

Blue Mountain-Birch Cove Lakes Comprehensive Study

June 21, 2023

Prepared for:

Halifax Regional Municipality

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BLUE MOUNTAIN-BIRCH COVE LAKES COMPREHENSIVE STUDY

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1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) has been retained to prepare background reports ("Blue Mountain-Birch Cove Lakes (BMBCL) Comprehensive Study") in support of the prefeasibility assessment phase of the Parks Canada National Urban Parks program. The program strives to expand urban conservation and provide for high quality access to nature for more Canadians within urban and near-urban settings. This document provides an overview of the key findings detailed in Appendices A through E.

The Study Area (Figure 1.1) is located on the western edge of the Halifax urban core. This area has been developed based on Map 11 presented in the Regional Municipal Planning Strategy (RMPS). Developing a proposed Regional Park within the Study Area has been a longstanding interest of the Halifax Regional Municipality (HRM) and other parties. This report contains background information about lands within the Study Area as identified therein. The purpose of the review of these lands is to support a possible future park plan over public lands that are owned by HRM and Province of Nova Scotia, and the Nova Scotia Nature Trust, that would occur with the agreement of these landowners.

In 2021, HRM signed a Statement of Collaboration with Parks Canada to indicate mutual interest in the opportunities for the proposed park to form part of the National Urban Parks program. In 2022, HRM, the Province of Nova Scotia, the Nova Scotia Nature Trust and the Mi'kmaq of Nova Scotia, began to work in collaboration with Parks Canada, and are currently in the pre-feasibility assessment phase of the project.

The objective of the pre-feasibility phase, as defined when this project was initiated in January 2022, is to:

- Establish a partner table (e.g., other jurisdictions, Indigenous partners)
- Develop a plan for stakeholder engagement in collaboration with partners
- Undertake mapping exercises and/or land assessments, as needed
- Undertake research and analysis to understand current opportunities, challenges and gaps in meeting programming objectives for nature, access, and reconciliation
- Develop and discuss options for a governance framework

Therefore, the purpose of this study is to inform future BMBCL park planning efforts, including:

- Developing and implementing an initial engagement program with the public and interested participants, to identify and document interest in the initiative
- Understanding the existing ecological, recreational and land use conditions found within the Study Area, to identify current opportunities, challenges and gaps
- Presenting options in developing a proposed governance framework for consideration to the project partners







C Study Area

0 1,000 2,000 metres (At original document size of 8.5x11) 1:125,000

Notes 1. Coordinate System: NAD 1983 CSRS UTM Zone 20N 2. Data Sources: Government of NS, Client 3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Project Location P Blue Mountain Birch Cove Lakes WildernessArea Nova Scotia Prepared on 5/6/2022

Client/Project 121417394_001

Halifax Regional Municipality Blue Mountain Birch Cove Lakes Comprehensive Study Figure No. 1

TRIE Blue Mountain Birch Cove Lakes Study Area Location

Disclaimer. This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

1.1 BACKGROUND

It has been a longstanding objective of HRM to develop a proposed Regional Park in the Study Area. Commitments were first identified in the 1975 Regional Parks Plan and were more recently reaffirmed in the 2006 and current 2014 Halifax Regional Plan. Over time, several studies have been conducted within this Study Area to fully understand the ecological conditions, recreational opportunities, archaeological and heritage potential and related impacts of land use and settlement. In 2006, an assessment study was completed by the consulting firm EDM, to develop a GIS database for the area. As part of the EDM study, it was noted that this area is valued as a wilderness landscape immediately adjacent to a densely developed city which provides users quietness, aesthetic beauty, and species diversity within an urban context (EDM 2006). The study found the area is extremely resilient and if undertaken carefully, suggests it would be possible to develop areas for human recreational use while retaining the area's essential wilderness attributes (EDM 2006). Such an assessment is consistent with the National Urban Park programming objectives of supporting increased conservation and public access to nature in near-urban landscapes. In addition to the EDM study, the following reports have been completed, and reviewed by Stantec, to support the assessment of the BMBCL Study Area:

- Proposed Trail Plan for BMBCL and Adjacent Crown Lands Leased to Maskwa Aquatic Club, 2015 -Cobequid Trail Consulting LTD
- Ecological Evaluation of Lands Adjacent to Blue Mountain Birch Cove Lakes Wilderness Area, 2017
 Robert Cameron NSE
- Halifax Green Network Plan Halifax Regional Municipality, 2018
- Black Duck Brook to Hobson Lake Trail Plan, 2021 Cobequid Outdoor Recreation Consultants and Contractors
- Wildlife Corridor Landscape Design Charrette, 2021 Chebucto-Timberlea-Sandy Lake area of Halifax, NS NS Crown Share Land Legacy Trust
- A Water Quality Survey of Lakes in the Blue Mountain-Birch Cove Lakes Regional Park, 2021 D. Gordon et al. with Friends of the Blue Mountain-Birch Cove Lakes
- Blue Mountain Birch Cove Lakes Wildlife, 2021 Sophie Kent-Purcell through Coastal Action Conservation at Work (https://www.bmbclwildlife.com/ report forthcoming)
- Baseline Ecological Inventory for the Blue Mountain Wilderness Connector. January 8, 2021 Stantec (Stantec Consulting Ltd.)

1.2 STUDY APPROACH

Building on the information that has been collected to date, this comprehensive study is focused on the following areas of interest: public engagement, ecological and recreational current conditions; archaeological and cultural study; land use and settlement analysis; and a review of park governance models. Information was gathered through engagement efforts, desktop research and field studies. Each of these key areas is discussed further in the following sections and respective appendices.



2.0 ENGAGEMENT

A series of engagement sessions were completed to facilitate discussion with identified stakeholders, gather knowledge, and seek public feedback regarding the evaluation of the Study Area's ecological, recreational, and archaeological conditions, as well as land use and settlement patterns and potential governance models.

As per the scope of work, engagement efforts conducted during the project timeframe included:

- Key Participant Engagement Session #1
- Public Engagement Session
- Key Participant Engagement Session #2
- Targeted Interview Workshops
- Key Participant Engagement Session #3

Each of these engagement programs are described further in Appendix A (What We Heard Report). A summary of feedback heard during these programs is provided below.

Key issues and important environmental features identified by participants included: rare ecosystems, freshwater ecosystems, aquatic connectivity, wildlife habitat connectivity, ecological connectivity, water quality (degrading due to anthropogenic development such as construction runoff), and habitat for species of concern/at risk. There are a variety of both land and waterway-based activities currently enjoyed throughout the Study Area as well as several scenic areas favoured for their meditative qualities and to produce art and photography that are closely tied to areas of ecological value.

The Study Area includes residential development and roadways, posing substantial constraints to maintaining ecological connectivity beyond the Study Area. Considerations should be made to support some level of connectivity in lower density residential areas, via watercourses and by air where formal terrestrial wildlife crossings are not practical.

Recreational activities were identified as occurring within the Study Area and included hiking, biking, snowshoeing, canoeing, kayaking, photography, dog walking, running, camping and more. Opportunities for formal recreational activities were also identified such as planning and maintenance of trails, water access improvements, primary and secondary entrance and exit points, year-round access. In general participants agreed that there is a need for balance between ecological preservation and recreational enjoyment.

With respect to archaeology and cultural heritage, information was received regarding the general history of the area including traditional land use by the Mi'kmaq, and development history (e.g., quarries and sawmills). Participants indicated there were opportunities to strengthen ties and advance reconciliation with Indigenous communities via the proposed park.



Participants generally characterized the Study Area as faced with development pressure on all sides, in some cases directly abutting the designated provincial wilderness area. Participants noted that conservation values should be a priority for consideration in any planning for future land use particularly at access to the proposed park and at its edges. Participants voiced significant concern regarding the impacts of development on the current and future use of the park. These include view/soundscape impacts, ecological edge effects, heat island effects caused by large, paved areas near the park, the continued loss of trees and forests, impacts on water quality to lakes, ponds, and watercourses in the park, and wind effects.

On the topic of governance, participants recognize the variety of governance options available; however, ecological integrity was viewed as a guiding principle for future park governance. Participants expressed a desire to see conservation at the heart of governance and expect it to carry over into a park vision. Diversity and inclusion should be fundamental to governance and management and should involve landowners and stakeholder groups, involved in capacities that include independent panels, advisory committees, and councils.

ECOLOGICAL AND RECREATIONAL CURRENT 3.0 **CONDITIONS**

Stantec has conducted a background study of the current ecological and recreational conditions, connectivity, biodiversity and wildlife habitat assessment, and ecosystem services analysis. The study included:

- Desktop spatial evaluation of ecological features of the Study Area and surrounding ecological connectivity using NS Natural Landscapes Eco-unit data
- Analysis of barriers and opportunities for ecological connectivity (land and water) •
- Desktop spatial delineation of existing recreational routes (land and water trails) in the Study Area • and existing access points/entrances
- Biodiversity and wildlife habitat assessment (desktop and field truthing), which includes ecosystem types (Eco-units level data), species at risk (provincial and federal lists) and species of conservation concern
- Spatial delineation of any anthropogenic impacts and potential liabilities
- Ecosystem services analysis related to water and climate change mitigation and adaptation

The following are the key findings based on the review. Results are detailed in Appendix B (Ecological and Recreational Current Conditions Report).

Stakeholders noted that rare ecosystems, freshwater ecosystems, aquatic connectivity, wildlife habitat connectivity, ecological connectivity, water quality (degrading due to anthropogenic development such as construction runoff), and habitat for species of concern/at risk were environmental features of particular importance. There are a variety of both land and waterway-based activities currently enjoyed throughout the area as well as several scenic areas favoured by artists and photographers for their natural characteristics.



- The Atlantic Canada Conservation Data Centre (AC CDC) data indicates 23 SAR (Species at Risk), within the Study Area and the surrounding 5 km. SAR are defined as species listed under the federal *Species at Risk Act* or the Nova Scotia *Endangered Species Act*, or species listed by COSEWIC (Committee on the Status of Endangered Wildlife in Canada). Sixty-one SOCC (Species of Conservation Concern) have been documented in this same area. SOCC are species that are not SAR but are ranked S1-S3 by the AC CDC. SAR contained in the data report include three lichens, three vascular plants, three invertebrates, ten birds, one fish, one mammal, and two reptiles.
- EcoUnit types that were provided by HRM were surveyed to describe the dominant vegetation. Forest types were identified and inventoried based on the overall percent cover of dominant tree and shrub species. Field effort for description and mapping was focused on the "Biotype" portion of EcoUnit types. Transitions to other EcoUnit types were marked as they were encountered while staff were moving through the Study Area, particularly where they differed from the boundaries provided in the EcoUnit data. Thirteen Biotypes were present within the Study Area. The most common were freshwater, softwood, and mixedwood. Some EcoUnit types have an elevated potential to support SAR and SOCC. EcoUnit types are discussed with respect to their potential to support these species. Maintenance and, if possible, expansion of protected areas would help reduce fragmentation and increase habitat connectivity. Additionally, the trail system should be formalized so as to avoid negative impacts caused by continued informal trail systems.
- The Study Area contains many wetlands that comprise a variety of wetland classes, types, and forms. Wetlands that represent the variety found within the Study Area were visited and their functions were assessed using the Wetland Ecosystems Services Protocol for Atlantic Canada (WESP-AC): Non-Tidal Wetlands assessment form. The functions of wetlands within the BMBCL Study Area are described in Appendix B.
- During ecological field surveys conducted in support of the Project, many of the existing informal trails were walked. As proposed park planning progresses, there may be opportunities for signage along trails on public lands for interpretation of local features such as geology, history and Mi'kmaq values.
- The Study Area includes residential areas and roadways, posing substantial constraints to maintaining ecological connectivity beyond the Study Area. Considerations should be made to support some level of connectivity in lower density developed areas, via watercourses and other prominent corridors.
- Through the engagement process, it was noted that it is important to promote connectivity between Sandy Lake and the Chebucto Peninsula so that any proposed park "does not become an island". Creating ecological connectivity between the Study Area and the Five Bridge Lakes Wilderness Area to the southwest would require two wildlife crossings to be created within a short distance of each other: one over part of a less developed section of Route 3 in the Timberlea area, and a subsequent crossing over Route 103, a divided highway. Both crossings would require investment to secure land to prevent future development from infringing on these potential crossing locations.



 Wildlife crossing surveys were specifically conducted within and adjacent to a potential future road right-of-way (Hwy 113 RoW) that bisects the Study Area. Areas which would best support the installation of wildlife crossings (e.g., wildlife underpasses and overpasses) in their current state were recorded. Evidence of wildlife use such as animal paths, scat, and tracks were noted as well as any topographical restrictions to movement. Areas in which pinch points or funnels for wildlife movement occurred, such as large watercourses and steep rock outcrops, were identified. Habitat types with increased suitability for different wildlife species were also recorded. Results and recommendations for wildlife crossings for this potential RoW are discussed in Appendix B.

4.0 ARCHAEOLOGICAL AND CULTURAL STUDY

Stantec conducted an archaeological and cultural study that includes desktop study and site reconnaissance as it relates to potential cultural heritage resources. The Archaeological Resource Impact Assessment was completed to identify areas of high archaeological potential within the Study Area. This included a site visit that was carried out on June 7 and 8, 2022, a background study (including environmental setting, Pre-contact and Historic Period land use, property history, and past archaeological assessments), and engagement with stakeholders and land users. This preliminary archaeological assessment is intended to provide a baseline for future study, informed by Mi'kmaq knowledge. The following are the key findings based on the review. A detailed report can be found in Appendix C (Archaeological Resource Impact Assessment).

Several locations visited within the Study Area were identified as exhibiting high potential for encountering Pre-contact and/or Historic Period archaeological resources. These locations included:

- Head of Frasers Lake and Mouth of Maple Lake: The head of Frasers Lake was assessed as
 exhibiting high archaeological potential because of its location along the Nine Mile River system at a
 portage point between Frasers Lake and Maple Lake through a small watercourse. Two additional
 areas exhibiting high potential for Pre-contact archaeological resources were noted on either side of
 the mouth of Maple Lake before it transitions to the unnamed watercourse that empties into Frasers
 Lake. These two areas were delineated and both exhibited dry level terrain suitable for past human
 habitation, particularly as a strategic location for harvesting resources at the point of constriction
 between the two lakes.
- Watercourse between Maple Lake and Upper Sheldrake Lake: The watercourse between Maple Lake and Upper Sheldrake Lake was visited to assess the archaeological potential of the area. Water levels were extremely low and with no well-defined banks, the watercourse was unlikely to have been navigable even in the distant past, although it may have been used as a portage between the two lakes. Old logging roads were noted throughout the area between the two lakes and a large open area completely covered in saw dust was noted on the west side of Maple Lake, which clearly indicated that this location was used for wood milling.



- Fraser Sawmill Site: The sawmill was located during the desk-based study and review (Faribault 1908). The remains of the sawmill were located during the site visit. Although no specific area was delineated, the location in and around the mill is seen as having high potential for historical archaeological resources as well as high for Pre-contact resources because of its position along the Nine Mile River system and the nature of the land being suitable for occupation.
- Coxs Lake Potential Sawmill Site: Another possible historic mill site was located at the head of Cox Lake next to Yankeetown. The site was noted by Don Gordon, a local landowner, who documented the location and history of a group of camps and houses built along the lake mostly during the midtwentieth century (Gordon 2021). It appears that a modern concrete block and wooden bridge were built on the footprint of the site. Large boulders reinforcing the watercourse banks under the bridge may have been previously used for the mill. Although there are modern impacts within this area, it is viewed as exhibiting high potential for historic resources.
- Blue Mountain: The northern slope of Blue Mountain, being an area of higher elevation, was found to be high in archaeological potential in 1999 (WGA 2000), and again in 2009 (Sanders 2009) because it offers a good vantage point for traveling through the area and for hunting and gathering. Although the potential is high in terms of Pre-contact activity, this location was not found to be suitable for past human occupation because of the exposed nature of the area, the absence of level terrain, the undulating nature of the bedrock and frequent boulder scatters, and a fair distance to good sources of potable water.
- Hobsons Lake: Two areas of high potential for Pre-contact archaeological resources were identified at the north end of Hobsons Lake next to an unnamed watercourse serving as the lake's outlet that connects to Kearney Lake. The first area can be characterized by a sheltered, bench-like terrace near the lake outlet, and the second area further to the north, an elevated level terrace overlooking the watercourse. These characteristics in combination with the area possibly being upstream from a portage route from Kearney Lake to the Bedford Basin, elevates the area's potential for past human occupation and use.
- Granite Quarry and Dam Site: A granite quarry and dam site were visited after being identified during
 the desktop review of historic maps and photographs of the Study Area. The road to the quarry was
 followed to the lake shore. Evidence of quarrying activity was still present onsite. Approximately 150
 m back from the quarry site, adjacent to the west side of the quarry road, a foundation and possible
 cellar feature were found at the location where a building for the quarry was marked on historic maps.
 Further north along the eastern side of Quarry Lake is the location of a historical dam site that was
 not visited because it continues to be an active dam site. It should be considered as having
 archaeological potential for Historic period resources. Finally, a concrete slab from a former building
 was noted on the east side of Birch Cove Lake.



5.0 LAND USE AND SETTLEMENT ANALYSIS

Stantec analyzed current land use and settlement types in the Study Area and vicinity in conjunction with known recreation access points. The land use settlement and analysis consists of four parts: a land use inventory, a review of land use policy and regulations covering the Study Area, a summary of development activity and land development trends found within the Study Area, and a report on the overall planning implications for the proposed national urban park initiative. The following are the key findings based on the review. Detailed land use and settlement analysis is found in Appendix D (Land Use and Settlement Analysis).

- The Study Area is characterized by a variety of economic and cultural activities, though interfaces between public and private lands are largely dominated by residential urban settlement features. Residential uses are generally located along public and private lands in the Plan Areas of Beaver Bank, Hammonds Plains and Upper Sackville, Halifax, and Timberlea/ Lakeside/Beechville. Within the Study Area, the highest density of residential buildings is found in the Timberlea and Clayton Park West areas, while the main areas of commercial building are in the Bayers Lake and Larry Uteck areas. Industrial buildings in the Study Area are concentrated in the Beechville Industrial Park. Growth and development have enabled informal public access to undertake various recreational activities (e.g., hiking, canoeing) as surrounding greenfield areas have been developed, creating opportunities for mostly informal access points. Certain developments, such as the Bedford West subdivision, have produced opportunities for more formalized access.
- Land ownership concerns were identified through the stakeholder engagement process. The need for strategies for long-term transition of key private properties to public ownership was expressed. While lands identified on the edges of the Study Area appear to be largely vacant, in many situations these lands are the subject of existing planning subdivision approvals. Such subdivisions establish edges and prospective park boundaries, where considerations should be given toward interfaces such as park entrances, in anticipation of future urban development. HRM is currently addressing several recent and active planning applications within the Study Area including two applications involving properties that may abut public lands. Site-specific requests are also being considered by HRM through the ongoing Regional Plan update. There are three site-specific requests within the Study Area and are detailed in Section 4.2 of Appendix D.
- Three "legacy subdivisions" are located within the Study Area known as Voyageur Lakes, Sheldrake, and Leeward Phase 4.
- In other cases, certain edge lands may be the subject of planning applications and secondary planning studies. The Study Area falls within the Regional Municipal Planning Strategy (the Regional Plan) which outlines where, when, and how future growth and development should take place between 2014 (when the current plan was adopted) and 2031. As noted in the 2014 Regional Plan, lands associated with the proposed BMBCL Regional Park are currently both privately and publicly owned. Where there are private plans to develop lands near to or adjoining existing public BMBCL lands, attention should be placed on ensuring that the proposed development is of a use and scale that is suitable for the adjoining prospective parkland. In those instances where lands are not subject to subdivision approvals, current applications, or development studies, there may be opportunities to identify lands, in a conceptual manner, that may be desirable to contribute to the prospective park and to continue acquisition efforts.



6.0 GOVERNANCE MODEL REVIEW

Stantec conducted research and review of available recent literature on parks and governance models. The sources of information included reports provided by HRM, internet research as well as feedback collected during stakeholder engagement efforts. The following are the key findings based on the review. Detailed governance review can be found in Appendix E (Governance Model Review).

- Through the engagement process, the need for a clear and agreed upon vision for conservation was
 identified. Key considerations identified by participants included measurable conservation objectives;
 collaborative, inclusive, and equitable arrangements; strong protection mechanism (not easily delisted); identified authority; greater more-than-human-ecosystem approach; monitoring, enforcement
 and adaptive management; and embracing Indigenous knowledge systems.
- Governance is an important component of overall public land management. Potential governance models that could be applied to the proposed BMBCL park, either wholly or in a variety of combinations, include:
 - Advisory committee: the authority responsible for governing a park manages through a line department and is advised by a committee representing external interests.
 - Stewardship: the responsible authority turns park management over to an external service provider.
 - Third-party administration: normally overseen by an appointed board that may include ex officio representatives of the authority.
 - Partnership agreement: Agreements are appropriate where more than one authority has a clear interest in the park, such as the various examples of national parks involving Indigenous groups. This can be done where there is a single authority or multiple authorities.
- Governance models are not mutually exclusive. An advisory committee, for example, could be
 incorporated in any of the other noted models. For another example, an authority delegated to
 provide a service might create partnership agreements to deal with its responsibilities or might
 choose to provide service through a commission or other third-party arrangement. The Study Area is
 in a unique situation where there are multiple landowners in various jurisdictions. This allows
 opportunity for development of a distinctive approach to governance planning.
- Another important consideration when dealing with parks governance is planning. Planning processes
 are a vital opportunity to engage interested parties and obtain their input. Adopted planning
 documents provide a framework for elected and appointed officials, as well as employees and others
 who may be engaged in service delivery. They provide a degree of assurance to the public that park
 development will follow a community-endorsed direction.



7.0 REFERENCES

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APPENDIX A

'What We Heard' Report



Blue Mountain-Birch Cove Lakes What We Heard Report

June 21, 2023

Prepared for:

Halifax Regional Municipality

Prepared by:

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1.0 INTRODUCTION

This report contains background information about lands within the Blue Mountain-Birch Cove Lake (BMBCL) Study Area as identified therein. The purpose of the review of these lands is to support a possible future park plan over public lands that are owned by Halifax Regional Municipality (HRM) and Province of Nova Scotia, and the Nova Scotia Nature Trust, that would occur with the agreement of these landowners.

The objective of this report is to provide information on engagement efforts completed in support of the pre-feasibility assessment of the Study Area for consideration in Parks Canada's National Urban Parks Program. Stantec Consulting Ltd. (Stantec) has worked closely with project partners at the Halifax Regional Municipality (HRM), Nova Scotia Nature Trust, the Province of Nova Scotia, Parks Canada, and the Mi'kmaq of Nova Scotia. A series of engagement sessions were completed to facilitate discussion with identified participants, gather knowledge and seek feedback regarding the evaluation of the Study Area's ecological, recreational and archaeological conditions as well as land use and settlement patterns and potential governance models.

This report includes a summary of the completed participant engagement efforts including:

- Key Participant Engagement Session #1
- Public Engagement Session
- Key Participant Engagement Session #2
- Targeted Interview Workshops
- Key Participant Engagement Session #3

Engagement efforts held in Timeframe One included the first key participant meeting, hosted online by Stantec. This meeting involved key participants as identified by the project partners in representing a diversity of backgrounds with a strong understanding on the background associated with BMBCL, high degree of familiarity with the Study Area or those with a potential role in the planning or governance of any potential park. The purpose of the first key participant meeting was to inform participants of Stantec's approach in undertaking the development of background studies by identified subject area.

Engagement efforts conducted during Timeframe Two included a virtual general public engagement workshop held on April 13, 2022, a series of in-person interviews held between May 12–16, 2022, and a second key participant engagement session held on June 15, 2022. The purpose of these meetings was to solicit and gather information from interested members of the public and to seek feedback on each of the study pillars: recreation conditions, ecological conditions, archaeological and cultural resources, surrounding land use and settlement pattern analysis, and governance. At this meeting, Stantec introduced this pre-feasibility assessment objectives of the BMBCL national urban park initiative and asked participants to share their knowledge on and ideas for the Study Area. The targeted interview sessions were in-person, small group interviews, which followed a prescriptive question and answer format designed to facilitate a deeper and more technical level of discussion.



BLUE MOUNTAIN-BIRCH COVE LAKES WHAT WE HEARD REPORT

The second key participant session included an update of "what we have heard to date" and provided the opportunity for participants to provide confirmation or additional considerations to the information previously collected. The engagement efforts conducted during Timeframe Two were used to inform the summary of key findings that would be incorporated into the comprehensive study.

The third key participant session held in Timeframe Three on October 28, 2022 reviewed the draft summary of key findings and provided participants an opportunity to discuss and evaluate the preliminary outcomes and any additional information for consideration.

Each of these engagement programs are described further in the following sections. Results from these engagement sessions were also used to support field and desktops studies and reporting provided in Appendix B through E of the Comprehensive Study Report.

2.0 KEY PARTICIPANT MEETING #1

2.1 MEETING LOGISTICS

Stantec sent a meeting save the date notice on March 3, 2022, to 42 participants, representing 32 separate groups identified by HRM. A second meeting invitation was also circulated to participants on Monday March 7, prior to the meeting. The virtual meeting was held on March 9, 2022, from 7–8 PM. The meeting was attended by 23 participants, with participants representing 11 of the 32 separate organizations that had been identified. Based on responses received to Stantec's exit survey, 83% of participants noted their main interest to be concerning ecological conditions with the remaining 17% to be recreational conditions. The meeting started with an introduction by HRM Parks and Recreation staff, Stantec then introduced the consultant team, provided an overview of their work plan and proposed public engagement timeline, and explained its approach to completing the comprehensive background study

After each identified pillar of the background study was presented by the Stantec team, a related question was posed to participants, who were given 3-4 minutes to respond to the question. Responses submitted via the interactive poll form were visualized in real-time within a word cloud. Several participants also opted to use the chat function of Microsoft Teams to submit their response. Following the presentation, a link to an exit survey was provided, giving participants the opportunity to provide additional context to their responses submitted during the meeting. Seven exit survey responses were completed. Like the chat form responses, the follow-up/exit survey responses have also been considered and summarized in this report. The following sections describe the feedback received. Raw feedback from the virtual meeting and exit survey is included in Appendix A.



