrial Development**

655 Main Street  
Moncton, New Brunswick  
E1C 1E8

Attention: Pierre Dupuis, General Manager

**Re: Wetland Delineation Report  
PIDs 01023076 & 70518624, Moncton, New Brunswick**

---

At your request, Hive Engineering Limited in conjunction with Boreal Environmental has prepared the following wetland delineation report for Moncton Industrial Development (MID) for the properties identified as PIDs 01023076 & 70518624 located in Moncton, 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

Derrick Mitchell, R.P.F.  
Recognized Wetland Delineator  
Ecologist, Boreal Environmental

## TABLE OF CONTENTS

1.0	Introduction .....	1
2.0	Regulatory Framework .....	1
3.0	Wetland Delineation Methodology .....	1
3.1	Vegetation .....	2
3.2	Soils .....	3
3.3	Hydrology .....	3
4.0	Wetland Delineation Results.....	3
4.1	General Site Conditions .....	3
4.2	Detailed Wetland Description .....	4
4.2.1	Wetland Data Point Conditions for WL1.....	4
4.2.2	Upland Data Point Conditions for WL1.....	5
4.2.3	Wetland Data Point Conditions for WL2.....	5
4.2.4	Upland Data Point Conditions for WL2.....	5
4.2.5	Wetland Data Point Conditions for WL3.....	6
4.2.6	Upland Data Point Conditions for WL3.....	6
4.2.7	Wetland Data Point Conditions for WL4.....	6
4.2.8	Upland Data Point Conditions for WL4.....	6
4.2.9	Wetland Data Point Conditions for WL5.....	7
4.2.10	Upland Data Point Conditions for WL5.....	7
4.2.11	Wetland Data Point Conditions for WL6.....	7
4.2.12	Upland Data Point Conditions for WL6.....	8
4.2.13	Wetland Conditions for WL7.....	8
5.0	Closure .....	8
6.0	References .....	9

## LIST OF APPENDICES

Appendix A	Wetland Delineation Map
Appendix B	Wetland Delineation Forms
Appendix C	Site Photographs

## 1.0 INTRODUCTION

Hive Engineering Limited (Hive) was retained by Moncton Industrial Development (MID) to delineate wetlands on two properties identified in the New Brunswick Geographical Corporation's PID database as 01023076 and 70518624. The field component of the assessment was completed by Derrick Mitchell, R.F.P., a Recognized Wetland Delineator. The properties are located north of the CN Railyard in Moncton, New Brunswick (the Project Area). The wetland assessment was conducted to assist in understanding permitting and environmental assessment requirements for the development of the properties as part of an expansion to Moncton's industrial parks.

## 2.0 REGULATORY FRAMEWORK

Watercourses and wetlands are regulated in New Brunswick under the Watercourse and Wetland Alteration (WAWA) Regulation, New Brunswick Regulation 90-80 of the Clean Water Act. Any proposed alterations within a wetland or watercourse, or within 30 metres of the regulated features, requires a permit issued by the New Brunswick Department of Environment and Local Government (NBDELG).

Under current policy, any wetland greater than one hectare in size and/or contiguous with a watercourse is considered regulated; a delineation is typically required to verify the size of the wetland prior to issuing a permit. Wetland delineations are typically valid for a period of five years following completion of the field work.

Any project that impacts a wetland greater than two hectares in area may be required to register through the Environmental Impact Assessment Regulation, New Brunswick Regulation 87-83 of the New Brunswick Clean Environment Act (Schedule A, Item (v.) "*all enterprises, activities, projects, structures, works or programs affecting two hectares or more of bog, march, swamp or other wetland*").

## 3.0 WETLAND DELINEATION METHODOLOGY

Between October 9 and October 13, 2020, Derrick Mitchell, R.F.P. identified and delineated wetlands on PIDs 01023076 and 70518624. The wetland delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (2006) and Regional Supplement (2012). Wetland boundaries were delineated through paired point wetland analysis. A figure depicting the locations of the delineated wetlands is presented in Appendix A.

Wetland data were recorded on NBDELG-issued Wetland Delineation Data Sheets, which are presented in Appendix B. *Munsell Soil Color Charts* (Kollmorgen Instruments Co. 1990) were used to identify hydric soils within the survey area and the *Flora of New Brunswick* (Hinds 2000) was consulted for plant nomenclature and identification.

Wetlands were identified using the following criteria:

- The vegetation cover was a minimum of 50%;
- The majority of dominant vegetation species are wetland associated species;
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season; and
- Hydric soils are present.

Data point locations were evaluated for vegetation, hydrology, and soil conditions to support a determination of wetland or non-wetland status. The location of boundary and data points were recorded using a Samsung Tab 8 field computer and the Qfield data collection application. The field computer was connected to a Garmin GLO GPS receiver with a stated accuracy of +/- 3 m.

### 3.1 Vegetation

The Corps of Engineers Wetlands Delineation Manual defines hydrophytic vegetation as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. To classify an area as 'wetland,' hydrophytic vegetation should be the dominant plant type.

Two methods, the '50/20 rule' and the Prevalence Index were used to assess the dominance of hydric vegetation. Using the '50/20 rule', dominant plant species observed at each data point were classified according to their indicator status (probability of occurrence in wetlands). If the majority (greater than 50 percent) of the dominant vegetation within the assessment area were classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC) (excluding FAC-), then the site was considered to be dominated by hydrophytic vegetation.

The Prevalence Index is a weighted-average of the wetland indicator status of all species in the sample (OBL=1, FACW=2, FAC=3, FACU=4, UPL=5). Calculated values less than or equal to three represent wetland or hydrophytic vegetation, and values greater than three represent upland vegetation.

## 3.2 Soils

Hydric soil is formed when it is saturated, flooded, or experiences ponding over an extended period of time during the growing season, creating anaerobic conditions. Hydric soil indicators include soil color (gleyed soils and soils with bright mottles and/or low matrix chroma), aquic or preaquic moisture regime, reducing soil conditions, sulfidic material (odor), soils listed on hydric soils list, iron and manganese concretions, organic soils (Histosols), histic epipedon, high organic content in surface layer in sandy soils, and organic streaking in sandy soils.

At each data point, a soil pit was excavated and the soil was then examined for hydric soil indicators. The matrix color and mottle color (if present) of the soil was determined using Munsell Soil Color Charts. To establish whether or not a soil was hydric, hydric indicators were determined using Fielded Indicators of the Hydric Soils in the United States, A Guide to Identifying and Delineating Hydric Soils, Version 6.0 (USDA and NRCS 2006).

## 3.3 Hydrology

At each site, the presence of any hydrology indicators (primary and/or secondary) was recorded. Primary indicators of wetland hydrology include but are not limited to: water marks; drift lines; sediment deposition; drainage patterns; visual observation of saturated soils; and visual observation of inundation.

In addition to the primary indicators, there is a variety of secondary wetland hydrology indicators. Secondary indicators include but are not limited to: oxidized root channels in the upper 30 cm; water-stained leaves; and local soil survey data. When no primary indicators of wetland hydrology were observed at a data point, two or more secondary indicators were used to confirm wetland hydrology.

## 4.0 WETLAND DELINEATION RESULTS

The following sections describe the general site conditions encountered during the survey as well as a detailed description of the wetlands identified.

### 4.1 General Site Conditions

Most of the upland within the Project area has recently been clearcut and was covered in logging slash. Some partial harvesting has taken place in the wetlands; however, field observations suggest that the ground was likely too wet for heavy machinery to track through these areas. In the areas where partial harvesting of wetland had taken place, rutting was observed.

A total of seven of wetlands were identified on-site; several of the wetlands have been bisected by forest access roads.

Wetland 1 has been altered by the presence of the forest access road; therefore, we have classified the wetland into three sub-areas (wetlands 1a, 1b and 1c); these areas are hydrologically connected by culverts located underneath an existing forest access road. Wetlands 2 (sub-areas 2a and 2b) and 5 (sub-areas 5a and 5b) are also separated by forest access roads, but hydrologically connected by culverts. The Figure presented in Appendix A provides the locations of the wetlands and forest access roads. Table 1 summarizes delineated wetlands by type, size, and watershed association.

**Table 1: Summary of Wetlands Delineated On-Site (October 2020)**

Wetland ID	Area (ha)	Wetland Type*	Watercourse	Associated Watershed
WL 1a, b, c	3.0	Tall shrub swamp	No	Jonathon Creek
WL 2a, b	3.1	Mixed forest swamp	Yes	Jonathon Creek
WL 3	7.7	Graminoid basin swamp	Yes	Jonathon Creek
WL 4	2.7	Deciduous riparian swamp	Yes	Jonathon Creek
WL 5a, b	29.2	Coniferous bog/deciduous swamp complex	Yes	Michaels Creek
WL 6	2.8	Mixed forest swamp	No	Michaels Creek
WL 7	0.32	Man-made pond	No	Jonathon Creek

\*Canadian Wetland Classification System (CWCS 1997)

Two watercourses and several drainage swales were encountered during the survey. The largest watercourse (including a local seasonal tributary) is an unnamed tributary to Jonathon Creek. The tributary discharges to Jonathan Creek approximately 1 kilometre northwest of the property boundary. The other watercourse encountered on-site is an unnamed tributary to Michaels Creek; the tributary discharges to Michaels Creek at a distance of approximately 600 metres south of the property boundary.

## 4.2 Detailed Wetland Description

### 4.2.1 Wetland Data Point Conditions for WL1

The tree stratum of WL1 was dominated by mature red maple (*Acer rubrum*) and trembling aspen (*Populus tremuloides*), while the shrub species stratum was dominated by speckled alder (*Alnus incana*). Other shrub species within WL1 included red maple (*Acer rubrum*) and mountain holly (*Nemopanthus mucronatus*), but they were only a minor component of the stratum.



Blue-joint reedgrass (*Calamagrostis canadensis*) was the dominant species in the herbaceous stratum.

Wetland hydrology indicators within WL1 included water-stained leaves and ground saturation. Wetland soils consisted of a 40 cm layer of depleted silt/sand matrix under 2 cm of organics.

#### 4.2.2 Upland Data Point Conditions for WL1

WL1 upland data point was located on a gentle slope. It was dominated by mature mixed forest dominated by red maple and balsam fir (*Abies balsamea*). The shrub stratum was dominated by trembling aspen and wild raisin (*Viburnum nudum*). The herbaceous stratum was dominated by bunchberry (*Cornus canadensis*) and bracken fern (*Pteridium aquilinum*). Other herbaceous species within WL1 were lowbush blueberry (*Vaccinium angustifolium*) and common wintergreen (*Chimaphila umbellata*).

No hydrological indicators were present. A soil pit was excavated to a depth of 40 cm revealing 8 cm of organics over 32 cm of sand textured soil. There were no redoximorphic features observed within the soil layer.

#### 4.2.3 Wetland Data Point Conditions for WL2

The WL2 tree stratum was dominated by red maple and balsam fir. The shrub species stratum was dominated by speckled alder and balsam fir. Other shrub species within WL2 were heart-leaved paper birch (*Betula papyrifera var. cordifolia*), but they were only a minor component of the stratum. The herbaceous stratum was dominated by sensitive fern (*Onoclea sensibilis*), fowl mana grass (*Glyceria striata*), and dwarf red raspberry (*Rubus pubescens*). Other herbaceous species present were velvetleaf blueberry (*Vaccinium myrtilloides*) and evergreen woodfern (*Dryopteris intermedia*).

Wetland hydrology indicators included for WL2 included water-stained leaves and ground saturation. Wetland soils consisted of a 24 cm of depleted mucky silt over 15 cm depleted silt matrix.

#### 4.2.4 Upland Data Point Conditions for WL2

Contributing upland areas for WL2 and WL1 are the same, therefore one upland data point was taken for both WL 1 and WL 2 data points. Refer to WL1 upland data point section for details.

#### 4.2.5 Wetland Data Point Conditions for WL3

The tree stratum of WL3 was dominated by red maple (*Acer rubrum*), while the well-developed shrub stratum was dominated by speckled alder. It also contained gray birch (*Betula populifolia*), meadow-sweet (*Spiraea alba*), pussy willow (*Salix discolor*), red raspberry (*Rubus idaeus*), heart-leaved paper birch, and rhodora (*Rhododendron canadense*). The herbaceous stratum was dominated by blue-joint reedgrass and a nodding sedge (*Carex gynandra*). Other herbaceous plants in the plot were fowl manna-grass, crested shield fern (*Dryopteris cristata*), dwarf red raspberry, and cinnamon fern (*Osmunda cinnamomea*).

Wetland hydrology indicators within WL3 included water-stained leaves and ground saturation. Wetland soils consisted of a thin (4 cm) organic layer over three layers of depleted silt matrix, totalling 39 cm in depth with the lowest layer containing redoximorphic features.

#### 4.2.6 Upland Data Point Conditions for WL3

WL3 upland data point was located on a slope leading down to an old beaver basin swamp. It was dominated by mature mixed forest dominated by red maple and balsam fir. The tree stratum plot also contained heart-leaved paper birch and trembling aspen. The shrub stratum was dominated by trembling aspen, with wild raisin (*Viburnum nudum*) and beaked hazelnut (*Corylus cornuta*) making up a small amount of understory. The herbaceous strata were dominated by bunchberry and bristly dewberry (*Rubus hispidus*).

No hydrological indicators were present. A soil pit was excavated to a depth of 40 cm revealing 5 cm of organics over 40 cm of an undeleted sand/silt textured mineral substrate. There were no redoximorphic features observed.

#### 4.2.7 Wetland Data Point Conditions for WL4

The tree stratum of WL4 was dominated by mature red maple while the shrub species stratum was dominated by speckled alder and winter berry. The herbaceous stratum was dominated by cinnamon fern, sensitive fern, and dwarf red raspberry.

Wetland hydrology within WL4 was apparent with water-stained leaves and ground saturation. Wetland soils consisted of a two layers of depleted silt matrix, totalling 40 cm depth.

#### 4.2.8 Upland Data Point Conditions for WL4

WL4 upland data point was located on a slope leading down to a mature deciduous riparian swamp. It was a partially cut mixed forest dominated by red maple and balsam fir. The shrub

stratum was dominated by trembling aspen, red maple and balsam fir. The shrub stratum also contained lambkill (*Kalmia angustifolia*). The herbaceous strata were dominated by bunchberry and evergreen woodfern.

No hydrological indicators were present. A soil pit was excavated to a depth of 43 cm revealing 12 cm of organics over 28 cm of sand/silt textured mineral substrate. There were no redoximorphic features observed at this location.

#### 4.2.9 Wetland Data Point Conditions for WL5

The tree stratum of WL5 was dominated by black spruce (*Picea mariana*) while the shrub species stratum was dominated by rhodora (*Rhododendron canadense*). Other shrubs in the plot included lambkill (*Kalmia angustifolia*), late lowbush blueberry (*Vaccinium angustifolium*) and mountain holly (*Nemopanthus mucronatus*). The herbaceous stratum was solely dominated by tussock sedge (*Carex stricta*).

Wetland hydrology within WL5 was apparent with high water table and saturated substrate. Wetland soils consisted of a deep histosol.

#### 4.2.10 Upland Data Point Conditions for WL5

WL5 upland data point was located on a slope leading down to a mature coniferous bog. It was a mature buffered mixed forest dominated by balsam fir, black spruce, gray birch, and trembling aspen. The shrub stratum was dominated by lambkill, also containing, trembling aspen, and gray birch. The herbaceous strata were dominated by bracken fern (*Pteridium aquilinum*) and trailing arbutus (*Epigaea repens*), also containing bunchberry and dewdrop (*Rubus repens*).

No hydrological indicators were present. A soil pit was excavated to a depth of 40 cm revealing 10 cm of organics over 30 cm of sand/silt textured mineral substrate. There were no redoximorphic features observed at this location.

#### 4.2.11 Wetland Data Point Conditions for WL6

The WL6 tree stratum was dominated by mature red maple and balsam fir. The shrub species stratum was dominated by speckled alder and balsam fir. The dominant species in the herbaceous stratum sensitive fern, blue-joint reedgrass, fowl mana grass and dwarf red raspberry.

Wetland hydrology indicators included for WL6 included water-stained leaves and ground saturation. Wetland soils consisted of a 3 cm of organics over 39 cm of depleted silt matrix.

#### 4.2.12 Upland Data Point Conditions for WL6

Contributing upland areas for WL1 are the same as WL6. Refer to WL1 upland data point for upland information pertaining to WL6.

#### 4.2.13 Wetland Conditions for WL7

WL7 was delineated because it was observed on GeoNB (i.e., a provincially mapped wetland); however, it is only 0.32 ha in size and it is not contiguous with a watercourse. It is unclear why this wetland is included in the provincial wetland inventory as it does not meet the criteria to be a regulated wetland feature. WL7 is a man-made wetland that formed in an exhausted or abandon aggregate pit (see Appendix C).

## 5.0 CLOSURE

The assessment has identified seven wetlands on-site; three of which are connected hydrologically by culverts traversing underneath existing forest access roads.

Six of the seven wetlands are greater than 2 hectares in area. Any work in or within 30 metres of these wetlands will require a permit (WAWA) issued by the NBDELG. Furthermore, any disturbance to these wetlands is potentially subject to an Environmental Impact Assessment under the Clean Environment Act. This document should be shared with regulatory authorities in order to understand of the assessment and permitting requirements associated with development of the property.

## 6.0 REFERENCES

Canadian Wetland Classification System (2nd Ed.). (1997). University of Waterloo, Waterloo, ON.

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Fish and Wildlife Service. 1988. National List of Plant Species that Occur in Wetlands, Region 1.

Hinds, H.R. 2000. Flora of New Brunswick, 2nd Ed., University of New Brunswick Press, Fredericton, NB.

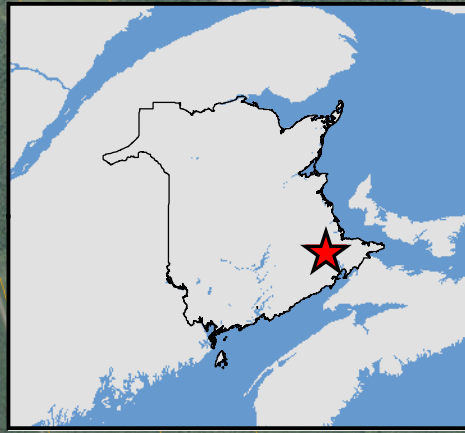
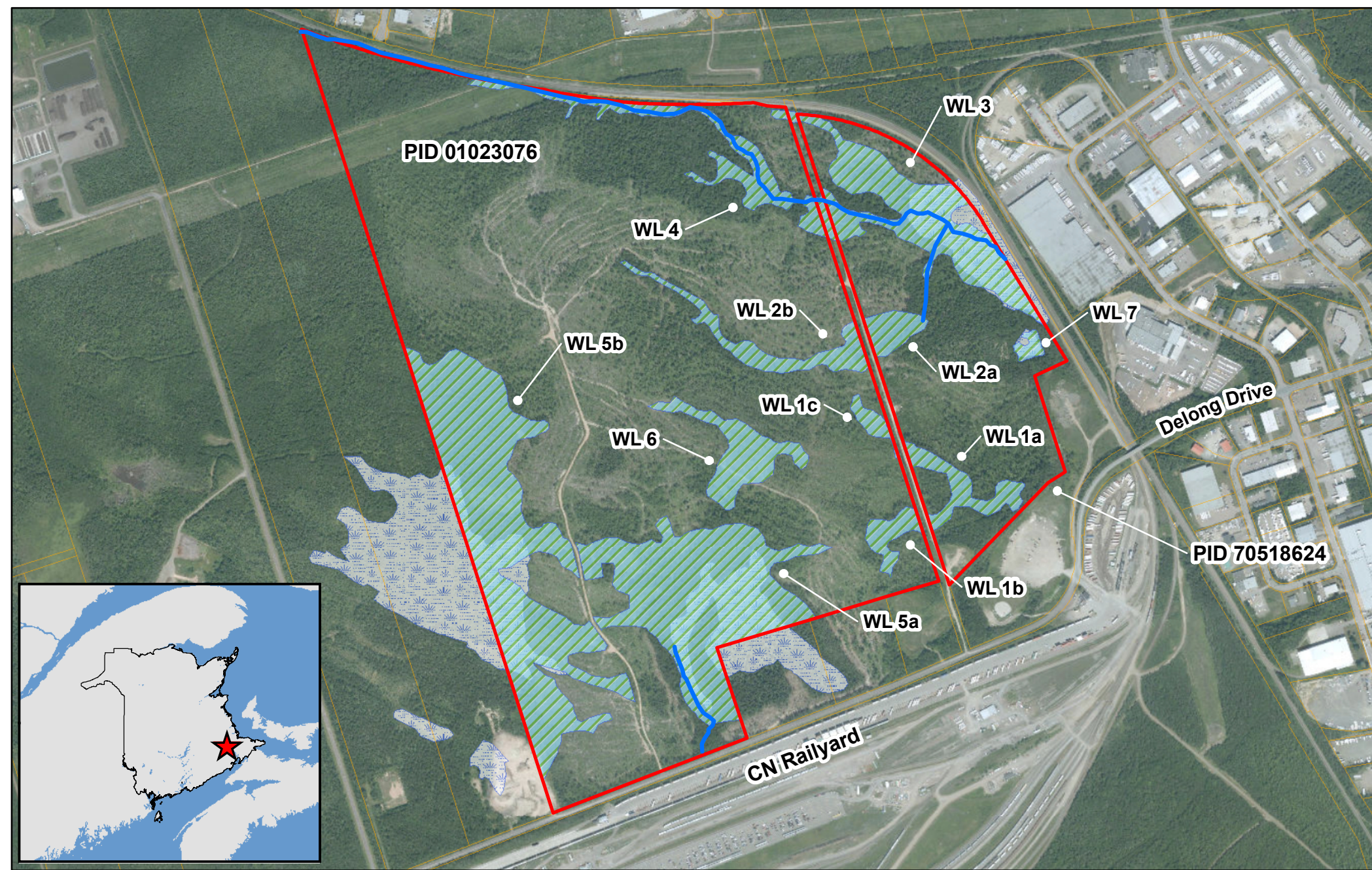
Kollmorgen Instruments Company. 1990. Munsell Soil Color Charts. Kollmorgen Corporation. Baltimore, Maryland.