2.2 MEETING FEEDBACK

2.2.1 Ecological Conditions

The discussion on ecological conditions began with an overview of Stantec's proposed approach to the ecological conditions analysis. This included an overview of proposed habitat mapping, species mapping and modeling, data collection including species at risk and conservation concern, our approach to site reconnaissance, ecosystem services analysis, and representative habitat analysis.

To gain feedback from the participants, meeting participants were asked: "Is there a particular habitat or environmental feature of particular importance to your organization or one which you would like to see more information on?" Top responses to this question included habitat/ecosystem connectivity, rare ecosystems, and wetlands. The habitats and environmental features identified by participants include:

- Rare ecosystems, freshwater ecosystems, aquatic connectivity, wildlife habitat connectivity, ecological connectivity, water quality (degrading due to construction runoff), and habitat for species of concern/at risk were identified as environmental features of particular importance.
- Wetlands were identified as a habitat of importance. Specific attention was raised concerning the
 large wetland near Kent Building Supplies in Bayers Lake. The concern described the wetland as
 being key to the water supply for Susies Lake, Kearney Lake, and Papermill Lake and that
 development pressure with respect to the industrial park and highway should result in the wetland
 being conserved. Another participant, in the exit survey, described the large wetland near Kent
 Building Supplies as "key to the health of Susie's Lake and the watershed inside BMBCL". Another
 survey respondent suggested that all wetlands should be delineated.
- Viewsheds were identified as an environmental feature of "critical importance", though Stantec acknowledges viewsheds may be better aligned with recreational and/or cultural considerations for the BMBCL area. Reference was made to a viewshed concept developed in 2012, which intended to avoid seeing urbanization from Susies Lake.

As part of their response to the ecological themed question, participants also identified the following considerations, identified by participants as opportunities, to address existing and future ecological conditions:

- The creation of canoe portages to avoid destruction within the BMBCL area.
- Immediate closing of some trails within the BMBCL area where spring thaw will lead to trail braiding and further destruction of habitat.
- Closer and regular monitoring of the site by the Provincial Government and/or HRM.
- Dogs on-leash only; prohibiting groups of 10-12 unleashed dog walking 'professionals'.

The above considerations from participants are closely tied to the management of recreational uses to meet objectives associated with maintaining the existing environmental state of the BMBCL area.



The feedback received during the ecological conditions presentation and question period helped to inform the baseline habitat mapping and eventual field-evaluation of the BMBCL area. By determining what areas are of importance to key participants, Stantec can consider these areas of interest in the study. The initial meeting also aided Stantec staff in the preliminary identification of individuals and/or participant groups who may benefit from or add value to a more targeted engagement or interview session.

2.2.2 Recreational Conditions

Stantec staff provided an overview of the proposed approach to recreational conditions analysis. This includes analyzing existing recreational use, connectivity, and potential for anthropogenic impacts. Stantec also noted the methods of these identified areas that will be studied and why there will be a particular emphasis on the potential impact of Highway 113. Participants were asked: "What recreational activities take place in the BMBCL area?" Feedback helped to provide the basis for evaluation and will be considered in identifying recreational activities and areas. Top responses to this question included hiking, photography and art, and canoeing and paddling. Based on the responses, the following activities were identified to occur within the park:

- Swimming and hiking
- Canoeing and kayaking
- Camping
- Skating, cross-country skiing
- Biking
- Angling
- Snow shoeing
- Art and photography
- Meditation and forest bathing
- Botany and nature studies
- Outdoor education
- Bird watching

These responses help validate existing knowledge that there are a variety of both land and waterwaybased activities currently enjoyed throughout the area as well as several scenic areas favoured for their meditative qualities and to produce art and photography.

2.2.3 Archaeological and Cultural Study

Stantec staff shared the proposed approach to the archaeological and cultural study, which involves a desktop study, background research, a review of historical data, as well as preliminary field assessments and site reconnaissance.



To gain feedback, participants were asked to elaborate on what types of archaeological and cultural resources that archaeologists are likely to encounter in the BMBCL area. It is important however to note that this question was prefaced by the option to discuss archaeological or cultural resources privately in the event the information being shared was of a sensitive or confidential nature. Stantec staff received information regarding the following information summarized below:

- Traditional Mi'kmaq canoe routes
- Traditional Mi'kmaq artefacts (water cups, travel supplies, camp supplies)
- Colonial era artefacts
- Hunting and fishing artefacts
- Indigenous cultural sites
- Cabins and settlement sites
- Water management sites including portages, dams, and river channelization for log runs

Feedback regarding archaeological and cultural resources, including the information identified above, will support both the background and field evaluations by assisting in the prioritization of areas for evaluation and through contributions to the body of knowledge which will inform the background research components. Top responses to this question included traditional canoe routes, portages, and historical connections.

2.2.4 Analysis of Land Use and Settlement

It is recognized and understood that development is happening at a very fast pace in those communities identified with the Study Area. Where the Study Area stretches from Bayers Lake to Hammonds Plains, there are many pressure points where public and private land interfaces. It is also known that development pressure is getting more intense as a result of HRM's increasing population growth and the housing challenges being experienced. Therefore, the review of existing land use and development process. Stantec's approach would include compiling a land use inventory, a review of land use related policy and regulations, a summary of development activity and future development trends, and a summary describing the development implications for the Study Area.

Participants were asked: "What are the issues or concerns regarding land use you see for the BMBCL area today and/or want to avoid in the future?". Top responses to this question included suburban sprawl, noise pollution, development, and landscape connectivity. Participants identified and described the following concerns shown in Table 2.1, which will be considered as part of the land use and settlement analysis.



Activity proximate to Study Area	Activity within Study Area		
 Development pressure on lands surrounding the BMBCL study area was identified as an existing and future concern. One participant felt that "developers seem to be in charge". Specific mention was made with respect to increased pressure to add high density housing near BMBCL with concerns on compatibility and intensity of the use in relation to the park. Concern was expressed on the extension of Bayers Lake Industrial Park, associated blasting, and potential environmental impacts (for example, stormwater collection from commercial spaces and impermeable surfaces migrating into the park area, heat island effects, loss of trees, and wind effects). Other land use impacts identified include noise pollution, light pollution, and viewshed impacts and visual pollution from high rise buildings. 	 Participants noted that the side of the watershed area near Kent Building Supplies as most vulnerable but also recognized that it may form an important future access point. Participants described their desire to avoid any further intrusion into the BMBCL viewshed particularly on the southern area near Bayers Lake Business Park at Susie and Quarry Lake together with any further development intrusion interfering with wildlife corridors at Sheldrake and Maple lakes. Participants noted that the protection of sensitive aspects of ecological assets in the BMBCL area should be prioritized over development and recreational access. Internal to the proposed park area, concern was expressed on "overuse" and "trail braiding" from unmanaged recreational activity. Participants felt that there are many unmarked trails that makes navigation difficult and cause damage to the BMBCL ecosystem. Associated with this, concerns were expressed over motorized trail use, illegal fire pits, and garbage. 		

Table 2.1 Land Use Issues and Concerns

Specific concern was raised about future highway development with proposed Highway 113 being described by participants as "outdated and no longer affordable". Participants also expressed concern regarding ecological connectivity and the impacts of the highway alignment on habitat. In the opinion of one participant, the proposed Highway 113 "should be cancelled".

Broader eco-connectivity was an additional land use concern. Participants felt that it was important to promote connectivity between Sandy Lake and the Chebucto Peninsula so that the proposed park "does not become an island". One participant described an opportunity to connect the proposed park with the Chebucto Peninsula along Highway 103. Participants described the need to consider mechanisms beyond park designation/zoning for long-term maintenance and restoration of connectivity for wildlife and trails from the Study Area to other natural areas and wildlife habitat beyond the site in the broader region.

Land ownership concerns were a land use issue identified by participants, who expressed a need for strategies for long-term transition of key private properties to public ownership. One participant noted that some of the essential portages pass through lands presently under private ownership.



2.2.5 Governance

The final area of background study discussed was Stantec's review of potential park governance models, which includes researching and reviewing available information on parks and park governance models, with a focus on both professional and academic literature, and developing a comprehensive typology of accepted and interesting governance approaches. Participants were informed that through future engagement, they would be asked for feedback on potential park governance models to better understand the acceptability and viability of the options identified.

On park governance. participants were asked: "What are the crucial elements that constitute "good governance" for the proposed BMBCL park?". Top responses to this question included transparency, accountability, community stewardship, ecological integrity, diversity, accountability, co-governance, equity, inclusion, indigenous engagement, and community input. Specific comments made centered on:

- Conservation principles as an overarching objective to park governance.
- Future provincial and federal legislation requirements on accessibility, which include recreation areas. The participant mentioned a gold standard for accessibility associated with Rick Hansen training.
- Participants identified with the Friends of BMBCL outlined a specific interest and desire for groups to be actively involved in park governance.
- The need for a clear and agreed upon vision for conservation. Key considerations identified by the participants included measurable conservation objectives; collaborative, inclusive, and equitable arrangements; strong protection mechanism (not easily de-listed); identified authority; greater more-than-human-ecosystem approach; monitoring, enforcement and adaptive management; and embracing Indigenous knowledge systems.
- The desire to have volunteers involved in a capacity that is more than advisory. One participant used the Western Common advisory committee as "painfully slow moving" example.
- Collaboration with HRM, Parks Canada, Nature Trust, and participant groups. One participant noted that it may be a large board, but that sub-committees should have bodies from each entity.
- Committee composition, in that it should be resourced with conservation biologists, foresters, park planners, and educators.
- Respect for volunteers and their expertise, time, personal financial costs, etc.
- One participant noted the need for sustainable funding, so that time and effort is not spent on continually writing grants.
- Another noted that the BMBCL area needs to be managed by a single authority, with reasonably uniform regulations.

2.2.6 Additional Survey-Specific Questions

The exit survey asked several additional questions that were not put to participants in the virtual meeting session. When participants were asked their top concern regarding BMBCL and Stantec's background study, participants noted the following:

- Suburban sprawl
- Water quality, ecological integrity, and biodiversity protection



- Accessible trails, including wheelchairs
- Uncontrolled development eating away at the park boundaries; "the wilderness area faces death by a thousand cuts".
- Wildlife habitat connectivity within and beyond the site and protection of interior habitat (reduced fragmentation; restore connectivity); the need to retain and enhance ecological integrity.
- Ongoing mass destruction of habitat by current users with little or no knowledge of sensitive slopes, wetlands, etc. Tree cutting for fires. For most, "its just a great place to hike...little or no nature appreciation". This generally applies to Maskwa, Colins Road, and Susies Lake trails.
- Encroaching urban sprawl around the BMBCL area. Noise pollution from surrounding suburbia and major highways (Highway 103, Highway 102, and Hammonds Plains Road); increasing nutrient and salt content in local water bodies.

When asked to provide overall feedback on the meeting, participants offered complimentary feedback ("good format for quick information", "well done", "a solid start"), looked forward to future meetings, and suggested the following, which Stantec took under advisement in delivering future engagement activities:

- Providing participants with meeting questions in advance
- Providing additional support for persons unfamiliar with MS Teams chat and form functions
- To provide a copy of the presentation materials to participants, in addition to a summary of engagement findings, following the meeting

Participants were asked how informative they found the meeting on a scale of 1-5 (with 1 being "not very" and 5 being "very"):

- 43% gave a 3/5 rating
- 43% gave a 4/5 rating
- 14% gave a 5/5 rating

3.0 PUBLIC WORKSHOP AND SURVEY

3.1 MEETING LOGISTICS

Stantec planned and conducted a workshop-style meeting open to members of the public. Stantec sent a virtual save the date notice on April 6, 2022, HRM advertised the public workshop on their project website and social media channels. A number of elected officials also shared news of the event on their own social media pages. The public workshop was held on April 13, 2022 from 7:00–9:00 pm and was attended by 88 individuals.



The meeting started with an introduction by HRM Parks and Recreation. Stantec then introduced the consultant team, demonstrated the technology to be used during the session, provided an overview of the work plan and engagement timeline, and explained its approach to completing the comprehensive background study. After each identified pillar of the background study was presented by the Stantec team, a related question was posed to attendees who could respond in a chat, form-based format, as well as by using live-mapping using the ArcGIS mapping applications produced by Stantec. The consulting team acknowledges that multiple participants had trouble using the live-mapping application and that not everyone was able to provide their input during the meeting to their satisfaction.

The day following the meeting, invitees were thanked for their attendance and patience with the technology and were given additional opportunity to provide feedback through an online exit survey, and to contact the Stantec team by e-mail, if necessary, in providing their input. Stantec also prepared a list of frequently asked questions (FAQ) from the public meeting (Appendix B) which was also posted on the municipality's website.

3.2 MEETING FEEDBACK

The public engagement was focused around the five pillars. Feedback received from workshop participants is provided below.

3.2.1 Ecological Conditions

Participants were asked to first respond to a form-based question: "What are the natural features that you appreciate the most about the BMBCL Study Area?". In total, 50 unique responses were received with the predominant response including lakes, ponds, and rivers (aquatic features) followed by forests, habitat, mountains (terrestrial features) and viewscapes/viewsheds, scenic features, night skies (atmospheric features). Additional feedback was sought by asking the participants to identify on a live map "Areas in which they visit that they associate the most with environmental importance". In total, there were 429 data points added to the map. The location and count of responses is shown in Figure 3.1. Note that Figure 3.1, and all following map figures, also includes responses obtained through the meeting exit survey. Responses submitted under "other" included old spruce forests, specklebelly and rock-loving lichens, and marsh areas with carnivorous plants.





Figure 3.1 Ecological Features of Importance Live Mapping Results



3.2.2 Recreational Conditions

Participants were then asked to identify on a live map "*What recreational activities take place within the BMBCL Study Area*". In total, there were 418 data points added to the map. The location and count of responses is shown in Figure 3.2. Based on the responses to the live mapping exercises, the following activities were identified to occur.

- Swimming and hiking
- Canoeing and kayaking
- Camping
- Skating
- Cross country skiing
- Biking
- Angling
- Snow shoeing
- Art and photography
- Meditation and forest bathing
- Botany and nature studies
- Outdoor education
- Bird watching

"Other" responses included hiking, trail running, geocaching, and off-leash dog walking/hiking.

These responses help validate existing knowledge that there are a variety of both land and waterwaybased activities currently enjoyed throughout the Study Area as well as several scenic areas favoured for their meditative qualities and to produce art and photography.





Figure 3.2 Recreational Features Live Mapping Results



File: 121417394

3.2.3 Archaeological and Cultural Study

To gain feedback on the archaeological and cultural pillar, participants were asked two form-based questions:

- "Are there known important/sensitive cultural elements that you would identify within the Study Area?"
- "What cultural elements are priorities in gathering additional research during this study?"

In response to Question A, a total of 44 responses were received with 11 individuals indicating that "yes" known cultural elements have been identified within the Study Area and 33 indicating that "no", no known cultural elements have been identified within the Study Area.

In response to Question B, 50 responses were received including responses indicating traditional use, Indigenous knowledge, and heritage, traditional trailways, African Nova Scotian use, post-contact resource use sites including mining and forestry and post-contact settlement including cabins, trails, and roadways.

Feedback regarding archaeological and cultural resources, including the information identified above, has supported both the background and field evaluations and through contributions to the body of knowledge which will inform the background research components.

3.2.4 Land Use and Settlement Analysis

Participants were asked: "Which existing access points are used when visiting the BMBCL Study Area". In total, there were 160 data points added to the map. The location and count of responses is shown in Figure 3.3. Not surprising, a number of access points appeared on the eastern end at some of the more commonly known entrances, but also noted that generally, people access the park at various places along the entire perimeter of the Study Area. It is also noted that access points identified by members of the public is, in many cases, occurring over private lands, which is not sanctioned by the property owner or by any external authority. The information mapped by Stantec in Figure 3.3 shows, visually, where the public has traditionally sought access, and where there are potential considerations with surrounding land use and development activity.





Figure 3.3 BMBCL Existing Access Points



File: 121417394

3.2.5 Governance

The last question posed to participants was on park governance. They were asked to respond in text to *"What are important factors for good park management and governance"*? Top responses to this question included public participation, stewardship, and transparency. The aggregate data responses to this question are available in Appendix C. In total, 95 responses were received with the primary responses indicating public participation, public transparency and public consultation, long term sustainable funding, long term preservation, effective trail management, shared stewardship, and inter-governmental cooperation.

3.2.6 Exit and Public Survey

Two separate online surveys were launched following the public workshop meeting. One survey was specific for meeting attendees (S1) while the second was a general survey for the public who did not attend the meeting (S2). The total number of respondents across both surveys was 77: 51 on the first (S1) and 26 on the second (S2). Of the 77 total participants, 38 (49.4%) identified as male, 34 (44.2%) as female, 4 (5.2%) preferred not to disclose, and 1 (1.3%) did not respond. Respondents identified most between the ages of 35-49 (n=22) followed by 50-64 (n=20), 65+ (n=19), 19-34 (n=13), and under 18 (n=1), with 2 respondents choosing not to respond (Figure 3.4).





Figure 3.4 Ages of Survey Respondents

Acknowledging the HRM's diverse fabric of individual communities, the survey prompted participants to self-describe their place of primary residence. Responses showed a broad distribution across the municipality (Table 3.1) with the most common responses being Halifax (16), Hammonds Plains (13), Bedford (12), and Timberlea (7).



Community	Number of Responses	Community	Number of Responses
Bedford	12	Kearney Lake	1
Birch Cove	1	Kingswood	4
Clayton Park	2	Lakeside	1
Cole Harbour	1	Lewis Lake	1
Dartmouth	4	Rockingham	3
Fairmount	1	St. Margaret's Bay	1
Fairview	1	Stillwater Lake	1
Halifax	16	Timberlea	7
Hammonds Plains	13	Wellington	1
Hubbards	1	Williamswood	1
Hubley	1	Kearney Lake	1

 Table 3.1
 Self-identified Community of Primary Residence

3.2.7 BMBCL Area Visitation

Questions were posed to develop an understanding of current usage and visitation patterns. Questions focused on the number of visits per season, time spent during each visit, and method of arrival transportation. By a close margin, survey respondents reported the Fall months (September, October, November) as the most popular season to make at least one visit (67), however the Summer (66) and Spring (63) months followed closely (Figure 3.5). Respondents reported the most instances of zero visits in the Winter with 16. The survey also indicated that the most common number of visits per year across all seasons is between one and three (96) with the least number of visits being even between zero per year and more than 13 (Figure 3.5).





Figure 3.5 Number of BMBCL Area Visits by Season and Total by Category

Across all seasons, it was most common for respondents to spend between two to three hours (97) in the area during their visit which is followed closely by one to two hours (91)(Figure 3.6). When expressed by individual season, (Figure 3.7) visits during the summer season generally extended to longer hours.



Figure 3.6 Hours Spent During Visits Across All Seasons




Figure 3.7 Hours Spent During Visits by Season

By a wide margin, private vehicle was expressed the most as being the method of transportation in visiting the Study Area (50) followed by walking (10)(Figure 3.8). Other mode choices were indicated to a lesser extent which included cycling, ATV, by water, public transit, and carpooling.



Figure 3.8 Transportation Method of Arrival

Predominately, survey respondents indicated a tendency to visit in groups of at least two or more (52) compared to individually (19)(Figure 3.9). Most frequently, results show these groups are between two and four people (45) with a smaller proportion opting for larger groups of five or more (7)(Figure 3.9).





Figure 3.9 Visit Group Size

3.2.8 Topics of Interest

One of the key objectives from both surveys was to identify the topic of greatest concern amongst community members. Respondents were asked to identify any additional features that were not addressed during the presentation and the natural features they most appreciated about the BMBCL area. These responses were open-ended and prompted participants to input their own custom responses. Table 3.2 displays responses sorted by general theme and their frequency. Overall, respondents identified a range of thematic interests but addressed natural features such as forests, water bodies, topography, views, and wildlife to be of greatest concern. Not all participants choose to provide a response and some responses covered more than one theme.

Theme	Frequency	Theme	Frequency
Forests	44	Noise	6
Lakes and Ponds	42	Highway	1
Slope and Elevation	42	Geology	1
Scenic views and viewsheds	36	Safety	1
Wildlife and Habitat	34	Escape from urban life	1
Rivers and Streams	32	Seasonality	1
Wetlands	28	Biodiversity	1
Night skies	21	Waterfalls	1

Area



Similar questions then asked survey participants to identify important or sensitive cultural elements within the Study Area from their personal knowledge and experiences. Likewise, these responses were openended and were sorted by general theme or topic area. Data was not obtained from all respondents and some responses covered more than one theme. As Table 3.3 identifies, themes covered the appreciation or desire to protect general heritage of the BMBCL area, its wetlands, recognition of Indigenous Peoples and history, presence of existing community-led projects and caretaking, anticipated archaeological artefacts, sensitivity due to land subsidence or former sub-surface excavation operations, and the danger of allowing developments that infringe or impose on the character or sensitivity of the area.

Table 3.3	Self-identified Important or Sensitive Cultural Elements in the BMBCL
	Area

Theme	Frequency
Heritage	3
Wetlands	3
Indigenous Peoples	2
Existing community projects	1
Archaeology	1
Land Subsidence	1
Imposing development	1

Survey participants were also asked on the perceived priority of cultural elements. The limited number of responses (three responses) to this question identified the preservation of resident lifestyle, importance of Indigenous consultation, and attention to sensitive environments.

3.2.9 Governance

Surveys asked respondents to optionally provide any points of elaboration on what they consider to the critical factors in achieving good park management and future governance. As with the previous openended questions, the responses were sorted by general theme. Again, some participants choose to identify more than one topic within their response which are totaled individually.

As Table 3.4 demonstrates, public participation with government, with an emphasis on partnership and transparency at all stages of park management, was found in the greatest number of responses. Particularly, respondents expressed opinions around public involvement as direct participants and being accountable to the people who might use the prospective park and the preservation of the natural environment. Following this, respondents indicated a strong emphasis on prudent trail maintenance and upkeep as an integral component of park stewardship. Other responses included themes concerning public education and ongoing participation to enhance the longevity and overall experience of prospective park users, and the importance of signage to discourage inappropriate or unsafe activities. Respondents also indicated a desire to see wayfinding or navigational signage for safety. The need for a long-term management commitment and vision was also stated as vital for the prospective park's stability. Several respondents felt that parks governance should be multi-generational and would not be sustainable without ongoing management and monitoring.



Theme	Frequency	Theme	Frequency
Partnership and transparency	9	Public safety	3
General trail upkeep/stewardship	5	Water access and recreation	3
Public education, participation, and experience	5	Pet control and accommodation	2
Signage and wayfinding	4	Forest management	1
Long-range planning and management	4	Erosion and flooding	1
Controlling development	3	Indigenous partnership	1
Conservation and biodiversity	3	Wildfire prevention	1
Legislative protection	3		

Table 3.4Self-identified Factors for Good Management and Governance in the
BMBCL Area

3.2.10 Other Comments

The survey concluded with an opportunity for respondents to provide any additional comments. Responses included a range of themes including: elements which respondents felt was absent from the engagement session; aspects of management they felt needed emphasis; and other general considerations. Not all survey participants choose to provide additional comments.

While there were a range of comments (Table 3.5), the response related to "controlling imposing development" in or around the Study Area was most frequently heard and noted of importance. Many respondents felt that private development or proposed highway construction would impede the prospective park's environmental protection and value for recreational use. Other comments expressed a need to improve the current public engagement process with several stating that it should be ongoing and not singularly a preface to the planning process. In addition, other respondents felt that the virtual engagement method did not suit the needs of the project and may not have captured an accurate representation of public opinion. Additional comments introduced themes of providing access to water, hiking, and overall recreation, the prioritization of habitat protection, and a desire to widen participant identification and involvement.

Table 3.5	Other Comments on the BMBCL Area Planning Process

Theme	Frequency	Theme	Frequency
Control imposing development	6	Permit more development	1
Improve public engagement strategy	4	Conservation and Biodiversity	1
Water access, hiking, and recreation	3	Implications of private land ownership	1
Habitat protection	2	Access points and parking	1
Increased participant involvement	2	More parking	1
Wildlife management	1	No park development in the back country	1



4.0 TARGETED INTERVIEW SESSIONS

4.1 MEETING LOGISTICS

Following the public workshop session, Stantec conducted a series of targeted, in-person interviews, with identified participants on the various pillars of the prefeasibility assessment. HRM staff provided a meeting space and sent invites to the various participants identified for these targeted interviews.

The interviews occurred during five separate sessions held May 12, 13 and 16, 2022. Meeting attendance included a total of 21 individuals, identified with 10 separate organizations, including: Ecology Action Centre, Friends of BMBCL, Canadian Parks and Wilderness Society, Woodens River Watershed Environmental Organization, Nova Scotia Nature Trust, NS Crown Share Land Legacy Trust, Canoe Kayak NS, Nature NS, Maskwa Aquatic Club, Leave No Trace Canada as well as a participant identified with Recreation NS.

During the targeted interview sessions, the guiding questions in Table 4.1 were used to facilitate discussions.