USDA NRCS. 2018. Field Indicators of Hydric Soils in the United States A Guide for Identifying and Delineating Hydric Soils, Version 8.2.



## APPENDIX A

### Wetland Delineation Map



**Moncton Industrial Development  
Wetland Delineation**

Moncton, NB  
May 7, 2022

150 75 0 150 300 Meters

Imagery source: Esri

- Project area
- Property boundaries
- Delineated wetlands
- Provincially mapped wetlands
- Unmapped watercourses





## APPENDIX B

### Wetland Delineation Forms



## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13, 2020  
 Applicant/Owner: MID Sampling Point: WL1 wet  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): Concave Slope (%): 0 X coord: 2627329.6 Y coord 7455146.0  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: NA Wetland Type: Tall Shrub Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? YES X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>																
1. <u>Acer rubrum</u>	<u>5</u>	<u>YES</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. <u>Populus tremuloides</u>	<u>5</u>	<u>YES</u>	<u>FAC</u>																	
3. _____																				
4. _____																				
5. _____																				
<u>10</u> = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____ x 1 = _____</td> <td></td> </tr> <tr> <td>FACW species <u>130</u> x 2 = <u>260</u></td> <td></td> </tr> <tr> <td>FAC species <u>25</u> x 3 = <u>75</u></td> <td></td> </tr> <tr> <td>FACU species _____ x 4 = _____</td> <td></td> </tr> <tr> <td>UPL species _____ x 5 = _____</td> <td></td> </tr> <tr> <td>Column Totals: <u>155</u> (A)</td> <td><u>335</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.16</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____ x 1 = _____		FACW species <u>130</u> x 2 = <u>260</u>		FAC species <u>25</u> x 3 = <u>75</u>		FACU species _____ x 4 = _____		UPL species _____ x 5 = _____		Column Totals: <u>155</u> (A)	<u>335</u> (B)	Prevalence Index = B/A = <u>2.16</u>	
Total % Cover of:	Multiply by:																			
OBL species _____ x 1 = _____																				
FACW species <u>130</u> x 2 = <u>260</u>																				
FAC species <u>25</u> x 3 = <u>75</u>																				
FACU species _____ x 4 = _____																				
UPL species _____ x 5 = _____																				
Column Totals: <u>155</u> (A)	<u>335</u> (B)																			
Prevalence Index = B/A = <u>2.16</u>																				
<b>Sapling/Shrub Stratum ( Plot size: <u>5</u> )</b>																				
1. <u>Alnus incana</u>	<u>60</u>	<u>YES</u>	<u>FACW</u>																	
2. <u>Acer rubrum</u>	<u>5</u>		<u>FAC</u>																	
3. <u>Nemopanthus mucronatus</u>	<u>5</u>		<u>FAC</u>																	
4. _____																				
5. _____																				
6. _____																				
<u>70</u> = Total Cover																				
<b>Herb Stratum ( Plot size: <u>1</u> )</b>																				
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>YES</u>	<u>FACW</u>																	
2. <u>Doellingeria umbellata</u>	<u>5</u>		<u>FAC</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
<u>75</u> = Total Cover																				
<b>Woody Vine Stratum ( Plot size: _____ )</b>																				
1. <u>No woody vines</u>																				
2. _____																				
<u>155</u> = Total Cover																				
Remarks:																				

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ Rapid Test for Hydrophytic Vegetation  
X Dominance Test is >50%  
X Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

**SOIL**

Sampling Point: WL1 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
2							Organic	
40+	7.5YR/3/2	95	5YR/5/8	5			Silt/Sand	

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

<b>Hydric Soil Indicators:</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surfaces (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 c Mucky Peat or Peat (S3) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (F22) <input type="checkbox"/> Other (Explain in Remarks)
--	---	--

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: <u>NA</u> Depth (cm): <u>NA</u>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Redoximorphic features present	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____ Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____ Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (cm): <u>0</u> (includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL1 & WL2 up  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): None Slope (%): 2 X coord: 2627332.5 Y coord 7455157.5  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Mature Mixed Forest

Are climatic / hydrologic conditions on the site typical for this time of year? **Yes** X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? **Yes** X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Betula populifolia</u>	<u>10</u>		FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)														
2. <u>Populus tremuloides</u>	<u>20</u>	YES	FAC															
3. <u>Abies balsamea</u>	<u>30</u>	YES	FAC															
4. <u>Acer rubrum</u>	<u>5</u>		FAC															
5. <u>Betula papyrifera var. cordifolia</u>	<u>5</u>		FACU															
	<u>70</u>	= Total Cover		<b>Prevalence Index worksheet:</b> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: right;">Multiply by:</td> </tr> <tr> <td>OBL species _____ x 1 = _____</td> <td></td> </tr> <tr> <td>FACW species _____ x 2 = _____</td> <td></td> </tr> <tr> <td>FAC species <u>127</u> x 3 = <u>381</u></td> <td></td> </tr> <tr> <td>FACU species <u>5</u> x 4 = <u>20</u></td> <td></td> </tr> <tr> <td>UPL species <u>6</u> x 5 = <u>30</u></td> <td></td> </tr> <tr> <td>Column Totals: <u>138</u> (A) <u>431</u> (B)</td> <td></td> </tr> </table> Prevalence Index = B/A = <u>3.12</u>	Total % Cover of:	Multiply by:	OBL species _____ x 1 = _____		FACW species _____ x 2 = _____		FAC species <u>127</u> x 3 = <u>381</u>		FACU species <u>5</u> x 4 = <u>20</u>		UPL species <u>6</u> x 5 = <u>30</u>		Column Totals: <u>138</u> (A) <u>431</u> (B)	
Total % Cover of:	Multiply by:																	
OBL species _____ x 1 = _____																		
FACW species _____ x 2 = _____																		
FAC species <u>127</u> x 3 = <u>381</u>																		
FACU species <u>5</u> x 4 = <u>20</u>																		
UPL species <u>6</u> x 5 = <u>30</u>																		
Column Totals: <u>138</u> (A) <u>431</u> (B)																		
Sapling/Shrub Stratum ( Plot size: <u>5</u> )																		
1. <u>Viburnum nudum</u>	<u>15</u>	YES	FAC															
2. <u>Populus tremuloides</u>	<u>25</u>	YES	FAC															
3. <u>Betula populifolia</u>	<u>10</u>		FAC															
4. _____																		
5. _____																		
6. _____																		
	<u>50</u>	= Total Cover																
Herb Stratum ( Plot size: <u>1</u> )																		
1. <u>Cornus canadensis</u>	<u>10</u>	YES	FAC															
2. <u>Chimaphila umbellata</u>	<u>1</u>		UPL															
3. <u>Pteridium aquilinum</u>	<u>5</u>	YES	UPL															
4. <u>Vaccinium angustifolium</u>	<u>2</u>		FAC															
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
	<u>18</u>	= Total Cover																
Woody Vine Stratum ( Plot size: _____ )																		
1. <u>No woody vines</u>																		
2. _____																		
	<u>138</u>	= Total Cover																
Remarks: (Include photo numbers here or on a separate sheet.)																		

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ Rapid Test for Hydrophytic Vegetation  
X Dominance Test is >50%  
 \_\_\_ Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

**SOIL**

Sampling Point: WL1 & WL2 up

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

Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
8							Organic	
32	7.5YR/5/8						Sandy	

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

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

- Stripped Matrix (S6)
- Dark Surfaces (S7)
- Polyvalue Below Surface (S8)
- Thin Dark Surface (S9)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

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

**Hydric Soil Present? Yes \_\_\_\_\_ No X**

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

**Field Observations:**

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

**Wetland Hydrology Present? Yes \_\_\_\_\_ No X**

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

Remarks:

## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL2 wet  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): Concave Slope (%): 0 X coord: 2627283.2 Y coord: 7455385.1  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Mixed Forest Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? **Yes**  **No** \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? **Yes**  **No** \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Abies balsamea</u>	<u>40</u>	<u>YES</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)														
2. <u>Acer rubrum</u>	<u>30</u>	<u>YES</u>	<u>FAC</u>															
3. <u>Betula papyrifera var. cordifolia</u>	<u>5</u>		<u>FAC</u>															
4. _____																		
5. _____																		
<u>75</u> = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>70</u></td> <td>x 2 = <u>140</u></td> </tr> <tr> <td>FAC species <u>109</u></td> <td>x 3 = <u>327</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>179</u> (A)</td> <td><u>467</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.6</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>70</u>	x 2 = <u>140</u>	FAC species <u>109</u>	x 3 = <u>327</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>179</u> (A)	<u>467</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species <u>70</u>	x 2 = <u>140</u>																	
FAC species <u>109</u>	x 3 = <u>327</u>																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: <u>179</u> (A)	<u>467</u> (B)																	
<u>50</u> = Total Cover																		
Sapling/Shrub Stratum ( Plot size: <u>5</u> )																		
1. <u>Alnus incana</u>	<u>30</u>	<u>YES</u>	<u>FACW</u>															
2. <u>Abies balsamea</u>	<u>15</u>	<u>YES</u>	<u>FAC</u>															
3. <u>Ilex verticillata</u>	<u>5</u>		<u>FACW+</u>															
4. _____																		
5. _____																		
6. _____																		
<u>50</u> = Total Cover																		
Herb Stratum ( Plot size: <u>1</u> )																		
1. <u>Rubus pubescens</u>	<u>15</u>	<u>YES</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Onoclea sensibilis</u>	<u>20</u>	<u>YES</u>	<u>FACW</u>															
3. <u>Glyceria striata</u>	<u>15</u>	<u>YES</u>	<u>FACW</u>															
4. <u>Vaccinium myrtilloides</u>	<u>2</u>		<u>FAC</u>															
5. <u>Dryopteris intermedia</u>	<u>2</u>		<u>FAC</u>															
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
<u>54</u> = Total Cover																		
Woody Vine Stratum ( Plot size: _____ )																		
1. <u>No woody vines</u>																		
2. _____																		
<u>179</u> = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

**SOIL**

Sampling Point: WL2 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
24	7.5YR/2.5/1						Silt	Mucky silt
15	7.5YR/4/2	90	7.5YR/4/6	10			Silt	
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.								
<b>Hydric Soil Indicators:</b>						<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surfaces (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 c Mucky Peat or Peat (S3) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (F22) <input type="checkbox"/> Other (Explain in Remarks)		
<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
<b>Restrictive Layer (if observed):</b>								
Type: <b>NA</b>								
Depth (cm): <b>NA</b>						<b>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>		
Remarks:								

**HYDROLOGY**

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	
	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>		
Surface Water Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (cm): _____
Water Table Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (cm): _____
Saturation Present? capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (cm): <u>0</u> (includes
		<b>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

**WETLAND DELINEATION DATA FORM – NEW BRUNSWICK**

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL3 wet  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): Concave Slope (%): 1 X coord: 2627346.7 Y coord: 7455625.0  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: [Old] Beaver Basin Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? YES  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

**VEGETATION – Use scientific names of plants.**

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Acer rubrum</i></u>	<u>25</u>	YES	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. <u><i>Populus tremuloides</i></u>	<u>5</u>		FAC																	
3. <u><i>Abies balsamea</i></u>	<u>2</u>		FAC																	
4. _____																				
5. _____																				
	<u>32</u>	= Total Cover		<b>Prevalence Index worksheet:</b> <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>81</u></td> <td>x 2 = <u>162</u></td> </tr> <tr> <td>FAC species <u>56</u></td> <td>x 3 = <u>168</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>137</u> (A)</td> <td><u>330</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.41</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>81</u>	x 2 = <u>162</u>	FAC species <u>56</u>	x 3 = <u>168</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>137</u> (A)	<u>330</u> (B)	Prevalence Index = B/A = <u>2.41</u>	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species <u>81</u>	x 2 = <u>162</u>																			
FAC species <u>56</u>	x 3 = <u>168</u>																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: <u>137</u> (A)	<u>330</u> (B)																			
Prevalence Index = B/A = <u>2.41</u>																				
<b>Sapling/Shrub Stratum ( Plot size: <u>5</u> )</b>																				
1. <u><i>Salix discolor</i></u>	<u>2</u>		FAC																	
2. <u><i>Alnus incana</i></u>	<u>20</u>	YES	FACW																	
3. <u><i>Betula populifolia</i></u>	<u>5</u>		FAC																	
4. <u><i>Spiraea alba</i></u>	<u>5</u>		FAC																	
5. <u><i>Rhododendron canadense</i></u>	<u>1</u>		FAC																	
6. <u><i>Betula papyrifera var. cordifolia</i></u>	<u>2</u>		FACU																	
7. <u><i>Rubus idaeus</i></u>	<u>2</u>		FAC																	
	<u>37</u>	= Total Cover																		
<b>Herb Stratum ( Plot size: <u>1</u> )</b>																				
1. <u><i>Glyceria striata</i></u>	<u>10</u>		FACW																	
2. <u><i>Calamagrostis canadensis</i></u>	<u>30</u>	YES	FACW																	
3. <u><i>Carex gynandra</i></u>	<u>20</u>	YES	FACW																	
4. <u><i>Rubus pubescens</i></u>	<u>2</u>		FAC																	
5. <u><i>Osmunda cinnamomea</i></u>	<u>5</u>		FAC																	
6. <u><i>Dryopteris cristata</i></u>	<u>1</u>		FACW																	
7. _____																				
8. _____																				
9. _____																				
10. _____																				
	<u>68</u>	= Total Cover																		
<b>Woody Vine Stratum ( Plot size: _____ )</b>																				
1. <u>No woody vines</u>																				
2. _____																				
	<u>137</u>	= Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ Rapid Test for Hydrophytic Vegetation  
 X Dominance Test is >50%  
 X Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

**SOIL**

Sampling Point: WL3 wet

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

Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
4							Organic	
16	7.5YR/2.5/1						Silt	
15	7.5YR/5/1						Silt	
8	7.5YR/6/1	80	7.5YR/6/8	10			Silt	

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

<p><b>Hydric Soil Indicators:</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p>	<p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surfaces (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8)</p> <p><input type="checkbox"/> Thin Dark Surface (S9)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Coast Prairie Redox (A16)</p> <p><input type="checkbox"/> 5 c Mucky Peat or Peat (S3)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (F22)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b></p> <p>Type: <b>NA</b></p> <p>Depth (cm): <b>NA</b></p>	<p><b>Hydric Soil Present? Yes X No</b></p>
<p>Remarks:</p>	

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators</u> (minimum of one is required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input checked="" type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators</u> (minimum of two required)</p> <p><input checked="" type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> Marl Deposits (B15)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No _____ Depth (cm): _____</p> <p>Water Table Present? Yes _____ No _____ Depth (cm): _____</p> <p>Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (cm): <u>0</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present? Yes X No</b></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p>		

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)



## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL3 up  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): None Slope (%): 2 X coord: 2627341.0 Y coord: 7455603.3  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Mixed Forest

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Abies balsamea</u>	<u>30</u>	YES	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)														
2. <u>Acer rubrum</u>	<u>20</u>	YES	FAC															
3. <u>Populus tremuloides</u>	<u>5</u>		FAC															
4. <u>Betula papyrifera var. cordifolia</u>	<u>5</u>		FACU															
5. _____																		
	<u>60</u>	= Total Cover		<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: right;">Multiply by:</td> </tr> <tr> <td>OBL species _____ x 1 = _____</td> <td></td> </tr> <tr> <td>FACW species <u>5</u> x 2 = <u>10</u></td> <td></td> </tr> <tr> <td>FAC species <u>67</u> x 3 = <u>201</u></td> <td></td> </tr> <tr> <td>FACU species <u>26</u> x 4 = <u>104</u></td> <td></td> </tr> <tr> <td>UPL species _____ x 5 = _____</td> <td></td> </tr> <tr> <td>Column Totals: <u>98</u> (A) <u>315</u> (B)</td> <td></td> </tr> </table> Prevalence Index = B/A = <u>3.21</u>	Total % Cover of:	Multiply by:	OBL species _____ x 1 = _____		FACW species <u>5</u> x 2 = <u>10</u>		FAC species <u>67</u> x 3 = <u>201</u>		FACU species <u>26</u> x 4 = <u>104</u>		UPL species _____ x 5 = _____		Column Totals: <u>98</u> (A) <u>315</u> (B)	
Total % Cover of:	Multiply by:																	
OBL species _____ x 1 = _____																		
FACW species <u>5</u> x 2 = <u>10</u>																		
FAC species <u>67</u> x 3 = <u>201</u>																		
FACU species <u>26</u> x 4 = <u>104</u>																		
UPL species _____ x 5 = _____																		
Column Totals: <u>98</u> (A) <u>315</u> (B)																		
Sapling/Shrub Stratum ( Plot size: <u>5</u> )																		
1. <u>Populus tremuloides</u>	<u>20</u>	YES	FACU															
2. <u>Viburnum nudum</u>	<u>1</u>		FAC															
3. <u>Corylus cornuta</u>	<u>5</u>		FAC															
4. _____																		
5. _____																		
6. _____																		
	<u>26</u>	= Total Cover																
Herb Stratum ( Plot size: <u>1</u> )																		
1. <u>Cornus canadensis</u>	<u>5</u>	YES	FAC															
2. <u>Rubus hispidus</u>	<u>5</u>	YES	FACW															
3. <u>Oclemena acuminata</u>	<u>1</u>		FACU															
4. <u>Doellingeria umbellata</u>	<u>1</u>		FAC															
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
	<u>12</u>	= Total Cover																
Woody Vine Stratum ( Plot size: _____ )																		
1. <u>No woody vines</u>																		
2. _____																		
	<u>98</u>	= Total Cover																
Remarks: (Include photo numbers here or on a separate sheet.)																		

**Hydrophytic Vegetation Indicators:**  
 Rapid Test for Hydrophytic Vegetation  
 Dominance Test is >50%  
 Prevalence Index is ≤3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

**SOIL**

Sampling Point: WL3 up

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

Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
5							Organic	
15	7.5YR/5/3						Sand/silt	
20	7.5YR/5/6						Sand/silt	

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

<p><b>Hydric Soil Indicators:</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p>	<p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surfaces (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8)</p> <p><input type="checkbox"/> Thin Dark Surface (S9)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Coast Prairie Redox (A16)</p> <p><input type="checkbox"/> 5 c Mucky Peat or Peat (S3)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (F22)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b></p> <p>Type: <b>NA</b></p> <p>Depth (cm): <b>NA</b></p>	<p><b>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b></p>
<p>Remarks:</p>	

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL4 wet  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): Concave Slope (%): 0 X coord: 2626996.9 Y coord: 7455789.4  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Mature Deciduous Riparian Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? **Yes**  **No** \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? **Yes**  **No** \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?    Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present?                    Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present?        Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Acer rubrum</i></u>	<u>65</u>	<b>YES</b>	<b>FAC</b>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. <u><i>Picea glauca</i></u>	<u>2</u>		<b>FAC</b>																	
3. <u><i>Abies balsamea</i></u>	<u>10</u>		<b>FAC</b>																	
4. _____																				
5. _____																				
	<u>77</u>	= Total Cover		<b>Prevalence Index worksheet:</b> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: right;">Multiply by:</td> </tr> <tr> <td>OBL species _____ x 1 = _____</td> <td></td> </tr> <tr> <td>FACW species <u>60</u> x 2 = <u>120</u></td> <td></td> </tr> <tr> <td>FAC species <u>137</u> x 3 = <u>411</u></td> <td></td> </tr> <tr> <td>FACU species _____ x 4 = _____</td> <td></td> </tr> <tr> <td>UPL species _____ x 5 = _____</td> <td></td> </tr> <tr> <td>Column Totals: <u>197</u> (A) <u>531</u> (B)</td> <td></td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.70</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____ x 1 = _____		FACW species <u>60</u> x 2 = <u>120</u>		FAC species <u>137</u> x 3 = <u>411</u>		FACU species _____ x 4 = _____		UPL species _____ x 5 = _____		Column Totals: <u>197</u> (A) <u>531</u> (B)		Prevalence Index = B/A = <u>2.70</u>	
Total % Cover of:	Multiply by:																			
OBL species _____ x 1 = _____																				
FACW species <u>60</u> x 2 = <u>120</u>																				
FAC species <u>137</u> x 3 = <u>411</u>																				
FACU species _____ x 4 = _____																				
UPL species _____ x 5 = _____																				
Column Totals: <u>197</u> (A) <u>531</u> (B)																				
Prevalence Index = B/A = <u>2.70</u>																				
<b>Sapling/Shrub Stratum ( Plot size: <u>5</u> )</b>																				
1. <u><i>Alnus incana</i></u>	<u>30</u>	<b>YES</b>	<b>FACW</b>																	
2. <u><i>Ilex verticillata</i></u>	<u>10</u>	<b>YES</b>	<b>FACW+</b>																	
3. <u><i>Acer rubrum</i></u>	<u>5</u>		<b>FAC</b>																	
4. <u><i>Abies balsamea</i></u>	<u>5</u>		<b>FAC</b>																	
5. _____																				
6. _____																				
	<u>50</u>	= Total Cover																		
<b>Herb Stratum ( Plot size: <u>1</u> )</b>																				
1. <u><i>Onoclea sensibilis</i></u>	<u>20</u>	<b>YES</b>	<b>FACW</b>	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u><i>Rubus pubescens</i></u>	<u>30</u>	<b>YES</b>	<b>FAC</b>																	
3. <u><i>Cornus canadensis</i></u>	<u>5</u>		<b>FAC</b>																	
4. <u><i>Osmunda cinnamomea</i></u>	<u>15</u>	<b>YES</b>	<b>FAC</b>																	
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
	<u>70</u>	= Total Cover																		
<b>Woody Vine Stratum ( Plot size: _____ )</b>																				
1. <u>No woody vines</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____																
2. _____																				
	<u>197</u>	= Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																				

**SOIL**

Sampling Point: WL4 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
20	7.5YR/3/2						Silt	
20	7.5YR/2.5/2						Silt	
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.								
<b>Hydric Soil Indicators:</b>						<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surfaces (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 c Mucky Peat or Peat (S3) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (F22) <input type="checkbox"/> Other (Explain in Remarks)		
<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.								
<b>Restrictive Layer (if observed):</b>								
Type: <b>NA</b>								
Depth (cm): <b>NA</b>						<b>Hydric Soil Present? Yes X No</b>		
Remarks:								