Recreational Conditions	 Building on the information we have heard to date, have we captured the activities occurring in the Study Area? Are there any challenges / concerns with these activities occurring in the area? Or any specific areas where there are recreational concerns? How do you see the balance between developing recreational park features, and the preservation of sensitive environmental features? What opportunities do you see to recreation in the area? Should any specific types or areas be considered "off-limits" for recreation? Why?
Ecological Conditions	 Building on the information we have heard to date, have we captured the ecologically important areas? What are any challenges / concerns with preserving these important areas? Are there areas where there are concern with habitat protection and human use? Based on correspondence, we understand landscape connectivity is an important element to the park planning. What opportunities do you see for the protection of habitat in the area?
Land Use and Settlement Analysis	 Building on the information we have heard to date, have we captured the nearby settlement impacts to Study Area? Where are the other areas of concern for potential residential encroachment on the park? How can HRM balance the need to facilitate development of private lands at the park interface without impacting the future of the park as you see it? We understand that the development pressures on surrounding lands are ongoing and increasing. What are there any challenges / concerns with adjacent development activities on the use of the area as a park? Are there specific areas of concern?

Table 4.1 Targeted Interview Questions



Archaeological and Cultural Resources	 Building on the information we have heard to date, have we captured the cultural aspects of the area? Are there any challenges / concerns with the protection of cultural resources? How do you see the balance between developing recreational park features, and the preservation of historic / cultural resources features?
Governance	How do you see the park being managed?What do you see the role of the organizations / public in park management?

Table 4.1 Targeted Interview Questions

4.2 MEETING FEEDBACK

The following sections summarize the results of the targeted interview sessions. A summary of these findings was provided to targeted interviewees.

4.2.1 Recreational Conditions

When discussing recreational conditions in the Study Area, Stantec staff asked, *"if we have effectively captured the activities occurring?"*, *"what are the risks and opportunities of recreation in the area?"*; and *"how do we strike a balance between ecological integrity and recreational enjoyment?"*. In response to these guiding questions, most participants stated that while recreation should be planned for and accommodated, ecological preservation and integrity should be considered at the forefront of future park planning.

Stantec also heard from many participants that recreation alone does not effectively capture what the prospective future park area could be used for, and that for many users, enjoyment of the area goes far beyond physical recreation. As one participant put it, "people access this space on the best and worst days of their lives, to think, to celebrate, to mourn". While participants agreed that the physical recreation activities taking place were adequately captured, participants commented that the personal connection and spiritual value should also be noted.

When discussing the traditional activities that occur, similar responses were received from each group, and included hiking, biking, snowshoeing, canoeing, kayaking, photography, dog walking, running, camping and more, with the full list available in the meeting notes (Appendix D).

When discussing challenges and risks posed by recreational activities, many participants noted that an over-use, and a lack of any sanctioned or managed trail planning, unsanctioned camping and motorized vehicles were the primary risks.

When discussing opportunities for the proposed park's development, the responses were numerous and included opportunities for a front country – back country model which provides greater accessibility and wider trails closer to primary access points with trails of increasing difficulty closer to the undeveloped interior identified with the provincial protected wilderness area. Additional opportunities included effective trail planning, formalized entrances , enhanced accessibility for those with disabilities, and opportunities for the park to host education and outreach groups. The full list of responses is provided in Appendix D.



When asked about if areas or activities should be off-limits, most respondents indicated that motorized use should be limited if not outright banned within any future park boundaries. Participants recognized the difficulty of enforcing a ban, however, they are expressed concerns with the level of noise and destruction associated with one recreational activity which disproportionately impacts the enjoyment of several others.

4.2.2 Ecological Conditions

When asked about ecological conditions in the Study Area, most groups emphasized that ecological integrity, especially in the core wilderness areas and back country, should be prioritized over development. Several groups noted that the existing development pressure is shrinking the potential land-base for a proposed park and have recommended purchasing, preserving and conserving core wilderness areas first, before building out the front-country for greater use.

The concerns related to connectivity and ecological conditions also relate to the existing development pressures on identified lands near to the existing Highway 103 as well as the proposed Highway 113 bypass, over-use by recreational groups, use of the area by motorized vehicles (ATVs) and the fragmentation of both terrestrial and aquatic habitat.

Opportunities noted for the area include supporting recovery plans for species at risk, creation of wildlife corridors for mainland moose and other species, maintenance of and a greater understanding of old growth forests, wetlands, watercourses, lakes, and other areas of ecological importance. Participants in the interview sessions also expressed an opportunity to preserve the unique viewscapes and soundscapes found in the area, to protect "quiet areas" free from urban noise and dark skies not impacted by light pollution.

When discussing landscape connectivity, most groups once again agreed that a front country – back country model would benefit the protection of species at risk as well as the connected ecosystems in which they rely on. Groups also identified the wetland and watercourse systems as well as the opportunity to enhance connectivity through the purchasing of additional conservation lands.

4.2.3 Archaeological and Cultural Resources

When discussing the archaeological and cultural resources within the Study Area a great deal about the history with a primary focus on historical Mi'kmaq land use was identified. Many groups followed up by expressing the opportunity for the park's development to bring Mi'kmaq voices and stories to the forefront and for the proposed park to be a setting in which their stories may be shared.

Participants also provided a great deal of information regarding post-contact land use including development history of the area which included sawmilling, logging, quarrying, hunting, and fishing . Participants noted that trails of indeterminate age are still in use today and that the area likely hosted precontact travelways and canoe portage routes. Information about more recent use of the area including older hunting and fishing camps, cabins and trailways was provided.



4.2.4 Land Use and Settlement Analysis

Targeted participants characterized the context of the Study Area where this area has been faced with development pressure for many years and that there are concerns of increased development pressure along all sides of the Study Area, including pressure that directly abuts or is in proximity to the designated provincial wilderness area. It was noted that development has outpaced public lands planning and that because of the pressures for development, there is a need to engage in both land use and public land planning at these edges outside of the proposed park area. A number of participants agree that conservation values should come before the planning of land for future development and access at the interface and that an ecological lens should be used to view all development proposals found at the proposed park edges.

Of particular concern from participants are the impacts of development on the current and future use of the park. These include view/soundscape impacts, development creating edge effects, heat island effects caused by large, paved areas near the park, the continued loss of trees and forests, impacts on water quality to lakes, ponds, and watercourses in the park, and wind effects.

Participants noted that there are several proposed planning tools that could be used to mitigate impacts, and in some cases, be used to facilitate future park access, including subdivision design, land dedication, service boundary limitations, density trading, new zoning designations, strategic and proactive land acquisitions, and policy and regulatory incentives aimed at maintaining ecological and wilderness areas.

Some of the input received suggested that with an overall park plan in place that considers land outside the identified Study Area, there could be opportunities to work with the development community in the design and development of the park.

4.2.5 Governance

Like the other study pillars, ecological integrity was viewed by targeted participants as the overarching guiding principle to park governance, regardless of the eventual governance model that gets chosen. Similarly, it was raised that conservation should be at the heart of park governance and management and that conservation principles should carry over into the future vision for the park.

Targeted participants were provided example park governance models. They recognized the variety of governance options available, including opportunities to combine models, but did not endorse any individual one specifically. The consensus was that it is too difficult to determine a model without the foundation of a park plan that sets out the collective goals and objectives for the BMBCL area. Participants indicated that:

- There is value in a central governance model that considers input from the public, stakeholders, and landowners but retains decision-making authority to limit the politicization of decisions.
- A co-governance model involving the Mi'kmaq of Nova Scotia could be an appropriate model and a possible conduit for reconciliation.



• Governance and management should involve both public and private landowners who own lands dedicated to conservation/park use and that there is a keen interest from environmental groups to be involved in park governance.

Overall, Stantec heard that a major challenge will be organizing people and bringing moving parts of a national urban park together: knowing who is leading the way, who is making decisions, and how the relationships work. In terms of priorities, it was noted that a management agreement for the trail network is needed as soon as possible due to the number of informal and unplanned trails that are already in existence.

5.0 KEY PARTICIPANT MEETING #2

5.1 MEETING LOGISTICS

Stantec sent a virtual invitation to 42 participants on June 9, 2022. Those invited represented the 32 separate groups identified by HRM as "key participants" at the project's onset . Following the invite, a second email containing a reminder and an advance copy of the presentation was sent on June 14, 2022. The virtual meeting was held on June 15, 2022, between 7:00-8:30 pm and was attended by eight key participants plus two Stantec staff and one representative of the HRM. The attendance rate by identified organizations was 19% leading to the potential need for additional engagement efforts to be conducted to ensure participants sentiments were effectively captured. During this second key participant meeting, Stantec staff provided a summary of the information collected through the engagement process to-date. Following the recap of the five pillars of the study, Stantec staff requested feedback from attendees to confirm that their previous sentiments were effectively captured and to provide an additional opportunity to have their thoughts and opinions and resources captured.

5.2 MEETING FEEDBACK

Following the "what we heard" recap and project update from Stantec, meeting participants were given an opportunity to provide additional feedback on the findings that were presented. Common themes identified included:

- 1. The overarching need for a park plan and park planning process should be identified in the report. In this context, there should be representation from property owners including the Province and Nova Scotia Nature Trust.
- 2. Ecological integrity should take precedence for all pillars. The way in which ecological integrity is framed should be consistent in all matters of background study.
- 3. The need to look at other jurisdictions on collaborative models of governance that provide for a variety of user groups, accessibilities, and experiences for inspiration. Victoria Park (Truro) was cited as an example.



- 4. On recreation, it was noted that dog walkers are contributing to ecological degradation (impacts to ground nesting birds and wildflowers) and that given the low-impact, high ecological value that is being placed on the area, that recreational opportunities should be limited to non-motorized ones. The front/back-country model was identified as the ideal recreational experience for the BMBCL area.
- 5. Consultation should be held with individuals involved in cited examples of park governance models to evaluate how they are working.
- 6. Emphasis on the Stantec study in providing specific recommendations.
- 7. Zoning needs to consider land surrounding the public lands so that any hard development infrastructure be required to consider the park's development.
- 8. That HRM should establish an annual budget for priority and strategic land acquisition related to the BMBCL park and its realization.
- 9. That the proposed Highway 113 is not appropriate and no longer serves its originally intended purpose.
- 10. That Parks Canada should play a prominent role in the creation and management of the park due to the special significance of the area and the recognized standard of quality, branding, ecological values, and experiences offered by Parks Canada.
- 11. There are opportunities to synergize the results of the BMBCL Comprehensive Study with HRM's new Regional Plan.

6.0 KEY PARTICIPANT MEETING #3

6.1 MEETING LOGISTICS

Stantec sent a meeting invite, including a draft copy of preliminary findings, to 45 individuals including the key participants as identified by HRM as well as additional key participants identified during previous engagement sessions. The meeting was held on October 27, 2022, between 7:00–8:30 pm and was attended by ten (10) key participants, three (3) Stantec staff, two (2) representatives from NS Environment Climate Change, and one (1) representative from HRM. The attendance rate by identified key participant organizations was 20% leading to the potential need to re-evaluate the online based format, the list of identified participants, or communications methods for future engagement. The meeting outlined preliminary key findings to date and provided opportunity for participants to provide feedback.

6.2 MEETING FEEDBACK

Stantec received numerous points of feedback from key participants during and after the engagement session including the following:

- Concerns that water quality, particularly of the lakes, identified with past studies that have been undertaken, was not adequately included in the study findings.
- Concern that the identified Study Area was not large enough and that the Study Area should include developed urban and suburban areas surrounding the Study Area as well as all undeveloped areas adjacent to the Study Area.



- Question / concern regarding the designation of archaeological sites and in particular a request to evaluate the Sawmill site near Cox's Lake more thoroughly / definitively.
- Question as to the level of involvement of First Nations communities and the use of Traditional studies. Additional feedback included contacting an official identified with NS Museum.
- Question as to the certainty of the proposed highway 113 corridor, which has the potential to bisect the Study Area as well as question as to the role of wildlife crossings for a potential development.
- Feedback regarding the inclusion of conservation easements as a tool to meet ecological objectives and a desire to see more emphasis placed on such applications and related land acquisitions by the Nature Trust.
- Question as to the definition of "legacy subdivisions" and their potential to interact with park planning.
- Feedback regarding the preliminary mapping found in the Summary document:
 - Have the provincial and municipal land holdings separated.
 - Show the entire Cox Lake wilderness reserve, to include land on the Western side of Cox Lake (PID 40748238).
 - Highlight the area where Crown lands on the western portion of the Study Area have been identified for potential housing development
- Inquiry as to what other types of maps will be included in the final report.
- Comment questioning the practicality of making any firm conclusions on park governance models at this stage of project assessment.
- Comment regarding the need for increased cooperation between all levels of government, First Nations, landowners, developers, and recreational groups.
- Commendation on the release of the preliminary findings and Request to make a draft of the final report available to key participants for review.
- Request for continued opportunities to submit comments to Stantec or HRM
- Comment that the project continues to move forward into park planning activities, in as quick a timeframe as possible, and continue to see the increased involvement of participant interests in the planning stage.
- Inquiry as to the role of LiDAR in mapping exercises and recommendations for its use in the project, specifically its use in the creation and use of digital elevation models.
- Comment requesting specific consideration be paid on watersheds, both within and on the periphery of the Study Area, and on the role that nearby developments may have on a potential contamination of the waterways.
- Question if the footprint of the Study Area or potential park area may expand in size through future land acquisitions.
- Request that all land acquisition methods be explored to protect land within the identified Study Area, to include easements.



7.0 SUMMARY OF FINDINGS

The following section describes the key findings gathered through the various engagement sessions as it relates to each of the key topic areas.

7.1 ECOLOGICAL CONDITIONS

Participants indicated that rare ecosystems, freshwater ecosystems, aquatic connectivity, wildlife habitat connectivity, ecological connectivity, water quality (degrading due to anthropogenic development such as construction runoff), and habitat for species of concern/at risk were identified as environmental features of particular importance. There are a variety of both land and waterway-based activities currently enjoyed throughout the Study Area as well as several scenic areas favoured for their meditative qualities and to produce art and photography that are closely tied to areas of ecological value.

The Study includes residential development and roadways, posing substantial constraints to maintaining ecological connectivity beyond the Study Area. Considerations should be made to support some level of connectivity in lower density residential areas, via watercourses and by air where formal terrestrial wildlife crossings are not practical.

It was noted that it is important to promote connectivity between Sandy Lake and the Chebucto Peninsula so that the proposed park "does not become an island". Creating ecological connectivity between the Study Area and the Five Bridge Lakes Wilderness Area to the southwest would require two wildlife crossings to be created within a short distance of each other: one over part of a less developed section of Route 3 in the Timberlea area, and subsequent crossing over Route 103, a divided highway. Both crossings would require investment to secure land to prevent future development from infringing on potential crossing locations.

7.2 RECREATIONAL CONDITIONS

The following information represents some of the primary themes and key information shared with Stantec staff during engagement sessions with the public and key participants as it relates to recreational conditions.

- The need for effective planning of and maintenance of trails holding them to an appropriate development standard
- Current trailway and water access are not properly managed and area leading to ad-hoc / unsanctioned trail development
- The need for primary and secondary entrance and exit points
- Recommendation to plan for year-round access
- The need to strike an effective balance between ecological preservation and recreational enjoyment
- The need for planning of recreational conditions as to not interfere with wildlife corridors
- Opportunity for education and outreach to work with community members and stewardship groups
- Opportunities for formalized entrances/exists to direct the flow of individuals



- Opportunities for an interpretive centre, kiosk, playground, seating, trash receptacles
- Opportunities to enhance accessibility for those with disabilities
- Opportunities for canoeing and kayaking routes, back-country camping
- Opportunities for those in urban areas to enjoy nature
- Opportunities for enjoyment and escape from urban areas
- Opportunities for the park to be connected to public transit and transport infrastructure
- Concerned with motorized vehicle use via ATV's
- Concerned with unregulated camping
- Concerned with the potential for forest fires
- Concerned with the potential for over-use and "loving it to death"

7.3 ARCHAEOLOGICAL AND CULTURAL STUDY

The following information represents some of the primary themes and key information shared with Stantec staff during engagement sessions with the public and key participants. The information captured by Stantec staff sought to include questions, suggestions, concerns and opportunities.

- Received information regarding the general history of the area including its previous traditional land use by the Mi'kmaq, and the areas post-contact development history (quarries and sawmills)
- Heard support for incorporating traditional stories, knowledge, history into park-based education and outreach initiatives, placards, historical sites and more
- Opportunities to strengthen ties and advance reconciliation with First Nation communities via the park project

7.4 LAND USE & SETTLEMENT ANALYSIS

The following information represents some of the primary themes and key information shared with Stantec staff during engagement sessions with the public and key participants as it relates to land use.

- Heard about the need to engage in planning of edges outside of park area.
- Heard about the current and historical development pressures facing the area.
- Received concerns of development pressure in particular the developments abutting directly with wilderness area.
- Received concerns that development has outpaced park planning.
- Strong concern regarding the cumulative impact of development and cumulation of development pressure
- Conservation values should precede planning of land for development and access at the interface; ecological lens should be used to view all development proposals
- Opportunities to work with development community to prove benefits of nearby park access and have private sector actively contribute to its design and development
- Strong expression of the potential for undesirable impacts on proposed park from development including:
 - View/soundscape impacts
 - Edge effects



- Heat island effects
- Loss of trees
- Water quality impacts
- Wind effects
- Recommendations that future zoning restrictions on development in the periphery in addition to rationed height restrictions
- Recommendations that a variety of planning tools should be considered including subdivision design, land dedication, service boundary limitations, density trading, new zoning designations, strategic and proactive land acquisitions, and policy and regulatory incentives

7.5 GOVERNANCE

The following information represents some of the primary themes and key information shared with Stantec staff during engagement sessions with the public and key participants as it relates to governance.

- Participants recognize the variety of governance options available, however, like the other pillars, ecological integrity was viewed as a guiding principle to future park governance
- Participants expressed a desire to see conservation at heart of governance and expect it to carry over into a park vision
- Diversity and inclusion should be fundamental to governance and management
- Governance and management should involve landowners and stakeholder groups, involved in capacities that include independent panels, advisory committees, and councils
- No specific governance model endorsement (difficult to determine model without park plan foundation)
- Participants saw value in a community-involved central authority, with a decision-making structure that avoids or limits politicization of decisions
- A co-governance model involving the Mi'kmaq of Nova Scotia was identified as an opportunity and conduit for reconciliation
- Major challenges: organizing people; bringing moving parts together; knowing who is leading the way, who is making decisions, and how relationships work
- All parties involved in the engagement sessions expressed interest in a trail management agreement

8.0 ACKNOWLEDGMENT

Stantec Consulting Ltd. (Stantec) would like to thank all participants who took the opportunity to share their knowledge and expertise with us on the work that is being conducted to support the pre-feasibility assessment of BMBCL area as part of Parks Canada's national urban parks program. This feedback and input received is strongly appreciated and will be used to inform our approach to the various areas of background study. Our thanks are also extended to HRM and Parks Canada for providing us with this opportunity and supporting the engagement process and offering their advice.

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APPENDIX A

Meeting Feedback

Question 1				
Is there a particular habitat or environmental feature of particular importance to				
Form	Chat	Survey		
recreation rare ecosystems Wildlife habitat connectivity Ecological connectivity connectivity, human impact connectivity, human impact connectivity connectivity rare ecosystems Wildlife habitat connectivity moose habitat snowshoe, cross-country skiing	 The habitat I would like to see more information on is the large wetland near Kent at Bayers Lake. This wetland is key to the water supply for Susie's Lake, Kearney Lake and Papermill Lake. It's under pressure from the industrial park and highway and needs conservation. Of critical importance is the viewshed concept developed by HRM park staff in 2012-13 where the concept was to avoid seeing urbanization from Susie Lake, 	 I would like to see more information about the large wetland near Kent hardware store that is key to the health of Susie's Lake and the watershed inside BMBCL All the wetlands need to be delineated. Canoe portages so that further destruction does not occur at these spots. Perhaps immediate closing of some trails where spring thaw will lead to braiding and further destruction of habitat. Closer & regular monitoring of the site by NS Gov. Not sure HRM has any staff who are tasked with this for their properties, but they should be out there. Dogs ON Leash only; NO groups of 10 -12 unleashed dog walking 'professionals' No, it is all crucial. Of course, habitat for species of concern/at risk is a priority (moose, turtles, birds, etc), including connectivity to allow for metapopulations. And aquatic connectivity Canoeing and hiking trails. Currently, the water in the lakes is quite clean. Recent develop has caused run off into Susie's Lake which is degrading the water quality. Black Duck Brook, has suffered from construction runoff as well. Freshwater ecosystems Its waterways, including their shorelines 		

Question 2				
What recreational activities take place in the BMBCL area?				
Form	Chat	Survey		
birding (bird watching) hiking hiking geocaching non-motorized active recreation universal access to trails - accessible hiking, birding swimming hiking, camping, paddling guided hikes paddling outdoor education universal access dog walking hiking, camping, paddling bioblitzes accessible Dog walking informational kiosk paddling trail running! fishing hiking, paddling, photography Accessible to all!!! hiking, paddling snowshoeing driving those little monster trucks? hiking, paddling Maybe a mountain bike tr photography photography art orienteering painting events bouldering fishing spots accessible swimming equipment loan skating Art, and photography.	 Certainly there a variety of activities that we enjoy throughout the park. The waterways for canoeing and the trails for hiking. There are several canoe routes, and many scenic areas for art and photography. hiking and camping Hiking and swimming Birding, canoeing, swimming, hiking Bioblitzes Art, photography, spiritual forest bathing. Bird watching. berry picking Outdoor education Photography painting events 	 Swimming and hiking are two of the most popular activities Bird Watching is key in spring with return of migrants and the SAR that make their homes here. The MBBAtlas will show findings as will the 2 Bioblitzes (SMU (2009 & EACCanada 150) & eBird posts. iNaturalist postings ongoing. Botany is important, lots of Lichens everywherelots of great opportunities for Interpretation & Outdoor education at all levels. I anticipate the need for a key staffed entrance facility with Interpretation, sharing of maps for hikers, paddlers, washrooms, etc for the purpose of an 'orientation' to the Park. An informed user is safer than those unaware of any and all challenges. You will have access to the number of rescues over the past 5 years! Other access points will need major Wayfinding & Signage for info. Parking for cars & bikes. Non-motorized. Hiking, birding, canoeing, snowshoeing. Numbers of recreational uses and users should be monitored/limited for ecologically sustainability. Canoeing, hiking, camping, swimming, skating, cross country skiing, art, photography, meditation, nature studies, outdoor education, forest bathing. Bird watching. Canoe, kayak, trails, hiking, swimming, etc would be available for persons of all abilities. Canoeing and kayaking, including camping and angling. 		

Question 3				
What types of archae	What types of archaeological and cultural resources are we likely to encounter in the BMBCL area?			
Form	Chat	Survey		
Mi'kmaq petroglyphs? Historical connections with Birch Cove L'nu biocultural values	 culture is a broad topicwill you be reaching out to the disabled community whose culture/access is often forgotten. industrial dg quarrying. There are stories of indigenous drinking cups found at portages. Settlers have used this area for hunting and fishing for generations. 	 Traditional Mi'kmaq canoe routes and related artifacts My response/concerns re Accessibility can best be approached through Paul T. Indigenous bio-cultural values. We have read about indigenous water cups being found at portage routes. Many settlers have camped, hunted and fished there for generations. Cabins were built in a variety of areas back in the 30's. Portages of indeterminate age, remains of old dams, log channels in streams modified for log driving. 		

What are the issues or concerns regarding land us area today and/or want to avoid in 1FormChatSudevelopment-Dogs Off Leashurban development-A proposal to divert a key-wy 113 roadsA proposal to divert a keyWy 113 roadsA proposal to divert a keyWe valand and then fill some of it in for high density housing should not be permitted because it will damage the watershed and chain of lakes beyond repairNeed for public ownership planning nature conservation minimize any roadway affect on surrounding environment (don valley parkway went thru this)(don valley parkway went thru this)Light footprint /human powered activities. Access points from many neighborhoodssetbacks Restore conn acros roads No primary access point fighting climate change preserving viewsheds, soundscapesNoise pollution from near landscape connectivity any for profit organizations allowed in the park How to maintain and restore connectivity to the broader, interior NSNoise pollution fight pollution profit organizationsNoise pollution from near suburban sprawl light pollution profit organizationsNoise pollution ford forganizationsNoise pollution profit organizationsNoise pollution ford forganizations <t< th=""><th>Ise you see for the BMBCL the future? urvey There is pressure to add high density housing near BMBCL and I don't feel it's compatible at all Mountain Biking was mentioned. The Whopper drop is gone. This is an important loss and the approach to MB can perhaps be discussed alongside the HRM MB Policyunder development by ? over the past couple of years after a survey was done. I cannot see a shared use trail in here with the numbers of hikers, etc. Perhaps a dedicated trails system, similar to McIntosh but away from the front country trails. I would hope there would not be any motorized trail users use within the park. There are guidelines for use in Wilderness Areas. Very concerned abut the extension</th></t<>	Ise you see for the BMBCL the future? urvey There is pressure to add high density housing near BMBCL and I don't feel it's compatible at all Mountain Biking was mentioned. The Whopper drop is gone. This is an important loss and the approach to MB can perhaps be discussed alongside the HRM MB Policyunder development by ? over the past couple of years after a survey was done. I cannot see a shared use trail in here with the numbers of hikers, etc. Perhaps a dedicated trails system, similar to McIntosh but away from the front country trails. I would hope there would not be any motorized trail users use within the park. There are guidelines for use in Wilderness Areas. Very concerned abut the extension
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 Dogs Off Leash A proposal to divert a key wetland and then fill some of it in for high density housing overwhelming suburban sprawl development suburban sprawl Need for public ownership Need for integrated urban planning nature conservation minimize any roadway affect on surrounding environment (don valley parkway went thru this) setbacks Restore conn acros roads No primary access point fighting climate change preserving viewsheds, soundscapes Noise pollution from near allowed in the park How to maintain and restore connectivity to the broader, interior NS Noise pollution from near suburban sprawl How to maintain and restore connectivity to the broader, interior NS Noise pollution from near suburban sprawl How to maintain and restore connectivity to the broader, interior NS Noise pollution from near suburban sprawl light pollution profit organizations allowed in the park How to maintain and restore connectivity to the broader, interior NS Noise pollution from near suburban sprawl light pollution profit organizations allowed in the park How to maintain and restore connectivity to the broader, interior NS Noise pollution from near suburban sprawl light pollution profit organizations light pollution profit organization	Inere is pressure to add high density housing near BMBCL and I don't feel it's compatible at all Mountain Biking was mentioned. The Whopper drop is gone. This is an important loss and the approach to MB can perhaps be discussed alongside the HRM MB Policyunder development by ? over the past couple of years after a survey was done. I cannot see a shared use trail in here with the numbers of hikers, etc. Perhaps a dedicated trails system, similar to McIntosh but away from the front country trails. I would hope there would not be any motorized trail users use within the park. There are guidelines for use in Wilderness Areas. Very concerned abut the extension
Roadsconnectivity & Wayfinding action items.Recreational overuse in suburban sprawl preserving viewsheds landscape connectivity roads- There's is a key intersection to consider between ecological assets, and land use. I wanted to see protection of sensitive aspects of ecological assetsHighway 113 soundscapes Noise pollution- Many unmarked trails, people have created their own trails. This makes trails difficult to follow - people get lost! But more importantly it damages the ecosystem - so more marked case to follow trails in	of Bayers Lake Industrial Park as the blasting, etc. continues. Stormwater collection from commercial spaces & impermeable surfaces will perhaps migrate into the park area. Heat effect from parking lots. Edge loss of trees due to compromise, wind effect and it goes on. This side of the WA is most vulnerable but may form an important access point(?) Innovative approaches to restore and maintain wildlife habitat and connectivity within and beyond the study site. Wildlife under/overpasses and other solutions for safe passage of wildlife. Strategies for long-term transition of key private properties to public ownership and stewardship for restoration of connectivity and expansion of wildlife habitat for wide- ranging, large-area requiring, sensitive species. We are concerned about 'trail braiding' from over unplanned use, illegal fire pits and garbage. We

Question 4		
What are the issues or concerns regarding land use you see for the BMBCL area today and/or want to avoid in the future?		
Form	Chat	Survey
	 "Development on all sides. Developers seem to be in charge. Concerned about #113 destroying habitat. Water quality degradation from storm runoff and development. Habitat destruction in general. Visual pollution from high rise buildings." Need to consider planning mechanisms for long-term maintenance and restoration of connectivity for wildlife (and trails) from the study site to natural areas (wildlife habitat) beyond the site, in the broader region. ? Nature Trust Lands? outdated suburban plan from the 1970s Yes, I noticed that the identified boundaries didn't include the 2016 additions to the WPA, labelling some of it as "Cox Lake Preservation Lands". 	 We want to promote connectivity between Sandy Lake and the Chebucto Peninsula. We don't want the park to become an island. There is an opportunity to connect the park with the Chebucto Peninsula along the 103. Some of the essential portages pass through private lands. Inappropriate or missing small watercraft launch sites. The proposed Highway 113 should be cancelled.

Question 5		
What are the issues or concerns regarding land use you see for the BMBCL		
area today and/or want to avoid in the future?		
Form	Chat	Survey
transparency accountability roles Stewardship of the trails Ecological integrity community stewardship Diversity all strategies are inclusive and considerate of all different communities Co-governance Equity evolve Inclusion Ecological integrity Stewardship of the trails Park land purchases Indigenous engagement vision Clear objectives Ecological integrity land purchases Evaluation and monitoring legal protection land purchases Ecological integrity Indigenous engagement strategies are inclusive Equity Inclusion inclusive and considerate	 Collaboration strong legal protection for biodiversity Sustainable funding Community groups input. Nothing happens without money, so consideration of where the necessary dollars and expertise to undertake this park is a key and practical consideration in determining the governance model. A single management authority, with common rules for different parts of the park, no mater who the owner is. Habitat protection. Planning! Good communications back to the community Community input. Planning Respect for volunteers 	 Strong legal framework that protects biodiversity and water quality We need to learn more about the current model at Rouge River. Volunteers need to play a role but the board needs to be more than advisoryI give the example of the current Western Commonpainfully slow moving. Collaboration with HRM, Parks Canada, Nature Trust and stakeholder groups. It may be a large board but sub-committees will need bodies from each entity. Accountability Resourced with Conservation Biologists, Foresters, Park Planners, Educators etc. being a part of the big picture. I see environmental integrity being the preferred lens through which all decisions are made, with Stewardship also playing a strong role. Respect for volunteersexpertise, time, personal financial costs, etc. are all key to success. Training is keystrategic plans, etc. Sustainable funding so time & effort are not spent on continually writing grants. Clear and agreed vision for conservation; measurable conservation objectives; collaborative, inclusive, and equitable arrangements; strong protection mechanism (not easily de-listed); identified authority; greater more-than-human-ecosystem approach; monitoring, enforcement and adaptive management; embrace Indigenous knowledge systems. Community group input from the Friends of BMBCL. Develop a plan. Both NS and Canada will soon have legislation requirements on Accessibility, which includes recreational areas. Which will you follow? There is the gold standard which is the Rick Hansen training as well. community stewardship We need clarification of the boundaries of the future park. It needs to be managed by a single authority, with reasonably uniform regulations.

APPENDIX B

Virtual Public Meeting Q&A



April 13, 2022 – BMBCL Virtual Public Meeting Questions and Answers

General (Q1 - Q7)

Q1: Is there a list of the "Key Participants" available?

A: A list of key participants was provided to Stantec by HRM. This list was used to invite identified representatives associated with different organizations / key stakeholder groups, for the session held in March and an updated list will be used in later sessions. The original list included representatives from the following organizations:

- Friends of Blue Mountain Birch Cove Lakes
- Canadian Parks and Wilderness Society
- Ecology Action Centre
- Halifax Field Naturalists
- Nature NS
- Sierra Club
- Leave No Trace Canada
- Bird Friendly Halifax
- Nature Conservancy Canada-NS
- Hike NS
- Woodens River Watershed Environmental Organization (WRWEO)
- BLT Rails to Trails
- Halifax North West Trails Association
- Maskwa Aquatic Club
- Kingswood Ratepayers Association
- Haliburton Highbury Homeowners Association
- NS Crown Share Land Legacy Trust
- NS Trails Federation
- Recreation NS
- Canoe Kayak NS
- Immigrant Settlement Association NS
- NS Communities Culture & Heritage (Parasport NS)
- Diversity with Nature (Dalhousie Univ)
- Canadian Association of Retired Persons (CARP)
- Nova Scotia Power
- Mi'kmaw Native Friendship Centre
- Confederacy of Mainland Mi'Kmaq
- Unama'ki Institute of Natural Resources
- Nova Scotia Nature Trust

Q2: Will the interim report be made public?

A: Yes, reports will be made available through the BMBCL Homepage.

Q3: Is there going to be a discussion about what we wish for the future for this park?

A: The national urban park project is in the pre-feasibility assessment phase and the current scope of work being undertaken by Stantec is to collect background information to inform further planning efforts within the Study Area. Stakeholder and public engagement on specific proposals identified with park development would potentially occur in subsequent phases of the national urban park initiative if there was a decision to proceed.

Q4: Will there not be another public session to look at the feedback and report?

A: For this stage of the pre-feasibility assessment, another general public session is not planned. The report will be made available on the BMBCL Homepage. Feedback can be submitted through the contact provided on the webpage.

Q5: Will these links be shared in a follow-up, not possible to copy URL.

A: Participants of the public meeting have received a follow-up email the following day with the links provided.

Q6: Will the presentation slides be available online?

A: Yes, presentation slides are available on the BMBCL Homepage.

Q7: What is the timeline for releasing your study results? Will this be a public document?

A: The complete background report is anticipated to be completed by Fall 2022. Yes, the study results will be a public document, made available on the BMBCL Homepage.

Recreation (Q8-Q11)

Q8: Why is hiking not on the list?

A: This was an oversight, and hiking has since been added to the list of recreational activities.

Q9: You made a comment about looking for other trails, rather than sanctioned trails. You do realize that there are NO official trails anywhere in BMBCL. Every existing trail needs to be carefully evaluated by certified trail planners and many will need to be closed off as they are creating huge environmental damage.

A: Yes, it is understood that there are no official trails within the Study Area. Trail planning is outside of the scope of the work being completed by Stantec; however, the existing environment information being collected will help inform future park planning.

Q10: What is the purpose of each question - This question will not capture what the public is doing and because no actual trails then certainly a lot of the public may want to use this nature area but can't due to mobility or access issues.

A: Stantec has developed questions around each of the pillars being considered in the background report, including recreation, environment, culture, land use and governance. Information provided in response to these questions will help inform the background conditions in the area as well as focus efforts for future exploration.

Q11: The activities that take place are knowable from many web sites - why would the knowledge of guests in this meeting have any value?

A: Information is being collected from a variety of sources to gain a holistic understanding of the current use of the BMBCL area. This includes online resources, engagement with key participants, as well as field data collection and mapping. The objective with carrying out a workshop open to all members of the general public was to provide an opportunity for individual feedback which may not necessarily get captured through the identified stakeholder organizations.

Environment/Ecological (Q12-Q13)

Q12: Where is DECC's Protected Areas and Nova Scotia Nature Trust? NS Environment own most of the land and the Nature Trust has and continues to play a significant conservation role.

A: These parties are both identified as key participants. Along with Parks Canada, the Halifax Regional Municipality, the Kwilmu'kw Maw-klusuagn Negotiation Office, the Province through DECC (Department of Environment & Climate Change) are involved in the pre-feasibility assessment, and the Nova Scotia Nature Trust have been invited to be involved in meetings to date. The following map identifies current provincial parks, wilderness areas and nature reserves:

https://www.novascotia.ca/parksandprotectedareas/plan/interactive-map/.

Q13: What are the intentions of BCBL in regard to the backcountry still owned privately?

A: It is Stantec's understanding that no decisions with respect to BMBCL backcountry have been made at this time.

Cultural/Archaeological (Q14-Q17)

Q14: Where will you be doing the testing (e.g., shovel testing)?

A: A field reconnaissance (archaeological survey or "walkover") of the Study Area will be undertaken in any potential areas of archaeological sensitivity or areas of elevated archaeological potential identified during the course of the historical background study and areas of modern disturbance within the Study Area. All work will be completed in compliance with Nova Scotia's Archaeological Resource Impact Assessment (Category C) Guidelines (2014) as well as the *Special Places Protection Act* (Chapter 438 of the Revised Statutes, 1989).

Q15: Re: "Are there known important / sensitive cultural elements that you would identify within the Study Area?" – Do historical areas count?

A: Yes.

Q16: Will you be consulting with Parks Canadas Indigenous stakeholders / Will more specific Mi'kmaq consultation happen after this public project?

A: Parks Canada is reaching out to local Indigenous communities to explore interests and opportunities to collaborate on the national urban parks program.

Additionally, prior to any designation of any candidate sites, a formal consultation process will also be implemented to ensure Indigenous people are partners in the designation process.

Q17: Can you expand on what you mean by cultural elements? How are you defining culture?

A: Cultural elements, or cultural resources, as defined in the Parks Canada Resource Management Policy means "a human work, an object, or a place that is determined, on the basis of its heritage value, to be directly associated with an important aspect or aspects of human history and culture. The heritage value of a cultural resource is embodied in tangible and/or intangible character-defining elements".

Land Use (Q18-Q19)

Q18: Does 'land use' include both pre- and post-colonial use?

A: The focus of the pre-feasibility study with respect to land use will be on current land use, including both developed and undeveloped land, and of settlement types in the Study Area and vicinity.

Q19: Will the Province and Halifax put the so called "shovel ready 2022" housing development on the Hwy 102 corridor on hold until this study and consultation are completed?

A: This is one area that has been selected for a study under the recent provincial announcement. Further determinations are to be about such studies.

APPENDIX C

Governance Model Factor Responses

What are important factors for good park management and governance?

- Diversity
- Secure funding
- Transparency
- Equity
- Relationship building
- Inclusion
- Transparency
- Public transparency
- Collaborative approach.
- Public participation
- Long term preservation
- Transparency
- Evidence-based ecological stewardship
- Community advisory group
- Legally designated as a protected area
- Capacity
- Transparency
- Co-management
- Long term preservation
- Protected in perpetuity
- Next-generation thinking
- Oversight
- Dollars to commit to project
- Collaboration
- Public participation
- Site knowledge
- Conservation-first
- Legally designated
- Public participation
- Legally designated
- Sustainable funding
- Dollars to commit to project
- Adequate parking and good protection for the area
- Public participation
- Security
- Co-management
- Funding
- Collaborative approach
- Funding
- Citizen members
- Citizen members
- Funding
- Need for central authority that can make day to day decisions without considerable consultation i.e., the authority is clear on its mandate and terms of reference
- Inter-governmental coordination
- Ecological stewardship
- Cooperation
- Conservation-first
- Public transparency
- Transparency
- Public participation

- Clarity of the roles of all the partners
- Free
- Cooperation
- Land purchases
- Transparency
- Should be similar to Keji
- On-going connection with the many publics that do and will have an interest in good management
- To date, public participation has been minimal to non-existent
- Listen to public input
- Yearly review by scientist
- Regular public input/feedback
- Ecological integrity #1 priority
- Should be similar to Keji
- Public transparency
- Co-management
- Yearly review by scientist
- Immediate trail management
- Public stewardship
- Public input
- Park development experience
- CPTED principals
- Industry representation
- Public consultation
- Public consultation
- Public consultation
- Connection with the many publics
- Monitoring
- Public participation
- Long-term planning
- Public stewardship
- Legally protected.
- Access links to community
- Collaborative approach
- Public involvement
- Funding
- Funding
- Science
- Citizen members
- Public Participation
- Ecological function
- Respecting the wilderness
- Inclusivity (all species)
- Strong guiding principals
- Connectivity with area
- Enforcement

APPENDIX D

Targeted Interview Meeting Notes



Meeting Notes

BMBCL: Targeted Interview Sessions

Торіс:	Discussions (Challenges & Opportunities / What We Heard)
Land Use and Settlement Analysis Summary	 There is a need to engage in planning of edges outside of the immediate park area. The BMBCL area has been faced with development pressure for many years and there are concerns of development pressure along all sides, abutting directly with the wilderness area. Development has outpaced park creation and park planning. There is a strong concern regarding the cumulative impact of development and cumulation of development pressure. Many participants agreed that conservation values should precede the planning of land for development and access at the interface and that an ecological lens should be used to view all development proposals at the park interface. Participants do not want development to affect view/soundscapes from within the park. In addition to view and noise impacts, there is concern for the creation of edge effects, heat island effects, loss of trees, water quality impacts, and wind effects. Participants suggested the consideration of future zoning restrictions on development in the periphery in addition to rationed height restrictions. There are opportunities to work with the development community to prove the benefits of nearby park access and have the private sector actively contribute to its design and development. A variety of planning tools should be considered including subdivision design, land dedication, service boundary limitations, density trading, new zoning designations,
	strategic and proactive land acquisition, and policy and regulatory incentives to
Governance Models Summary	 Example park governance models were shown to participants (five models: advisory committee, stewardship, third-party administration, partnership agreement (equal authorities), and partnership agreement (single authority)). Like the other pillars, ecological integrity was viewed as a guiding principle to park governance. Participants see conservation at the heart of governance and expect it to carry over into a vision for the park. Participants recognized the variety of governance options available, including opportunities to combine models, but did not endorse any one specifically, noting the difficulty in determining a model without the foundation of a park plan. The notion was that a proper governance model should know the collective goals and objectives for the BMBCL area before identifying the framework for governance. Participants saw value in a community-involved central authority, with a decision-making structure that avoids or limits politicization of decisions. A co-governance model involving the Mi'kmaq of Nova Scotia was identified as an opportunity and conduit for reconciliation. Diversity and inclusion should be fundamental to governance and management of the park. Governance and management should involve landowners; additionally, there is interest from stakeholder groups to be involved in capacities that include independent panels, advisory committees, and councils. A management agreement for the trail network is needed as soon as possible due to the number of informal and unplanned trails in existing and being created by different user groups
	- A major challenge will be organizing people and brining moving parts together: knowing
Archaeological and Cultural Resources Summary	 We heard a lot about the history of the area including its development history (quarries and sawmills) with a special thank you Don Gordon for the comprehensive history of the Riley Road area. We heard from almost every group about Mi'kmaq historical land use and the potential for the park to be a vehicle for bringing their voices to the forefront. We heard about more recent development of the area (Industrial onward).

APPENDIX B

Ecological and Recreational Current Conditions



Blue Mountain- Birch Cove Lakes Ecological and Recreational Current Conditions

June 21, 2023

Prepared for:

Halifax Regional Municipality

Prepared by:

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BLUE MOUNTAIN- BIRCH COVE LAKES ECOLOGICAL AND RECREATIONAL CURRENT CONDITIONS

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1.0 INTRODUCTION

This report contains background information about lands within the Blue Mountain-Birch Cove Lake (BMBCL) Study Area as identified therein. The purpose of the review of these lands is to support a possible future park plan over public lands that are owned by Halifax Regional Municipality (HRM) and Province of Nova Scotia, and the Nova Scotia Nature Trust, that would occur with the agreement of these landowners. Stantec has assessed ecological and recreational current conditions for the Study Area, in support of the prefeasibility assessment phase of the Parks Canada National Urban Parks program. The assessment of ecological conditions included a desktop component using a pre-existing EcoUnits habitat classification system (Cameron and Williams 2011), as requested by HRM, and a review of Atlantic Canada Conservation Data Centre (AC CDC) data for the Study Area and a 5-km radius around it. A field component was conducted to verify NS EcoUnits; survey a proposed corridor for Hwy 113 for appropriate locations to install wildlife crossings; and conduct wetland functional assessments. Incidental ecological points of interest were also recorded.

A description of recreational conditions collected during engagement programs is presented in Appendix A of this Comprehensive Study. Key issues and important environmental features identified by participants included: rare ecosystems, freshwater ecosystems, aquatic connectivity, wildlife habitat connectivity, ecological connectivity, water quality (degrading due to anthropogenic development such as construction runoff), and habitat for species of concern/at risk. There are a variety of both land and waterway-based activities currently enjoyed throughout the Study Area as well as several scenic areas favoured for their meditative qualities and to produce art and photography that are closely tied to areas of ecological value. This work was supplemented with desktop research and observations during the ecological field studies.

2.0 **BIODIVERSITY AND WILDLIFE HABITAT**

2.1 ECOUNIT VERIFICATION AND DESCRIPTIONS

Stantec was provided with NS Environment EcoUnit data for the Study Area from HRM, and a metadata document that listed the various codes used within the system (Appendix A). The EcoUnit system (Cameron and Williams 2011) incorporates biotype, drainage, and topography into a code for individual polygons. Within the metadata document, biotype includes the following 12 coarse habitats:

- SWD: softwood forest
- HWD: hardwood forest
- MWD: mixedwood forest
- CST: coast
- FWA: open fresh water
- OBA: open barren
- SBG: shrub bog


- TBG: treed bog
- SFE: shrub fen
- URB: urban
- XWD: unknown
- FWT: water

Although the Biotype codes are defined in the metadata as listed above, the individual biotypes are not described beyond a basic definition, nor are they described in Cameron and Williams (2011). The EcoUnit system also includes five drainage classes and ten topography classes.

2.1.1 Methods

Stantec biologists visited 27 of the mapped NS EcoUnit polygons to describe the dominant vegetation. Forest types were identified and inventoried based on the overall percent cover of dominant tree and shrub species. Transitions to other EcoUnit types were marked as they were encountered while staff were moving through the Study Area, particularly where they differed from the boundaries provided in the EcoUnit data (Figure 2.1).

The field assessment of EcoUnits focused on the biotype component of the EcoUnit because prior to refinement based on field observations, there were nearly 100 EcoUnits within the Study Area, many without defined drainage or texture classes.

All waterbodies within the Study Area were reclassified as FWT (water) instead of FWA (open fresh water, presumably referring to wetlands). Areas that were mapped as upland areas within the EcoUnit database but that are part of the provincially mapped wetlands datasets, including Wetlands of Special Significance (WSS), were reclassified as wetlands within the EcoUnit spatial dataset, and biotypes updated. As there is no biotype that refers to forested wetlands, those have been lumped with treed bogs (TBG), to reflect the fact that they are wetlands with trees.

Two additional EcoUnit Biotypes, rocky barren (RBA) and HED, were discovered within the GIS data for the project but not included in the metadata for EcoUnits. It is assumed that the RBA Biotype stands for rocky barren. A single EcoUnit within the Study Area had the biotype HED. This may have intended to be HWD, but the EcoUnit corresponded to a Nova Scotia Department of Natural Resources and Renewables -mapped marsh wetland and was reclassified to FWA.

In general, use of the EcoUnit system presented a number of classification challenges and limitations when compared with standard habitat classification systems routinely used by Stantec.





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2.1.2 Results

Table 2.1 outlines the amounts of each EcoUnit (to Biotype) within the Study Area following the adjustment of EcoUnit data based on field observations and other existing spatial data. Adjusted EcoUnit Biotype polygons are illustrated in Figure 2.2.

EcoUnit Biotype	Number of Polygons	Area (ha)	% Within Study Area
SWD: Softwood Forest	68	1,430.51	44.2
HWD: Hardwood Forest	17	194.31	6.0
MWD: Mixedwood Forest	20	336.77	10.4
OBA: Open Barren	5	269.79	8.3
RBA: Rocky Barren	13	289.00	8.9
FWA: Open Fresh Water (Wetland)	30	34.58	1.1
SBG: Shrub Bog (Wetland)	27	48.41	1.5
SFE: Shrub Fen (Wetland)	21	59.85	1.8
TBG: Treed Bog (Wetland, and Forested Wetlands)	27	41.32	1.3
URB: Urban	17	79.41	2.5
XWD: Unknown	4	17.89	0.6
FWT: Water	47	434.48	13.4
Total	284	3,236.32	100.0

 Table 2.1
 Number, Area, and Percentage of EcoUnit Biotypes within the Study Area





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Softwood Forest (SWD) is the most prevalent EcoUnit within the Study Area, representing approximately 44% of the Study Area. It is found throughout but is most concentrated within the northwestern end of the Study Area. Most softwood stands are dominated by balsam fir (*Abies balsamea*) and white spruce (*Picea glauca*). Mature eastern white pine (*Pinus strobus*) stands with lesser amounts of white spruce and balsam fir are located in the northwestern portion of the Study Area.

Hardwood Forest (HWD) EcoUnits, which represent approximately 6% of the Study Area, are concentrated in the eastern end, apart from a stand located between Maple Lake and Upper Sheldrake Lake. Hardwood stands are largely dominated by red oak (*Quercus rubra*). Sugar maple (*Acer saccharum*), red maple (*A. rubrum*), American beech (*Fagus grandifolia*), and white birch (*Betula papyrifera*) are also common in hardwood stands within the Study Area.

Mixedwood Forest (MWD) EcoUnits are scattered throughout, representing 10% of the Study Area. Many mixedwood stands were dominated by red maple and balsam fir, though spruce, sugar maple, eastern white pine, white birch, and occasionally red oak were also common. Eastern hemlock (*Tsuga canadensis*), yellow birch (*Betula alleghaniensis*), and American beech were noted within a mixedwood stand near the northern extent of the Study Area.

Open Barren (OBA) and RBA EcoUnits are habitat types that contain several suites of species. Together they represent 17% of the Study Area. Overall, the dominant species present in the OBA and RBA EcoUnits were similar. These EcoUnits largely differed in the amount of exposed rock, with more exposed rock in the RBA EcoUnits. Although detailed surveys were not completed, most barren areas within the Study Area appear to correspond to either the S3 (Mixed Tall Shrubland) or S5 (Sheep Laurel Inland Heath) barrens type as described in Porter et al. (2020). Sparse and stunted balsam fir, white spruce, and red maple are common tree species within the EcoUnits, found growing between rock outcrops, with occasional stunted eastern white pine in some areas. The shrub layer is dominated by northern wild raisin (*Viburnum nudum*), sheep laurel (*Kalmia angustifolia*), and common winterberry (*Ilex verticillata*). One area of RBA within the northeastern portion of the Study Area differed from other barrens sites in that it was dominated by black huckleberry (*Gaylussacia baccata*) in the shrub layer, and likely represented the S1 (Black Huckleberry Heath) barrens type (Porter et al. 2020). A more detailed study of the barrens areas within the Study Area is recommended.

Open Fresh Water (FWA) EcoUnits are marshes that are largely associated with the many waterbodies and watercourses present and account for 1% of the Study Area. These wetlands are dominated by graminoids and other non-woody vegetation.

Shrub bog (SBG) and shrub fen (SFE) EcoUnits are peat wetlands dominated by ericaceous shrubs. Typically, besides their shrub cover, bogs are dominated by sphagnum mosses and fens are dominated by sedges. Bogs are usually ombrotrophic while fens are associated with ground or surface water flows, though these two wetland types often grade into one another. Each of these EcoUnits accounts for less than 2% of the Study Area.



Treed Bog (TBG) EcoUnits include areas similar to shrub bogs but with stunted, scattered trees, and also forested wetlands that do not have their own EcoUnit class. These forested wetlands are typically dominated by black spruce (*Picea mariana*), red maple, balsam fir, and tamarack (*Larix laricina*). Cinnamon fern (*Osmundastrum cinnamomeum*) and various wetland sedges (*Carex* spp.) are common. This EcoUnit accounts for only 1.3% of the Study Area; it is likely that many forested wetlands are not accounted for, as they are difficult to differentiate from upland forest using aerial photography, and many would not have been visited during field surveys.

Urban (URB) EcoUnits are composed of transmission lines, expanding commercial/industrial areas (primarily in the southeastern part of the Study Area), and new residential areas.