**HYDROLOGY**

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	
	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>		
Surface Water Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (cm): _____
Water Table Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (cm): _____
Saturation Present? capillary fringe)	Yes <input checked="" type="checkbox"/> No _____	Depth (cm): <u>0</u> (includes
		<b>Wetland Hydrology Present? Yes X No</b>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL4 up  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): None Slope (%): 2 X coord: 2626990.1 Y coord: 7455785.2  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Partial Cut Mixed forest

Are climatic / hydrologic conditions on the site typical for this time of year? **Yes**  **No** \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. <u>Abies balsamea</u>	<u>25</u>	YES	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. <u>Acer rubrum</u>	<u>30</u>	YES	FAC																	
3. _____																				
4. _____																				
5. _____																				
<u>55</u> = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species <u>107</u></td> <td>x 3 = <u>321</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>107</u> (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species <u>107</u>	x 3 = <u>321</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>107</u> (A)	_____ (B)	Prevalence Index = B/A = <u>3.0</u>	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species <u>107</u>	x 3 = <u>321</u>																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: <u>107</u> (A)	_____ (B)																			
Prevalence Index = B/A = <u>3.0</u>																				
<b>Sapling/Shrub Stratum ( Plot size: <u>5</u> )</b>																				
1. <u>Abies balsamea</u>	<u>10</u>	YES	FAC																	
2. <u>Acer rubrum</u>	<u>15</u>	YES	FAC																	
3. <u>Populus tremuloides</u>	<u>10</u>	YES	FAC																	
4. <u>Kalmia angustifolia</u>	<u>2</u>		FAC																	
5. _____																				
6. _____																				
<u>37</u> = Total Cover																				
<b>Herb Stratum ( Plot size: <u>1</u> )</b>																				
1. <u>Dryopteris intermedia</u>	<u>10</u>	YES	FAC																	
2. <u>Cornus canadensis</u>	<u>5</u>	YES	FAC																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
<u>15</u> = Total Cover																				
<b>Woody Vine Stratum ( Plot size: _____ )</b>																				
1. <u>No woody vines</u>																				
2. _____																				
<u>107</u> = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ Rapid Test for Hydrophytic Vegetation  
 Dominance Test is >50%  
 Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

**SOIL**

Sampling Point: WL4 up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (cm)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>		
12						Organic	
9	7.5YR/3/3					Silt/Sand	
19	7.5YR/4/6					Silt/sand	

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

<b>Hydric Soil Indicators:</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surfaces (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 c Mucky Peat or Peat (S3) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (F22) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: <b>NA</b> Depth (cm): <b>NA</b>	<b>Hydric Soil Present? Yes _____ No <u>X</u></b>
Remarks:	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b> Surface Water Present? Yes _____ No _____ Depth (cm): _____ Water Table Present? Yes _____ No _____ Depth (cm): _____ Saturation Present? Yes _____ No _____ Depth (cm): _____ (includes capillary fringe)		<b>Wetland Hydrology Present? Yes _____ No <u>X</u></b>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL5 wet  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): Concave Slope (%): 1 X coord: 2627024.0 Y coord: 7454788.0  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Mature coniferous bog

Are climatic / hydrologic conditions on the site typical for this time of year? **Yes**  **No** \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? **Yes**  **No** \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?    Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present?                    Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present?        Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Picea mariana</i></u>	<u>85</u>	<b>YES</b>	<b>FACW</b>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
<u>85</u> = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>85</u></td> <td>x 2 = <u>170</u></td> </tr> <tr> <td>FAC species <u>85</u></td> <td>x 3 = <u>255</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>175</u> (A)</td> <td><u>430</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.45</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>85</u>	x 2 = <u>170</u>	FAC species <u>85</u>	x 3 = <u>255</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>175</u> (A)	<u>430</u> (B)	Prevalence Index = B/A = <u>2.45</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>5</u>	x 1 = <u>5</u>																			
FACW species <u>85</u>	x 2 = <u>170</u>																			
FAC species <u>85</u>	x 3 = <u>255</u>																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: <u>175</u> (A)	<u>430</u> (B)																			
Prevalence Index = B/A = <u>2.45</u>																				
<b>Sapling/Shrub Stratum ( Plot size: <u>5</u> )</b>																				
1. <u><i>Rhododendron canadense</i></u>	<u>60</u>	<b>YES</b>	<b>FAC</b>																	
2. <u><i>Kalmia angustifolia</i></u>	<u>15</u>		<b>FAC</b>																	
3. <u><i>Vaccinium angustifolium</i></u>	<u>5</u>		<b>FAC</b>																	
4. <u><i>Nemopanthus mucronatus</i></u>	<u>5</u>		<b>FAC</b>																	
5. _____																				
6. _____																				
<u>85</u> = Total Cover																				
<b>Herb Stratum ( Plot size: <u>1</u> )</b>																				
1. <u><i>Carex stricta</i></u>	<u>5</u>	<b>YES</b>	<b>OBL</b>																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
<u>5</u> = Total Cover																				
<b>Woody Vine Stratum ( Plot size: _____ )</b>																				
1. <u>No woody vines</u>																				
2. _____																				
<u>175</u> = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Hydrophytic Vegetation Present?**        Yes  No \_\_\_\_\_

**SOIL**

Sampling Point: WL5 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
150							Organics	

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

<b>Hydric Soil Indicators:</b> <input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surfaces (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 c Mucky Peat or Peat (S3) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (F22) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: <u>NA</u> Depth (cm): <u>NA</u>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (cm): <u>15</u> Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (cm): <u>0</u> (includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)





**SOIL**

Sampling Point: WL5 up

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

Depth (cm)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
10							Organic	
30	7.5YR/4/3						Silt/Sand	

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

<p><b>Hydric Soil Indicators:</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p>	<p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surfaces (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8)</p> <p><input type="checkbox"/> Thin Dark Surface (S9)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Coast Prairie Redox (A16)</p> <p><input type="checkbox"/> 5 c Mucky Peat or Peat (S3)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19)</p> <p><input type="checkbox"/> Red Parent Material (F21)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (F22)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b></p> <p>Type: <b>NA</b></p> <p>Depth (cm): <b>NA</b></p>	<p><b>Hydric Soil Present? Yes _____ No <u>X</u></b></p>
<p>Remarks:</p>	

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
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<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No _____ Depth (cm): _____</p> <p>Water Table Present? Yes _____ No _____ Depth (cm): _____</p> <p>Saturation Present? Yes _____ No _____ Depth (cm): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present? Yes _____ No <u>X</u></b></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DELINEATION DATA FORM – NEW BRUNSWICK

Project/Site: Industrial Park Expansion Municipality/County: Westmorland County Sampling Date: Oct 13 - 2020  
 Applicant/Owner: MID Sampling Point: WL6 wet  
 Investigator(s): Derrick Mitchell and Ryan Power Affiliation: Boreal Environmental Landform (hillslope, terrace, etc.): NA  
 Local relief (concave, convex, none): Concave Slope (%): 0 X coord: 2626925.3 Y coord: 7455068.5  
 Datum: NAD83 NBDS Soil Map Unit Name/Type: \_\_\_\_\_ Wetland Type: Mixed Forest Swamp

Are climatic / hydrologic conditions on the site typical for this time of year? **Yes**  **No** \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? **Yes**  **No** \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

### VEGETATION – Use scientific names of plants.

Tree Stratum ( Plot size: <u>15</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Abies balsamea</u>	<u>25</u>	YES	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. <u>Acer rubrum</u>	<u>40</u>	YES	FAC																	
3. <u>Betula papyrifera var. cordifolia</u>	<u>5</u>		FAC																	
4. _____																				
5. _____																				
<u>70</u> = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>65</u></td> <td>x 2 = <u>130</u></td> </tr> <tr> <td>FAC species <u>92</u></td> <td>x 3 = <u>276</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>157</u> (A)</td> <td><u>406</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.6</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>65</u>	x 2 = <u>130</u>	FAC species <u>92</u>	x 3 = <u>276</u>	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>157</u> (A)	<u>406</u> (B)	Prevalence Index = B/A = <u>2.6</u>	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species <u>65</u>	x 2 = <u>130</u>																			
FAC species <u>92</u>	x 3 = <u>276</u>																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: <u>157</u> (A)	<u>406</u> (B)																			
Prevalence Index = B/A = <u>2.6</u>																				
<b>Sapling/Shrub Stratum ( Plot size: <u>5</u> )</b>																				
1. <u>Alnus incana</u>	<u>30</u>	YES	FACW																	
2. <u>Abies balsamea</u>	<u>10</u>	YES	FAC																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
<u>40</u> = Total Cover																				
<b>Herb Stratum ( Plot size: <u>1</u> )</b>																				
1. <u>Rubus pubescens</u>	<u>10</u>	YES	FAC																	
2. <u>Onoclea sensibilis</u>	<u>25</u>	YES	FACW																	
3. <u>Glyceria striata</u>	<u>10</u>	YES	FACW																	
4. <u>Vaccinium myrtilloides</u>	<u>2</u>		FAC																	
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
<u>47</u> = Total Cover																				
<b>Woody Vine Stratum ( Plot size: _____ )</b>																				
1. <u>No woody vines</u>																				
2. _____																				
<u>157</u> = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

**Hydrophytic Vegetation Indicators:**  
 Rapid Test for Hydrophytic Vegetation  
 Dominance Test is >50%  
 Prevalence Index is ≤3.0<sup>1</sup>  
 Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Adapted from U.S. Army Corps of Engineers form for North Central and North East Region (Version 2.0), and Field Indicators for Identifying Hydric Soils in New England (Version 4.0) Supplement for use in New Brunswick (2019)

**SOIL**

Sampling Point: WL2 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (cm)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
3						Organic		
39	7.5YR/4/2	95	7.5YR/4/6	5		Silt		

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

<b>Hydric Soil Indicators:</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surfaces (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 c Mucky Peat or Peat (S3) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (F22) <input type="checkbox"/> Other (Explain in Remarks)
--	---	--

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: <b>NA</b> Depth (cm): <b>NA</b>	<b>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>
---	---

Remarks:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (cm): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (cm): <u>0</u> (includes capillary fringe)		<b>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

## APPENDIX C

### Site Photographs



Photograph 1. Representative tree and shrub cover within WL 1 wet.



Photograph 2. Representative herbaceous vegetation within WL 1 wet.



Photograph 3. Soil pit within WL 1 wet showing depleted matrix below a two cm organic layer.



Photograph 4. Representative tree and shrub cover within WL 1 and WL 2 up.



Photograph 5. Upland ground cover for WL 1 and WL 2.



Photograph 6. Upland soil pit showing sandy soil under eight cm organic layer.



Photograph 7. Representative tree and shrub cover within WL 2 wet.



Photograph 8. Representative herbaceous vegetation within WL 2 wet.



Photograph 9. Soil pit within WL 2 wet showing depleted mucky silt matrix over depleted silt.



Photograph 10. Representative tree and shrub cover within WL 3 wet.



Photograph 11. Representative herbaceous vegetation within WL 3 wet.



Photograph 12. Soil pit within WL 3 wet showing depleted silty matrix.





Photograph 13. Representative upland tree, shrub, and ground cover for WL 3 up.



Photograph 14. Upland soil pit for WL 3 up.



Photograph 15. Representative wetland tree and shrub strata for WL 4 wet.



Photograph 16. Representative herbaceous strata for WL 4 wet.



Photograph 17. Wetland soil pit for WL 4 wet showing two layers of depleted silt.



Photograph 18. Representative upland tree strata for WL 4 up.



Photograph 19. Representative upland shrub and herbaceous cover for WL 4 up.



Photograph 20. Upland soil pit for WL 4 up.



Photograph 21. Representative tree and shrub strata for WL 5 wet.



Photograph 22. Representative herbaceous strata for WL 5 wet.



Photograph 23. Photo of soil auger in WL 5 wet embedded in deep organic layer (histosol).



Photograph 24. Representative upland tree strata in WL 5 up.



Photograph 25. Representative upland shrub and herbaceous strata for WL 5 up.



Photograph 26. Upland soil pit for WL 5 up.



[www.hiveeng.ca](http://www.hiveeng.ca)

# Appendix D Atlantic Canada Conservation Data Centre (ACCDC) Report - April 2022



**eNGLOBE**

# DATA REPORT 7237: MID West Moncton, NB

Prepared 14 April 2022  
by J. Pender, Data Manager

## CONTENTS OF REPORT

### 1.0 Preface

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

### 2.0 Rare and Endangered Species

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

### 3.0 Special Areas

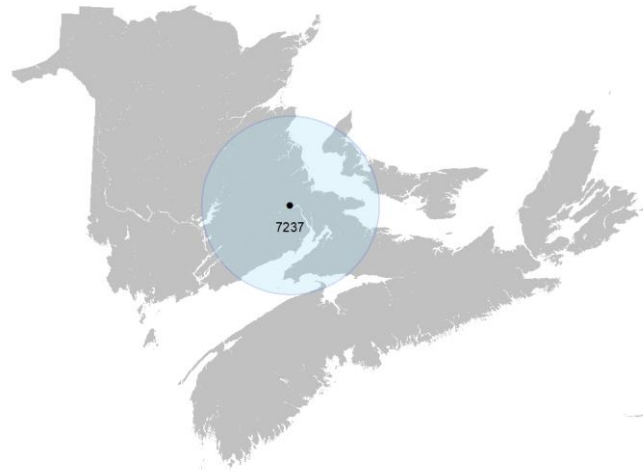
- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

### 4.0 Rare Species Lists

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

### 5.0 Rare Species within 100 km

- 5.1 Source Bibliography



**Map 1.** A 100 km buffer around the study area

## 1.0 PREFACE

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

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

### 1.1 DATA LIST

Included datasets:

<u>Filename</u>	<u>Contents</u>
MidwMonctonNB_7237ob.xls	Rare or legally-protected Flora and Fauna in your study area
MidwMonctonNB_7237ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
MidwMonctonNB_7237msa.xls	Managed and Biologically Significant Areas in your study area
MidwMonctonNB_7237ff_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](mailto:sean.blaney@accdc.ca)

### Animals (Fauna)

John Klymko  
Zoologist  
(506) 364-2660  
[john.klymko@accdc.ca](mailto:john.klymko@accdc.ca)

### Data Management, GIS

James Churchill  
Conservation Data Analyst / Field Biologist  
(902) 679-6146  
[james.churchill@accdc.ca](mailto:james.churchill@accdc.ca)

### Billing

Jean Breau  
Financial Manager / Executive Assistant  
(506) 364-2657  
[jean.breau@accdc.ca](mailto:jean.breau@accdc.ca)

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

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

**Western:** Emma Vost  
(902) 670-8187  
[Emma.Vost@novascotia.ca](mailto:Emma.Vost@novascotia.ca)

**Western:** Sarah Spencer  
(902) 541-0081  
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**Eastern:** Elizabeth Walsh  
(902) 563-3370  
[Elizabeth.Walsh@novascotia.ca](mailto:Elizabeth.Walsh@novascotia.ca)

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

## 2.0 RARE AND ENDANGERED SPECIES

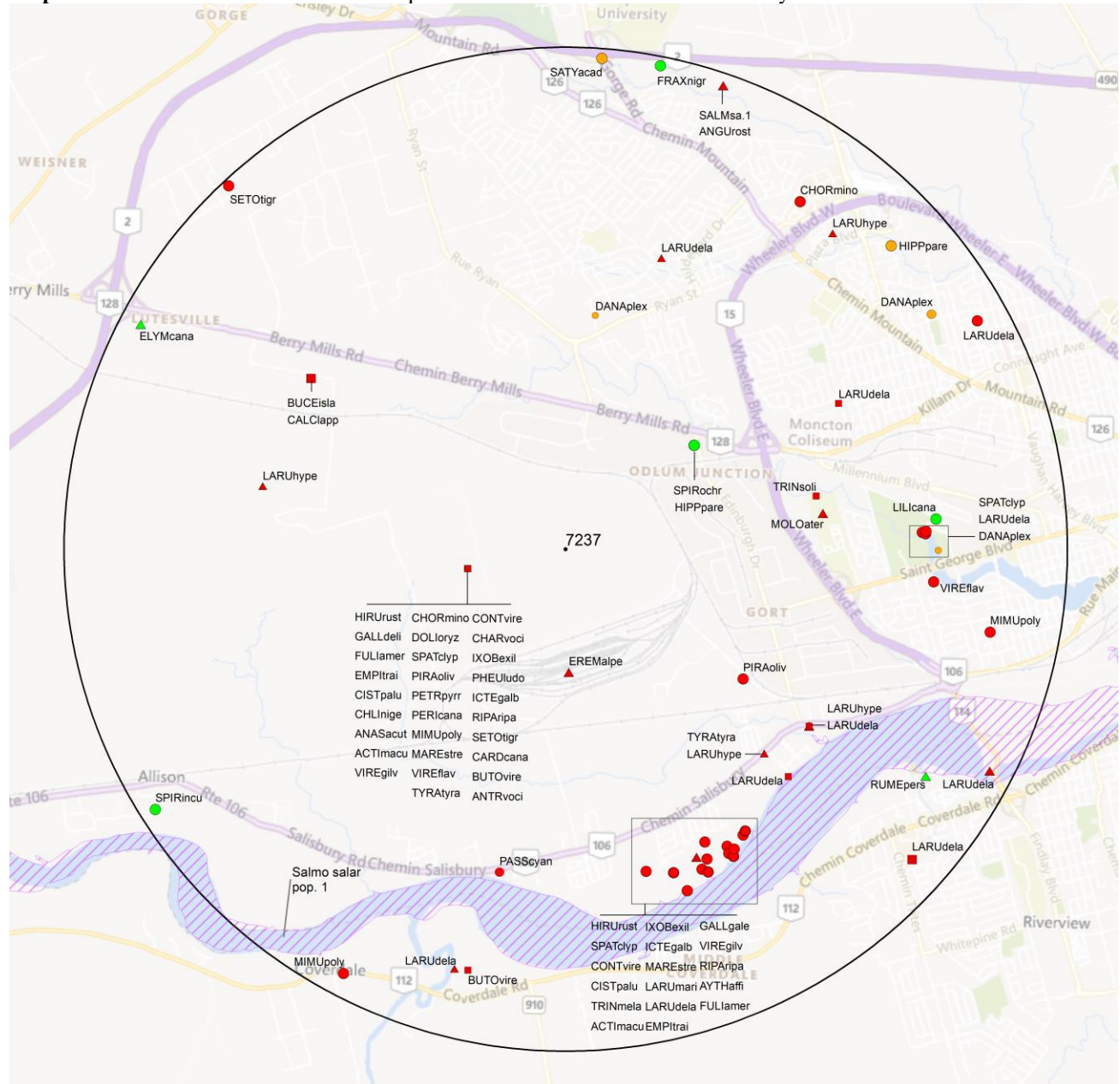
### 2.1 FLORA

The study area contains 6 records of 6 vascular, no records of nonvascular flora (Map 2 and attached: \*ob.xls), excluding 'location-sensitive' species.

### 2.2 FAUNA

The study area contains 198 records of 43 vertebrate, 6 records of 3 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List), excluding 'location-sensitive' species. Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

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



#### RESOLUTION

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

#### HIGHER TAXOII

- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

### 3.0 SPECIAL AREAS

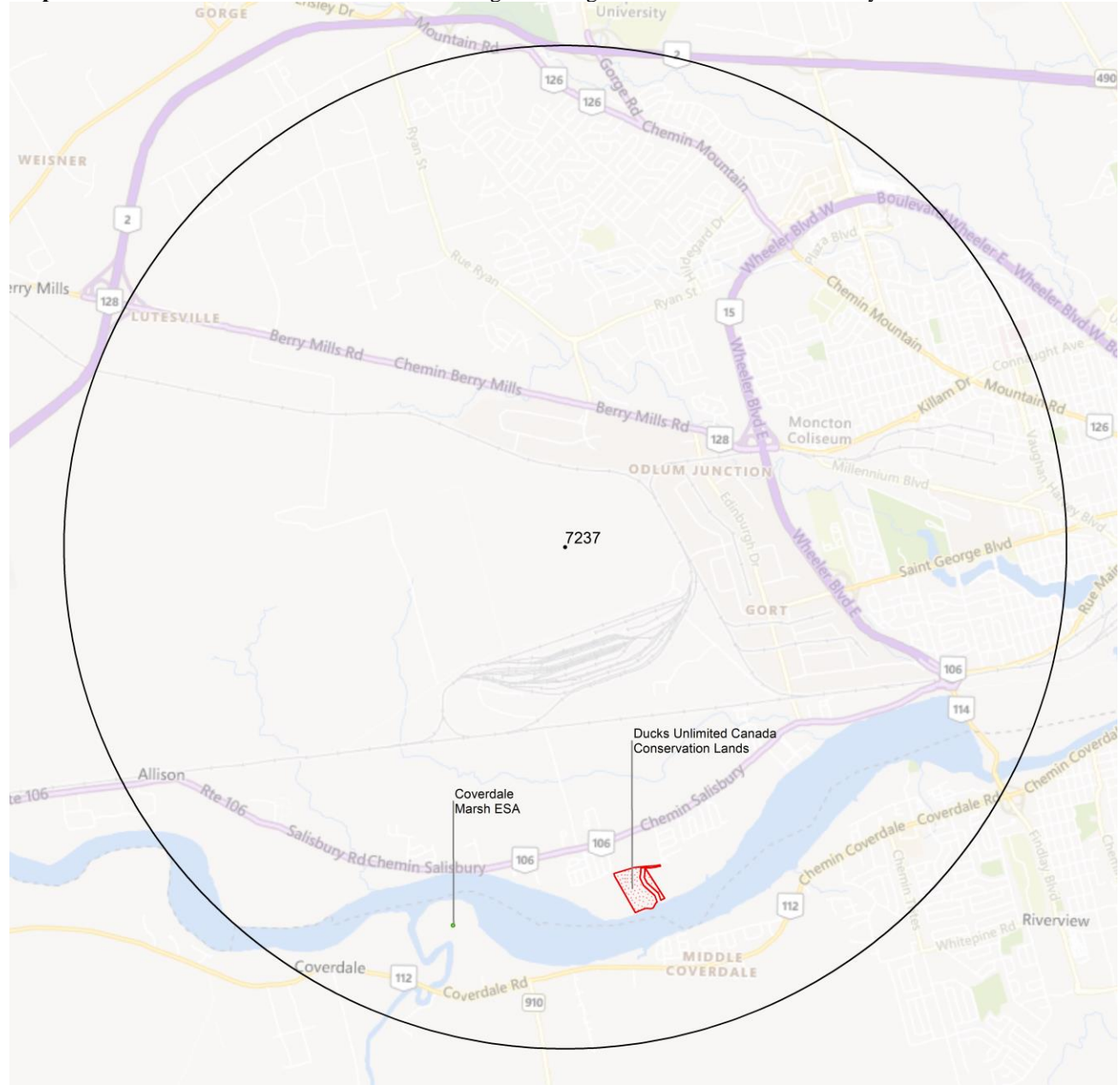
#### 3.1 MANAGED AREAS

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

#### 3.2 SIGNIFICANT AREAS

The GIS scan identified 1 biologically significant site 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.