Unknown (XWD) EcoUnits represent a small proportion of the Study Area (less than 1%) where the habitat type is not known, typically in areas that have been recently harvested or were not visited during field surveys.

Water (FWT) EcoUnits account for approximately 13% of the Study Area. Water EcoUnit polygons are found throughout and range in size from a few square metres to nearly 132 ha (Birch Cove Lakes).

2.2 ECOLOGICALLY SIGNIFICANT AND SENSITIVE AREAS

Much of the Study Area falls within the Blue Mountain – Birch Cove Lakes Wilderness Area, a provincially protected area 1,767 ha in size (NSECC n.d.) (Figure 2.3). This protected area provides a variety of habitats for wildlife species amidst a densely populated region of Nova Scotia.

Data were requested from AC CDC for the Study Area and a 5-km radius surrounding it. The data returned for this area includes 23 Species at Risk (SAR, i.e., species listed by the federal *Species at Risk Act*, the Nova Scotia *Endangered Species Act*, or by COSEWIC [Committee on the Status of Endangered Wildlife in Canada]) and 61 Species of Conservation Concern (AC CDC 2022a) (Figure 2.3). Table 2.2 outlines those SAR known to occur within 5 km of the Study Area and lists their preferred EcoUnit Biotype(s). Species data in Table 2.2 is from AC CDC (2022a), Stantec (2021), and Nova Scotia Nature Trust (NSNT 2019). Bolded species have records within the Study Area. The full AC CDC report is included in Appendix B.





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Scientific Name	Common Name	COSEWIC Status	SARA Status	NS ESA Status	AC CDC Rank ¹	Record Source	Preferred EcoUnit Biotype
Birds					•		
Cardellina canadensis ²	Canada Warbler	Special Concern	Threatened	Endangered	S3B	AC CDC, NSNT	Mixedwood Forest, Treed Bog (Forested Wetland)
Chordeiles minor	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	AC CDC	Urban, Rocky Barren, Unknown (Recently Harvested)
Coccothraustes vespertinus	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	AC CDC	Softwood Forest, Mixedwood Forest
Contopus cooperi	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	AC CDC, Stantec	Softwood Forest or Mixedwood Forest adjacent to Open Fresh Water (Wetland), Water, Shrub Bog, or Shrub Fen
Contopus virens	Eastern Wood- Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	AC CDC	Softwood Forest, Mixedwood Forest
Dolichonyx oryzivorus	Bobolink	Threatened	Threatened	Vulnerable	S3B	AC CDC	None
Euphagus carolinus	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	AC CDC	Softwood Forest near Water
Falco peregrinus pop. 1	Peregrine Falcon – anatum/tundrius pop.	Not at Risk	Special Concern	Vulnerable	S1B,SUM	AC CDC	Urban
Hirundo rustica	Barn Swallow	Special Concern	Threatened	Endangered	S3B	AC CDC	Urban
Riparia riparia	Bank Swallow	Threatened	Threatened	Endangered	S2B	AC CDC	Urban, Water
Fish				-	•		
Salmo salar pop. 6	Atlantic Salmon - Nova Scotia Southern Upland population	Endangered	_3	-	S1	AC CDC	Water

Table 2.2Species at Risk Known to Occur Within 5 km of the Study Area



Scientific Name	Common Name	COSEWIC Status	SARA Status	NS ESA Status	AC CDC Rank ¹	Record Source	Preferred EcoUnit Biotype
Herpetiles							
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	AC CDC	Water, Open Fresh Water (Wetland)
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	Threatened	S2	AC CDC	Water, Open Fresh Water (Wetland)
Invertebrates							
Bombus bohemicus	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	AC CDC	Softwood Forest, Urban, Unknown (Meadows)
Bombus terricola	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	AC CDC	Softwood Forest, Hardwood Forest, Mixedwood Forest, Open Fresh Water (Wetland), Urban
Danaus plexippus	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	AC CDC	Open Fresh Water (Wetland), Urban
Mammals							
Myotis lucifugus, Myotis septentrionalis, or Perimyotis subflavus	Bat Hibernaculum or Bat Species Occurrence	Endangered	Endangered	Endangered	S1S2	AC CDC	Softwood Forest, Hardwood Forest, Mixedwood Forest
Vascular Plants							
Crocanthemum canadense	Long-branched Frostweed	-	-	Endangered	S1S2	AC CDC	Softwood Forest, Hardwood Forest, Mixedwood Forest, Urban
Juglans cinerea	Butternut	Endangered	Endangered	-	SNA	AC CDC	Hardwood Forest, Mixedwood Forest
Thuja occidentalis	Eastern White Cedar	-	-	Vulnerable	S2S3	AC CDC	Softwood Forest, Mixedwood Forest

Table 2.2Species at Risk Known to Occur Within 5 km of the Study Area



Table 2.2	Species at Risk Known to Occur Within 5 km of the Study Area
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Scientific Name	Common Name	COSEWIC Status	SARA Status	NS ESA Status	AC CDC Rank ¹	Record Source	Preferred EcoUnit Biotype
Non-Vascular Plant	S						
Pectenia plumbea	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	AC CDC, Stantec	Hardwood Forest, Mixedwood Forest, Treed Bog (Forested Wetland)
Fuscopannaria leucosticta	White-rimmed Shingle Lichen	Threatened	-	-	S3	AC CDC	Hardwood Forest, Mixedwood Forest, Treed Bog (Forested Wetland)
Erioderma pedicellatum (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	AC CDC	Softwood Forest, Mixedwood Forest, Treed Bog (Forested Wetland)
 ¹ S1 = Critically Imperiled, S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure, S5 = Secure, SNA = Not Applicable (AC CDC 2022b) ² Bolded records indicate species that have been observed within the Study Area ³ No status 							



The majority of SAR and SOCC AC CDC records that have been observed within the Study Area have been found in the southeastern portion, particularly in the Kearney Lake and Charlies Lake area, as well as around Birch Cove Lakes (Figure 2.3). This may reflect that more surveys have been conducted in this area relative to other portions of the Study Area and does not necessarily indicate a lower ecological value in other areas. Surveys conducted within the Nova Scotia Nature Trust Blue Mountain Wilderness Connector (NSNT-owned land located at the northwestern extent of the Study Area, Figure 2.3) noted several vascular plant and lichen SOCC records that were not included in the AC CDC data. These previously unrecorded species included blue felt lichen (*Pectenia plumbea*), a lichen SAR that was included in the AC CDC data, but only known from outside the Study Area (Stantec 2021).

Other scientific studies have been carried out within the Study Area, including a Bioblitz 2009, a 24-hour taxonomic survey carried out by multiple scientists that occurred June 5-6, 2009, and was organized by Saint Mary's University. During this study, a new fungal genus (*Trifoliellum*, type species *Trifoliellum bioblitzii*) and a separate new fungal species (*Legeriosimilis halifaxensis*) were observed (Strongman and White 2011).

2.3 ECOSYSTEM SERVICES

2.3.1 Wetland Functional Assessment

The function of 17 wetlands within the Study Area were assessed using the Wetland Ecosystems Services Protocol for Atlantic Canada (WESP-AC): Non-Tidal Wetlands assessment form (NBDELG 2018). Five representative wetlands were selected to discuss function of a range of wetland types from across the Study Area (Figure 2.4). This method includes both a field form completed during a site visit and an office form completed using GIS (Geographic Information Services). Together the results of these assessments calculate scores for different wetland functions and attributes:

- Water storage and delay
- Stream flow support
- Water cooling
- Sediment retention and stabilization
- Phosphorus retention
- Nitrate removal and retention
- Carbon sequestration
- Organic nutrient export
- Anadromous fish habitat
- Resident fish habitat
- Aquatic invertebrate habitat
- Amphibian and turtle habitat
- Waterbird feeding habitat
- Waterbird nesting habitat
- Songbird, raptor, and mammal habitat
- Pollinator habitat
- Native plant habitat
- Public use and recognition



- Wetland sensitivity
- Wetland ecological condition
- Wetland stressors

Within the WESP-AC assessment, the scores for these functions are ranked as lower, moderate, or higher, based on their relationship to a set of regional calibration wetlands within Nova Scotia. This work informs a qualitative high-level ecosystem service analysis related to climate change mitigation and adaptation. Other ecosystem functions discussed include the general function of surface water and community use and enjoyment of the lands and their potential implications for climate change mitigation and adaptation, including public education.

The Interpretation Tool is an objective tool created by NSECC (Nova Scotia Department of Environment and Climate Change) and built into the WESP-AC assessment that uses the results of the WESP-AC Functional Assessment to determine whether the wetland is a Wetland of Special Significance (WSS). This is one of many ways for a WSS to be classified, and NSECC uses this information to help inform application decisions. Many of the provincially mapped wetlands within the Study Area are included within the provincial WSS layer, including wetlands within each of the EcoUnit wetland biotypes (SFE, SBG, TBG, and FWA), and three of the five representative wetlands discussed below. However, none of the representative wetlands analyzed for this Project were determined to be WSS by the WESP-AC Interpretation Tool.





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2.3.1.1 WL1 – Functional Assessment

This section presents the results generated from the WESP-AC Interpretation Tool for WL1 (Table 2.3). WL1 (44.72105, -63.79777) is a fen not previously classified by the province as a WSS nor was it reclassified as a WSS by the Interpretation Tool of the WESP-AC. The results of this functional assessment indicate that WL1 scores higher for stream flow support, waterbird feeding habitat, waterbird nesting habitat, and pollinator habitat, which can be attributed to the wetland being a lacustrine wetland to Flat Lake. The open water of the fen formed a disconnected channel with water pooled over sphagnum moss.

Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Water Storage & Delay (WS)	0.67	Lower	6.09	Moderate
Stream Flow Support (SFS)	5.86	Higher	4.97	Moderate
Water Cooling (WC)	3.60	Moderate	2.34	Moderate
Sediment Retention & Stabilization (SR)	2.26	Lower	0.00	Lower
Phosphorus Retention (PR)	1.73	Lower	0.00	Lower
Nitrate Removal & Retention (NR)	2.38	Lower	10.00	Higher
Carbon Sequestration (CS)	4.71	Moderate		
Organic Nutrient Export (OE)	7.42	Moderate		
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower
Aquatic Invertebrate Habitat (INV)	0.33	Lower	5.00	Moderate
Amphibian & Turtle Habitat (AM)	2.98	Lower	7.41	Higher
Waterbird Feeding Habitat (WBF)	9.29	Higher	10.00	Higher
Waterbird Nesting Habitat (WBN)	7.37	Higher	10.00	Higher
Songbird, Raptor, & Mammal Habitat (SBM)	7.49	Moderate	10.00	Higher
Pollinator Habitat (POL)	8.27	Higher	10.00	Higher
Native Plant Habitat (PH)	3.14	Lower	7.79	Moderate
Public Use & Recognition (PU)			7.77	Higher
Wetland Sensitivity (Sens)			4.90	Moderate
Wetland Ecological Condition (EC)			3.04	Lower
Wetland Stressors (STR) (higher score means more stress)			4.34	Moderate

Table 2.3 WESP-AC Function and Benefits Score Results – WL1



Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Summary Ratings for Grouped Functions:				
HYDROLOGIC Group	0.67	Lower	6.09	Moderate
WATER QUALITY SUPPORT Group	3.74	Moderate	6.67	Moderate
AQUATIC SUPPORT Group	5.86	Higher	4.55	Moderate
AQUATIC HABITAT Group	6.61	Higher	7.74	Higher
TRANSITION HABITAT Group	7.28	Higher	9.63	Higher
WETLAND CONDITION			3.04	Lower
WETLAND RISK (average of Sensitivity & Stressors)			4.62	Moderate

Table 2.3 WESP-AC Function and Benefits Score Results – WL1

2.3.1.2 WL8 – Functional Assessment

This section presents the results generated from the WESP-AC Interpretation Tool for WL8 (Table 2.4). WL8 (44.69410, -63.78481) is a shrub swamp classified by the province as a WSS, but not classified as a WSS by the Interpretation Tool of the WESP-AC. The results of this functional assessment indicate the wetland scores higher for stream flow support, organic nutrient export, amphibian and turtle habitat, waterbird feeding habitat, and waterbird nesting habitat which can be attributed to the wetland being a lacustrine wetland associated with a small waterbody north of Maple Lake.

Table 2.4 WESP-AC Interpretation Tool Results – WL8

Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Water Storage & Delay (WS)	1.24	Lower	3.05	Lower
Stream Flow Support (SFS)	6.90	Higher	5.47	Moderate
Water Cooling (WC)	4.50	Moderate	3.29	Moderate
Sediment Retention & Stabilization (SR)	4.09	Moderate	7.56	Higher
Phosphorus Retention (PR)	4.14	Moderate	7.29	Higher
Nitrate Removal & Retention (NR)	3.73	Moderate	10.00	Higher
Carbon Sequestration (CS)	3.73	Moderate		
Organic Nutrient Export (OE)	8.71	Higher		
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower
Aquatic Invertebrate Habitat (INV)	5.30	Moderate	5.14	Moderate
Amphibian & Turtle Habitat (AM)	7.74	Higher	6.21	Higher
Waterbird Feeding Habitat (WBF)	7.64	Higher	10.00	Higher
Waterbird Nesting Habitat (WBN)	8.67	Higher	10.00	Higher



Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Songbird, Raptor, & Mammal Habitat (SBM)	5.52	Moderate	10.00	Higher
Pollinator Habitat (POL)	6.73	Moderate	10.00	Higher
Native Plant Habitat (PH)	5.02	Moderate	6.79	Moderate
Public Use & Recognition (PU)			6.45	Higher
Wetland Sensitivity (Sens)			3.87	Lower
Wetland Ecological Condition (EC)			6.52	Higher
Wetland Stressors (STR) (higher score means more stress)			5.34	Moderate
Summary Ratings for Grouped Functions:				
HYDROLOGIC Group	1.24	Lower	3.05	Lower
WATER QUALITY SUPPORT Group	4.03	Moderate	9.14	Higher
AQUATIC SUPPORT Group	7.53	Higher	5.06	Moderate
AQUATIC HABITAT Group	6.74	Higher	7.62	Higher
TRANSITION HABITAT Group	6.24	Moderate	9.47	Higher
WETLAND CONDITION			6.52	Higher
WETLAND RISK (average of Sensitivity & Stressors)			4.60	Moderate

Table 2.4 WESP-AC Interpretation Tool Results – WL8

2.3.1.3 WL13 – Functional Assessment

This section presents the results generated from the WESP-AC Interpretation Tool for WL13 (Table 2.5). WL13 (44.68147, -63.71081) is a treed bog classified by the province as a WSS, but not classified as a WSS by the Interpretation Tool of the WESP-AC. The results of this functional assessment indicate the wetland scores higher for water storage and delay, nitrate removal and retention, and carbon sequestration which can be attributed to the wetland being composed of deep decomposing peat to the east of Ash Lake.

 Table 2.5
 WESP-AC Interpretation Tool Results – WL13

Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Water Storage & Delay (WS)	9.08	Higher	3.21	Lower
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower
Water Cooling (WC)	0.00	Lower	0.00	Lower
Sediment Retention & Stabilization (SR)	5.73	Moderate	0.91	Lower
Phosphorus Retention (PR)	4.99	Moderate	0.86	Lower
Nitrate Removal & Retention (NR)	10.00	Higher	10.00	Higher



Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Carbon Sequestration (CS)	7.57	Higher		
Organic Nutrient Export (OE)	7.11	Moderate		
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower
Aquatic Invertebrate Habitat (INV)	4.29	Moderate	0.61	Lower
Amphibian & Turtle Habitat (AM)	0.94	Lower	4.26	Moderate
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower
Songbird, Raptor, & Mammal Habitat (SBM)	6.67	Moderate	10.00	Higher
Pollinator Habitat (POL)	5.69	Moderate	10.00	Higher
Native Plant Habitat (PH)	4.31	Moderate	6.84	Moderate
Public Use & Recognition (PU)			7.97	Higher
Wetland Sensitivity (Sens)			6.27	Moderate
Wetland Ecological Condition (EC)			3.04	Lower
Wetland Stressors (STR) (higher score means more stress)			6.56	Higher
Summary Ratings for Grouped Functions:				
HYDROLOGIC Group	9.08	Higher	3.21	Lower
WATER QUALITY SUPPORT Group	8.54	Higher	6.96	Higher
AQUATIC SUPPORT Group	4.98	Moderate	0.40	Lower
AQUATIC HABITAT Group	0.57	Lower	2.55	Moderate
TRANSITION HABITAT Group	6.11	Moderate	9.47	Higher
WETLAND CONDITION			3.04	Lower
WETLAND RISK (average of Sensitivity & Stressors)			6.41	Moderate

Table 2.5 WESP-AC Interpretation Tool Results – WL13

2.3.1.4 WL15 – Functional Assessment

This section presents the results generated from the WESP-AC Interpretation Tool for WL15 (Table 2.6). WL15 (44.68959, -63.71484) is a shrub swamp classified by the province as a WSS, but not classified as a WSS by the Interpretation Tool of the WESP-AC. The results of this functional assessment indicate the wetland scores higher for stream flow and delay, organic nutrient export, waterbird nesting habitat, and songbird, raptor, and mammal habitat which can be attributed to the wetland being lacustrine wetland to a waterbody south of Hobsons Lake.



Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Water Storage & Delay (WS)	0.48	Lower	3.05	Lower
Stream Flow Support (SFS)	6.90	Higher	5.15	Moderate
Water Cooling (WC)	4.50	Moderate	3.29	Moderate
Sediment Retention & Stabilization (SR)	2.02	Lower	7.71	Higher
Phosphorus Retention (PR)	3.99	Moderate	7.29	Higher
Nitrate Removal & Retention (NR)	2.30	Lower	10.00	Higher
Carbon Sequestration (CS)	3.78	Moderate		
Organic Nutrient Export (OE)	8.32	Higher		
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower
Aquatic Invertebrate Habitat (INV)	2.13	Lower	4.99	Moderate
Amphibian & Turtle Habitat (AM)	5.74	Moderate	6.98	Higher
Waterbird Feeding Habitat (WBF)	6.43	Moderate	10.00	Higher
Waterbird Nesting Habitat (WBN)	6.80	Higher	10.00	Higher
Songbird, Raptor, & Mammal Habitat (SBM)	8.78	Higher	10.00	Higher
Pollinator Habitat (POL)	7.94	Moderate	10.00	Higher
Native Plant Habitat (PH)	4.00	Moderate	8.07	Higher
Public Use & Recognition (PU)			7.32	Higher
Wetland Sensitivity (Sens)			3.44	Lower
Wetland Ecological Condition (EC)			3.04	Lower
Wetland Stressors (STR) (higher score means more stress)			5.03	Moderate
Summary Ratings for Grouped Functions:				
HYDROLOGIC Group	0.48	Lower	3.05	Lower
WATER QUALITY SUPPORT Group	3.51	Moderate	9.17	Higher
AQUATIC SUPPORT Group	6.89	Higher	4.81	Moderate
AQUATIC HABITAT Group	5.30	Moderate	7.70	Higher
TRANSITION HABITAT Group	7.84	Higher	9.68	Higher
WETLAND CONDITION			3.04	Lower
WETLAND RISK (average of Sensitivity & Stressors)			4.24	Lower

Table 2.6 WESP-AC Interpretation Tool Results – WL15



2.3.1.5 WL17 – Functional Assessment

This section presents the results generated from the WESP-AC Interpretation Tool for WL17 (Table 2.7). WL17 (44.69416, -63.72233) is a shrub swamp to the west of Hobsons Lake not previously classified by the province as a wetland of special significance (WSS) nor reclassified by the WESP-AC as a WSS. The results of this functional assessment indicate the wetland scores higher for water storage and delay and nitrate removal and retention. This wetland was partially cleared of shrubs and trees along the power utility right-of-way which is likely the reason this wetland has overall lower scores than the others in the reference group.

Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Water Storage & Delay (WS)	8.80	Higher	3.05	Lower
Stream Flow Support (SFS)	0.00	Lower	0.00	Lower
Water Cooling (WC)	0.00	Lower	0.00	Lower
Sediment Retention & Stabilization (SR)	4.30	Moderate	0.91	Lower
Phosphorus Retention (PR)	4.39	Moderate	0.86	Lower
Nitrate Removal & Retention (NR)	10.00	Higher	10.00	Higher
Carbon Sequestration (CS)	3.58	Moderate		
Organic Nutrient Export (OE)	5.41	Moderate		
Anadromous Fish Habitat (FA)	0.00	Lower	0.00	Lower
Resident Fish Habitat (FR)	0.00	Lower	0.00	Lower
Aquatic Invertebrate Habitat (INV)	3.75	Moderate	0.18	Lower
Amphibian & Turtle Habitat (AM)	0.11	Lower	3.87	Moderate
Waterbird Feeding Habitat (WBF)	0.00	Lower	0.00	Lower
Waterbird Nesting Habitat (WBN)	0.00	Lower	0.00	Lower
Songbird, Raptor, & Mammal Habitat (SBM)	5.57	Moderate	10.00	Higher
Pollinator Habitat (POL)	6.27	Moderate	10.00	Higher
Native Plant Habitat (PH)	2.81	Lower	6.68	Moderate
Public Use & Recognition (PU)			3.11	Moderate
Wetland Sensitivity (Sens)			10.00	Higher
Wetland Ecological Condition (EC)			3.04	Lower
Wetland Stressors (STR) (higher score means more stress)			6.56	Higher

Table 2.7 WESP-AC Interpretation Tool Results – WL17



Wetland Functions or Other Attributes:	Function Score (Normalized)	Function Rating	Benefits Score (Normalized)	Benefits Rating
Summary Ratings for Grouped Functions:				
HYDROLOGIC Group	8.80	Higher	3.05	Lower
WATER QUALITY SUPPORT Group	7.79	Higher	6.96	Higher
AQUATIC SUPPORT Group	3.85	Moderate	0.12	Lower
AQUATIC HABITAT Group	0.07	Lower	2.32	Moderate
TRANSITION HABITAT Group	5.58	Moderate	9.45	Higher
WETLAND CONDITION			3.04	Lower
WETLAND RISK (average of Sensitivity & Stressors)			8.28	Higher

Table 2.7 WESP-AC Interpretation Tool Results – WL17

2.3.1.6 Summary

Five representative wetlands (WL1, WL8, WL13, WL15, and WL17) were selected to present the results of the functional assessments. Each wetland had differentiating levels of higher functional scores in different areas, which attests to the importance of each wetland being assessed individually. All five wetlands had either a higher function of water storage and delay or the stream flow support indicating these wetlands can manage fluctuations in water levels and potentially help to offset flooding. None were identified as WSS from the Interpretation Tool, even though three were previously identified as WSS by NSECC.

2.3.2 Climate Change

Wetlands provide ecosystem services that are key components of climate change mitigation and adaptation. The WESP-AC functional assessments can be used to evaluate which wetlands have a higher function in areas that could mitigate some of the effects of climate change. The functional abilities of wetland ecosystem services in the hydrological and carbon cycle are especially of interest to researchers.

Functions such as water storage and delay, stream flow support, and water cooling can mitigate changes in temperature and precipitation by slowing and storing floodwaters and snow melt and recharging groundwater, which may result from climate change. Wetlands which discharge to watercourses can help to maintain water levels during periods of reduced surface and groundwater input into the channel. Fish habitat may benefit from reducing the fluctuation of water levels. Watersheds which have a high proportion of wetlands and lakes can reduce flooding effects as severe weather events grow more common. Within the Study Area several wetlands serve as lacustrine wetlands helping mitigate during times of high-water conditions of the adjacent lakes, storing the excess water.



Carbon sequestration abilities of a wetland varies depending on wetland functions. Forested wetlands such as WL13 (treed bog) sequester carbon with the tree biomass but most wetlands store most of the carbon in peaty soils. Wetlands which are undisturbed sequester carbon but wetlands which have been disturbed can become carbon emitters. A minimum vegetative cover of 55% is required for a wetland to become a carbon sink (Valach et al. 2021). Undisturbed wetlands can sequester carbon over the long term due to slow decomposition and high primary productivity.

Understanding the functions of wetlands within the Study Area, especially those which have higher scores in a greater number of ecosystem services is key to effective resource management. Management targeted at maximizing carbon sequestration through vegetation management and minimizing disturbances is of importance when developing recreational infrastructure such as information centers and trail systems.

In addition to wetlands, several waterbodies are present in the Study Area. In 2021, a water quality survey was undertaken by a group of volunteers of 21 lakes within the conceptual boundary of the BMBCL area (Gordon et al. 2021). Based on previous studies, in general, the water quality of the lakes appears excellent; however, lakes in the lower part of the Kearney Run Watershed (i.e., Susies, Quarry, Washmill and Kearney Lakes) are currently the most affected by adjacent development (Gordon et al. 2021). Surface water resources support aquatic life, wildlife ecosystems, and recreational uses in the area. As discussed through engagement efforts in support of this project, waterbodies in the Study Area are enjoyed by the local communities for the purposes of swimming, canoeing, foraging, skating and cross-country skiing. These ecosystem functions, on land and in the water, can be affected by climate change. This can occur through changes in the freeze thaw pattern, the number of degree-growing days, and changes in the water table (Parks Canada 2018). Heavier precipitation events can lead to more erosion, which can impact trails and overall enjoyment of the area. Also, new forest pests and increases in existing populations (e.g., ticks), may be cause for concern and/or changes in management practices (Nova Scotia Zoonotic Diseases Technical Working Group 2021). Due in part to climate change, infectious diseases carried by insect vectors (e.g., Lyme disease) are becoming increasingly common in Canada (Climate Atlas of Canada n.d., Government of Canada 2022). Mitigation for climate change is a regional, national, and global undertaking. Specific mitigation (adaptation) for some of the effects of climate change as it pertains to the ecological functioning and use and enjoyment of the lands of BMBCL would include monitoring of physical changes (such as changes in hydrology, changes in wildlife, changes in invasive or harmful species) and education regarding these changes and incorporation of findings into regional research initiatives on effects of climate change.