 Managed Area  Significant Area

## 4.0 RARE SPECIES LISTS

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

### 4.1 FLORA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S3S4	1	4.9 $\pm$ 0.0
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses				S1S2	1	1.6 $\pm$ 0.0
P	<i>Spiranthes incurva</i>	Sphinx Ladies'-tresses				S1S3	1	4.8 $\pm$ 0.0
P	<i>Elymus canadensis</i>	Canada Wild Rye				S2S3	1	4.8 $\pm$ 1.0
P	<i>Rumex persicarioides</i>	Peach-leaved Dock				S3S4	1	4.2 $\pm$ 1.0
P	<i>Lilium canadense</i>	Canada Lily				S3S4	1	3.7 $\pm$ 0.0

### 4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered	Endangered	S2	1	4.9 $\pm$ 1.0
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B	2	1.0 $\pm$ 7.0
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	1	1.0 $\pm$ 7.0
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2B	16	1.0 $\pm$ 7.0
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B	5	1.0 $\pm$ 7.0
A	<i>Anguilla rostrata</i>	American Eel	Threatened		Threatened	S4N	1	4.9 $\pm$ 1.0
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Threatened	S2B	3	1.0 $\pm$ 7.0
A	<i>Bucephala islandica</i>	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	1	3.1 $\pm$ 11.0
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	7	1.0 $\pm$ 7.0
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	4	1.0 $\pm$ 7.0
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	2	1.0 $\pm$ 7.0
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1B	2	1.0 $\pm$ 7.0
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B	1	1.0 $\pm$ 7.0
A	<i>Vireo flavifrons</i>	Yellow-throated Vireo				S1?B	2	1.0 $\pm$ 7.0
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S4S5M	2	3.5 $\pm$ 0.0
A	<i>Gallinula galeata</i>	Common Gallinule				S1B	2	3.4 $\pm$ 0.0
A	<i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	1	3.3 $\pm$ 0.0
A	<i>Eremophila alpestris</i>	Horned Lark				S1B,S4N,S5M	1	1.2 $\pm$ 1.0
A	<i>Butorides virescens</i>	Green Heron				S1S2B	2	1.0 $\pm$ 7.0
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B	5	1.0 $\pm$ 7.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2B	3	1.0 $\pm$ 7.0
A	<i>Cistothorus palustris</i>	Marsh Wren				S2B	19	1.0 $\pm$ 7.0
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B	7	1.0 $\pm$ 7.0
A	<i>Mareca strepera</i>	Gadwall				S2B,S3M	3	1.0 $\pm$ 7.0
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S4S5M	1	2.6 $\pm$ 3.0
A	<i>Larus hyperboreus</i>	Glaucous Gull				S2N	10	2.8 $\pm$ 0.0
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	12	1.0 $\pm$ 7.0
A	<i>Larus delawarensis</i>	Ring-billed Gull				S2S3B,S4N,S5M	18	3.0 $\pm$ 2.0
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S2S3N,SUM	1	3.1 $\pm$ 9.0
A	<i>Larus marinus</i>	Great Black-backed Gull				S3	2	3.4 $\pm$ 0.0
A	<i>Spatula clypeata</i>	Northern Shoveler				S3B	12	1.0 $\pm$ 7.0
A	<i>Charadrius vociferus</i>	Killdeer				S3B	4	1.0 $\pm$ 7.0
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B	2	1.0 $\pm$ 7.0
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	2	1.0 $\pm$ 7.0
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B	1	3.3 $\pm$ 0.0

	<b>Scientific Name</b>	<b>Common Name</b>	<b>COSEWIC</b>	<b>SARA</b>	<b>Prov Legal Prot</b>	<b>Prov Rarity Rank</b>	<b># recs</b>	<b>Distance (km)</b>
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B	1	2.6 ± 1.0
A	<i>Setophaga tigrina</i>	Cape May Warbler				S3B,S4S5M	2	1.0 ± 7.0
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	1	1.0 ± 7.0
A	<i>Perisoreus canadensis</i>	Canada Jay				S3S4	1	1.0 ± 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	6	1.0 ± 7.0
A	<i>Vireo gilvus</i>	Warbling Vireo				S3S4B	17	1.0 ± 7.0
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S4M	10	1.0 ± 7.0
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	2	1.0 ± 7.0
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	3	2.3 ± 0.0
I	<i>Hippodamia parenthesis</i>	Parenthesis Lady Beetle				S3	2	1.6 ± 0.0
I	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	1	4.9 ± 0.0

### 4.3 LOCATION SENSITIVE SPECIES

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

#### New Brunswick

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

<sup>1</sup> *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
79	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
45	Berrigan, L. 2019. Maritimes Marsh Monitoring Project 2013, 2014, 2016, 2017, and 2018 data. Bird Studies Canada, Sackville, NB.
27	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
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11	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
9	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.
6	Tranquilla, L. 2015. Maritimes Marsh Monitoring Project 2015 data. Bird Studies Canada, Sackville NB, 5062 recs.
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1	Dept of Fisheries & Oceans. 2001. Atlantic Salmon Maritime provinces overview for 2000. DFO.
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1	Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
1	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc, 6042 recs. <a href="https://doi.org/10.1037/arc0000014">https://doi.org/10.1037/arc0000014</a> .

## 5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 61818 records of 153 vertebrate and 1099 records of 64 invertebrate fauna; 9496 records of 292 vascular, 2174 records of 204 nonvascular flora (attached: \*ob100km.xls).

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

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Myotis lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	24	23.6 $\pm$ 1.0	NB
A	<i>Myotis septentrionalis</i>	Northern Myotis	Endangered	Endangered	Endangered	S1	12	23.6 $\pm$ 1.0	NB
A	<i>Perimyotis subflavus</i>	Tricolored Bat	Endangered	Endangered	Endangered	S1	17	13.3 $\pm$ 1.0	NB
A	<i>Charadrius melodus melodus</i>	Piping Plover <i>melodus</i> subspecies	Endangered	Endangered	Endangered	S1B	1556	31.1 $\pm$ 0.0	NB
A	<i>Sterna dougallii</i>	Roseate Tern	Endangered	Endangered	Endangered	S1B	1	94.4 $\pm$ 0.0	NS
A	<i>Dermochelys coriacea</i> pop. 2	Leatherback Sea Turtle - Atlantic population	Endangered	Endangered	Endangered	S1S2N	5	55.2 $\pm$ 1.0	NB
A	<i>Salmo salar</i> pop. 1	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered	Endangered	S2	645	4.9 $\pm$ 1.0	NB
A	<i>Salmo salar</i> pop. 7	Atlantic Salmon - Outer Bay of Fundy population	Endangered		Endangered	SNR	403	11.2 $\pm$ 0.0	NB
A	<i>Rangifer tarandus</i> pop. 2	Caribou - Atlantic-Gasp /rsie population	Endangered	Endangered	Extirpated	SX	2	24.2 $\pm$ 1.0	NB
A	<i>Lanius ludovicianus</i>	Loggerhead Shrike	Endangered	Endangered		SXB	1	6.4 $\pm$ 0.0	NB
A	<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B	50	6.5 $\pm$ 7.0	NB
A	<i>Asio flammeus</i>	Short-eared Owl	Threatened	Special Concern	Special Concern	S1S2B	47	11.8 $\pm$ 64.0	NB
A	<i>Ixobrychus exilis</i>	Least Bittern	Threatened	Threatened	Threatened	S1S2B	19	1.0 $\pm$ 7.0	NB
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened	Threatened	Threatened	S1S2B	99	6.5 $\pm$ 7.0	NB
A	<i>Hydrobates leucorhous</i>	Leach's Storm-Petrel	Threatened			S1S2B	1	40.2 $\pm$ 0.0	NB
A	<i>Antrostomus vociferus</i>	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	27	1.0 $\pm$ 7.0	NB
A	<i>Catharus bicknelli</i>	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B	11	11.2 $\pm$ 2.0	NB
A	<i>Riparia riparia</i>	Bank Swallow	Threatened	Threatened		S2B	1571	1.0 $\pm$ 7.0	NB
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2S3	719	4.4 $\pm$ 0.0	NB
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	283	6.0 $\pm$ 0.0	NB
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	Threatened	S3B	2140	1.0 $\pm$ 7.0	NB
A	<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Threatened		Threatened	S3B,S3N	3	13.9 $\pm$ 1.0	NB
A	<i>Tringa flavipes</i>	Lesser Yellowlegs	Threatened			S3M	1743	8.1 $\pm$ 0.0	NB
A	<i>Limosa haemastica</i>	Hudsonian Godwit	Threatened			S3M	438	33.7 $\pm$ 0.0	NB
A	<i>Anguilla rostrata</i>	American Eel	Threatened		Threatened	S4N	7018	4.9 $\pm$ 1.0	NB
A	<i>Coturnicops noveboracensis</i>	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	5	37.0 $\pm$ 3.0	NB
A	<i>Histrionicus histrionicus</i> pop. 1	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2M	6	43.8 $\pm$ 0.0	NB
A	<i>Hirundo rustica</i>	Barn Swallow	Special Concern	Threatened	Threatened	S2B	1637	1.0 $\pm$ 7.0	NB
A	<i>Salmo salar</i> pop. 12	Atlantic Salmon - Gaspé - Southern Gulf of St. Lawrence population	Special Concern		Special Concern	S2S3	12	29.3 $\pm$ 50.0	NB
A	<i>Balaenoptera physalus</i>	Fin Whale	Special Concern	Special Concern		S2S3	1	52.3 $\pm$ 1.0	NB
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S2S3B,S3M	124	6.4 $\pm$ 0.0	NB
A	<i>Bucephala islandica</i>	Barrow's Goldeneye	Special Concern	Special Concern	Special Concern	S2S3N,S3M	112	3.1 $\pm$ 11.0	NB
A	<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	2	93.5 $\pm$ 10.0	NB
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	22	21.2 $\pm$ 1.0	NB
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S3B	837	1.0 $\pm$ 7.0	NB
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	604	6.4 $\pm$ 0.0	NB
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Special Concern	Special Concern		S3B,S3S4N,SUM	377	9.0 $\pm$ 7.0	NB
A	<i>Chordeiles minor</i>	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	262	1.0 $\pm$ 7.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern	Special Concern		S3M	23	13.2 ± 0.0	NB
A	<i>Podiceps auritus</i>	Horned Grebe	Special Concern	Special Concern	Special Concern	S3N	54	31.1 ± 1.0	NB
A	<i>Cardellina canadensis</i>	Canada Warbler	Special Concern	Threatened	Threatened	S3S4B	803	1.0 ± 7.0	NB
A	<i>Phocoena phocoena</i>	Harbour Porpoise	Special Concern		Spec.Concern	S4	3	36.8 ± 0.0	NB
A	<i>Chrysemys picta picta</i>	Eastern Painted Turtle	Special Concern	Special Concern		S4	31	32.2 ± 0.0	NB
A	<i>Hemidactylum scutatum</i>	Four-toed Salamander	Not At Risk			S1?	5	59.7 ± 0.0	NB
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1B	65	1.0 ± 7.0	NB
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	382	6.2 ± 1.0	NB
A	<i>Falco peregrinus</i>	Peregrine Falcon	Not At Risk	Special Concern		S1B,S3M	1	77.1 ± 0.0	NB
A	<i>Bubo scandiacus</i>	Snowy Owl	Not At Risk			S1N,S2S3M	50	5.7 ± 0.0	NB
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1S2B	10	10.1 ± 0.0	NB
A	<i>Buteo lineatus</i>	Red-shouldered Hawk	Not At Risk			S1S2B	26	6.4 ± 0.0	NB
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S1S2B,SUM	11	45.0 ± 0.0	NB
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk			S2	3	32.6 ± 1.0	NB
A	<i>Chlidonias niger</i>	Black Tern	Not At Risk			S2B	191	1.0 ± 7.0	NB
A	<i>Podiceps grisegena</i>	Red-necked Grebe	Not At Risk			S2N,S3M	58	31.1 ± 1.0	NB
A	<i>Desmognathus fuscus pop. 2</i>	Northern Dusky Salamander - Quebec / New Brunswick population	Not At Risk			S3	1	56.3 ± 0.0	NB
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B,SUM	681	6.2 ± 1.0	NB
A	<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	Not At Risk			S3S4	2	35.6 ± 1.0	NB
A	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not At Risk		Endangered	S4	1385	1.0 ± 7.0	NB
A	<i>Lynx canadensis</i>	Canada Lynx	Not At Risk		Endangered	S4	23	14.5 ± 10.0	NB
A	<i>Canis lupus</i>	Grey Wolf	Not At Risk		Extirpated	SX	2	64.2 ± 1.0	NB
A	<i>Puma concolor pop. 1</i>	Cougar - Eastern population Red Knot rufa subspecies - wintering population	Data Deficient		Endangered	SU	121	8.7 ± 1.0	NB
A	<i>Calidris canutus rufa</i>	Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	726	25.9 ± 44.0	NB
A	<i>Morone saxatilis</i>	Striped Bass	E,SC			S3S4B,S3S4N	8640	13.9 ± 0.0	NB
A	<i>Salmo salar</i>	Atlantic Salmon	E,T,SC			S2S3	1	97.8 ± 0.0	NB
A	<i>Thryothorus ludovicianus</i>	Carolina Wren				S1	10	6.7 ± 0.0	NB
A	<i>Salvelinus alpinus</i>	Arctic Char				S1	3	62.9 ± 1.0	NB
A	<i>Vireo flavifrons</i>	Yellow-throated Vireo				S1?B	4	1.0 ± 7.0	NB
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S1?B,S4S5M	2542	3.5 ± 0.0	NB
A	<i>Aythya americana</i>	Redhead				S1B	10	18.4 ± 0.0	NB
A	<i>Gallinula galeata</i>	Common Gallinule				S1B	53	3.4 ± 0.0	NB
A	<i>Grus canadensis</i>	Sandhill Crane				S1B	24	33.7 ± 0.0	NB
A	<i>Bartramia longicauda</i>	Upland Sandpiper				S1B	55	7.6 ± 0.0	NB
A	<i>Phalaropus tricolor</i>	Wilson's Phalarope				S1B	34	13.0 ± 1.0	NB
A	<i>Leucophaeus atricilla</i>	Laughing Gull				S1B	11	7.5 ± 1.0	NB
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S1B	4	40.9 ± 0.0	NB
A	<i>Fratercula arctica</i>	Atlantic Puffin				S1B	3	54.6 ± 11.0	NB
A	<i>Progne subis</i>	Purple Martin				S1B	141	6.5 ± 7.0	NB
A	<i>Aythya marila</i>	Greater Scaup				S1B,S2N,S4M	11	33.6 ± 1.0	NB
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B,S2S3M	113	5.4 ± 0.0	NB
A	<i>Aythya affinis</i>	Lesser Scaup				S1B,S4M	178	3.3 ± 0.0	NB
A	<i>Eremophila alpestris</i>	Horned Lark				S1B,S4N,S5M	70	1.2 ± 1.0	NB
A	<i>Sterna paradisaea</i>	Arctic Tern				S1B,SUM	25	27.5 ± 7.0	NB
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S1N,S2M	17	6.6 ± 0.0	NB
A	<i>Branta bernicla</i>	Brant				S1N,S2S3M	39	28.7 ± 0.0	NB
A	<i>Calidris alba</i>	Sanderling				S1N,S3S4M	1624	28.7 ± 0.0	NB
A	<i>Butorides virescens</i>	Green Heron				S1S2B	8	1.0 ± 7.0	NB
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1S2B	6	6.4 ± 0.0	NB
A	<i>Empidonax traillii</i>	Willow Flycatcher				S1S2B	86	1.0 ± 7.0	NB
A	<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow				S1S2B	6	11.7 ± 0.0	NB
A	<i>Troglodytes aedon</i>	House Wren				S1S2B	14	9.0 ± 7.0	NB



Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Calidris bairdii</i>	Baird's Sandpiper				S1S2M	51	15.8 ± 0.0	NB
A	<i>Melanitta americana</i>	American Scoter				S1S2N,S3M	275	5.9 ± 119.0	NB
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2B	644	1.0 ± 7.0	NB
A	<i>Cistothorus palustris</i>	Marsh Wren				S2B	82	1.0 ± 7.0	NB
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S2B	147	1.0 ± 7.0	NB
A	<i>Poocetes gramineus</i>	Vesper Sparrow				S2B	131	6.2 ± 1.0	NB
A	<i>Mareca strepera</i>	Gadwall				S2B,S3M	359	1.0 ± 7.0	NB
A	<i>Tringa solitaria</i>	Solitary Sandpiper				S2B,S4S5M	189	2.6 ± 3.0	NB
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2B,S4S5N,S4S5M	43	9.2 ± 7.0	NB
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2N	53	5.3 ± 2.0	NB
A	<i>Somateria spectabilis</i>	King Eider				S2N	5	31.5 ± 0.0	NB
A	<i>Larus hyperboreus</i>	Glaucous Gull				S2N	95	2.8 ± 0.0	NB
A	<i>Melanitta perspicillata</i>	Surf Scoter				S2N,S4M	35	43.6 ± 0.0	NB
A	<i>Melanitta deglandi</i>	White-winged Scoter				S2N,S4M	22	34.0 ± 1.0	NB
A	<i>Asio otus</i>	Long-eared Owl				S2S3	26	9.0 ± 7.0	NB
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S2S3	15	21.0 ± 7.0	NB
A	<i>Toxostoma rufum</i>	Brown Thrasher				S2S3B	30	29.0 ± 7.0	NB
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	144	1.0 ± 7.0	NB
A	<i>Somateria mollissima</i>	Common Eider				S2S3B,S2S3N,S4M	228	13.1 ± 80.0	NB
A	<i>Larus delawarensis</i>	Ring-billed Gull				S2S3B,S4N,S5M	466	3.0 ± 2.0	NB
A	<i>Pluvialis dominica</i>	American Golden-Plover				S2S3M	224	26.0 ± 0.0	NB
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S2S3N,SUM	44	3.1 ± 9.0	NB
A	<i>Larus marinus</i>	Great Black-backed Gull				S3	456	3.4 ± 0.0	NB
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3	80	9.0 ± 7.0	NB
A	<i>Loxia curvirostra</i>	Red Crossbill				S3	174	9.0 ± 7.0	NB
A	<i>Spinus pinus</i>	Pine Siskin				S3	459	8.4 ± 0.0	NB
A	<i>Salvelinus namaycush</i>	Lake Trout				S3	1	25.3 ± 0.0	NB
A	<i>Sorex maritimensis</i>	Maritime Shrew				S3	142	47.4 ± 1.0	NB
A	<i>Spatula clypeata</i>	Northern Shoveler				S3B	475	1.0 ± 7.0	NB
A	<i>Charadrius vociferus</i>	Killdeer				S3B	1018	1.0 ± 7.0	NB
A	<i>Tringa semipalmata</i>	Willet				S3B	1122	5.2 ± 0.0	NB
A	<i>Cephus grylle</i>	Black Guillemot				S3B	69	41.1 ± 5.0	NB
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	149	6.4 ± 0.0	NB
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S3B	99	9.0 ± 7.0	NB
A	<i>Piranga olivacea</i>	Scarlet Tanager				S3B	65	1.0 ± 7.0	NB
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3B	790	1.0 ± 7.0	NB
A	<i>Passerina cyanea</i>	Indigo Bunting				S3B	60	3.3 ± 0.0	NB
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S3B	318	2.6 ± 1.0	NB
A	<i>Setophaga tigrina</i>	Cape May Warbler				S3B,S4S5M	318	1.0 ± 7.0	NB
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3B,S4S5N,S5M	320	9.7 ± 0.0	NB
A	<i>Anas acuta</i>	Northern Pintail				S3B,S5M	164	1.0 ± 7.0	NB
A	<i>Anser caerulescens</i>	Snow Goose				S3M	25	5.9 ± 5.0	NB
A	<i>Numenius phaeopus hudsonicus</i>	Whimbrel				S3M	256	26.5 ± 0.0	NB
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	1057	8.1 ± 0.0	NB
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	2706	7.8 ± 0.0	NB
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S3M	476	5.7 ± 18.0	NB
A	<i>Limnodromus griseus</i>	Short-billed Dowitcher				S3M	1435	8.1 ± 0.0	NB
A	<i>Phalaropus fulicarius</i>	Red Phalarope				S3M	5	43.3 ± 0.0	NB
A	<i>Bucephala albeola</i>	Bufflehead				S3N	131	11.8 ± 64.0	NB
A	<i>Calidris maritima</i>	Purple Sandpiper				S3N	107	13.7 ± 0.0	NB
A	<i>Uria lomvia</i>	Thick-billed Murre				S3N,S3M	2	69.5 ± 0.0	NS
A	<i>Perisoreus canadensis</i>	Canada Jay				S3S4	582	1.0 ± 7.0	NB
A	<i>Poecile hudsonicus</i>	Boreal Chickadee				S3S4	410	9.0 ± 7.0	NB
A	<i>Eptesicus fuscus</i>	Big Brown Bat				S3S4	12	5.8 ± 10.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	<i>Synaptomys cooperi</i>	Southern Bog Lemming				S3S4	94	37.4 ± 1.0	NB
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	634	1.0 ± 7.0	NB
A	<i>Vireo gilvus</i>	Warbling Vireo				S3S4B	99	1.0 ± 7.0	NB
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B,S4M	1027	1.0 ± 7.0	NB
A	<i>Melospiza lincolnii</i>	Lincoln's Sparrow				S3S4B,S4M	428	9.9 ± 7.0	NB
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B,S5M	1189	1.0 ± 7.0	NB
A	<i>Setophaga striata</i>	Blackpoll Warbler				S3S4B,S5M	72	10.2 ± 7.0	NB
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3S4M	2070	11.5 ± 0.0	NB
A	<i>Morus bassanus</i>	Northern Gannet				SHB	189	25.9 ± 44.0	NB
I	<i>Bombus bohemicus</i>	Ashton Cuckoo Bumble Bee	Endangered	Endangered		S1	6	17.8 ± 5.0	NB
I	<i>Gomphurus ventricosus</i>	Skilllet Clubtail	Endangered	Endangered	Endangered	S2	2	52.3 ± 0.0	NB
I	<i>Danaus plexippus</i>	Monarch	Endangered	Special Concern	Special Concern	S2S3?B	246	2.3 ± 0.0	NB
I	<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	Special Concern	Endangered	Endangered	S2S3	92	87.4 ± 0.0	NB
I	<i>Ophiogomphus howei</i>	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2S3	11	77.9 ± 0.0	NB
I	<i>Alasmodonta varicosa</i>	Brook Floater	Special Concern	Special Concern	Special Concern	S3	34	12.9 ± 1.0	NB
I	<i>Lampsilis cariosa</i>	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S3	25	62.4 ± 0.0	NB
I	<i>Bombus terricola</i>	Yellow-banded Bumble Bee	Special Concern	Special Concern		S4	169	22.4 ± 0.0	NB
I	<i>Coccinella transversoguttata richardsoni</i>	Transverse Lady Beetle		Special Concern		SH	31	5.9 ± 0.0	NB
I	<i>Appalachina sayana sayana</i>	Spike-lip Crater Snail	Not At Risk			S3?	1	79.4 ± 1.0	NB
I	<i>Erora laeta</i>	Early Hairstreak				S1	1	9.1 ± 1.0	NB
I	<i>Leucorrhinia patricia</i>	Canada Whiteface				S1	10	79.7 ± 1.0	NB
I	<i>Icaricia saepiolus</i>	Greenish Blue				S1S2	2	23.3 ± 7.0	NB
I	<i>Cicindela ancocisconensis</i>	Appalachian Tiger Beetle				S2	2	71.3 ± 0.0	NB
I	<i>Strymon melinus</i>	Gray Hairstreak				S2	2	17.1 ± 2.0	NB
I	<i>Somatochlora brevicincta</i>	Quebec Emerald				S2	2	17.2 ± 0.0	NB
I	<i>Chrysops delicatulus</i>	Delicate Deer Fly				S2S3	1	93.4 ± 1.0	NB
I	<i>Psyrassa unicolor</i>	Unicoloured Long-horned Beetle				S3	1	38.7 ± 0.0	NB
I	<i>Elaphrus americanus</i>	Boreal Elaphrus Beetle				S3	1	42.9 ± 0.0	NB
I	<i>Agonum crenistriatum</i>	Scalloped Harp Ground Beetle				S3	1	7.2 ± 1.0	NB
I	<i>Agonum consimile</i>	Consimile Ground Beetle				S3	1	7.2 ± 1.0	NB
I	<i>Lachnocrepis parallela</i>	Swamp Harp Ground Beetle				S3	1	41.8 ± 0.0	NB
I	<i>Dyschirius setosus</i>	Bristly Pedunculate Ground Beetle				S3	3	41.8 ± 0.0	NB
I	<i>Harpalus fulvilabris</i>	Fulvia Harpaline Beetle				S3	1	42.5 ± 0.0	NB
I	<i>Olisthopus parmatus</i>	Tawny-bordered Harp Ground Beetle				S3	1	45.8 ± 0.0	NB
I	<i>Amara pallipes</i>	Pale-footed Sun Beetle				S3	2	7.2 ± 1.0	NB
I	<i>Carabus maeander</i>	Meander Ground Beetle				S3	1	7.2 ± 1.0	NB
I	<i>Carabus serratus</i>	Serrated Ground Beetle				S3	2	5.9 ± 1.0	NB
I	<i>Hippodamia parenthesis</i>	Parenthesis Lady Beetle				S3	15	1.6 ± 0.0	NB
I	<i>Xylotrechus undulatus</i>	Spruce Zebra Beetle				S3	2	25.5 ± 1.0	NB
I	<i>Calathus gregarius</i>	Gregarious Harp Ground Beetle				S3	1	53.8 ± 1.0	NB
I	<i>Gonioctena americana</i>	American Aspen Beetle				S3	1	42.6 ± 0.0	NB
I	<i>Naemia seriata</i>	Seaside Lady Beetle				S3	9	37.0 ± 0.0	NB
I	<i>Beckerus appressus</i>	Compressed Click Beetle				S3	1	53.9 ± 0.0	NB
I	<i>Saperda lateralis</i>	Red-edged Long-horned Beetle				S3	1	63.9 ± 0.0	NS
I	<i>Trachysida aspera</i>	Rough Flower Longhorn Beetle				S3	1	46.7 ± 0.0	NB
I	<i>Dicerca caudata</i>	Tailed Jewel Borer				S3	1	56.5 ± 0.0	NB
I	<i>Enoclerus muttkowskii</i>	Muttkowski's Checkered Beetle				S3	2	6.3 ± 0.0	NB
I	<i>Epargyreus clarus</i>	Silver-spotted Skipper				S3	8	32.9 ± 0.0	NB
I	<i>Hesperia sassacus</i>	Indian Skipper				S3	4	38.1 ± 0.0	NB

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I	<i>Euphyes bimacula</i>	Two-spotted Skipper				S3	19	10.7 ± 1.0	NB
I	<i>Papilio brevicauda bretonensis</i>	Short-tailed Swallowtail				S3	14	47.1 ± 0.0	NB
I	<i>Tharsalea dospassosi</i>	Maritime Copper				S3	108	31.2 ± 0.0	NB
I	<i>Satyrium acadica</i>	Acadian Hairstreak				S3	17	4.9 ± 0.0	NB
I	<i>Plebejus idas</i>	Northern Blue				S3	6	68.5 ± 0.0	NS
I	<i>Plebejus idas empetri</i>	Crowberry Blue				S3	25	41.9 ± 7.0	NB
I	<i>Argynnis aphrodite</i>	Aphrodite Fritillary				S3	20	5.9 ± 0.0	NB
I	<i>Boloria bellona</i>	Meadow Fritillary				S3	10	87.3 ± 0.0	NB
I	<i>Boloria chariclea</i>	Arctic Fritillary				S3	9	35.4 ± 7.0	NB
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S3	9	5.8 ± 10.0	NB
I	<i>Gomphurus vastus</i>	Cobra Clubtail				S3	8	89.1 ± 0.0	NB
I	<i>Ladona exusta</i>	White Corporal				S3	1	67.4 ± 0.0	NB
I	<i>Arigomphus furcifer</i>	Lilypad Clubtail				S3	1	90.2 ± 0.0	NB
I	<i>Alasmidonta undulata</i>	Triangle Floater				S3	54	14.2 ± 1.0	NB
I	<i>Atlanticoncha ochracea</i>	Tidewater Mucket				S3	66	41.9 ± 1.0	NB
I	<i>Neohelix albolabris</i>	Whitlip Snail				S3	1	81.4 ± 0.0	NB
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S3B	6	31.2 ± 0.0	NB
I	<i>Collops vittatus</i>	Banded Soft-winged Flower Beetle				S3S4	1	18.4 ± 3.0	NB
I	<i>Hemicrepidius memnonius</i>	Memnon's Click Beetle				S3S4	3	38.7 ± 0.0	NB
I	<i>Bolitophagus corticola</i>	Corticolous Darkling Beetle				S3S4	1	38.7 ± 0.0	NB
I	<i>Bombus griseocollis</i>	Brown-belted Bumble Bee				S3S4	4	5.4 ± 0.0	NB
I	<i>Lanthus vernalis</i>	Southern Pygmy Clubtail				S3S4	1	42.4 ± 0.0	NB
I	<i>Somatochlora forcipata</i>	Forcinate Emerald				S3S4	9	35.6 ± 0.0	NB
I	<i>Somatochlora tenebrosa</i>	Clamp-Tipped Emerald				S3S4	8	29.3 ± 1.0	NB
N	<i>Erioderma mollissimum</i>	Graceful Felt Lichen	Endangered	Endangered	Endangered	SH	2	63.1 ± 1.0	NB
N	<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	SH	2	78.1 ± 0.0	NS
N	<i>Pannaria lurida</i>	Wrinkled Shingle Lichen	Threatened	Threatened		S1?	4	33.7 ± 1.0	NB
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened	Threatened		S1S2	15	23.6 ± 0.0	NB
N	<i>Fuscopannaria leucosticta</i>	White-rimmed Shingle Lichen	Threatened			S2	66	51.9 ± 0.0	NB
N	<i>Peltigera hydrothyria</i>	Eastern Waterfan	Threatened	Threatened		S2S3	789	25.3 ± 0.0	NB
N	<i>Pectenium plumbea</i>	Blue Felt Lichen	Special Concern	Special Concern	Special Concern	S1	15	75.1 ± 1.0	NS
N	<i>Pseudevernia cladonia</i>	Ghost Antler Lichen	Not At Risk			S2S3	13	54.5 ± 0.0	NB
N	<i>Aloina rigida</i>	Aloe-Like Rigid Screw Moss				S1	1	46.0 ± 0.0	NB
N	<i>Arrhenopterum heterostichum</i>	One-sided Groove Moss				S1	1	83.6 ± 0.0	NB
N	<i>Campylostelium saxicola</i>	a Moss				S1	1	86.0 ± 0.0	NB
N	<i>Dicranoweisia crispula</i>	Mountain Thatch Moss				S1	1	53.8 ± 0.0	NB
N	<i>Didymodon rigidulus</i> var. <i>gracilis</i>	a moss				S1	1	61.1 ± 1.0	NB
N	<i>Zygodon viridissimus</i> var. <i>viridissimus</i>	a Moss				S1	1	84.4 ± 0.0	NB
N	<i>Syntrichia ruralis</i>	a Moss				S1	1	62.0 ± 0.0	NB
N	<i>Sticta fuliginosa</i>	Peppered Moon Lichen				S1	14	78.0 ± 0.0	NS
N	<i>Cladonia straminea</i>	Reptilian Pixie-cup Lichen				S1	5	47.2 ± 1.0	NB
N	<i>Coccocarpia palmicola</i>	Salted Shell Lichen				S1	1	47.2 ± 1.0	NB
N	<i>Peltigera malacea</i>	Veinless Pelt Lichen				S1	2	58.4 ± 1.0	NB
N	<i>Bryoria bicolor</i>	Electrified Horsehair Lichen				S1	1	58.4 ± 1.0	NB
N	<i>Hygrobiella laxifolia</i>	Lax Notchwort				S1?	1	59.1 ± 1.0	NB
N	<i>Bartramia ithyphylla</i>	Straight-leaved Apple Moss				S1?	2	54.7 ± 1.0	NB
N	<i>Dicranum bonjeanii</i>	Bonjean's Broom Moss				S1?	1	98.8 ± 0.0	NS
N	<i>Dicranum condensatum</i>	Condensed Broom Moss				S1?	1	53.8 ± 0.0	NB
N	<i>Entodon brevisetus</i>	a Moss				S1?	1	53.2 ± 10.0	NB
N	<i>Oxyrrhynchium hians</i>	Light Beaked Moss				S1?	1	65.1 ± 0.0	NB
N	<i>Homomallium adnatum</i>	Adnate Hairy-gray Moss				S1?	4	30.0 ± 1.0	NB

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N	<i>Plagiothecium latebricola</i>	Alder Silk Moss				S1?	3	60.2 ± 1.0	NB
N	<i>Rhytidium rugosum</i>	Wrinkle-leaved Moss				S1?	2	61.1 ± 1.0	NB
N	<i>Timmia megapolitana</i>	Metropolitan Timmia Moss				S1?	1	99.0 ± 1.0	NS
N	<i>Rhizomnium pseudopunctatum</i>	Felted Leafy Moss				S1?	1	82.0 ± 0.0	NB
N	<i>Enchylium tenax</i>	Soil Tarpaper Lichen				S1?	2	84.8 ± 0.0	PE
N	<i>Heterodermia squamulosa</i>	Scaly Fringe Lichen				S1?	75	79.1 ± 1.0	NS
N	<i>Pertusaria propinqua</i>	a Lichen				S1?	2	58.4 ± 1.0	NB
N	<i>Rhizocarpon umbilicatum</i>	a Lichen				S1?	2	46.3 ± 1.0	NB
N	<i>Cephaloziella spinigera</i>	Spiny Threadwort				S1S2	2	50.0 ± 0.0	NB
N	<i>Odontoschisma francisci</i>	Holt's Notchwort				S1S2	4	44.9 ± 0.0	NB
N	<i>Harpanthus flotovianus</i>	Great Mountain Flapwort				S1S2	2	46.8 ± 1.0	NB
N	<i>Odontoschisma sphagni</i>	Bog-Moss Flapwort				S1S2	1	94.3 ± 0.0	NB
N	<i>Pallavicinia lyellii</i>	Lyell's Ribbonwort				S1S2	2	53.2 ± 1.0	NB
N	<i>Radula tenax</i>	Tenacious Scalewort				S1S2	1	56.3 ± 0.0	NB
N	<i>Reboulia hemisphaerica</i>	Purple-margined Liverwort				S1S2	1	61.2 ± 0.0	NB
N	<i>Solenostoma obovatum</i>	Egg Flapwort				S1S2	1	56.3 ± 0.0	NB
N	<i>Brachythecium acuminatum</i>	Acuminate Ragged Moss				S1S2	3	56.4 ± 2.0	NB
N	<i>Ptychostomum salinum</i>	Saltmarsh Bryum				S1S2	1	60.2 ± 1.0	NB
N	<i>Tortula obtusifolia</i>	a Moss				S1S2	1	95.7 ± 0.0	NB
N	<i>Distichium inclinatum</i>	Inclined Iris Moss				S1S2	5	61.1 ± 1.0	NB
N	<i>Ditrichum pallidum</i>	Pale Cow-hair Moss				S1S2	1	51.3 ± 1.0	NB
N	<i>Drummondia prorepens</i>	a Moss				S1S2	1	86.1 ± 0.0	NB
N	<i>Timmia norvegica</i>	a moss				S1S2	3	61.3 ± 0.0	NB
N	<i>Timmia norvegica var. excurrens</i>	a moss				S1S2	1	61.3 ± 0.0	NB
N	<i>Tortella humilis</i>	Small Crisp Moss				S1S2	7	52.2 ± 1.0	NB
N	<i>Pseudotaxiphyllum distichaceum</i>	a Moss				S1S2	2	29.7 ± 1.0	NB
N	<i>Umbilicaria vellea</i>	Grizzled Rocktripe Lichen				S1S2	1	60.7 ± 1.0	NB
N	<i>Pilophorus cereolus</i>	Powdered Matchstick Lichen				S1S2	1	32.2 ± 5.0	NB
N	<i>Peltigera scabrosa</i>	Greater Toad Pelt Lichen				S1S2	4	45.4 ± 1.0	NB
N	<i>Tritomania scitula</i>	Mountain Notchwort				S1S3	1	52.5 ± 1.0	NB
N	<i>Amphidium mougeotii</i>	a Moss				S2	11	50.7 ± 0.0	NB
N	<i>Anomodon viticulosus</i>	a Moss				S2	2	36.3 ± 10.0	NB
N	<i>Cirriphyllum piliferum</i>	Hair-pointed Moss				S2	4	33.4 ± 1.0	NB
N	<i>Dicranella palustris</i>	Drooping-Leaved Fork Moss				S2	9	46.8 ± 1.0	NB
N	<i>Didymodon ferrugineus</i>	Rusty Beard Moss				S2	1	60.9 ± 0.0	NB
N	<i>Anomodon tristis</i>	a Moss				S2	10	53.7 ± 10.0	NB
N	<i>Hygrohypnum bestii</i>	Best's Brook Moss				S2	5	49.9 ± 0.0	NB
N	<i>Hypnum pratense</i>	Meadow Plait Moss				S2	1	89.5 ± 0.0	PE
N	<i>Isoetecium myosuroides</i>	Slender Mouse-tail Moss				S2	2	90.2 ± 3.0	NS
N	<i>Meesia triquetra</i>	Three-ranked Cold Moss				S2	1	89.3 ± 100.0	NB
N	<i>Platydictya jungermannioides</i>	False Willow Moss				S2	4	26.2 ± 15.0	NB
N	<i>Pohlia elongata</i>	Long-necked Nodding Moss				S2	14	53.9 ± 0.0	NB
N	<i>Seligeria calcarea</i>	Chalk Brittle Moss				S2	2	46.8 ± 0.0	NB
N	<i>Seligeria recurvata</i>	a Moss				S2	3	26.2 ± 15.0	NB
N	<i>Seligeria brevifolia</i>	a Moss				S2	4	84.1 ± 0.0	NB
N	<i>Sphagnum flexuosum</i>	Flexuous Peatmoss				S2	4	50.2 ± 0.0	NB
N	<i>Tayloria serrata</i>	Serrate Trumpet Moss				S2	7	30.8 ± 100.0	NB
N	<i>Tetradontium brownianum</i>	Little Georgia				S2	13	53.7 ± 10.0	NB
N	<i>Thamnobryum alleghaniense</i>	a Moss				S2	25	24.8 ± 0.0	NB
N	<i>Tortula mucronifolia</i>	Mucronate Screw Moss				S2	1	98.9 ± 3.0	NS
N	<i>Ulotia phyllantha</i>	a Moss				S2	4	61.1 ± 0.0	NB
N	<i>Anomobryum julaceum</i>	Slender Silver Moss				S2	4	61.1 ± 1.0	NB
N	<i>Cladonia macrophylla</i>	Fig-leaved Lichen				S2	3	53.1 ± 1.0	NB
N	<i>Leptogium milligranum</i>	Stretched Jellyskin Lichen				S2	21	31.8 ± 0.0	NB