3.0 ECOLOGICAL CONNECTIVITY POTENTIAL

Wildlife crossing surveys were conducted within and adjacent to the proposed Hwy 113 right-of-way (RoW) that bisects the Study Area. Areas which would best support the installation of wildlife corridors (e.g., wildlife underpasses and overpasses) in their current state were recorded. Evidence of wildlife use such as animal paths, scat, and tracks were noted as well as any topographical restrictions to movement. Areas in which pinch points or funnels for wildlife movement occurred, such as large watercourses and steep rock outcrops, were identified. Habitat types with increased suitability for different wildlife species were also recorded. Though the Study Area is within a Mainland Moose Concentration Area, no evidence of moose was noted during field surveys, and Nova Scotia Department of Natural Resources and Renewables has indicated that they have no evidence that a moose population exists within the Study Area (EDM 2006).

Connectivity within the Study Area, should Hwy 113 be constructed at the currently proposed location, can be mitigated with a large and series of small mammal wildlife underpasses paired with fencing. One large mammal underpass would be sufficient for the length of the proposed Hwy 113 right-of-way with several small mammal underpasses integrated at drainage culvert locations. A large mammal wildlife underpass would be best suited for integration with a watercourse crossing that currently facilitates a natural funneling of wildlife movement. During field surveys one watercourse showed evidence of wildlife funneling, an unnamed watercourse north of Frasers Lake (44.686773, -63.769085). Given the constriction of wildlife movement via the lake system to the south and the width (up to 10 m) and depth (up to 5 m) of the watercourse, this area is naturally ideal to continue to facilitate wildlife movement as the watercourse begins to run perpendicular to the proposed RoW (Figure 3.1).

The proposed Hwy 113 could impact fish passage which can be mitigated by using the proper culvert installations. Open-bottom culverts or bridges are the best structures to pass fish through a road corridor. The open bottom allows for the watercourse to maintain its natural bottom substrate, maintaining that habitat for fish use. It also removes the risk of a culvert becoming hanging due to improper installation or undercutting beneath the structure which could result in this section of the watercourse becoming impassible to fish. Closed-bottom culverts are recommended for drainage channels that are not fish bearing.

Terrestrial connectivity outside the boundaries of Study Area is limited due to several natural and human influenced constraints. To the southwest of the Study Area is the expansive Five Bridge Lakes Wilderness Area; however, a series of waterbodies including lake systems connected by wide deep watercourses make it challenging for terrestrial mammals to cross (Figure 3.1). To the south and west of the lake system there are expanding subdivisions and the provincial series Hwy 103. The remaining perimeter of the Study Area consists of extensive and expanding subdivisions with the city of Halifax and Bedford located to the east. The Study Area is an 'island' of wilderness that would require significant land acquisition or land use control within existing subdivisions and further wildlife crossings through roads outside of the Study Area to provide adequate connectivity.





Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for errifying the accuracy and completeness of the data.

4.0 RECREATIONAL CURRENT CONDITIONS

The Study Area is an important site within the HRM for outdoor recreational activities. Trails within the Study Area are primarily used for hiking, but also trail running, snowshoeing, and skiing. Lakes are used for paddling and fishing in the summer, and skating, snowshoeing, and skiing in winter months (NS ECC nd). Several well used waterways and portage routes exist throughout the area. Several popular unsanctioned mountain biking trails exist just south and west of Susies Lake, within and extending outside of the Study Area (Trailforks Mapping Inc. 2022). Mountain biking also occurs along the trails accessed from the Maskwa Canoe Club on Kearney Lake (EDM 2006).

Prior to the commencement of field studies supporting the Project, GPX files (GPS Exchange Format files) of local area trails were downloaded from the AllTrails app (AllTrails 2022) (Figure 4.1). Trails included in the app were used by the field team when it facilitated access to planned survey areas. Additional unmapped trails were noted during field surveys that were not part of the network of known trails. It is important to note that almost all existing trails within the Study Area were established without permission of the respective landowners, whether on private or public land. Most are not maintained, poorly marked, and not well routed. Where use of this trail network is not sanctioned or endorsed by property owners or by any external parties, the information presented on these aspects is solely to inform current site conditions.

Access to the Study Area occurs throughout the perimeter, as determined from local participants' responses to the question, "Which existing access points are used when visiting the BMBCL area?" (Figure 4.2). Access points are concentrated at the eastern end of the Study Area, near Kearney Lake, in the commercial area near Chain Lake Drive and Black Duck Pond, but many access points are also in the northern part of the Study Area, near Coxs Lake in the Hammonds Plain area (Stantec 2022). Residents near the Study Area have reported concerns with speeding and parking occurring on both sides of narrow roads near trailheads, which could restrict access for emergency vehicles (Stapleton et al. n.d.).

Most recreational users of the Study Area use private vehicles to access the site, but some, presumably local residents, also walk. Few users reported accessing the Study Area via cycling, ATV, by water or using public transit (Stantec 2022). Current public transit routes could allow users to enter the Study Area via known access points near Kearney Lake and Chain Lake Drive (Halifax Transit 2021). Access to areas near Cox Lake/Hammonds Plains via public transit is restricted to weekdays during commuting times and requires more time and typically several transfers, if accessing from the downtown Halifax or Dartmouth areas.





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Figure 4.2 BMBCL Existing Access Points based on public/stakeholder input

4.1 ANTHROPOGENIC IMPACTS AND POTENTIAL RESTORATION OPPORTUNITIES

Anthropogenic impacts observed within the Study Area were primarily related to housing. A homeless encampment was noted just outside the Study Area, northeast of Governor Lake. Two unauthorized cabin sites were noted in various areas within the Study Area (Figure 4.1). These structures could be removed, and the areas rehabilitated to avoid further impacts to the site. No evidence of illegal dumping or contamination was noted during field surveys conducted in support of the Project, though this could be occurring outside of areas that were visited during surveys. Some garbage has been previously noted associated with unauthorized camp sites and at fishing locations within the NSNT Blue Mountain Wilderness Connector (Stantec 2021), and littering, particularly dog refuse bags, was listed as a concern in a separate study conducted within the Study Area (Stapleton et al. n.d.).

In some places within the Study Area, people have damaged understory vegetation by hiking off the more well-established trails (Stapleton et al. n.d.). This can occur when trails are poorly designed, e.g., when trails do not follow natural topographic features or cross wet areas without appropriate mitigation (BCMoF 2001; Cobequid Trail Consulting Ltd. 2015). This has been observed in some areas on trails originating at the Maskwa Aquatic Club, where trails follow wet features for part of their distance and have been widened to up to 3 m (Cobequid Trail Consulting Ltd. 2015). Areas that have experienced negative effects



from frequent foot traffic can be restored to their natural state once a series of formal trails have been established. Formal trails are managed and maintained by park agencies whereas informal trails exist in various conditions and can range from flattened or absence of vegetation to heavily and actively eroding trails. The continuation of an informal trails network can lead to a decrease in biodiversity and the establishment of invasive plant species. Hardened and less porous soil due to trampling can lead to water loss and impact nutrient levels in the soils. Loss of vegetation will lead to an increase in erosion and a decrease in vegetative cover. More biologically disturbance-sensitive areas, such as wetlands, will be affected the most by trampling and may be managed, for example, by establishing boardwalks to keep hikers to a more established path or by relocating the trail. Once formal trails have been established, restoration on the informal trails may begin.

Within the NSNT Blue Mountain Wilderness Connector, a number of ATV trails were previously noted, including trails which have been established and abandoned within wetlands, at stream crossings, and near the shores of lakes. As discussed in more detail in the Baseline Ecological inventory for the Blue Mountain Wilderness Connector report (Stantec 2021), ATV use is degrading wetland and stream habitat and it is recommended that ATV use, particularly through sensitive habitats, be deterred through the use of barriers and signage.

5.0 FINDINGS

The Study Area is an important ecological refuge and wilderness recreational area within the densely populated HRM. Maintenance and, if possible, expansion of protected areas would help reduce fragmentation and increase habitat connectivity.

More detailed biological and ecological surveys are recommended to further understand the importance of the Study Area and which species currently inhabit it. Surveys completed within the NSNT Blue Mountain Wilderness Connector (Stantec 2021) demonstrated that additional rare species exist within the Study Area that have previously been unreported or unrecorded within the AC CDC data for the site (AC CDC 2022a). It is reasonable to expect that other, previously unrecorded rare species inhabit the Study Area.

The EcoUnit classification system was useful to understand what habitats are present within the Study Area at a coarse scale and was beneficial as the communities were geographically mapped. However, it was not accurate in many areas, and more information on vegetation communities and habitat suitability could be obtained by employing a more detailed habitat classification system, such as the Forest Ecosystem Classification (FEC) for Nova Scotia (Neily et al. 2011) in conjunction with the Canadian Wetland Classification System (CWCS) (National Wetlands Working Group 1997) and the Barrens Ecosystems in Nova Scotia (Porter et al. 2020).



If a portion of the public lands identified within the Study Area are ultimately designated as a national urban park, it is expected that public use of the area will increase. There will likely be increased travel on trails and portage routes and widening of trails may occur. It is recommended that, where possible, upgrades of existing trails and portage routes and establishment of new trails is completed prior to the designation. Areas planned for trail upgrades and formal establishment should avoid wetlands or poorly drained areas wherever possible. Boardwalks should be established along portions of trails that pass through or adjacent to wetlands where vegetation trampling, and soil disturbance is likely to occur. Once a system of formal trails is complete, an official trail map should be created for the site.



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APPENDIX A

EcoUnit Information provided by HRM

ECOUNITS ECOSYSTEM CLASSIFICATION SYSTEM

This GIS shapefile layer was created by ovelaying pre-existing remote sensed GIS data. For complete details on this process see Cameron, R.P. and D. Williams. 2011. Completing an Ecosystem Classification System for Nova Scotia. Natural Areas Journal. 31: 92-96.

Drainage		
W	well drained	
Ι	imperfectly drained	
Р	poorly drained	
S	saturated	
Х	unclassified	

Biotype		
SWD	softwood forest	
HWD	hardwood forest	
MWD	mixedwood forest	
CST	coast	
FWA	open fresh water	
OBA	open barren	
SBG	shrub bog	
TBG	treed bog	
SFE	shrub fen	
URB	urban	
XWD	unknown	
FWT	water	

Landscape - refers to the Natural Landscape see

Lynds, J.A. and J.M. LeDuc. 1995. Planning for the protection of biodiversity at the landscape level in Nova Scotia. Pp. 548-558 *In* T.B. Herman, S. Bondrup-Nielsen, J.H.M. Willison and N.W.P. Munro., eds., Proceedings of the Second International Conference on Science and the Management of Protected Areas. Dalhousie University, Halifax.

Topography			
CB	coastal beach		
CN	canyon		
DM	drumlin		
DS	steep slope		
НО	hummock		
KK	hill		
MS	salt marsh		
RD	ridge		
SM	flat		
WA	water		

BIOELC

SWDIXHO Topography BIOTYPE Drainage

APPENDIX B

AC CDC Data Report 7220: BMBCL, NS



DATA REPORT 7220: BMBCL, NS

Prepared 26 March 2022 by J. Churchill, Data Manager



1.0 PREFACE

5.1 Source Bibliography

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

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

1.1 DATA LIST

Included datasets:	
<u>Filename</u>	<u>Contents</u>
BmbclNS_7220ob.xls	Rare or legally-protected Flora and Fauna in your study area
BmbclNS_7220ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
BmbclNS_7220msa.xls	Managed and Biologically Significant Areas in your study area
BmbclNS_7220ff_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	Animals (Fauna)
Sean Blaney	John Klymko
Senior Scientist / Executive Director	Zoologist
(506) 364-2658	(506) 364-2660
sean.blaney@accdc.ca	john.klymko@acedc.ca
Data Management, GIS	Billing
James Churchill	Jean Breau
Conservation Data Analyst / Field Biologist	Financial Manager / Executive Assistant
(902) 679-6146	(506) 364-2657
james.churchill@accdc.ca	iean.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	Western: Sarah Spencer	Central : Shavonne Meyer	Central : Kimberly George
(902) 670-8187	(902) 541-0081	(902) 893-0816	(902) 890-1046
Emma.Vost@novascotia.ca	Sarah.Spencer@novascotia.ca	<u>Shavonne.Meyer@novascotia.ca</u>	<u>Kimberly.George@novascotia.ca</u>
Eastern: Harrison Moore	Eastern: Maureen Cameron-MacMillan	Eastern: Elizabeth Walsh	
(902) 497-4119	(902) 295-2554	(902) 563-3370	
<u>Harrison.Moore@novascotia.ca</u>	<u>Maureen.Cameron-MacMillan@novascotia.ca</u>	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 within 100s of meters

1.7 within 10s of meters

¢

2.0 RARE AND ENDANGERED SPECIES

2.1 FLORA

The study area contains 102 records of 22 vascular, 43 records of 22 nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 235 records of 47 vertebrate, 55 records of 17 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

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



3.0 SPECIAL AREAS

3.1 MANAGED AREAS

The GIS scan identified 8 managed areas in the vicinity of the study area (Map 3 and attached file: *msa.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified no biologically significant sites in the vicinity of the study area (Map 3).

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)
Ν	Erioderma pedicellatum (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	2	7.9 ± 0.0
Ν	Fuscopannaria leucosticta	White-rimmed Shingle Lichen	Threatened			S3	1	3.9 ± 0.0
Ν	Pectenia plumbea	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	2	4.2 ± 0.0
Ν	Umbilicaria vellea	Grizzled Rocktripe Lichen				S1	1	9.1 ± 5.0
Ν	Stereocaulon intermedium	Pacific Brain Foam Lichen				S1S3	1	5.6 ± 0.0
Ν	Usnea flavocardia	Blood-splattered Beard Lichen				S2	1	6.3 ± 4.0
Ν	Cystocoleus ebeneus	Rockgossamer Lichen				S2	2	3.9 ± 0.0
Ν	Ditrichum rhynchostegium	a Moss				S2?	1	4.4 ± 1.0
Ν	Moelleropsis nebulosa	Blue-gray Moss Shingle Lichen				S2S3	3	3.2 ± 0.0
Ν	Collema leptaleum	Crumpled Bat's Wing Lichen				S2S3	1	4.1 ± 1.0
Ν	Usnocetraria oakesiana	Yellow Band Lichen				S2S3	1	6.6 ± 0.0
Ν	Cladonia mateocyatha	Mixed-up Pixie-cup				S2S3	1	5.8 ± 5.0
Ν	Scytinium tenuissimum	Birdnest Jellyskin Lichen				S2S3	1	3.8 ± 0.0
Ν	Scytinium lichenoides	Tattered Jellyskin Lichen				S3	1	8.7 ± 0.0
Ν	Nephroma bellum	Naked Kidney Lichen				S3	1	6.3 ± 4.0
Ν	Peltigera collina	Tree Pelt Lichen				S3	1	3.7 ± 0.0
Ν	Sticta fuliginosa	Peppered Moon Lichen				S3S4	2	10.0 ± 0.0
Ν	Arctoparmelia incurva	Finger Ring Lichen				S3S4	10	5.5 ± 0.0
Ν	Leptogium acadiense	Acadian Jellyskin Lichen				S3S4	1	9.9 ± 0.0
Ν	Coccocarpia palmicola	Salted Shell Lichen				S3S4	2	3.2 ± 0.0
Ν	Anaptychia palmulata	Shaggy Fringed Lichen				S3S4	3	1.6 ± 0.0
Ν	Heterodermia neglecta	Fringe Lichen				S3S4	4	3.9 ± 0.0
Р	Juglans cinerea	Butternut	Endangered	Endangered		SNA	2	10.2 ± 0.0
Р	Crocanthemum canadense	Long-branched Frostweed			Endangered	S1S2	2	5.3 ± 1.0
Ρ	Hudsonia ericoides	Pinebarren Golden Heather				S2	1	4.8 ± 0.0
Р	Juncus greenei	Greene's Rush				S2	1	10.9 ± 0.0
Р	Thuja occidentalis	Eastern White Cedar			Vulnerable	S2S3	2	2.8 ± 0.0
Р	Caltha palustris	Yellow Marsh Marigold				S2S3	3	10.8 ± 0.0
Р	Potentilla canadensis	Canada Cinquefoil				S2S3	2	2.9 ± 0.0
Р	Carex adusta	Lesser Brown Sedge				S2S3	1	11.2 ± 5.0
Р	Ophioglossum pusillum	Northern Adder's-tongue				S2S3	1	10.5 ± 50.0
Р	Mononeuria groenlandica	Greenland Stitchwort				S3	27	1.5 ± 0.0
Р	Samolus parviflorus	Seaside Brookweed				S3	1	8.8 ± 1.0
Р	Carex swanii	Swan's Sedge				S3	1	6.4 ± 0.0
Р	Neottia bifolia	Southern Twayblade				S3	12	3.8 ± 0.0
Р	Spiranthes ochroleuca	Yellow Ladies'-tresses				S3?	1	6.7 ± 7.0
Р	Bidens vulgata	Tall Beggarticks				S3S4	1	10.4 ± 0.0
Р	Fagus grandifolia	American Beech				S3S4	38	10.0 ± 0.0
Р	Proserpinaca pectinata	Comb-leaved Mermaidweed				S3S4	1	4.5 ± 1.0
Р	Veronica serpyllifolia	Thyme-Leaved Speedwell				S3S4	1	5.9 ± 0.0
Ρ	Ulmus americana	White Elm				S3S4	1	7.5 ± 0.0
Ρ	Viola sagittata var. ovata	Arrow-Leaved Violet				S3S4	1	11.4 ± 1.0
Ρ	Diphasiastrum complanatum	Northern Ground-cedar				S3S4	1	8.9 ± 1.0
Р	Greeneochloa coarctata	Small Reedgrass				SH	1	10.5 ± 6.0

4.2 FAUNA

_	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
А	Salmo salar pop. 6	Atlantic Salmon - Nova Scotia Southern Upland population	Endangered			S1	1	6.6 ± 1.0
А	Riparia riparia	Bank Swallow	Threatened	Threatened	Endangered	S2B	3	5.8 ± 7.0
А	Dolichonyx oryzivorus	Bobolink	Threatened	Threatened	Vulnerable	S3B	4	5.9 ± 0.0
А	Euphagus carolinus	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	4	5.8 ± 0.0
А	Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	6	5.2 ± 0.0
А	Hirundo rustica	Barn Swallow	Special Concern	Threatened	Endangered	S3B	12	2.9 ± 0.0
А	Cardellina canadensis	Canada Warbler	Special Concern	Threatened	Endangered	S3B	25	10.1 ± 0.0
А	Chordeiles minor	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	17	10.1 ± 0.0
А	Contopus cooperi	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	9	10.4 ± 0.0
А	Coccothraustes vespertinus	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	4	5.9 ± 0.0
А	Contopus virens	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	8	5.8 ± 7.0
А	Accipiter cooperii	Cooper's Hawk	Not At Risk			S1?B,SUN,SUM	1	6.2 ± 0.0
А	Hemidactylium scutatum	Four-toed Salamander	Not At Risk			S3	2	10.4 ± 1.0
А	Sterna hirundo	Common Tern	Not At Risk			S3B	2	6.9 ± 0.0
А	Accipiter gentilis	Northern Goshawk	Not At Risk			S3S4	2	5.8 ± 7.0
А	Passerina cyanea	Indigo Bunting				S1?B,SUM	2	10.2 ± 0.0
А	Mviarchus crinitus	Great Crested Flycatcher				S1B	1	5.8 ± 7.0
А	Mimus polvalottos	Northern Mockingbird				S1B	1	5.8 ± 7.0
А	Calidris minutilla	Least Sandpiper				S1B.S4M	1	8.9 ± 0.0
A	Anas acuta	Northern Pintail				S1B.SUM	1	9.1 ± 7.0
A	Vireo allvus	Warbling Vireo				S1B.SUM	3	5.8 ± 7.0
A	Molothrus ater	Brown-headed Cowbird				S2B	1	67+70
A	Asio otus	Long-eared Owl				S2S3	1	58+70
A	Petrochelidon pyrrhonota	Cliff Swallow				S2S3B	3	58 + 70
A	Cathartes aura	Turkey Vulture				S2S3B S4S5M	2	32 ± 0.0
A	Bucephala clangula	Common Goldeneve				S2S3B S5N S5M	4	65+00
A	Icterus galbula	Baltimore Oriole				S2S3B SUM	2	58 ± 70
Δ	Perisoreus canadensis	Canada Jay				S3	12	34+00
Δ	Poecile hudsonicus	Boreal Chickadee				S3	10	58+70
Δ	Spinus pinus	Pine Siskin				S3	8	37+00
Δ	Charadrius vociferus	Killdeer				S3B	14	58+70
Δ	Pheucticus Iudovicianus	Rose-breasted Grosbeak				S3B	1	10.3 + 0.0
Δ	Alosa pseudobarengus	Alewife				S3B	1	63+00
Δ	Tringa melanoleuca	Greater Yellowlegs				S3B S4M	5	41+00
Δ	Falco sparverius	American Kestrel				S3B S4S5M	3	58+70
Δ	Gallinaro delicata	Wilson's Snipe				S3B S5M	3	67+70
Δ	Setonbaga striata	Blackpoll Warbler				S3B S5M	2	54+00
Δ	Cardellina nusilla	Wilson's Warbler				S3B S5M	6	5.4 ± 0.0
Δ	Pinicola enucleator	Pine Grosbeak				S3B S5N S5M	7	58+70
Δ	Setophaga tigrina	Cape May Warbler				S3B SUM	4	58+70
Δ	Picoides arcticus	Black-backed Woodpecker				S3S4	3	58+70
Δ	l oxia cunvirostra	Bed Crossbill				S3S4	7	56+00
Δ	Setonhaga castanea	Bay-breasted Warbler				S3S/B S/S5M	5	5.0 ± 0.0 5.8 + 7.0
Δ	Actitis macularius	Spotted Sandhiner				S3S4B S5M	10	3.0 ± 7.0 11 3 + 0.0
Δ	Leiothlynis peregrina	Tennessee Warhler				S3S4B S5M	6	58+70
Δ	Passerella iliaca	For Sparrow				S3S4B S5M	⊿	5.0±7.0 5.8±7.0
Δ	Marque serrator	Red_breasted Merganser				\$3\$4B \$5M \$5N	+ 2	7.0 ± 7.0
ĩ	Rombus bohemicus	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	<u>د</u> 1	110 ± 50
ì	Dombus bonemicus	Monarch	Endangered	Special Concern	Endangered	S22B S3M	، ۵	11.0 ± 3.0
ì	Bombus terricola	Vellow-banded Rumble Ree	Special Concorn	Special Concern	Vulnerable	62: D,001VI	9 2	11.1 ± 2.0
ì	Erora lanta	Farly Hairstroak			VUILLEIANE	S1	<u>د</u> 1	10.2 ± 1.0
		Lany hansuear				01	1	10.2 ± 1.0

_	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
I	Polygonia comma	Eastern Comma				S1?	5	11.1 ± 2.0
I.	Polygonia satyrus	Satyr Comma				S1?	5	11.1 ± 1.0
I.	Nymphalis I-album	Compton Tortoiseshell				S2S3	5	1.1 ± 0.0
I.	Aglais milberti	Milbert's Tortoiseshell				S2S3	2	11.1 ± 1.0
I.	Strophiona nitens	Chestnut Bark Long-horned Beetle				S3	2	3.2 ± 0.0
I.	Satyrium calanus	Banded Hairstreak				S3	3	11.1 ± 2.0
I.	Strymon melinus	Gray Hairstreak				S3	1	11.1 ± 1.0
I.	Polygonia interrogationis	Question Mark				S3B	6	10.1 ± 0.0
I.	Amblyscirtes hegon	Pepper and Salt Skipper				S3S4	7	10.3 ± 2.0
I.	Polygonia faunus	Green Comma				S3S4	2	11.1 ± 2.0
I.	Aeshna clepsydra	Mottled Darner				S3S4	2	10.3 ± 0.0
I.	Nannothemis bella	Elfin Skimmer				S3S4	1	6.8 ± 1.0
I	Icaricia saepiolus	Greenish Blue				SH	1	10.3 ± 2.0

4.3 LOCATION SENSITIVE SPECIES

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

Nova Scotia				
Scientific Name	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
Fraxinus nigra	Black Ash		Threatened	No
Emydoidea blandingii	Blanding's Turtle - Nova Scotia pop.	Endangered	Vulnerable	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	YES
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	YES
Bat hibernaculum or bat s	species occurrence	[Endangered] ¹	[Endangered] ¹	YES

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

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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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5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 40221 records of 150 vertebrate and 1232 records of 60 invertebrate fauna; 11202 records of 291 vascular, 2581 records of 187 nonvascular flora (attached: *ob100km.xls).