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N	<i>Nephroma laevigatum</i>	Mustard Kidney Lichen				S2	31	70.7 ± 0.0	NS
N	<i>Anacamptodon splachnoides</i>	a Moss				S2?	3	61.3 ± 1.0	NB
N	<i>Andreaea rothii</i>	Dusky Rock Moss				S2?	5	50.7 ± 0.0	NB
N	<i>Anomodon minor</i>	Blunt-leaved Anomodon Moss				S2?	1	35.9 ± 1.0	NB
N	<i>Ptychostomum pallescens</i>	Tall Clustered Bryum				S2?	1	68.0 ± 100.0	NB
N	<i>Dichelyma capillaceum</i>	Hairlike Dichelyma Moss				S2?	1	53.1 ± 3.0	NB
N	<i>Hygrohypnum montanum</i>	a Moss				S2?	2	50.1 ± 1.0	NB
N	<i>Schistostega pennata</i>	Luminous Moss				S2?	1	85.9 ± 100.0	NB
N	<i>Seligeria diversifolia</i>	a Moss				S2?	2	88.8 ± 0.0	NB
N	<i>Sphagnum angermanicum</i>	a Peatmoss				S2?	2	53.1 ± 10.0	NB
N	<i>Trichodon cylindricus</i>	Cylindric Hairy-teeth Moss				S2?	2	26.2 ± 15.0	NB
N	<i>Plagiomnium rostratum</i>	Long-beaked Leafy Moss				S2?	5	56.8 ± 0.0	NB
N	<i>Ramalina labiosorediata</i>	Chalky Ramalina Lichen				S2?	1	58.3 ± 1.0	NB
N	<i>Collema leptaleum</i>	Crumpled Bat's Wing Lichen				S2?	11	83.5 ± 0.0	PE
N	<i>Imshaugia placodioides</i>	Eyed Starburst Lichen				S2?	1	85.0 ± 0.0	PE
N	<i>Nephroma arcticum</i>	Arctic Kidney Lichen				S2?	2	56.6 ± 1.0	NB
N	<i>Ptychostomum cernuum</i>	Swamp Bryum				S2S3	1	61.1 ± 0.0	NB
N	<i>Buxbaumia aphylla</i>	Brown Shield Moss				S2S3	1	80.9 ± 0.0	NB
N	<i>Calliergonella cuspidata</i>	Common Large Wetland Moss				S2S3	4	39.0 ± 5.0	NB
N	<i>Drepanocladus polygamus</i>	Polygamous Hook Moss				S2S3	2	53.4 ± 0.0	NB
N	<i>Palustriella falcata</i>	Curled Hook Moss				S2S3	2	58.3 ± 0.0	NB
N	<i>Didymodon rigidulus</i>	Rigid Screw Moss				S2S3	8	56.4 ± 2.0	NB
N	<i>Ephemerum serratum</i>	a Moss				S2S3	3	60.8 ± 0.0	NB
N	<i>Isopterygiopsis pulchella</i>	Neat Silk Moss				S2S3	7	51.5 ± 1.0	NB
N	<i>Orthotrichum elegans</i>	Showy Bristle Moss				S2S3	2	32.8 ± 0.0	NB
N	<i>Pohlia prolifera</i>	Cottony Nodding Moss				S2S3	13	26.2 ± 15.0	NB
N	<i>Codriophorus fascicularis</i>	Clustered Rock Moss				S2S3	3	53.8 ± 0.0	NB
N	<i>Bucklandiella affinis</i>	Lesser Rock Moss				S2S3	11	45.1 ± 0.0	NB
N	<i>Saelania glaucescens</i>	Blue Dew Moss				S2S3	2	53.8 ± 0.0	NB
N	<i>Sphagnum centrale</i>	Central Peat Moss				S2S3	8	47.7 ± 1.0	NB
N	<i>Sphagnum subfulvum</i>	a Peatmoss				S2S3	3	79.7 ± 0.0	NB
N	<i>Taxiphyllum deplanatum</i>	Imbricate Yew-leaved Moss				S2S3	2	56.3 ± 1.0	NB
N	<i>Zygodon viridissimus</i>	a Moss				S2S3	3	56.3 ± 1.0	NB
N	<i>Schistidium agassizii</i>	Elf Bloom Moss				S2S3	3	47.9 ± 1.0	NB
N	<i>Loeskeobryum brevirostre</i>	a Moss				S2S3	13	50.7 ± 0.0	NB
N	<i>Cyrtomnium hymenophylloides</i>	Short-pointed Lantern Moss				S2S3	7	47.0 ± 0.0	NB
N	<i>Sphaerophorus globosus</i>	Northern Coral Lichen				S2S3	13	46.4 ± 0.0	NB
N	<i>Cetrariella delisei</i>	Snowbed Icelandmoss Lichen				S2S3	2	40.2 ± 0.0	NB
N	<i>Cladonia acuminata</i>	Scantily Clad Pixie Lichen				S2S3	2	60.7 ± 1.0	NB
N	<i>Cladonia ramulosa</i>	Bran Lichen				S2S3	4	55.2 ± 1.0	NB
N	<i>Cladonia sulphurina</i>	Greater Sulphur-cup Lichen				S2S3	5	45.2 ± 1.0	NB
N	<i>Dendroscopula umhausense</i>	a lichen				S2S3	1	86.4 ± 0.0	NB
N	<i>Parmeliopsis ambigua</i>	Green Starburst Lichen				S2S3	1	63.7 ± 1.0	NB
N	<i>Polychidium muscicola</i>	Eyed Mossthorns Woollybear Lichen				S2S3	4	41.3 ± 0.0	NB
N	<i>Hypnum curvifolium</i>	Curved-leaved Plait Moss				S3	8	50.7 ± 0.0	NB
N	<i>Tortella fragilis</i>	Fragile Twisted Moss				S3	1	61.3 ± 0.0	NB
N	<i>Schistidium maritimum</i>	a Moss				S3	6	57.6 ± 0.0	NB
N	<i>Hymenostylium recurvirostrum</i>	Curve-beak Beardless Moss				S3	6	61.6 ± 1.0	NB
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	6	78.3 ± 3.0	NS
N	<i>Solorina saccata</i>	Woodland Owl Lichen				S3	6	60.7 ± 1.0	NB
N	<i>Ahtiana aurescens</i>	Eastern Candlewax Lichen				S3	4	80.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	<i>Normandina pulchella</i>	Rimmed Elf-ear Lichen			S3		23	55.2 ± 1.0	NB
N	<i>Cladonia farinacea</i>	Farinose Pixie Lichen			S3		5	54.3 ± 1.0	NB
N	<i>Cladonia strepsilis</i>	Olive Cladonia Lichen			S3		1	99.6 ± 0.0	NB
N	<i>Hypotrachyna catawbiensis</i>	Powder-tipped Antler Lichen			S3		17	60.2 ± 0.0	NB
N	<i>Scytinium lichenoides</i>	Tattered Jellyskin Lichen			S3		6	60.7 ± 1.0	NB
N	<i>Nephroma bellum</i>	Naked Kidney Lichen			S3		5	52.9 ± 1.0	NB
N	<i>Peltigera degenii</i>	Lustrous Pelt Lichen			S3		3	55.2 ± 1.0	NB
N	<i>Leptogium laceroides</i>	Short-bearded Jellyskin Lichen			S3		14	48.0 ± 1.0	NB
N	<i>Peltigera membranacea</i>	Membranous Pelt Lichen			S3		24	24.6 ± 0.0	NB
N	<i>Cladonia botrytes</i>	Wooden Soldiers Lichen			S3		3	41.4 ± 0.0	NB
N	<i>Cladonia carneola</i>	Crowned Pixie-cup Lichen			S3		2	54.5 ± 0.0	NB
N	<i>Cladonia deformis</i>	Lesser Sulphur-cup Lichen			S3		9	51.7 ± 0.0	NB
N	<i>Aulacomnium androgynum</i>	Little Groove Moss			S3?		10	26.2 ± 15.0	NB
N	<i>Ptychostomum inclinatum</i>	Blunt-tooth Thread Moss			S3?		3	60.9 ± 0.0	NB
N	<i>Dicranella rufescens</i>	Red Forklet Moss			S3?		1	61.3 ± 0.0	NB
N	<i>Rhytidiadelphus loreus</i>	Lanky Moss			S3?		3	60.8 ± 0.0	NB
N	<i>Sphagnum lescurii</i>	a Peatmoss			S3?		8	47.2 ± 1.0	NB
N	<i>Rostania occultata</i>	Crusted Tarpaper Lichen			S3?		4	75.7 ± 2.0	NS
N	<i>Scytinium subtile</i>	Appressed Jellyskin Lichen			S3?		12	69.7 ± 0.0	PE
N	<i>Peltigera neckeri</i>	Black-saddle Pelt Lichen			S3?		1	57.0 ± 5.0	NB
N	<i>Stereocaulon subcoralloides</i>	Coralloid Foam Lichen			S3?		1	58.3 ± 1.0	NB
N	<i>Anomodon rugelii</i>	Rugel's Anomodon Moss			S3S4		1	100.0 ± 0.0	NS
N	<i>Barbula convoluta</i>	Lesser Bird's-claw Beard Moss			S3S4		1	49.5 ± 15.0	NB
N	<i>Brachytheciastrum velutinum</i>	Velvet Ragged Moss			S3S4		2	53.8 ± 1.0	NB
N	<i>Calliergon giganteum</i>	Giant Spear Moss			S3S4		1	86.2 ± 0.0	PE
N	<i>Dicranella cerviculata</i>	a Moss			S3S4		3	50.6 ± 2.0	NB
N	<i>Dicranella varia</i>	a Moss			S3S4		2	78.8 ± 0.0	PE
N	<i>Dicranum majus</i>	Greater Broom Moss			S3S4		23	47.0 ± 0.0	NB
N	<i>Dicranum leioneuron</i>	a Dicranum Moss			S3S4		2	31.6 ± 0.0	NB
N	<i>Encalypta ciliata</i>	Fringed Extinguisher Moss			S3S4		3	60.9 ± 0.0	NB
N	<i>Fissidens bryoides</i>	Lesser Pocket Moss			S3S4		5	57.6 ± 0.0	NB
N	<i>Elodium blandowii</i>	Blandow's Bog Moss			S3S4		1	85.2 ± 0.0	PE
N	<i>Heterocladium dimorphum</i>	Dimorphous Tangle Moss			S3S4		6	32.8 ± 0.0	NB
N	<i>Isopterygiopsis muelleriana</i>	a Moss			S3S4		19	47.0 ± 0.0	NB
N	<i>Myurella julacea</i>	Small Mouse-tail Moss			S3S4		2	61.3 ± 0.0	NB
N	<i>Orthotrichum speciosum</i>	Showy Bristle Moss			S3S4		6	62.7 ± 4.0	NB
N	<i>Physcomitrium pyriforme</i>	Pear-shaped Urn Moss			S3S4		3	40.0 ± 0.0	NB
N	<i>Pogonatum dentatum</i>	Mountain Hair Moss			S3S4		4	58.8 ± 0.0	NS
N	<i>Sphagnum compactum</i>	Compact Peat Moss			S3S4		6	39.4 ± 0.0	NB
N	<i>Sphagnum torreyanum</i>	a Peatmoss			S3S4		2	67.4 ± 0.0	NB
N	<i>Sphagnum austinii</i>	Austin's Peat Moss			S3S4		1	56.7 ± 0.0	NS
N	<i>Sphagnum contortum</i>	Twisted Peat Moss			S3S4		1	67.4 ± 0.0	NB
N	<i>Sphagnum quinquefarium</i>	Five-ranked Peat Moss			S3S4		2	32.8 ± 0.0	NB
N	<i>Tetraphis geniculata</i>	Geniculate Four-tooth Moss			S3S4		14	47.9 ± 1.0	NB
N	<i>Tetraplodon angustatus</i>	Toothed-leaved Nitrogen Moss			S3S4		2	76.0 ± 0.0	NS
N	<i>Weissia controversa</i>	Green-Cushioned Weissia			S3S4		1	61.6 ± 1.0	NB
N	<i>Abietinella abietina</i>	Wiry Fern Moss			S3S4		1	61.3 ± 0.0	NB
N	<i>Trichostomum tenuirostre</i>	Acid-Soil Moss			S3S4		5	53.8 ± 0.0	NB
N	<i>Raiiella scita</i>	Smaller Fern Moss			S3S4		1	78.6 ± 0.0	NB
N	<i>Pannaria rubiginosa</i>	Brown-eyed Shingle Lichen			S3S4		22	60.9 ± 1.0	NB
N	<i>Pseudocyphellaria holarctica</i>	Yellow Specklebelly Lichen			S3S4		88	19.2 ± 0.0	NB
N	<i>Ramalina thrausta</i>	Angelhair Ramalina Lichen			S3S4		13	45.4 ± 1.0	NB
N	<i>Hypogymnia vittata</i>	Slender Monk's Hood Lichen			S3S4		29	45.4 ± 1.0	NB
N	<i>Scytinium teretiusculum</i>	Curly Jellyskin Lichen			S3S4		12	78.4 ± 0.0	PE
N	<i>Montanella panniformis</i>	Shingled Camouflage Lichen			S3S4		5	47.4 ± 1.0	NB

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N	<i>Cladonia floerkeana</i>	Gritty British Soldiers Lichen				S3S4	5	54.5 ± 1.0	NB
N	<i>Xylopsora friesii</i>	a Lichen				S3S4	1	60.7 ± 1.0	NB
N	<i>Nephroma parile</i>	Powdery Kidney Lichen				S3S4	18	18.3 ± 0.0	NB
N	<i>Protopannaria pezizoides</i>	Brown-gray Moss-shingle Lichen				S3S4	27	24.1 ± 0.0	NB
N	<i>Usnea strigosa</i>	Bushy Beard Lichen				S3S4	35	24.0 ± 0.0	NB
N	<i>Stereocaulon condensatum</i>	Granular Soil Foam Lichen				S3S4	9	25.2 ± 0.0	NB
N	<i>Stereocaulon paschale</i>	Easter Foam Lichen				S3S4	2	43.7 ± 1.0	NB
N	<i>Pannaria conoplea</i>	Mealy-rimmed Shingle Lichen				S3S4	39	56.3 ± 0.0	NB
N	<i>Physcia tenella</i>	Fringed Rosette Lichen				S3S4	6	55.2 ± 0.0	NB
N	<i>Anaptychia palmulata</i>	Shaggy Fringed Lichen				S3S4	81	36.3 ± 0.0	NB
N	<i>Peltigera neopolydactyla</i>	Undulating Pelt Lichen				S3S4	10	47.2 ± 1.0	NB
N	<i>Cladonia cariosa</i>	Lesser Ribbed Pixie Lichen				S3S4	4	42.7 ± 0.0	NB
N	<i>Hypocenomyce scalaris</i>	Common Clam Lichen				S3S4	1	58.3 ± 1.0	NB
N	<i>Leucodon brachypus</i>	a Moss				SH	13	49.4 ± 1.0	NB
N	<i>Splachnum luteum</i>	Yellow Collar Moss				SH	1	68.0 ± 100.0	NB
N	<i>Thelia hirtella</i>	a Moss				SH	1	89.3 ± 100.0	NB
N	<i>Cyrto-hypnum minutulum</i>	Tiny Cedar Moss				SH	3	58.6 ± 10.0	NB
P	<i>Juglans cinerea</i>	Butternut	Endangered	Endangered	Endangered	S1	62	35.2 ± 1.0	NB
P	<i>Symphytotrichum laurentianum</i>	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	50	76.0 ± 0.0	NB
P	<i>Fraxinus nigra</i>	Black Ash	Threatened			S3S4	407	4.9 ± 0.0	NB
P	<i>Isoetes prototypus</i>	Prototype Quillwort	Special Concern	Special Concern	Endangered	S1	3	95.3 ± 0.0	NS
P	<i>Lechea maritima</i> var. <i>subcylindrica</i>	Beach Pinweed	Special Concern	Special Concern	Special Concern	S2	2638	46.2 ± 0.0	NB
P	<i>Symphytotrichum subulatum</i> (Bathurst pop)	Bathurst Aster - Bathurst pop.	Not At Risk		Endangered	S2	20	60.2 ± 0.0	NB
P	<i>Cryptotaenia canadensis</i>	Canada Honewort				S1	1	64.3 ± 1.0	NB
P	<i>Antennaria parlinii</i> ssp. <i>fallax</i>	Parlin's Pussytoes				S1	5	96.1 ± 1.0	NB
P	<i>Bidens discoides</i>	Swamp Beggarticks				S1	1	79.9 ± 0.0	NB
P	<i>Pseudognaphalium obtusifolium</i>	Eastern Cudweed				S1	28	50.8 ± 5.0	NB
P	<i>Hieracium paniculatum</i>	Panicled Hawkweed				S1	2	91.8 ± 0.0	NB
P	<i>Solidago multiradiata</i>	Multi-rayed Goldenrod				S1	19	28.1 ± 0.0	NB
P	<i>Symphytotrichum subulatum</i> (non-Bathurst pop)	Annual Saltmarsh Aster				S1	12	80.3 ± 0.0	NB
P	<i>Barbarea orthoceras</i>	American Yellow Rocket				S1	1	73.4 ± 1.0	NB
P	<i>Cardamine parviflora</i>	Small-flowered Bittercress				S1	11	88.3 ± 0.0	NS
P	<i>Draba arabisans</i>	Rock Whitlow-Grass				S1	39	54.4 ± 0.0	NB
P	<i>Draba glabella</i>	Rock Whitlow-Grass				S1	8	61.0 ± 0.0	NB
P	<i>Stellaria crassifolia</i>	Fleshy Stitchwort				S1	3	30.1 ± 5.0	NB
P	<i>Chenopodium simplex</i>	Maple-leaved Goosefoot				S1	6	29.6 ± 5.0	NB
P	<i>Blitum capitatum</i>	Strawberry-Blite				S1	2	89.6 ± 1.0	NB
P	<i>Suaeda rolandii</i>	Roland's Sea-Blite				S1	17	23.5 ± 1.0	NB
P	<i>Hypericum virginicum</i>	Virginia St. John's-wort				S1	1	60.0 ± 0.0	NS
P	<i>Corema conradii</i>	Broom Crowberry				S1	13	99.0 ± 0.0	PE
P	<i>Vaccinium boreale</i>	Northern Blueberry				S1	5	40.1 ± 1.0	NB
P	<i>Vaccinium corymbosum</i>	Highbush Blueberry				S1	1	58.6 ± 0.0	NS
P	<i>Euphorbia polygonifolia</i>	Seaside Spurge				S1	15	73.5 ± 0.0	NB
P	<i>Lespedeza capitata</i>	Round-headed Bush-clover				S1	11	89.9 ± 0.0	NB
P	<i>Proserpinaca pectinata</i>	Comb-leaved Mermaidweed				S1	2	75.4 ± 5.0	NS
P	<i>Polygonum douglasii</i>	Douglas Knotweed				S1	1	61.9 ± 0.0	NB
P	<i>Lysimachia quadrifolia</i>	Whorled Yellow Loosestrife				S1	4	90.9 ± 0.0	NB
P	<i>Primula laurentiana</i>	Laurentian Primrose				S1	48	54.3 ± 3.0	NB
P	<i>Amelanchier fernaldii</i>	Fernald's Serviceberry				S1	2	22.6 ± 1.0	NB
P	<i>Crataegus jonesiae</i>	Jones' Hawthorn				S1	1	70.3 ± 1.0	NB
P	<i>Dryas integrifolia</i>	Entire-leaved Mountain				S1	15	28.0 ± 3.0	NB

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P	<i>Potentilla canadensis</i>	Avens				S1	1	79.7 ± 0.0	NB
P	<i>Rubus flagellaris</i>	Canada Cinquefoil				S1	3	52.2 ± 1.0	NB
P	<i>Salix myrtilifolia</i>	Northern Dewberry				S1	25	28.7 ± 0.0	NB
P	<i>Saxifraga paniculata</i> ssp. <i>laestadii</i>	Blueberry Willow				S1	42	58.4 ± 0.0	NB
P	<i>Viola sagittata</i> var. <i>ovata</i>	Laestadius' Saxifrage				S1	1	96.8 ± 2.0	NS
P	<i>Carex annectens</i>	Arrow-Leaved Violet				S1	3	37.3 ± 0.0	NB
P	<i>Carex atlantica</i> ssp. <i>atlantica</i>	Yellow-Fruited Sedge				S1	8	52.1 ± 0.0	NB
P	<i>Carex backii</i>	Atlantic Sedge				S1	3	32.4 ± 0.0	NB
P	<i>Carex merritt-fernaldii</i>	Rocky Mountain Sedge				S1	1	32.9 ± 0.0	NB
P	<i>Carex scirpoidea</i>	Merritt Fernald's Sedge				S1	6	65.9 ± 0.0	NB
P	<i>Carex sterilis</i>	Scirpuslike Sedge				S1	1	35.5 ± 2.0	NB
P	<i>Carex grisea</i>	Sterile Sedge				S1	12	65.4 ± 5.0	NB
P	<i>Scirpus pendulus</i>	Inflated Narrow-leaved Sedge				S1	9	35.0 ± 0.0	NB
P	<i>Sisyrinchium angustifolium</i>	Hanging Bulrush				S1	1	68.3 ± 5.0	NS
P	<i>Juncus greenii</i>	Narrow-leaved Blue-eyed-grass				S1	9	50.6 ± 0.0	NB
P	<i>Juncus stygius</i> ssp. <i>americanus</i>	Greene's Rush				S1	17	54.4 ± 5.0	NB
P	<i>Goodyera pubescens</i>	Moor Rush				S1	12	28.9 ± 5.0	NB
P	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	Downy Rattlesnake-Plantain				S1	7	30.0 ± 0.0	NB
P	<i>Platanthera flava</i> var. <i>herbiola</i>	North American White Adder's-mouth				S1	1	30.0 ± 0.0	NB
P	<i>Platanthera macrophylla</i>	Pale Green Orchid				S1	12	33.3 ± 0.0	NB
P	<i>Bromus pubescens</i>	Large Round-Leaved Orchid				S1	1	79.8 ± 0.0	NB
P	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	Hairy Wood Brome Grass				S1	3	49.5 ± 1.0	NB
P	<i>Cinna arundinacea</i>	Slim-stemmed Reed Grass				S1	3	91.7 ± 1.0	NB
P	<i>Danthonia compressa</i>	Sweet Wood Reed Grass				S1	18	36.3 ± 0.0	NB
P	<i>Potamogeton friesii</i>	Flattened Oat Grass				S1	7	42.8 ± 0.0	NB
P	<i>Potamogeton nodosus</i>	Fries' Pondweed				S1	1	98.2 ± 0.0	NB
P	<i>Potamogeton strictifolius</i>	Long-leaved Pondweed				S1	1	96.1 ± 2.0	NB
P	<i>Cystopteris laurentiana</i>	Straight-leaved Pondweed				S1	1	64.5 ± 1.0	NB
P	<i>Dryopteris filix-mas</i> ssp. <i>brittonii</i>	Laurentian Bladder Fern				S1	2	25.0 ± 1.0	NB
P	<i>Huperzia selago</i>	Britton's Male Fern				S1	1	93.4 ± 1.0	NS
P	<i>Selaginella rupestris</i>	Northern Firmoss				S1	9	58.1 ± 1.0	NB
P	<i>Cuscuta campestris</i>	Rock Spikemoss				S1?	3	91.6 ± 5.0	NB
P	<i>Polygonum aviculare</i> ssp. <i>neglectum</i>	Field Dodder				S1?	4	39.0 ± 0.0	NB
P	<i>Carex laxiflora</i>	Narrow-leaved Knotweed				S1?	1	93.3 ± 7.0	NS
P	<i>Spiranthes ochroleuca</i>	Loose-Flowered Sedge				S1S2	17	1.6 ± 0.0	NB
P	<i>Eriophorum russeolum</i> ssp. <i>albidum</i>	Yellow Ladies'-tresses				S1S3	13	17.9 ± 0.0	NB
P	<i>Spiranthes cernua</i>	Smooth-fruited Russet Cottongrass				S1S3	21	33.6 ± 0.0	NB
P	<i>Spiranthes arcisepala</i>	Nodding Ladies'-Tresses				S1S3	7	41.9 ± 0.0	NB
P	<i>Spiranthes incurva</i>	Appalachian Ladies'-tresses				S1S3	1	4.8 ± 0.0	NB
P	<i>Neottia bifolia</i>	Sphinx Ladies'-tresses			Endangered	S2	50	17.4 ± 0.0	NB
P	<i>Sanicula trifoliata</i>	Southern Twayblade				S2	1	97.0 ± 5.0	NB
P	<i>Hieracium robinsonii</i>	Large-Fruited Sanicle				S2	12	47.9 ± 0.0	NB
P	<i>Atriplex glabriuscula</i> var. <i>franktonii</i>	Robinson's Hawkweed				S2	6	38.4 ± 0.0	NB
P	<i>Hypericum x dissimulatum</i>	Frankton's Saltbush				S2	3	64.4 ± 1.0	NB
P	<i>Viburnum dentatum</i>	Disguised St. John's-wort				S2	2	42.9 ± 0.0	NB
P	<i>Viburnum dentatum</i> var.	Southern Arrow-Wood				S2	1	35.3 ± 0.0	NB



Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Quercus macrocarpa</i>	Bur Oak				S2	26	64.3 ± 0.0	NB
P	<i>Nuphar x rubrodiscalis</i>	Red-disk Yellow Pond-lily				S2	15	10.0 ± 0.0	NB
P	<i>Polygaloides paucifolia</i>	Fringed Milkwort				S2	8	59.1 ± 1.0	NB
P	<i>Persicaria amphibia</i> var. <i>emersa</i>	Long-root Smartweed				S2	18	78.9 ± 0.0	NB
P	<i>Anemone parviflora</i>	Small-flowered Anemone				S2	9	28.9 ± 0.0	NB
P	<i>Geum fragarioides</i>	Barren Strawberry				S2	1	45.8 ± 1.0	NB
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort				S2	2	62.0 ± 1.0	NB
P	<i>Carex albicans</i> var. <i>emmonsii</i>	White-tinged Sedge				S2	12	14.9 ± 0.0	NB
P	<i>Cyperus lupulinus</i> ssp. <i>macilentus</i>	Hop Flatsedge				S2	18	91.9 ± 0.0	NB
P	<i>Galearia rotundifolia</i>	Small Round-leaved Orchid				S2	3	56.1 ± 0.0	NB
P	<i>Calypso bulbosa</i> var. <i>americana</i>	Calypso				S2	3	29.6 ± 5.0	NB
P	<i>Coeloglossum viride</i>	Long-bracted Frog Orchid				S2	7	21.9 ± 10.0	NB
P	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Small Yellow Lady's-Slipper				S2	2	26.6 ± 0.0	NB
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S2	4	54.7 ± 0.0	NB
P	<i>Festuca subverticillata</i>	Nodding Fescue				S2	8	81.2 ± 0.0	NS
P	<i>Puccinellia nutkaensis</i>	Alaska Alkaligrass				S2	2	35.9 ± 1.0	NB
P	<i>Diphasiastrum sitchense</i>	Sitka Ground-cedar				S2	4	34.3 ± 0.0	NB
P	<i>Schizaea pusilla</i>	Little Curlygrass Fern				S2	9	54.1 ± 0.0	NB
P	<i>Coryphopteris simulata</i>	Bog Fern				S2	16	37.7 ± 0.0	NB
P	<i>Toxicodendron radicans</i> var. <i>radicans</i>	Eastern Poison Ivy				S2?	12	46.7 ± 0.0	NB
P	<i>Symphiotrichum novi-belgii</i> var. <i>crenifolium</i>	New York Aster				S2?	5	50.7 ± 1.0	NB
P	<i>Humulus lupulus</i> var. <i>lupuloides</i>	Common Hop				S2?	2	56.1 ± 5.0	NB
P	<i>Crataegus macrocarpa</i>	Big-Fruit Hawthorn				S2?	2	12.2 ± 0.0	NB
P	<i>Rubus x recurvicaulis</i>	arching dewberry				S2?	6	26.1 ± 1.0	NB
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2S3	8	73.4 ± 1.0	NS
P	<i>Bidens heterodoxa</i>	Connecticut Beggar-Ticks				S2S3	2	89.5 ± 0.0	NB
P	<i>Symphiotrichum racemosum</i>	Small White Aster				S2S3	4	79.2 ± 0.0	NB
P	<i>Alnus serrulata</i>	Smooth Alder				S2S3	1	98.2 ± 0.0	NB
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S2S3	6	31.7 ± 0.0	NB
P	<i>Gentiana linearis</i>	Narrow-Leaved Gentian				S2S3	1	51.5 ± 50.0	NB
P	<i>Hedeoma pulegioides</i>	American False Pennyroyal				S2S3	5	62.2 ± 0.0	NB
P	<i>Aphyllon uniflorum</i>	One-flowered Broomrape				S2S3	1	99.0 ± 0.0	NS
P	<i>Persicaria careyi</i>	Carey's Smartweed				S2S3	11	39.1 ± 2.0	NB
P	<i>Hepatica americana</i>	Round-lobed Hepatica				S2S3	1	80.1 ± 1.0	NB
P	<i>Cephalanthus occidentalis</i>	Common Buttonbush				S2S3	1	99.3 ± 0.0	NB
P	<i>Galium obtusum</i>	Blunt-leaved Bedstraw				S2S3	10	31.8 ± 10.0	NB
P	<i>Euphrasia randii</i>	Rand's Eyebright				S2S3	8	62.5 ± 0.0	NB
P	<i>Dirca palustris</i>	Eastern Leatherwood				S2S3	1	19.8 ± 1.0	NB
P	<i>Carex comosa</i>	Bearded Sedge				S2S3	7	49.6 ± 0.0	NB
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge				S2S3	3	52.3 ± 0.0	NB
P	<i>Carex vacillans</i>	Estuarine Sedge				S2S3	4	50.8 ± 7.0	NB
P	<i>Scirpus atrovirens</i>	Dark-green Bulrush				S2S3	2	75.2 ± 0.0	PE
P	<i>Juncus ranarius</i>	Seaside Rush				S2S3	4	91.2 ± 0.0	NB
P	<i>Allium tricoccum</i>	Wild Leek				S2S3	34	24.8 ± 0.0	NB
P	<i>Corallorhiza maculata</i> var. <i>occidentalis</i>	Spotted Coralroot				S2S3	14	13.7 ± 10.0	NB
P	<i>Corallorhiza maculata</i> var.	Spotted Coralroot				S2S3	4	53.2 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>maculata</i>								
P	<i>Elymus canadensis</i>	Canada Wild Rye				S2S3	1	4.8 ± 1.0	NB
P	<i>Piptatheropsis canadensis</i>	Canada Ricegrass				S2S3	4	16.5 ± 10.0	NB
P	<i>Puccinellia phryganodes</i>	Creeping Alkali Grass				S2S3	2	46.7 ± 1.0	NB
P	<i>ssp. neoarctica</i>								
P	<i>Poa glauca</i>	Glaucous Blue Grass				S2S3	24	56.7 ± 0.0	NB
P	<i>Piptatheropsis pungens</i>	Slender Ricegrass				S2S3	5	32.1 ± 0.0	NB
P	<i>Potamogeton vaseyi</i>	Vasey's Pondweed				S2S3	1	73.7 ± 0.0	PE
P	<i>Panax trifolius</i>	Dwarf Ginseng				S3	35	16.5 ± 0.0	NB
P	<i>Artemisia campestris</i> ssp. <i>caudata</i>	Tall Wormwood				S3	89	49.9 ± 0.0	NB
P	<i>Artemisia campestris</i>	Field Wormwood				S3	4	62.5 ± 0.0	NB
P	<i>Nabalus racemosus</i>	Glaucous Rattlesnakeroot				S3	26	79.6 ± 0.0	NB
P	<i>Tanacetum bipinnatum</i> ssp. <i>huronense</i>	Lake Huron Tansy				S3	11	99.1 ± 0.0	NB
P	<i>Ionactis linariifolia</i>	Flax-leaved Aster				S3	22	74.4 ± 5.0	NB
P	<i>Pseudognaphalium macounii</i>	Macoun's Cudweed				S3	41	28.9 ± 5.0	NB
P	<i>Impatiens pallida</i>	Pale Jewelweed				S3	10	65.5 ± 0.0	NB
P	<i>Boechera stricta</i>	Drummond's Rockcress				S3	21	32.1 ± 0.0	NB
P	<i>Turritis glabra</i>	Tower Mustard				S3	1	70.9 ± 0.0	NB
P	<i>Arabis pycnocarpa</i>	Cream-flowered Rockcress				S3	13	30.8 ± 0.0	NB
P	<i>Cardamine maxima</i>	Large Toothwort				S3	31	70.9 ± 0.0	NB
P	<i>Sagina nodosa</i>	Knotted Pearlwort				S3	2	98.8 ± 0.0	PE
P	<i>Sagina nodosa</i> ssp. <i>borealis</i>	Knotted Pearlwort				S3	2	98.5 ± 0.0	PE
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort				S3	17	30.3 ± 5.0	NB
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S3	10	39.1 ± 2.0	NB
P	<i>Oxybasis rubra</i>	Red Goosefoot				S3	9	35.7 ± 0.0	NB
P	<i>Hudsonia tomentosa</i>	Woolly Beach-heath				S3	530	40.1 ± 0.0	NB
P	<i>Cornus obliqua</i>	Silky Dogwood				S3	71	53.9 ± 0.0	NB
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S3	7	21.4 ± 0.0	NB
P	<i>Viburnum lentago</i>	Nannyberry				S3	1	53.3 ± 0.0	NB
P	<i>Rhodiola rosea</i>	Roseroot				S3	94	53.0 ± 0.0	NB
P	<i>Shepherdia canadensis</i>	Soapberry				S3	42	24.4 ± 0.0	NB
P	<i>Oxytropis campestris</i> var. <i>johannensis</i>	Field Locoweed				S3	27	87.1 ± 1.0	NS
P	<i>Bartonia paniculata</i>	Branched Bartonia				S3	2	61.1 ± 0.0	NS
P	<i>Bartonia paniculata</i> ssp. <i>iodandra</i>	Branched Bartonia				S3	24	50.3 ± 0.0	NB
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	27	5.5 ± 5.0	NB
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S3	9	43.7 ± 0.0	NB
P	<i>Myriophyllum humile</i>	Low Water Milfoil				S3	1	50.9 ± 1.0	NB
P	<i>Myriophyllum quitense</i>	Andean Water Milfoil				S3	12	96.1 ± 0.0	NB
P	<i>Proserpinaca palustris</i>	Marsh Mermaidweed				S3	1	81.1 ± 0.0	NB
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S3	33	17.1 ± 0.0	NB
P	<i>Rumex pallidus</i>	Seabeach Dock				S3	7	51.0 ± 0.0	NB
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	6	47.8 ± 1.0	NB
P	<i>Clematis occidentalis</i>	Purple Clematis				S3	16	31.7 ± 0.0	NB
P	<i>Ranunculus flabellaris</i>	Yellow Water Buttercup				S3	1	19.6 ± 0.0	NB
P	<i>Amelanchier canadensis</i>	Canada Serviceberry				S3	20	32.0 ± 0.0	NB
P	<i>Crataegus scabrada</i>	Rough Hawthorn				S3	7	48.4 ± 0.0	NB
P	<i>Rubus occidentalis</i>	Black Raspberry				S3	5	37.2 ± 0.0	NB
P	<i>Salix myricoides</i>	Bayberry Willow				S3	2	28.6 ± 1.0	NB
P	<i>Salix nigra</i>	Black Willow				S3	52	62.7 ± 0.0	NB
P	<i>Salix interior</i>	Sandbar Willow				S3	1	22.5 ± 1.0	NB
P	<i>Comandra umbellata</i>	Bastard's Toadflax				S3	44	31.4 ± 0.0	NB
P	<i>Agalinis purpurea</i> var. <i>parviflora</i>	Small-flowered Purple False Foxglove				S3	58	29.4 ± 0.0	NB

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P	<i>Viola adunca</i>	Hooked Violet				S3	7	32.8 ± 0.0	NB
P	<i>Sagittaria montevidensis</i> <i>ssp. spongiosa</i>	Spongy Arrowhead				S3	68	49.5 ± 0.0	NB
P	<i>Symplocarpus foetidus</i>	Eastern Skunk Cabbage				S3	128	55.1 ± 18.0	NB
P	<i>Carex adusta</i>	Lesser Brown Sedge				S3	14	6.0 ± 10.0	NB
P	<i>Carex arcta</i>	Northern Clustered Sedge				S3	14	29.6 ± 5.0	NB
P	<i>Carex conoidea</i>	Field Sedge				S3	10	37.4 ± 0.0	NB
P	<i>Carex garberi</i>	Garber's Sedge				S3	1	35.5 ± 0.0	NB
P	<i>Carex granularis</i>	Limestone Meadow Sedge				S3	11	37.3 ± 0.0	NB
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S3	1	62.0 ± 1.0	NB
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S3	8	21.5 ± 0.0	NB
P	<i>Carex livida</i>	Livid Sedge				S3	9	56.0 ± 0.0	NS
P	<i>Carex ormostachya</i>	Necklace Spike Sedge				S3	6	20.5 ± 1.0	NB
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S3	3	62.1 ± 0.0	NB
P	<i>Carex rosea</i>	Rosy Sedge				S3	26	59.3 ± 0.0	NB
P	<i>Carex sprengelii</i>	Longbeak Sedge				S3	2	68.9 ± 0.0	NB
P	<i>Carex tenuiflora</i>	Sparse-Flowered Sedge				S3	9	32.1 ± 10.0	NB
P	<i>Cyperus esculentus</i> var. <i>leptostachyus</i>	Perennial Yellow Nutsedge				S3	27	39.6 ± 0.0	NB
P	<i>Cyperus squarrosus</i>	Awned Flatsedge				S3	16	87.0 ± 0.0	NB
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S3	52	31.7 ± 0.0	NB
P	<i>Blysmopsis rufa</i>	Red Bulrush				S3	32	67.7 ± 0.0	NB
P	<i>Juncus vaseyi</i>	Vasey Rush				S3	12	7.5 ± 0.0	NB
P	<i>Cyripedium reginae</i>	Showy Lady's-Slipper				S3	39	22.1 ± 0.0	NB
P	<i>Goodyera oblongifolia</i>	Menzies' Rattlesnake-plantain				S3	2	86.7 ± 0.0	PE
P	<i>Neottia auriculata</i>	Auricled Twayblade				S3	1	58.3 ± 0.0	NB
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	50	20.0 ± 0.0	NB
P	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid				S3	21	34.6 ± 0.0	NB
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S3	4	29.7 ± 1.0	NB
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S3	28	15.8 ± 0.0	NB
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S3	1	73.6 ± 0.0	NB
P	<i>Schizachyrium scoparium</i>	Little Bluestem				S3	31	80.0 ± 0.0	NB
P	<i>Zizania aquatica</i> var. <i>aquatica</i>	Eastern Wild Rice				S3	7	51.7 ± 0.0	NB
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S3	1	80.1 ± 1.0	NB
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3	18	32.6 ± 1.0	NB
P	<i>Anchistea virginica</i>	Virginia chain fern				S3	25	58.9 ± 0.0	NS
P	<i>Woodsia alpina</i>	Alpine Cliff Fern				S3	5	47.9 ± 0.0	NB
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S3	67	46.8 ± 0.0	NB
P	<i>Isoetes tuckermanii</i> ssp. <i>tuckermanii</i>	Tuckerman's Quillwort				S3	4	50.3 ± 0.0	NB
P	<i>Diphasiastrum x sabinifolium</i>	Savin-leaved Ground-cedar				S3	16	32.8 ± 1.0	NB
P	<i>Huperzia appressa</i>	Mountain Firmoss				S3	48	58.2 ± 0.0	NB
P	<i>Sceptridium dissectum</i>	Dissected Moonwort				S3	9	28.5 ± 1.0	NB
P	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	Narrow Triangle Moonwort				S3	17	24.5 ± 5.0	NB
P	<i>Botrychium simplex</i>	Least Moonwort				S3	6	43.0 ± 0.0	NB
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S3	5	52.4 ± 1.0	NB
P	<i>Selaginella selaginoides</i>	Low Spikemoss				S3	8	56.7 ± 0.0	NB
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S3?	5	91.2 ± 1.0	NB
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn				S3?	2	79.5 ± 0.0	PE
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3?	38	22.1 ± 0.0	NB
P	<i>Bidens hyperborea</i>	Estuary Beggarticks				S3S4	33	31.8 ± 1.0	NB
P	<i>Solidago altissima</i>	Tall Goldenrod				S3S4	3	43.7 ± 0.0	NB
P	<i>Symphotrichum boreale</i>	Boreal Aster				S3S4	14	22.4 ± 0.0	NB
P	<i>Betula pumila</i>	Bog Birch				S3S4	112	17.4 ± 0.0	NB
P	<i>Mertensia maritima</i>	Sea Lungwort				S3S4	11	45.8 ± 0.0	NB

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P	<i>Subularia aquatica</i> ssp. <i>americana</i>	American Water Awlwort				S3S4	2	51.8 ± 0.0	NB
P	<i>Callitriche hermaphroditica</i>	Northern Water-starwort				S3S4	8	43.0 ± 0.0	NB
P	<i>Viburnum edule</i>	Squashberry				S3S4	14	44.9 ± 0.0	NB
P	<i>Crassula aquatica</i>	Water Pygmyweed				S3S4	6	51.1 ± 0.0	NB
P	<i>Penthorum sedoides</i>	Ditch Stonecrop				S3S4	36	18.4 ± 0.0	NB
P	<i>Elatine americana</i>	American Waterwort				S3S4	7	49.4 ± 0.0	NB
P	<i>Fagus grandifolia</i>	American Beech				S3S4	204	16.6 ± 0.0	NB
P	<i>Geranium robertianum</i>	Herb Robert				S3S4	98	46.7 ± 0.0	NB
P	<i>Stachys pilosa</i>	Hairy Hedge-Nettle				S3S4	2	95.4 ± 1.0	NB
P	<i>Teucrium canadense</i>	Canada Germander				S3S4	145	30.5 ± 0.0	NB
P	<i>Utricularia gibba</i>	Humped Bladderwort				S3S4	3	47.3 ± 0.0	NB
P	<i>Fraxinus americana</i>	White Ash				S3S4	223	19.4 ± 0.0	NB
P	<i>Epilobium strictum</i>	Downy Willowherb				S3S4	29	21.3 ± 0.0	NB
P	<i>Fallopia scandens</i>	Climbing False Buckwheat				S3S4	80	15.8 ± 0.0	NB
P	<i>Rumex persicarioides</i>	Peach-leaved Dock				S3S4	3	4.2 ± 1.0	NB
P	<i>Littorella americana</i>	American Shoreweed				S3S4	4	94.1 ± 1.0	NB
P	<i>Samolus parviflorus</i>	Seaside Brookweed				S3S4	117	25.9 ± 0.0	NB
P	<i>Thalictrum confine</i>	Northern Meadow-rue				S3S4	8	84.5 ± 0.0	NB
P	<i>Rosa palustris</i>	Swamp Rose				S3S4	9	49.4 ± 0.0	NB
P	<i>Rubus pensilvanicus</i>	Pennsylvania Blackberry				S3S4	31	19.5 ± 0.0	NB
P	<i>Sanguisorba canadensis</i>	Canada Burnet				S3S4	20	54.3 ± 0.0	NB
P	<i>Galium boreale</i>	Northern Bedstraw				S3S4	8	58.3 ± 0.0	NB
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S3S4	14	22.5 ± 0.0	NB
P	<i>Salix pedicellaris</i>	Bog Willow				S3S4	66	25.8 ± 0.0	NB
P	<i>Geocaldon lividum</i>	Northern Comandra				S3S4	42	16.9 ± 0.0	NB
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S3S4	1	55.2 ± 0.0	NS
P	<i>Limosella australis</i>	Southern Mudwort				S3S4	68	25.9 ± 0.0	NB
P	<i>Ulmus americana</i>	White Elm				S3S4	311	7.5 ± 1.0	NB
P	<i>Juniperus horizontalis</i>	Creeping Juniper				S3S4	21	22.7 ± 1.0	NB
P	<i>Carex capillaris</i>	Hairlike Sedge				S3S4	20	56.6 ± 0.0	NB
P	<i>Carex eburnea</i>	Bristle-leaved Sedge				S3S4	18	30.8 ± 100.0	NB
P	<i>Carex exilis</i>	Coastal Sedge				S3S4	6	62.6 ± 0.0	NS
P	<i>Carex haydenii</i>	Hayden's Sedge				S3S4	21	14.1 ± 0.0	NB
P	<i>Carex lupulina</i>	Hop Sedge				S3S4	27	18.4 ± 0.0	NB
P	<i>Carex tenera</i>	Tender Sedge				S3S4	25	5.9 ± 0.0	NB
P	<i>Carex wiegandii</i>	Wiegand's Sedge				S3S4	177	9.9 ± 0.0	NB
P	<i>Carex recta</i>	Estuary Sedge				S3S4	16	28.1 ± 0.0	NB
P	<i>Carex atratiformis</i>	Scabrous Black Sedge				S3S4	3	86.4 ± 0.0	NS
P	<i>Cladium mariscoides</i>	Smooth Twigrush				S3S4	7	48.2 ± 0.0	NB
P	<i>Cyperus dentatus</i>	Toothed Flatsedge				S3S4	125	57.3 ± 1.0	NB
P	<i>Rhynchospora capitellata</i>	Small-headed Beakrush				S3S4	2	71.8 ± 0.0	NB
P	<i>Trichophorum clintonii</i>	Clinton's Clubrush				S3S4	25	57.9 ± 0.0	NB
P	<i>Bolboschoenus fluviatilis</i>	River Bulrush				S3S4	17	27.0 ± 1.0	NB
P	<i>Triglochin gaspensis</i>	Gasp Arrowgrass				S3S4	69	38.2 ± 0.0	NB
P	<i>Lilium canadense</i>	Canada Lily				S3S4	43	3.7 ± 0.0	NB
P	<i>Corallorhiza maculata</i>	Spotted Coralroot				S3S4	25	28.4 ± 0.0	NB
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	35	6.0 ± 0.0	NB
P	<i>Neottia cordata</i>	Heart-leaved Twayblade				S3S4	16	13.7 ± 10.0	NB
P	<i>Platanthera obtusata</i>	Blunt-leaved Orchid				S3S4	22	29.6 ± 2.0	NB
P	<i>Calamagrostis pickeringii</i>	Pickering's Reed Grass				S3S4	32	20.9 ± 0.0	NB
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S3S4	32	29.4 ± 2.0	NB
P	<i>Calamagrostis stricta</i> ssp. <i>stricta</i>	Slim-stemmed Reed Grass				S3S4	15	50.2 ± 0.0	NB
P	<i>Eragrostis pectinacea</i>	Tufted Love Grass				S3S4	6	5.9 ± 1.0	NB
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S3S4	2	36.5 ± 1.0	NB
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S3S4	12	55.4 ± 0.0	NS
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S3S4	6	88.6 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	<i>Xyris montana</i>	Northern Yellow-Eyed-Grass				S3S4	262	14.1 ± 0.0	NB
P	<i>Cryptogramma stelleri</i>	Steller's Rockbrake				S3S4	1	89.0 ± 0.0	NB
P	<i>Asplenium viride</i>	Green Spleenwort				S3S4	18	32.5 ± 1.0	NB
P	<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S3S4	81	46.4 ± 0.0	NB
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3S4	31	28.7 ± 1.0	NB
P	<i>Montia fontana</i>	Water Blinks				SH	4	29.4 ± 1.0	NB
P	<i>Brachyelytrum erectum</i>	Bearded Shorthusk				SH	2	39.1 ± 2.0	NB
P	<i>Agalinis maritima</i>	Saltmarsh Agalinis				SX	2	71.1 ± 50.0	NB

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

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# Appendix E Fauna, Flora and Habitat Description



**eNGLOBE**



## 1. Flora

An ACCDC search was requested by Englobe in April 2022. Species at Risk (SAR) appearing on the federal SARA Schedule 1 benefit from all the legal protection afforded and the mandatory recovery planning required under SARA (ECCC, 2022). The ACCDC reported one floral SAR listed as ‘Threatened’ under COSEWIC described below within 5 km of the site.

### 1.1 Black Ash (*Fraxinus nigra*)

The Black Ash is predominantly a wetland species of swamps, floodplains and fens. It has an intermediate light requirement and a tendency toward greater abundance in more alkaline sites. Most sites in which it is dominant are flood prone, where its high tolerance of seasonal flooding appears to offer a competitive advantage. Black Ash also occurs widely in moist upland forests, but generally at lower densities than in wet areas. There is potential favorable habitat for this species on or near the site; however the field survey confirmed this species is not present at the site.