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

Taxonomic									
Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	Coregonus huntsmani	Atlantic Whitefish	Endangered	Endangered	Endangered	S1	128	74.4 ± 1.0	NS
A	Myotis lucifugus	Little Brown Myotis	Endangered	Endangered	Endangered	S1	384	3.1 ± 0.0	NS
A	Myotis septentrionalis	Northern Myotis	Endangered	Endangered	Endangered	S1	36	34.5 ± 0.0	NS
A	Perimyotis subflavus	Tricolored Bat	Endangered	Endangered	Endangered	S1	46	34.5 ± 0.0	NS
A	Emydoidea blandingii	Blanding's Turtle	Endangered	Endangered	Endangered	S1	3291	83.3 ± 0.0	NS
٨	Solmo color pop 1	Atlantic Salmon - Inner Bay	Endongorod	Endongorod	-	C1	27	20.1 ± 0.0	NS
A	Saimo salar pop. T	of Fundy population	Endangered	Endangered		31	57	20.1 ± 0.0	
		Atlantic Salmon - Nova							NS
A	Salmo salar pop. 6	Scotia Southern Upland	Endangered			S1	30	6.6 ± 1.0	
		population							
٨	Charadrius melodus	Piping Plover melodus	Endongorod	Endangorod	Endangorod	S1B	1101	20.1 ± 0.0	NS
A	melodus	subspecies	Liluangeleu	Lindangered	Liluangereu	310	1101	20.1 ± 0.0	
A	Sterna dougallii	Roseate Tern	Endangered	Endangered	Endangered	S1B	65	16.9 ± 0.0	NS
Δ	Dermochelys coriacea pop.	Leatherback Sea Turtle -	Endangered	Endangered		\$1\$2N	3	23 2 + 5 0	NS
~	2	Atlantic population	Lindangered	Lindangered		01021	5	20.2 ± 0.0	
Δ	Morone savatilis non 2	Striped Bass - Bay of Fundy	Endangered			\$2\$38 \$2\$3N	4	315+00	NS
~	Morone suxulins pop. 2	population	Endangered			02000,02001	7	01.0 ± 0.0	
A	Melanerpes erythrocephalus	Red-headed Woodpecker	Endangered	Threatened		SNA	1	79.6 ± 0.0	NS
A	Protonotaria citrea	Prothonotary Warbler	Endangered	Endangered		SNA	1	28.9 ± 0.0	NS
A	Icteria virens	Yellow-Breasted Chat	Endangered	Endangered		SNA	5	16.7 ± 0.0	NS
A	Colinus virginianus	Northern Bobwhite	Endangered	Endangered			7	18.4 ± 0.0	NS
A	Antrostomus vociferus	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	13	14.0 ± 0.0	NS
A	Asio flammeus	Short-eared Owl	Threatened	Special Concern		S1B	10	14.9 ± 7.0	NS
A	Glyptemys insculpta	Wood Turtle	Threatened	Threatened	Threatened	S2	1263	7.1 ± 5.0	NS
A	Riparia riparia	Bank Swallow	Threatened	Threatened	Endangered	S2B	1465	5.8 ± 7.0	NS
A	Thamnophis saurita	Eastern Ribbonsnake	Threatened	Threatened	Threatened	S2S3	440	77.0 ± 0.0	NS
A	Chaetura pelagica	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	270	7.7 ± 7.0	NS
A	Limosa haemastica	Hudsonian Godwit	Threatened			S2S3M	96	26.3 ± 0.0	NS
A	Acipenser oxyrinchus	Atlantic Sturgeon	Threatened			S2S3N	7	42.8 ± 0.0	NS
A	Dolichonyx oryzivorus	Bobolink	Threatened	Threatened	Vulnerable	S3B	711	5.9 ± 0.0	NS
A	Hydrobates leucorhous	Leach's Storm-Petrel	Threatened			S3B	28	18.5 ± 0.0	NS
A	Tringa flavipes	Lesser Yellowlegs	Threatened			S3M	893	25.3 ± 0.0	NS
A	Anguilla rostrata	American Eel	Threatened			S3N	50	10.6 ± 0.0	NS
A	Sturnella magna	Eastern Meadowlark	Threatened	Threatened		SHB	2	34.9 ± 7.0	NS
A	Melanerpes lewis	Lewis's Woodpecker	Threatened	Threatened		SNA	1	27.6 ± 0.0	NS
A	Hylocichla mustelina	Wood Thrush	Threatened	Threatened		SUB	38	43.3 ± 7.0	NS
Δ	Passerculus sandwichensis	Inswich Sparrow	Special Concern	Special Concern		S1B	5	26.0 + 0.0	NS
~	princeps	ipswiell opariow				OID	0	20.0 ± 0.0	
A	Bucephala islandica	Barrow's Goldeneye	Special Concern	Special Concern		S1N,SUM	2	65.7 ± 2.0	NS
A	Euphagus carolinus	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	213	5.8 ± 7.0	NS
A	Balaenoptera physalus	Fin Whale	Special Concern	Special Concern		S2S3	1	56.7 ± 0.0	NS
A	Phalaropus lobatus	Red-necked Phalarope	Special Concern	Special Concern		S2S3M	8	26.2 ± 0.0	NS
Δ	Histrionicus histrionicus pop.	Harlequin Duck - Eastern	Special Concern	Special Concern	Endangered	S2S3N SUM	39	168+00	NS
	1	population			Linddingorod	020014,00101	00	10.0 ± 0.0	
A	Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	267	5.2 ± 0.0	NS
A	Hirundo rustica	Barn Swallow	Special Concern	Threatened	Endangered	S3B	1066	2.9 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	Cardellina canadensis	Canada Warbler	Special Concern	Threatened	Endangered	S3B	814	3.5 ± 0.0	NS
А	Chordeiles minor	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	442	4.3 ± 0.0	NS
А	Contopus cooperi	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	674	5.8 ± 7.0	NS
A	Coccothraustes vespertinus	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B.S3N.S3M	560	5.9 ± 0.0	NS
A	Podiceps auritus	Horned Grebe	Special Concern	Special Concern		S3N SUM	6	182+00	NS
A	Contonus virens	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	868	58+70	NS
Δ	Phocoena phocoena	Harbour Porpoise	Special Concern	oposiai oonooni	Valiorabio	S4	6	14 8 + 0 0	NS
Δ	Chrysemys nicta nicta	Fastern Painted Turtle	Special Concern	Special Concern		S4	453	11 9 + 0 0	NS
^	Calidria subruficallis	Buff broasted Sandniner	Special Concern	Special Concern		SNA	47	263 ± 0.0	NS
^	Zonotrichia quorula	Harris's Sparrow	Special Concern	Special Concern		SNA	47	20.3 ± 0.0	NS
^	Accinitar acconcrii	Cooper's Howk					2	10.0 ± 0.0	NG
A	Accipiter cooperii	American Cost	Not At Diak			ST 20, SUN, SUN	10	0.2 ± 0.0	NO NO
А	Fulica americana	American Cool	NOLAL RISK			310	10	12.0 ± 0.0	NS NC
А	Falco peregrinus pop. 1	anatum/tundrius	Not At Risk	Special Concern	Vulnerable	S1B,SUM	102	11.5 ± 0.0	NS
A	Sorex dispar	Long-tailed Shrew	Not At Risk			S2	2	78.3 ± 0.0	NS
A	Aegolius funereus	Boreal Owl	Not At Risk			S2?B,SUM	4	51.6 ± 7.0	NS
A	Lynx canadensis	Canada Lynx	Not At Risk		Endangered	S2S3	2	67.9 ± 1.0	NS
A	Globicephala melas	Long-finned Pilot Whale	Not At Risk			S2S3	2	26.8 ± 0.0	NS
A	Hemidactylium scutatum	Four-toed Salamander	Not At Risk			S3	29	5.4 ± 0.0	NS
А	Megaptera novaeangliae	Humpback Whale	Not At Risk			S3	2	71.4 ± 0.0	NS
А	Sterna hirundo	Common Tern	Not At Risk			S3B	231	6.9 ± 0.0	NS
А	Sialia sialis	Eastern Bluebird	Not At Risk			S3B	60	15.5 ± 0.0	NS
A	Buteo lagopus	Rough-legged Hawk	Not At Risk			S3N	1	25.6 ± 0.0	NS
A	Acciniter gentilis	Northern Goshawk	Not At Risk			S3S4	124	58 + 70	NS
A	Glaucomys volans	Southern Elving Squirrel	Not At Risk			S3S4	6	589+00	NS
Δ		Atlantic White-sided Dolphin	Not At Risk			6364 6364	5	21.4 ± 0.0	NS
Δ	Ammosniza nelsoni	Nelson's Sparrow	Not At Risk			5354B	126	21.4 ± 0.0 100 + 70	NS
	Ammospiza neisoni	Red Knot rufa subspecies -				00040	120	19.9 ± 7.0	NS
A	Calidris canutus rufa	Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	644	26.3 ± 0.0	
Δ	Morone saxatilis	Striped Bass	E SC			S2S3B S2S3N	8	137+00	NS
Δ	Gadus morbua	Atlantic Cod				SNR	2	255+00	NS
Δ	Alces alces americana	Moose	2,00,00		Endangered	S1	27	117 ± 0.0	NS
Δ	l Iria aalge	Common Murre			Endangered	S12B	1	30.4 ± 0.0	NS
Δ	Passarina cyanea	Indigo Bunting				S12B SLIM	22	10.2 ± 0.0	NS
^		Ruddy Duck				S18	1	10.2 ± 0.0	NS
^	Callinula galacta	Common Collinulo				S1D S1D	2	22.2 ± 0.0	NG
A ^	Galilliula galeata Mujorobuo oripituo	Creat Created Elvesteber				01D 01D	2	44.4 ± 7.0	NO
A	Mylarchus chinitus					010	20	3.0 ± 7.0	INS NO
A	Cistotnorus palustris	Marsh wren				51B 04D	Z	61.5 ± 0.0	NS NO
A	Mimus polygiottos					SIB	47	5.8 ± 7.0	NS NO
A	Toxostoma rutum	Brown Inrasher				S1B	15	14.9 ± 7.0	NS
A	Charadrius semipaimatus	Semipalmated Plover				51B,54M	1//1	10.4 ± 0.0	NS NO
A	Calidris minutilla	Least Sandpiper				S1B,S4M	1292	8.9 ± 0.0	NS
A	Anas acuta	Northern Pintail				S1B,SUM	24	9.1 ± 7.0	NS
A	Vireo gilvus	Warbling Vireo				S1B,SUM	20	5.8 ± 7.0	NS
A	Vespertilionidae sp.	bat species				S1S2	272	5.6 ± 0.0	NS
Α	Pooecetes gramineus	Vesper Sparrow				S1S2B,SUM	41	17.2 ± 7.0	NS
A	Vireo philadelphicus	Philadelphia Vireo				S2?B,SUM	30	21.7 ± 0.0	NS
A	Alca torda	Razorbill				S2B	17	41.5 ± 0.0	NS
А	Fratercula arctica	Atlantic Puffin				S2B	20	41.3 ± 0.0	NS
А	Empidonax traillii	Willow Flycatcher				S2B	30	13.5 ± 0.0	NS
А	Molothrus ater	Brown-headed Cowbird				S2B	156	6.7 ± 7.0	NS
A	Spatula clypeata	Northern Shoveler				S2B.SUM	11	21.7 ± 0.0	NS
A	Mareca strepera	Gadwall				S2B.SUM	25	14.9 ± 7.0	NS
A	Piranga olivacea	Scarlet Tanager				S2B SUM	44	77+70	NS
A	Calidris alba	Sanderling				S2N S3M	1380	22 2 + 0 0	NS
A	Martes americana	American Marten			Endangered	S2S3	1	915+00	NS
Δ	Asio atus				Lindingered	5253	21	58 + 70	NS
~	7310 0103	Long-caled Own				0200	21	0.0 ± 1.0	NO

l axonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Raritv Rank	# recs	Distance (km)	Prov
A	Rallus limicola	Virginia Rail				S2S3B	17	29.3 ± 7.0	NS
A	Rissa tridactyla	Black-legged Kittiwake				S2S3B	7	415 ± 0.0	NS
A	Petrochelidon pyrrhonota	Cliff Swallow				S2S3B	247	58+70	NS
A	Phalacrocorax carbo	Great Cormorant				S2S3B S2S3N	39	146+00	NS
Δ	Cathartes aura	Turkey Vulture				S2S3B S/S5M	32	32 + 10	NS
^	Sotophaga pipus	Pipe Warbler				S2SSD, 5455M	16	3.2 ± 1.0	NS
A	Selopriaga pirius					02000,0400IVI	10	10.4 ± 0.0	NO NO
A		Common Goldeneye				32330,331V,331VI	125	0.5 ± 0.0	NS NC
A	Icterus galbula	Baltimore Oriole				5253B,50M	66	5.8 ± 7.0	NS NO
A	Pluvialis dominica	American Golden-Plover				S2S3M	256	26.3 ± 0.0	NS
А	Numenius phaeopus hudsonicus	Whimbrel				S2S3M	255	25.0 ± 0.0	NS
A	Phalaropus fulicarius	Red Phalarope				S2S3M	4	26.3 ± 0.0	NS
A	Perisoreus canadensis	Canada Jay				S3	479	3.4 ± 0.0	NS
A	Poecile hudsonicus	Boreal Chickadee				S3	496	5.8 ± 7.0	NS
А	Spinus pinus	Pine Siskin				S3	458	3.7 ± 0.0	NS
А	Salvelinus fontinalis	Brook Trout				S3	54	8.5 ± 0.0	NS
А	Salvelinus namavcush	Lake Trout				S3	1	42.2 ± 0.0	NS
А	Svnaptomvs cooperi	Southern Bog Lemming				S3	1	78.3 ± 0.0	NS
А	Pekania pennanti	Fisher				S3	6	56.5 ± 5.0	NS
Δ	Calcarius Iannonicus	Lapland Longspur				S32N SUM	3	22.3 ± 0.0	NS
A	Spatula discors	Blue-winged Teal				S3B	56	149+70	NS
^	Charadrius vociforus	Killdoor				C3B	571	58±70	NS
^	Tringa sominalmata	Willot				23B	1663	3.0 ± 7.0	NS
~	Stormo porodiogoo					000	1003	10.0 ± 7.0	NG
A	Sterna paradisaea	Arctic Tern Block billed Cuckes				000	59	12.0 ± 7.0	NS NC
A	Coccyzus erythropthalmus	Black-billed Cuckoo				SJB	48	19.9 ± 7.0	NS NO
A	Tyrannus tyrannus	Eastern Kingbird				S3B	199	14.4 ± 7.0	NS
A	Pheucticus Iudovicianus	Rose-breasted Grosbeak				S3B	393	10.3 ± 0.0	NS
A	Alosa pseudoharengus	Alewite				S3B	21	6.3 ± 0.0	NS
A	Somateria mollissima	Common Eider				S3B,S3M,S3N	501	14.6 ± 0.0	NS
A	Tringa melanoleuca	Greater Yellowlegs				S3B,S4M	1902	4.1 ± 0.0	NS
A	Falco sparverius	American Kestrel				S3B,S4S5M	252	5.8 ± 7.0	NS
A	Gallinago delicata	Wilson's Snipe				S3B,S5M	582	6.7 ± 7.0	NS
A	Setophaga striata	Blackpoll Warbler				S3B,S5M	104	5.4 ± 0.0	NS
А	Cardellina pusilla	Wilson's Warbler				S3B,S5M	78	5.8 ± 7.0	NS
А	Pinicola enucleator	Pine Grosbeak				S3B,S5N,S5M	126	5.8 ± 7.0	NS
А	Setophaga tigrina	Cape May Warbler				S3B.SUM	141	5.8 ± 7.0	NS
А	Branta bernicla	Brant				S3M	2	64.9 ± 0.0	NS
A	Pluvialis squatarola	Black-bellied Plover				S3M	1967	17 1 + 0 0	NS
Δ	Arenaria interpres	Ruddy Turnstone				S3M	772	20.5 ± 1.0	NS
Δ	Calidris pusilla	Seminalmated Sandniner				S3M	1616	166+00	NS
Δ	Calidris melanotos	Pectoral Sandniner				S3M	338	263+00	NS
Δ	Limpodromus griseus	Short-billed Dowitcher				S3M	1264	25.0 ± 0.0	NS
^	Chroiocopholus ridibundus	Block booded Cull				CON	7	23.1 ± 0.0	NC
~	Disoidos areticus	Black backed Weedbacker				6364	1/2	22.3 I U.U	NG
~						0004	143	5.0 ± 7.0	NO NO
A	Loxia curvirostra					5354 0004D 0405M	207	5.0 ± 0.0	NS NO
A	Botaurus ientiginosus	American Bittern				S3S4B,S4S5M	182	14.0 ± 0.0	NS
A	Setophaga castanea	Bay-breasted Warbler				S3S4B,S4S5M	349	5.8 ± 7.0	NS
A	Actitis macularius	Spotted Sandpiper				S3S4B,S5M	750	5.8 ± 7.0	NS
A	Leiothlypis peregrina	Tennessee Warbler				S3S4B,S5M	380	5.8 ± 7.0	NS
A	Passerella iliaca	Fox Sparrow				S3S4B,S5M	75	5.8 ± 7.0	NS
A	Mergus serrator	Red-breasted Merganser				S3S4B,S5M,S5N	122	7.1 ± 0.0	NS
А	Calidris maritima	Purple Sandpiper				S3S4N	180	15.2 ± 0.0	NS
А	Lanius borealis	Northern Shrike				S3S4N	1	28.1 ± 0.0	NS
А	Morus bassanus	Northern Gannet				SHB	19	14.6 ± 0.0	NS
А	Avthva americana	Redhead				SHB	2	15.2 ± 0.0	NS
A	l eucophaeus atricilla	Laughing Gull				SHB	11	215+00	NS
A	Progne subis	Purple Martin				SHB	4	30 2 + 0 0	NS
Δ	Fremonhila albestris	Horned Lark					11	21.7 ± 7.0	NS
~		HUITEU LAIN				0,	11	Z1.1 Z1.0	NO

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	Bombus bohemicus	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	29	11.0 ± 5.0	NS
	Danaus plexippus	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	381	5.3 ± 6.0	NS
	Danaus plexippus plexippus	Monarch	Endangered	Special Concern		S2?B,S3M	1	37.5 ± 0.0	NS
	Gomphurus ventricosus	Skillet Clubtail	Endangered	Endangered		SH	2	25.1 ± 1.0	NS
	Barnea truncata	Atlantic Mud-piddock	Threatened	Threatened		S1	1	79.0 ± 1.0	NS
	Bombus suckleyi	Suckley's Cuckoo Bumble	Threatened			SH	2	67.9 ± 5.0	NS
	Alasmidonta varicosa	Brook Floater	Special Concern	Special Concern	Threatened	S3	5	47.5 ± 0.0	NS
	Bombus terricola	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	95	4.5 ± 0.0	NS
	Coccinella transversoguttata richardsoni	Transverse Lady Beetle	Special Concern		Endangered	SH	3	33.3 ± 2.0	NS
	Cicindela formosa	Big Sand Tiger Beetle				S1	1	71.0 ± 1.0	NS
	Erora laeta	Early Hairstreak				S1	1	10.2 ± 1.0	NS
	Ophiogomphus anomalus	Extra-Striped Snaketail				S1	8	93.3 ± 0.0	NS
	Pachvdiplax longipennis	Blue Dasher				S1	4	13.5 ± 0.0	NS
	Polvaonia comma	Eastern Comma				S1?	19	11.1 ± 2.0	NS
	Polygonia satvrus	Satvr Comma				S1?	7	9.3 ± 2.0	NS
	Boloria chariclea	Arctic Fritillary				S1S2	2	90.8 ± 2.0	NS
	Somatochlora brevicincta	Quebec Emerald				S1S2	1	34.7 ± 0.0	NS
	Satvrium acadica	Acadian Hairstreak				S2	4	856+20	NS
	Coenagrion resolutum	Taiga Bluet				S2	2	17 2 + 1 0	NS
	Margaritifora margaritifora	Fastorn Poorleholl				S2	64	17.2 ± 1.0	NS
	Pantala hymonaoa	Spot Wingod Glidor				52 522B	6	37.2 ± 1.0 14.4 ± 1.0	NG
	Fanlaid Hymeniaea	Spot-Willged Gilder				02 (D	17	14.4 ± 1.0	NO
	Nymphalis I-album Agleie milherti	Milbert's Tertaiseshell				5253	17	1.1 ± 0.0	NO NC
	Agiais milberti	Mildert's Tortoiseshell				5253	20	11.1 ± 1.0	NS NO
	Somatocniora kennedyi	Kennedy's Emerald				S2S3	3	20.9 ± 1.0	NS
	Enallagma geminatum	Skimming Bluet				\$2\$3	2	73.5 ± 0.0	NS
	Stylurus scudderi	Zebra Clubtail				\$2\$3	6	31.9 ± 0.0	NS
	Alasmidonta undulata	Triangle Floater				S2S3	24	11.8 ± 0.0	NS
	Strophiona nitens	Chestnut Bark Long-horned Beetle				S3	2	3.2 ± 0.0	NS
	Hippodamia parenthesis	Parenthesis Lady Beetle				S3	2	20.8 ± 0.0	NS
	Naemia seriata	Seaside Lady Beetle				S3	14	249 + 00	NS
	Chilocorus stigma	Twice-stabbed Lady Beetle				S3	3	133 + 00	NS
	enneeende engina	Rough Flower Longhorn					Ũ	10.0 - 0.0	NS
	Trachysida aspera	Beetle				S3	1	15.5 ± 0.0	
	Astylopsis sexguttata	Six-speckled Long-horned Beetle				S3	1	16.4 ± 0.0	NS
	Satvrium calanus	Banded Hairstreak				S3	64	8.2 ± 2.0	NS
	Callophrys lanoraieensis	Bog Elfin				S3	20	15.8 ± 2.0	NS
	Strymon melinus	Grav Hairstreak				S3	13	111+10	NS
	Ophiogomphus aspersus	Brook Snaketail				S3	2	169+00	NS
	Onhiogomphus mainensis	Maine Snaketail				S3	7	741+00	NS
	Ophiogomphus mainensis	Rusty Snaketail				53	21	318+00	NS
	Epithese princeps	Drippo Bookottoil				60	12	31.0 ± 0.0	NC
	Sometechlore fereinete	Finite Daskeilali Foreinata Emorald				00 62	13	11.0 ± 0.0	NO
	Somalochiora forcipata	Forcipate Emerald				33	4	12.7 ± 1.0	NO NO
	Enallagma vernale					33 00D	5	20.0 ± 1.0	NS NC
	Polygonia interrogationis	Question Mark				S3B	153	9.3 ± 2.0	NS
	Cecropterus pylades	Northern Cloudywing				S3S4	5	81.6 ± 2.0	NS
	Amblyscirtes hegon	Pepper and Salt Skipper				S3S4	27	8.2 ± 2.0	NS
	Cupido comyntas	Eastern Tailed Blue				S3S4	21	17.2 ± 7.0	NS
	Argynnis aphrodite	Aphrodite Fritillary				S3S4	39	25.1 ± 2.0	NS
	Polygonia faunus	Green Comma				S3S4	13	11.1 ± 2.0	NS
	Oeneis jutta	Jutta Arctic				S3S4	5	25.1 ± 2.0	NS
	Aeshna clepsvdra	Mottled Darner				S3S4	11	2.1 ± 1.0	NS
		Lawse Times of Damage				5351	17	191+10	NS
	Aesnna constricta	Lance-Hoped Darner				0004	17	19.1 ± 1.9	110
	Aesnna constricta Boveria grafiana	Ocellated Darner				S3S4	10	38.5 ± 1.0	NS

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1	Somatochlora franklini	Delicate Emerald				S3S4	1	25.1 ± 1.0	NS
I	Erythrodiplax berenice	Seaside Dragonlet				S3S4	3	52.1 ± 0.0	NS
1	Nannothemis bella	Elfin Skimmer				S3S4	17	6.8 ± 1.0	NS
I	Enallagma vesperum	Vesper Bluet				S3S4	5	64.1 ± 1.0	NS
I	Amphiagrion saucium	Eastern Red Damsel				S3S4	2	83.5 ± 1.0	NS
I	Icaricia saepiolus	Greenish Blue				SH	1	10.3 ± 2.0	NS
I	Polygonia gracilis	Hoary Comma				SH	1	84.3 ± 2.0	NS
Ν	Erioderma mollissimum	Graceful Felt Lichen	Endangered	Endangered	Endangered	S1	16	32.0 ± 0.0	NS
Ν	Erioderma pedicellatum (Atlantic pop.)	Boreal Felt Lichen - Atlantic	Endangered	Endangered	Endangered	S1	254	7.9 ± 0.0	NS
N	Peltigera hydrothyria	Fastern Waterfan	Threatened	Threatened	Threatened	S1	49	662+00	NS
N	Pannaria lurida	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S2S3	143	22 4 + 13 0	NS
N	Anzia colpodes	Black-foam Lichen	Threatened	Threatened	Threatened	S3	58	30.3 ± 0.0	NS
N	Fuscopannaria leucosticta	White-rimmed Shingle	Threatened			S3	28	3.9 ± 0.0	NS
Ν	Pectenia plumbea	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	168	4.2 ± 0.0	NS
Ν	Sclerophora peronella (Atlantic pop.)	Frosted Glass-whiskers (Atlantic population)	Special Concern	Special Concern		S3S4	23	18.7 ± 0.0	NS
Ν	Pseudevernia cladonia	Ghost Antler Lichen	Not At Risk			S2S3	16	13.7 ± 0.0	NS
Ν	Fissidens exilis	Pygmy Pocket Moss	Not At Risk			S3	13	41.0 ± 0.0	NS
Ν	Aloina brevirostris	Moss				S1	1	37.8 ± 2.0	113
N	Sematophyllum demissum	a Moss				S1	2	18.1 ± 2.0	NS
N	Blennothallia crispa	Crinkled Jelly Lichen				S1	1	61.7 ± 0.0	NS
N	Umbilicaria vellea	Grizzled Rocktripe Lichen				S1	1	9.1 ± 5.0	NS
N	Usnea perplexans	Powdered Beard Lichen				S1	1	61.3 ± 0.0	NS
Ν	Scytinium dactylinum	Brown-buttoned Jellyskin Lichen				S1	1	85.5 ± 0.0	NS
Ν	Lathagrium cristatum	Fingered Jelly Lichen				S1	3	45.5 ± 0.0	NS
Ν	Ephebe perspinulosa	Thread Lichen				S1	1	85.4 ± 1.0	NS
Ν	Fuscopannaria praetermissa	Moss Shingles Lichen				S1	1	42.2 ± 0.0	NS
Ν	Scytinium schraderi	Wrinkled Jellyskin Lichen				S1	1	64.0 ± 0.0	NS
Ν	Lichina confinis	Marine Seaweed Lichen				S1	4	28.7 ± 0.0	NS
Ν	Polychidium muscicola	Eyed Mossthorns Woollybear Lichen				S1	1	85.7 ± 0.0	NS
N	Pseudevernia consocians	Common Antler Lichen				S1	1	662+00	NS
N	Sticta limbata	Powdered Moon Lichen				S1	4	275 ± 30	NS
N	l entogium hibernicum	Hibernia Jellyskin Lichen				S1	2	298+00	NS
N	Peltigera lenidophora	Scalv Pelt Lichen				S1	5	409+00	NS
N	Brvoria nitidula	Tundra Horsehair Lichen				S1	2	272 ± 0.0	NS
		Powdered Honeycomb					-		NS
N	Hypogymnia hultenii	Lichen				S1	14	35.9 ± 0.0	NO
IN N	Calypogela neogaea					01/ 012	1	01.7 ± 0.0	6/I
IN NI	Alullia ligida					01/ 010	3	31.0 ± 2.0	NO NC
IN N	Conordio composto	Nuenienbeck's Bryum Moss				01/ 012	2	51.0 ± 0.0	6/I
IN N	Conardia compacta	o Moon				01/ 012	1	20.U ± 2.U	
IN N	i unula optusitolia	a WOSS				01/ 010	3	$0U.7 \pm U.0$	6VI NC
IN N	Diaymoaon tophaceus	Unve Beard Moss				517	1	0.0 ± 0.0	NS NC
IN N	Paludella squarrosa					01/ 010	3	39.0 ± 0.0	6VI NC
IN N	Physicomitrium immersum	a Maaa				517	1	13.1±0.0	NS NC
IN N	Schistostega pennata					517	1	38.2 ± 0.0	NS NG
N	i ricnoaon cylindricus	Cylindric Hairy-teeth Moss				51?	1	96.1 ± 3.0	NS
N	Syntrichia ruralis	a Moss				51?	1	10.3 ± 0.0	NS NG
Ν	Melanelia culbersonii	Appaiachain Camoutlage				S1?	1	31.2 ± 0.0	NS
Ν	Porella pinnata	Pinnate Scalewort				S1S2	1	97.3 ± 0.0	NS
Ν	Arrhenopterum heterostichum	One-sided Groove Moss				S1S2	3	37.8 ± 2.0	NS