## 2. SARA Birds

Species at Risk (SAR) appearing on the federal SARA Schedule 1 benefit from all the legal protection afforded and the mandatory recovery planning required under SARA (ECCC, 2022). The ACCDC search revealed the following 13 faunal SAR on Schedule 1 of SARA having been identified within 5 km of the site or within the study area (i.e. location sensitive species). Habitat descriptions are outlined in the following paragraphs.

### 2.1 Bank Swallow (*Riparia riparia*)

Bank Swallows are insectivorous birds that nest in colonies dug into the sides of sandy cliffs or banks. They also nest in gravel and sand piles in construction sites and freight yards (ECCC, 2022). There is negligible favourable habitat at the site; however a field survey is required to confirm the presence/absence of this species at the site.

### 2.2 Bobolink (*Dolichonyx oryzivorus*)

Bobolinks nest in grassland and herbaceous habitats (such as wetlands), including forage fields. Fall migration begins in mid-July and they return to their Canadian nesting grounds in mid-May, after which time the males establish territories and court females. Females construct nests directly on the ground, often at the base of large herbaceous plants. Bobolinks feed on both insects and plant matter during the breeding period, though nestlings are fed only insects (mostly butterflies, moths, grasshoppers, and crickets) (Cornell University, 2022). There is potential favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

### 2.3 Barn Swallow (*Hirundo rustica*)

Barn Swallows are insectivorous birds feeding predominantly on flying insects. They largely nest in or on an artificial structure, including barns and other outbuildings, garages, houses, bridges and road culverts.

Barn swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, wetlands and subarctic tundra. (NatureServe Explorer, 2022). There is negligible favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

## **2.4 Common Nighthawk (*Chordeiles minor*)**

The breeding habitat includes moist thickets of woodland undergrowth (especially aspen-poplar), bogs, tall shrubbery along streams or near swamps, and deciduous second growth. Nests are on or near the ground, among roots of fallen trees, in cavities in banks, or on ledges, sides of rocks, hummocks, stumps, or fallen logs, or on the ground under shrubbery. In migration, this warbler uses various forest, woodland, scrub, and thicket habitats, mostly in humid areas. In winter, it occurs in forested areas of foothills and mountains. (NatureServe Explorer, 2022). There is potential favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

## **2.5 Canada Warbler (*Cardellina canadensis*)**

The Canada Warbler habitat includes moist thickets of woodland undergrowth (especially aspen poplar), bogs, tall shrubbery along streams or near swamps, and deciduous second growth. Nests are on or near the ground, among roots of fallen trees, in cavities in banks, or on ledges, sides of rocks, hummocks, stumps, or fallen logs, or on the ground under shrubbery. In migration, this warbler uses various forest, woodland, scrub, and thicket habitats, mostly in humid areas. In winter, it occurs in forested areas of foothills and mountains. (NatureServe Explorer, 2022). There is potential favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

## **2.6 Eastern Wood-Pewee (*Contopus virens*)**

The Eastern Wood-Pewee inhabits a wide variety of wooded upland and lowland habitats including deciduous, coniferous, or mixed forests and occurs most frequently in forests with some degree of openness, whether it be the result of forest structure, natural disturbance, or human alteration. Intermediate-aged forests with a relatively sparse midstory are preferred. Also occurs in anthropogenic habitats providing an open forested aspect such as parks and suburban neighborhoods. Nests are constructed atop a horizontal branch, 1.2-21.4 meters above the ground, in a wide variety of deciduous and coniferous trees (NatureServe Explorer, 2022). There is potential favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

## **2.7 Barrow's Goldeneye (*Bucephala islandica*)**

The Barrow's Goldeneye prefers freshwater habitats, winters on lakes, rivers, estuaries, and bays. Usually nests near lakes or ponds surrounded by dense vegetation, but may nest in wooded or open country. Usually nests in a natural tree cavity, abandoned woodpecker hole, rock cavity, or stream bank. Often nests in same area in successive years. Forages in fresh water for aquatic insects, crustaceans, some plant food, small fishes, and fish eggs. In salt water, this species feeds on mollusks (especially blue mussels), some sea stars, and marine worms (NatureServe Explorer 2022). There is negligible favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

## 2.8 Eastern Whip-Poor-Will (*Antrostomus vociferus*)

The Eastern Whip-Poor-Will breeding habitat includes forest and open woodland, from lowland moist and deciduous forest to montane forest and pine-oak association. In open woodlands with well spaced trees and a low canopy. Lays eggs on ground in open site under trees or under bush, usually on a bed of dead leaves at woods edge or in open woodland. There is potential favorable habitat for this species on or near the site; however a field survey is required to confirm the presence/absence of this species at the site.

## 2.13 Bald Eagle (*Haliaeetus leucocephalus*)

The Bald eagle breeding habitat most commonly includes areas close to (within 4 km) coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, or seabirds. Nests usually are in tall trees or on pinnacles or cliffs near water (NatureServe Explorer, 2022). This species may occasionally occur on or near the site, however a field survey is required to confirm the presence/absence of this species at the site.

# 3. SARA Invertebrate Fauna

Species at Risk (SAR) appearing on the federal SARA Schedule 1 benefit from all the legal protection afforded and the mandatory recovery planning required under SARA (ECCC, 2022). The ACCDC reported one invertebrate fauna SAR listed as 'Endangered' under COSEWIC and 'Special Concern' under SARA and NB SARA described below within 5 km of the site.

## 3.1 Monarch (*Danaus plexippus*)

The Monarch habitat is a complex issue for this species. In general, breeding areas are virtually all patches of milkweed in North America and some other regions. Coastal regions are important flyways and so nectar (wild or in gardens) is an important resource in such places (NatureServe Explorer, 2022). This species may occasionally occur on or near the site, however a field survey is required to confirm the presence/absence of this species at the site.

# 4. Provincial Rarity Rank Birds

The ACCDC reported the following eighteen bird species listed below within 5 km of the site that, although are not protected under SARA, are identified provincially as very rare (S1) or rare (S2).

Common Name	Scientific Name
Yellow-throated Vireo	<i>Vireo flavifrons</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
American Coot	<i>Fulica americana</i>
Common Gallinule	<i>Gallinula galeata</i>
Lesser Scaup	<i>Aythya affinis</i>
Horned Lark	<i>Eremophila alpestris</i>
Green Heron	<i>Butorides virescens</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Black Tern	<i>Chlidonias niger</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>

Marsh Wren	<i>Cistothorus palustris</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Gadwall	<i>Mareca strepera</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Glaucous Gull	<i>Larus hyperboreus</i>
Baltimore Oriole	<i>Icterus galbula</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Lapland Longspur	<i>Calcarius lapponicus</i>

## 5. References

Atlantic Canada Conservation Data Centre (ACCDC). 2022. Data Report 7237: MID West Moncton, NB.

Bird Studies Canada. 2022. Important Bird Areas of Canada Database. <http://www.ibacanada.org>.

Cornell University. 2022. All About Birds. [www.allaboutbirds.org](http://www.allaboutbirds.org)

Environment and Climate Change Canada. 2022. Species at Risk Act. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>

NatureServe Explorer. 2022. <https://explorer.natureserve.org/>.



Common Name	Scientific Name	AC CDC S-Rank	X Coord	Y Coord
Alleghaney Blackberry	Rubus allegheniensis	S5	46.086129	-64.854798
Alternate-leaved Dogwood	Cornus alternifolia	S5	46.083364	-64.850869
American Burreed	Sparganium americanum	S5	46.086677	-64.850202
American Mountain Ash	Sorbus americana	S5	46.087029	-64.854525
Autumn Hawkbit	Scorzoneroides autumnalis	SNA	46.085674	-64.854568
Awl-fruited Sedge	Carex stipata	S5	46.088865	-64.853489
Balsam Fir	Abies balsamea	S5	46.087191	-64.854926
Balsam Poplar	Populus balsamifera	S5	46.086175	-64.854781
Bartram's Serviceberry	Amelanchier bartramiana	S5	46.086216	-64.851946
Beaked Hazel	Corylus cornuta	S5	46.087867	-64.853412
Bebb's Willow	Salix bebbiana	S5	46.086179	-64.854789
Black Chokeberry	Aronia melanocarpa	S5	46.085844	-64.855315
Black Huckleberry	Gaylussacia baccata	S5	46.089568	-64.864295
Black Sedge	Carex arctata	S5	46.087307	-64.850327
Black Spruce	Picea mariana	S5	46.087103	-64.854603
Bladder Sedge	Carex intumescens	S5	46.087173	-64.854917
Bluejoint Reed Grass	Calamagrostis canadensis	S5	46.087283	-64.855040
Blunt Broom Sedge	Carex tribuloides	S4S5	46.083243	-64.852808
Blunt Spikerush	Eleocharis obtusa	S5	46.089718	-64.856397
Boreal Bog Sedge	Carex magellanica	S5	46.088280	-64.861375
Bracken Fern	Pteridium aquilinum	S5	46.086107	-64.854756
Bristly Dewberry	Rubus hispidus	S5	46.086918	-64.854525
Bristly Sarsaparilla	Aralia hispida	S5	46.087744	-64.853826
Bristly-stalked Sedge	Carex leptalea	S5	46.087200	-64.853631
Broom Sedge	Carex scoparia	S5	46.086120	-64.854779
Brownish Sedge	Carex brunnescens	S5	46.088349	-64.852997
Calico Aster	Symphyotrichum lateriflorum	S5	46.086125	-64.854738
Canada Fly Honeysuckle	Lonicera canadensis	S5	46.088891	-64.854953
Canada Goldenrod	Solidago canadensis	S5	46.087247	-64.853650
Canada Horseweed	Erigeron canadensis	S5	46.084643	-64.863930
Canada Manna Grass	Glyceria canadensis	S5	46.087285	-64.855058
Cinnamon Fern	Osmundastrum cinnamomeum	S5	46.087136	-64.854757
Coltsfoot	Tussilago farfara	SNA	46.087247	-64.853650
Common Boneset	Eupatorium perfoliatum	S5	46.086859	-64.855015
Common Dandelion	Taraxacum officinale	SNA	46.086071	-64.854736
Common Lady Fern	Athyrium filix-femina	S5	46.088101	-64.853396
Common Marsh Bedstraw	Galium palustre	S5	46.089953	-64.864957
Common Milkweed	Asclepias syriaca	S4S5	46.082113	-64.863860
Common Mullein	Verbascum thapsus	SNA	46.089691	-64.856668
Common Oak Fern	Gymnocarpium dryopteris	S5	46.089634	-64.858444
Common Plantain	Plantago major	SNA	46.085674	-64.854564
Common Self-heal	Prunella vulgaris	S5	46.089652	-64.857490
Common Speedwell	Veronica officinalis	SNA	46.086144	-64.854762
Common Tansy	Tanacetum vulgare	SNA	46.086579	-64.854914
Common Winterberry	Ilex verticillata	S5	46.087259	-64.854939
Common Wood Sorrel	Oxalis montana	S5	46.087769	-64.853375
Common Woolly Bulrush	Scirpus cyperinus	S5	46.085674	-64.854565
Crawford's Sedge	Carex crawfordii	S5	46.089630	-64.857527
Creeping Snowberry	Gaultheria hispidula	S5	46.088073	-64.854067
Crested Wood Fern	Dryopteris cristata	S5	46.087123	-64.853738
Cyperuslike Sedge	Carex pseudocyperus	S5	46.086821	-64.850042
Devil's Beggarticks	Bidens frondosa	S5	46.087345	-64.852956
Dwarf Red Raspberry	Rubus pubescens	S5	46.086872	-64.854482
Early Goldenrod	Solidago juncea	S5	46.091216	-64.864424
Eastern Burnweed	Erechtites hieraciifolius	S5	46.087763	-64.864945

Common Name	Scientific Name	AC CDC S-Rank	X Coord	Y Coord
Eastern Marsh Fern	<i>Thelypteris palustris</i>	S5	46.088795	-64.853151
Eastern Teaberry	<i>Gaultheria procumbens</i>	S5	46.088906	-64.862560
Eastern White Pine	<i>Pinus strobus</i>	S5	46.088812	-64.853321
Evergreen Wood Fern	<i>Dryopteris intermedia</i>	S5	46.089126	-64.853823
Fibrous-Root Sedge	<i>Carex communis</i>	S5	46.088353	-64.853087
Field Horsetail	<i>Equisetum arvense</i>	S5	46.087172	-64.855138
Fireweed	<i>Chamaenerion angustifolium</i>	S5	46.085749	-64.854584
Fowl Blue Grass	<i>Poa palustris</i>	S5	46.086673	-64.850212
Fowl Manna Grass	<i>Glyceria striata</i>	S5	46.087206	-64.853639
Fraser's St. John's-wort	<i>Hypericum fraseri</i>	S5	46.089015	-64.855954
Fringed Black Bindweed	<i>Fallopia cilinodis</i>	S5	46.089717	-64.857286
Fringed Sedge	<i>Carex crinita</i>	S5	46.087590	-64.853406
Garden Bird's-foot Trefoil	<i>Lotus corniculatus</i>	SNA	46.086070	-64.854735
Goldthread	<i>Coptis trifolia</i>	S5	46.087680	-64.853308
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	S5	46.086117	-64.854783
Hairy Flat-top White Aster	<i>Doellingeria umbellata</i>	S5	46.085678	-64.854582
Hairy Willowherb	<i>Epilobium hirsutum</i>	SNA	46.086463	-64.854942
Harlequin Blue Flag	<i>Iris versicolor</i>	S5	46.088545	-64.855700
Herb Robert	<i>Geranium robertianum</i>	S3S4	46.087384	-64.853212
Hooded Ladies'-Tresses	<i>Spiranthes romanzoffiana</i>	S4	46.086077	-64.854719
Inflated Lobelia	<i>Lobelia inflata</i>	S5	46.087884	-64.865489
Interrupted Fern	<i>Claytonomunda claytoniana</i>	S5	46.087183	-64.854708
Jack Pine	<i>Pinus banksiana</i>	S5	46.086762	-64.850286
Large-leaved Goldenrod	<i>Solidago macrophylla</i>	S4	46.088646	-64.853153
Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>	S5	46.087139	-64.854741
Leatherleaf	<i>Chamaedaphne calyculata</i>	S5	46.084622	-64.857250
Lesser Duckweed	<i>Lemna minor</i>	SNA	46.086681	-64.850195
Low Hop Clover	<i>Trifolium campestre</i>	SNA	46.087247	-64.853650
Low Rough Aster	<i>Eurybia radula</i>	S5	46.088217	-64.854536
Mad-dog Skullcap	<i>Scutellaria lateriflora</i>	S5	46.087216	-64.853672
Marsh Blue Violet	<i>Viola cucullata</i>	S5	46.087206	-64.853640
Marsh Speedwell	<i>Veronica scutellata</i>	S5	46.083361	-64.851049
Mosquito Bulrush	<i>Scirpus hattorianus</i>	S5	46.088694	-64.855784
Mountain Holly	<i>Ilex mucronata</i>	S5	46.087282	-64.850360
Multiflora Rose	<i>Rosa multiflora</i>	SNA	46.085914	-64.852086
New England Aster	<i>Symphyotrichum novae-angliae</i>	SU	46.085408	-64.854491
New England Sedge	<i>Carex novae-angliae</i>	S5	46.087358	-64.853107
New York Aster	<i>Symphyotrichum novi-belgii</i>	S5	46.081252	-64.863613
New York Fern	<i>Parathelypteris noveboracensis</i>	S5	46.087610	-64.853349
Nodding Sedge	<i>Carex gynandra</i>	S5	46.086182	-64.854802
Northern Beech Fern	<i>Phegopteris connectilis</i>	S5	46.088351	-64.853036
Northern Long Sedge	<i>Carex folliculata</i>	S4	46.087125	-64.853736
Northern Panic Grass	<i>Dichanthelium boreale</i>	S5	46.088672	-64.855804
Northern Red Oak	<i>Quercus rubra</i>	S5	46.087693	-64.853356
Northern Shorthusk	<i>Brachyelytrum aristosum</i>	S5	46.088547	-64.853147
Northern St John's-Wort	<i>Hypericum boreale</i>	S5	46.087346	-64.853062
Northern Starflower	<i>Lysimachia borealis</i>	S5	46.087195	-64.854915
Northern Water Horehound	<i>Lycopus uniflorus</i>	S5	46.087103	-64.854133
Northern Water Plantain	<i>Alisma triviale</i>	S5	46.086874	-64.855001
Northern Wild Raisin	<i>Viburnum cassinoides</i>	S5	46.087213	-64.854871
Northern Willowherb	<i>Epilobium ciliatum</i>	S5	46.088703	-64.855284
Old Field Cinquefoil	<i>Potentilla simplex</i>	S5	46.086128	-64.854771
Paper Birch	<i>Betula papyrifera</i>	S5	46.087247	-64.853650
Partridgeberry	<i>Mitchella repens</i>	S5	46.090682	-64.862101
Pearly Everlasting	<i>Anaphalis margaritacea</i>	S5	46.086138	-64.854769

Common Name	Scientific Name	AC CDC S-Rank	X Coord	Y Coord
Pickernelweed	Pontederia cordata	S5	46.082867	-64.853375
Pin Cherry	Prunus pensylvanica	S5	46.088117	-64.855615
Pink Lady's-Slipper	Cypripedium acaule	S5	46.087226	-64.852553
Poverty Oat Grass	Danthonia spicata	S5	46.086064	-64.854736
Prostrate Knotweed	Polygonum aviculare	SNA	46.084428	-64.864107
Purple Loosestrife	Lythrum salicaria	SNA	46.085402	-64.854532
Pussy Willow	Salix discolor	S5	46.085907	-64.854653
Queen Anne's Lace	Daucus carota	SNA	46.084492	-64.854024
Rabbit's-foot Clover	Trifolium arvense	SNA	46.088112	-64.855676
Red Clover	Trifolium pratense	SNA	46.086078	-64.854715
Red Maple	Acer rubrum	S5	46.087247	-64.853650
Red Osier Dogwood	Cornus sericea	S5	46.082850	-64.853135
Red Raspberry	Rubus idaeus	S5	46.085742	-64.854593
Rhodora	Rhododendron canadense	S5	46.088812	-64.853325
Rice Cut Grass	Leersia oryzoides	S5	46.089792	-64.856331
Rough Bent Grass	Agrostis scabra	S5	46.088534	-64.855710
Rough Fleabane	Erigeron strigosus	S5	46.088133	-64.855654
Round-branched Tree-clubm	Dendrolycopodium dendroideum	S5	46.087746	-64.853321
Sallow Sedge	Carex lurida	S5	46.086873	-64.854987
Sensitive Fern	Onoclea sensibilis	S5	46.087286	-64.855046
Sheep Laurel	Kalmia angustifolia	S5	46.086908	-64.854526
Shining Rose	Rosa nitida	S5	46.088981	-64.853581
Shining Willow	Salix lucida	S5	46.078213	-64.860245
Silvery Sedge	Carex canescens	S5	46.088454	-64.861989
Skunk Currant	Ribes glandulosum	S5	46.089630	-64.857521
Slender Manna Grass	Glyceria melicaria	S5	46.087281	-64.855035
Small-fruited Bulrush	Scirpus microcarpus	S5	46.086872	-64.854991
Soft Rush	Juncus effusus	S5	46.088341	-64.853043
Speckled Alder	Alnus incana	S5	46.085672	-64.854578
Spotted Jewelweed	Impatiens capensis	S5	46.089785	-64.856312
Star Sedge	Carex echinata	S5	46.089665	-64.856671
Steeplebush	Spiraea tomentosa	S5	46.087270	-64.855031
Swamp Yellow Loosestrife	Lysimachia terrestris	S5	46.088795	-64.853151
Sweet-fern	Comptonia peregrina	S5	46.087247	-64.853650
Tall Meadow-Rue	Thalictrum pubescens	S5	46.087873	-64.853427
Tamarack	Larix laricina	S5	46.086820	-64.850048
Tawny Cottongrass	Eriophorum virginicum	S5	46.085350	-64.855055
Three-leaved False Solomar	Maianthemum trifolium	S5	46.084620	-64.857351
Three-petaled Bedstraw	Galium trifidum	S5	46.088876	-64.853511
Three-seeded Sedge	Carex trisperma	S5	46.087184	-64.854894
Trailing Arbutus	Epigaea repens	S5	46.085350	-64.855136
Trembling Aspen	Populus tremuloides	S5	46.085672	-64.854555
Tufted Clubrush	Trichophorum cespitosum	S4	46.084627	-64.857056
Tussock Cottongrass	Eriophorum vaginatum	S5	46.088956	-64.862722
Tussock Sedge	Carex stricta	S5	46.079693	-64.860260
Twinflower	Linnaea borealis	S5	46.088369	-64.853094
Two-seeded Sedge	Carex disperma	S5	46.083558	-64.852437
Velvet-leaved Blueberry	Vaccinium myrtilloides	S5	46.088891	-64.853598
Wall Hawkweed	Hieracium murorum	SNA	46.078418	-64.860144
Water Avens	Geum rivale	S5	46.089422	-64.859507
White Clover	Trifolium repens	SNA	46.086118	-64.854745
White Goldenrod	Solidago bicolor	S5	46.087048	-64.850296
White Meadowsweet	Spiraea alba	S5	46.085676	-64.854571
White Spruce	Picea glauca	S5	46.087518	-64.853479
White Sweet-clover	Melilotus albus	SNA	46.086123	-64.854748

Common Name	Scientific Name	AC CDC S-Rank	X Coord	Y Coord
White Turtlehead	<i>Chelone glabra</i>	S5	46.087213	-64.853628
Whorled Wood Aster	<i>Oclemena acuminata</i>	S5	46.087215	-64.854933
Wiegand's Sedge	<i>Carex wiegandii</i>	S3S4	46.085338	-64.855078
Wild Lily-of-The-Valley	<i>Maianthemum canadense</i>	S5	46.087207	-64.854942
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	S5	46.087201	-64.854927
Wild Strawberry	<i>Fragaria virginiana</i>	S5	46.087247	-64.853650
Woodland Horsetail	<i>Equisetum sylvaticum</i>	S5	46.087276	-64.854943
Yellow Bluebead Lily	<i>Clintonia borealis</i>	S5	46.086884	-64.854494