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N	Brachythecium turgidum	Thick Ragged Moss				S1S2	2	961+30	NS
N	Hypnum pratense	Meadow Plait Moss				S1S2	1	812+30	NS
N	Mnium thomsonii	Thomson's Leafy Moss				S1S2	1	432+20	NS
N	Tortula acaulon	Cuspidate Farth Moss				S1S2	1	825+20	NS
N	Plagiothecium latebricola	Alder Silk Moss				S1S2	2	40.0 + 5.0	NS
N	Platydictya confervoides	a Moss				S1S2	1	40.0 ± 0.0 41.0 ± 0.0	NS
	Sematophyllum					0102		11.0 1 0.0	NS
N	manylandicum	a Moss				S1S2	2	18.2 ± 3.0	NO
N	Timmia meganolitana	Metropolitan Timmia Moss				S1S2	з	806+10	NS
N	Tortula mucronifolia	Mucronate Screw Moss				S1S2	1	797+30	NS
	Pseudotavinhvllum	Mucronate Corew Moss				0102		10.1 ± 0.0	NS
N	distichaceum	a Moss				S1S2	1	75.9 ± 0.0	110
N	Haplocladium microphyllum	Tiny-leaved Haplocladium				S1S2	1	726+50	NS
N		Moss				0102		15.0 ± 0.0	NO
IN	Enchyllum bachmanlanum	Limy Soil Stipplescale				5152	1	45.7 ± 0.0	NS NS
N	Placidium squamulosum	Lichen				S1S2	1	79.6 ± 6.0	110
Ν	Pilophorus cereolus	Powdered Matchstick Lichen				S1S2	1	83.0 ± 3.0	NS
N	Rhizoplaca subdiscrepans	Scattered Rock-posy Lichen				S1S2	1	32.7 ± 1.0	NS
N	Parmotrema reticulatum	Netted Ruffle Lichen				S1S2	6	642 ± 0.0	NS
N	Parmeliella parvula	Poor-man's Shingles Lichen				S1S2	9	358+00	NS
N	Umbilicaria polyrhiza	Ballpoint Rocktripe Lichen				S1S3	1	754+00	NS
N	Lecanora polytropa	a lichen				S1S3	1	28.6 ± 1.0	NS
N	Heterodermia galactophylla	Branching Fringe Lichen				S1S3	1	328+00	NS
N	Xvlopsora friesii	a Lichen				S1S3	2	13.7 ± 0.0	NS
N	Peltigera neckeri	Black-saddle Pelt Lichen				S1S3	1	996+00	NS
N	Stereocaulon grande	Grand Foam Lichen				S1S3	1	92.9 ± 0.0	NS
N	Stereocaulon intermedium	Pacific Brain Foam Lichen				S1S3	4	5.6 ± 0.0	NS
N	Anacamptodon splachnoides	a Moss				S2	2	11 8 + 30 0	NS
N	Sphagnum platyphyllum	Elat-leaved Peat Moss				S2	2	225+30	NS
N	Sphagnum subnitens	Lustrous Peat Moss				S2	1	677 + 20	NS
		Blood-splattered Beard				<u>-</u>		0.0. 1.0	NS
N	Usnea flavocardia	Lichen				52	1	6.3 ± 4.0	
N	Cystocoleus ebeneus	Rockgossamer Lichen				S2	3	3.9 ± 0.0	NS
N	Hypotrachyna catawbiensis	Powder-tipped Antler Lichen				S2	3	32.4 ± 0.0	NS
N	Scytinium imbricatum	Scaly Jellyskin Lichen				S2	1	65.7 ± 0.0	NS
N	Nephroma arcticum	Arctic Kidney Lichen				S2	1	21.6 ± 1.0	NS
N	Nephroma resupinatum	a lichen				S2	11	11.4 ± 0.0	NS
N	Placynthium flabellosum	Scaly Ink Lichen				S2	1	48.5 ± 17.0	NS
N	Riccardia multifida	Delicate Germanderwort				S2?	1	64.9 ± 0.0	NS
N	Weissia muhlenbergiana	a Moss				S2?	5	43.2 ± 1.0	NS
N	Atrichum angustatum	Lesser Smoothcap Moss				S2?	2	84.8 ± 5.0	NS
N	Ptychostomum pendulum	Drooping Bryum				S2?	1	37.8 ± 2.0	NS
N	Drepanocladus polygamus	Polygamous Hook Moss				S2?	3	18.1 ± 2.0	NS
N	Pseudocampylium radicale	Long-stalked Fine Wet Moss				S2?	1	81.2 ± 3.0	NS
N	Dicranum condensatum	Condensed Broom Moss				S2?	3	19.0 ± 0.0	NS
N	Ditrichum rhynchostegium	a Moss				S2?	1	4.4 ± 1.0	NS
N	Grimmia anomala	Mountain Forest Grimmia				S2?	1	49.8 ± 1.0	NS
N	Kiaeria starkei	Starke's Fork Moss				S2?	1	54.7 ± 10.0	NS
N	Orthotrichum anomalum	Anomalous Bristle Moss				S2?	1	43.7 ± 2.0	NS
Ν	Philonotis marchica	a Moss				S2?	2	91.3 ± 0.0	NS
Ν	Physcomitrium collenchymatum	a Moss				S2?	1	96.1 ± 0.0	NS
Ν	Platydictya jungermannioides	False Willow Moss				S2?	1	49.5 ± 0.0	NS
Ν	Cyrtomnium hymenophylloides	Short-pointed Lantern Moss				S2?	1	13.8 ± 5.0	NS
Ν	Platylomella lescurii	a Moss				S2?	5	26.8 ± 0.0	NS

Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	Phylliscum demangeonii	Black Rock-wafer Lichen				S2?	4	42.5 ± 0.0	NS
N	Oxyrrhynchium hians	Light Beaked Moss				S2S3	4	15.5 ± 5.0	NS
N	Platvdictva subtilis	Bark Willow Moss				S2S3	2	89.9 ± 3.0	NS
N	Plagiomnium rostratum	Long-beaked Leafy Moss				S2S3	1	95.1 ± 2.0	NS
N	Scorpidium revolvens	Limprichtia Moss				S2S3	2	25.4 ± 2.0	NS
		Blue-grav Moss Shingle					_		NS
N	Moelleropsis nebulosa	Lichen				S2S3	48	3.2 ± 0.0	
	Moelleronsis nebulosa ssp	Blue-grav Moss Shingle							NS
N	frullaniae	Lichen				S2S3	3	62.4 ± 0.0	110
N	Ramalina thrausta	Angelbair Ramalina Lichen				6263	11	276+50	NS
N	Colloma Iontaloum	Crumpled Bat's Wing Lichon				6263	61	27.0 ± 0.0	NS
N	Uspoa coratina	Warty Board Lichon				5255 6263	2	4.1 ± 1.0	NS
N	Usnoa hirta	Bristly Board Lichon				5255 6263	2	13.7 ± 0.0	NS
N	Usnea rubioundo	Bod Board Lichon				0200 6260	2	13.7 ± 0.0	NG
IN N	Oshea rubicunda	Red Beard Lichen				5253	5	30.0 ± 0.0	NO NO
IN NI						3233	10	20.4 ± 0.0	NO
N	Usnocetraria oakesiana	Yellow Band Lichen				5253	12	6.6 ± 0.0	NS NO
N	Cladonia mateocyatha	Mixed-up Pixie-cup				S2S3	4	5.8 ± 5.0	NS
N	Cladonia parasitica	Fence-rall Lichen				S2S3	3	13.8 ± 0.0	NS
N	Chaenotheca gracilenta	alichen				\$2\$3	1	15.0 ± 0.0	NS
N	Scytinium tenuissimum	Birdnest Jellyskin Lichen				S2S3	7	3.8 ± 0.0	NS
N	Melanohalea septentrionalis	Northern Camouflage Lichen				S2S3	1	61.4 ± 0.0	NS
N	Myelochroa aurulenta	Powdery Axil-bristle Lichen				S2S3	4	65.5 ± 2.0	NS
N	Parmelia fertilis	Fertile Shield Lichen				S2S3	6	50.6 ± 0.0	NS
N	Hvpotrachvna minarum	Hairless-spined Shield				S2S3	2	58.5 ± 0.0	NS
N	Dama aliana ia amakimua	Licnen				0000	0	10.0 + 0.0	NO
N	Parmeliopsis ambigua	Green Starburst Lichen				S2S3	2	13.6 ± 0.0	NS
N	Racodium rupestre	Rockhair Lichen				S2S3	3	9.9 ± 1.0	NS
N	Umbilicaria polypnylla	Petalled Rocktripe Lichen				S2S3	1	66.1 ± 2.0	NS
N	Usnea cavernosa	Pitted Beard Lichen				\$2\$3	2	61.3 ± 0.0	NS
N	Usnea mutabilis	Bloody Beard Lichen				S2S3	1	61.3 ± 0.0	NS
N	Fuscopannaria sorediata	a Lichen				S2S3	3	9.9 ± 1.0	NS
N	Stereocaulon condensatum	Granular Soil Foam Lichen				S2S3	1	88.3 ± 0.0	NS
N	Physcia subtilis	Slender Rosette Lichen				S2S3	1	52.9 ± 0.0	NS
N	Dimelaena oreina	Golden Moonglow Lichen				S2S3	2	20.3 ± 0.0	NS
N	Cetraria arenaria	Sand-loving Icelandmoss				6263	1/	518 ± 0.0	NS
	Cellana alenana	Lichen				0200	14	51.0 ± 0.0	
N	Cladania consifera	Eastern Boreal Pixie-cup				6063	2	275+20	NS
IN	Cladonia coccilera	Lichen				3233	5	21.5 ± 2.0	
N	Cladonia deformis	Lesser Sulphur-cup Lichen				S2S3	3	44.4 ± 4.0	NS
N	Cladonia phyllophora	Felt Lichen				S2S3	2	77.1 ± 4.0	NS
N	Usnea flammea	Coastal Bushy Beard Lichen				S2S3	1	28.6 ± 1.0	NS
N	Ephemerum serratum	a Moss				S3	5	44.7 ± 5.0	NS
N	Fissidens taxifolius	Yew-leaved Pocket Moss				S3	8	13.8 ± 0.0	NS
N	Anomodon tristis	a Moss				S3	9	64.1 ± 15.0	NS
N	Sphagnum contortum	Twisted Peat Moss				S3	3	61.7 ± 0.0	NS
	T i i i i i i i i i i	Toothed-leaved Nitrogen					-		NS
N	Tetrapiodon angustatus	Moss				83	3	67.7 ± 2.0	
Ν	Rostania occultata	Crusted Tarpaper Lichen				S3	1	85.0 ± 0.0	NS
N	Collema nigrescens	Blistered Tarpaper Lichen				S3	25	20.7 ± 0.0	NS
Ν	Solorina saccata	Woodland Owl Lichen				S3	10	45.6 ± 0.0	NS
Ν	Fuscopannaria ahlneri	Corrugated Shingles Lichen				S3	79	17.0 ± 0.0	NS
Ν	Heterodermia squamulosa	Scaly Fringe Lichen				S3	79	62.5 ± 0.0	NS
N	Scytinium lichenoides	Tattered Jellyskin Lichen				S3	28	8.7 ± 0.0	NS
N	Leptogium milligranum	Stretched Jellyskin Lichen				S3	9	39.7 ± 0.0	NS
N	Nephroma bellum	Naked Kidney Lichen				S3	Ř	63+40	NS
N	Placynthium nigrum	Common Ink Lichen				53	1	807+00	NS
N	Platismatia norvegica	Oldgrowth Rag Lichen				S3	1	692+00	NS
N	Punctelia annalachansis	Annalachian Speckleback				53	101	793+00	NS
1.1		, pharaoman oheomenaor					101	, J.J ± 0.0	110

Taxonomic									_
Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
		Lichen				00	0	44 5 . 0.0	NO
N	Viridotnellum virens	Wetenside Deskelen Lieben				53	3	11.5 ± 2.0	NS
N	Ephebe lanata	Waterside Rockshag Lichen				83	2	48.5 ± 17.0	NS
Ν	Phaeophyscia adiastola	Powder-tipped Shadow Lichen				S3	1	14.0 ± 0.0	NS
Ν	Phaeophyscia pusilloides	Pompom-tipped Shadow Lichen				S3	9	11.2 ± 0.0	NS
Ν	Peltigera collina	Tree Pelt Lichen				S3	8	3.7 ± 0.0	NS
Ν	Barbula convoluta	Lesser Bird's-claw Beard Moss				S3?	2	40.9 ± 0.0	NS
Ν	Calliergon giganteum	Giant Spear Moss				S3?	2	35.6 ± 3.0	NS
Ν	Drummondia prorepens	a Moss				S3?	1	41.6 ± 5.0	NS
N	Elodium blandowii	Blandow's Bog Moss				S3?	5	20.7 ± 7.0	NS
Ν	Mnium stellare	Star Leafy Moss				S3?	3	38.8 ± 0.0	NS
Ν	Sphagnum lindbergii	Lindberg's Peat Moss				S3?	1	81.6 ± 0.0	NS
Ν	Sphagnum riparium	Streamside Peat Moss				S3?	2	55.0 ± 0.0	NS
Ν	Cladonia stygia	Black-footed Reindeer				S3?	4	46.7 ± 0.0	NS
Ν	Anomodon rugelii	Rugel's Anomodon Moss				S3S4	3	792+00	NS
N	Dichelyma capillaceum	Hairlike Dichelyma Moss				S3S4	3	14.0 + 3.0	NS
N	Dicranum leioneuron	a Dicranum Moss				S3S4	1	247+00	NS
N	Encalvota ciliata	Eringed Extinguisher Moss				S3S4	2	797+30	NS
N	Splachnum ampullaceum	Cruet Dung Moss				S3S4	1	54.4 ± 0.0	NS
N	Thempohyum ellegheniense	a Moss				5354 5354	8	687+10	NS
N	Tomontypnum nitons	Coldon Euzzy Eon Moss				6364	2	30.0 ± 0.0	NG
N	Sobiotidium ogoopizii	Elf Bloom Moon				0004 0204	2	39.9 ± 0.0	NG
IN N	Schistidium agassizii	a Faathar Maaa				0004 0204	3	49.0 ± 1.0 12.0 ± 0.0	NG
IN N	Encludium tonov	Soil Torpoper Liebon				0004 0204	7	13.0 ± 0.0	NG
IN N	Stists fullginges	Soli Tarpaper Lichen				5354 5254	62	39.0 ± 0.0	NO
IN N		Feppered Moon Lichen				0004	03	0.7 ± 2.0	INS NC
N	Arctoparmella incurva	Finger Ring Lichen				S3S4	69	5.5 ± 0.0	NS
N	Scytinium teretiusculum					5354	12	27.5 ± 0.0	NS NO
N	Leptogium acadiense	Acadian Jellyskin Lichen				S3S4	24	9.9 ± 0.0	NS
N	Scytinium subtile	Appressed Jellyskin Lichen				S3S4	18	22.2 ± 0.0	NS
N	Cladonia floerkeana	Gritty British Soldiers Lichen				\$3\$4	3	27.5 ± 0.0	NS
N	Vahliella leucophaea	Shelter Shingle Lichen				S3S4	5	98.8 ± 0.0	NS
N	Heterodermia speciosa	Powdered Fringe Lichen				S3S4	44	41.6 ± 0.0	NS
N	Leptogium corticola	Blistered Jellyskin Lichen				S3S4	76	17.1 ± 0.0	NS
Ν	Melanohalea olivacea	Spotted Camouflage Lichen				S3S4	2	61.3 ± 0.0	NS
Ν	Parmeliopsis hyperopta	Gray Starburst Lichen				S3S4	1	88.7 ± 0.0	NS
Ν	Parmotrema perlatum	Powdered Ruffle Lichen				S3S4	15	32.0 ± 0.0	NS
N	Peltigera hymenina	Cloudy Pelt Lichen				S3S4	2	27.5 ± 2.0	NS
N	Sphaerophorus fragilis	Fragile Coral Lichen				S3S4	7	23.8 ± 1.0	NS
Ν	Coccocarpia palmicola	Salted Shell Lichen				S3S4	359	3.2 ± 0.0	NS
Ν	Physcia caesia	Blue-gray Rosette Lichen				S3S4	2	28.6 ± 1.0	NS
Ν	Physcia tenella	Fringed Rosette Lichen				S3S4	5	11.1 ± 0.0	NS
Ν	Anaptychia palmulata	Shaggy Fringed Lichen				S3S4	114	1.6 ± 0.0	NS
Ν	Evernia prunastri	Valley Oakmoss Lichen				S3S4	29	13.7 ± 0.0	NS
Ν	Heterodermia neglecta	Fringe Lichen				S3S4	108	3.9 ± 0.0	NS
Р	Rhynchospora	Tall Beakrush	Endangered	Endangered	Endangered	S1	7	90.9 ± 0.0	NS
Р	Clethra alnifolia	Coast Pepper-Bush	Endangered	Threatened	Vulnerable	S2	2	19.4 ± 0.0	NS
Р	Juglans cinerea	Butternut	Endangered	Endangered		SNA	12	36+00	NS
P	Fravinus nigra	Black Ash	Threatened	Lindingered	Threatened	S1S2	200	112 + 0.0	NS
, D	liatris spicata	Dense Blazing Stor	Threatened	Threatened	meatened	SNA	200	138+00	NS
P	Bartonia paniculata ssp.	Branched Bartonia	Threatened	Threatened		SNA	1	93.3 + 10.0	NS
-	paniculata		modelleu	Theatened				50.0 ± 10.0	
P P	Lachnanthes caroliniana Lophiola aurea	Redroot Goldencrest	Special Concern Special Concern	Special Concern Special Concern	Vulnerable Vulnerable	S2 S2	1064 681	89.9 ± 0.0 74.7 ± 1.0	NS NS
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Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Barity Bank	# recs	Distance (km)	Prov
D		Eastern Lilaeonsis	Special Concern	Special Concern	Vulnerable	S3	150	65 9 + 1 0	NS
Г D	Scirpus Iongii		Special Concern	Special Concern	Vulnerable	53 53	274	00.9 ± 1.0	NS
Г	loootoo prototypuo	Brototype Quillwort	Special Concern	Special Concorn	Vulnerable	50 62	12	04.3 ± 0.0	NG
	Elearkaa proserninacoidas	Flototype Quiliwort	Not At Pick	Special Concern	vuillelable	53 5753	27	77.0 ± 0.0	NS
Г	Acor accobaring	Silver Maple	NOT AL MISK			0200 01	11	75.2 ± 0.0	NG
P	Acer sacchannum	Sliver Maple				51	1	75.5 ± 0.0	NO
P		Diuni Sweet Cicely				51	5	03.0 ± 3.0	NO
P	Andersonglossum boreale	Tower Musterd				51	5	41.1 ± 1.0	NO
P	Turnus giabra					51	1	67.4 ± 0.0	NO NO
P	Lobella spicata	Pale-Spiked Lobella				51	8	72.4 ± 7.0	NS
P		Sleepy Catchily				51	5	90.7 ± 0.0	NO NO
P	Ribes americanum	Wild Black Currant				51	4	40.8 ± 3.0	NS
P	Tricnosterna dicnotomum	Forked Bluecuris				51	6	89.3 ± 0.0	NS
P	Fraxinus pennsylvanica	Red Ash				51	12	23.7 ± 5.0	NS
P	Persicaria careyi	Carey's Smartweed				51	1	68.5 ± 3.0	NS
P	Phytolacca americana	Common Pokeweed				51	1	11.8 ± 0.0	NS
P	Podostemum ceratopnyllum	Horn-leaved Riverweed				51	4	75.9±0.0	NS
Р	Montia fontana	Water Blinks				51	1	13.7 ± 1.0	NS
Р	Lysimachia quadrifolia	Whorled Yellow Loosestrife				51	1	12.5 ± 0.0	NS
Р	Amelanchier nantucketensis	Nantucket Serviceberry				51	1	93.0 ± 1.0	NS
Р	Salix myrtillifolia	Blueberry Willow				S1	1	56.8 ± 0.0	NS
Р	Salix serissima	Autumn Willow				S1	2	56.6 ± 0.0	NS
Р	Scrophularia lanceolata	Lance-leaved Figwort				S1	2	93.4 ± 1.0	NS
Р	Carex digitalis	Slender Wood Sedge				S1	2	98.9 ± 0.0	NS
Р	Carex garberi	Garber's Sedge				S1	4	92.5 ± 0.0	NS
Р	Carex laxiflora	Loose-Flowered Sedge				S1	2	78.3 ± 1.0	NS
Р	Carex ormostachya	Necklace Spike Sedge				S1	1	83.2 ± 5.0	NS
P	Carex plantaginea	Plantain-Leaved Sedge				S1	4	87.4 ± 0.0	NS
Р	Carex prairea	Prairie Sedge				S1	2	79.1 ± 1.0	NS
Р	Carex viridula var.	Greenish Sedge				S1	5	81.7 ± 2.0	NS
D	Saxiiillofaiis	Dark groon Bulmich				61	4	40 E L 0 0	NC
P	Scripus arrovirens	Tarrayla Dulruch				51	4	40.5 ± 0.0	NO
P	Schoenopiecius iorreyi	Clander Dive Flog				51	0	00.4 ± 0.0	NO
F	ins prismauca	Coastal Plain Plus aved				31	I	75.4 ± 100.0	NO
Р	Sisyrinchium fuscatum	coastal Flain Blue-eyeu-				S1	3	73.6 ± 0.0	NO
р	lunqua acquindua	Socued Buch				C1	2	907+00	NC
	Juncus secundus	Vegev Bush				01 01	2 1	00.7 ± 0.0	NO
	Trillium grandiflarum	White Trillium				01 01	2	93.3 ± 0.0 70.1 ± 1.0	NO
F	Malaxia mananhullaa yar	North American M/hite				31	3	79.1±1.0	NO
Р	walaxis monophylios var.	Adder's mouth				S1	5	72.4 ± 10.0	NO
D	Drachypoda	Adder S-mouth				61	0	57 0 1 0 0	NC
P	Spirantnes caser var. caser	Case's Ladies - Tresses				51	2	57.6 ± 0.0	NO
Р	venthophysum	Slender Panic Grass				S1	9	70.6 ± 1.0	NO
Р	Flymus hystrix	Spreading Wild Rve				S1	11	387+00	NS
_	Torrevochloa pallida var					01		00.7 ± 0.0	NS
Р	pallida	Pale False Manna Grass				S1	1	96.7 ± 1.0	110
Р	Adiantum pedatum	Northern Maidenhair Fern				S1	11	30.7 ± 1.0	NS
Р	Dryopteris goldieana	Goldie's Woodfern				S1	1	56.9 ± 1.0	NS
Р	Equisetum palustre	Marsh Horsetail				S1	1	73.2 ± 5.0	NS
Р	Botrychium lunaria	Common Moonwort				S1	8	30.3 ± 0.0	NS
Р	Selaginella rupestris	Rock Spikemoss				S1	1	40.2 ± 0.0	NS
Р	Solidago hispida	Hairy Goldenrod				S1?	1	14.9 ± 7.0	NS
Р	Suaeda rolandii	Roland's Sea-Blite				S1?	5	41.4 ± 2.0	NS
Р	Carex pensylvanica	Pennsylvania Sedge				S1?	3	26.7 ± 0.0	NS
Р	Allium schoenoprasum	Wild Chives				S1?	4	65.4 ± 0.0	NS
Р	Allium schoenoprasum var.	Wild Chives				S1?	1	83.7 ± 7.0	NS
D	sibiricum	Long bronched Freetrie			Endongorod			E 2 + 1 0	NC
۲	Giocanthemum canadense	Long-branched Frostweed			Endangered	3132	111	0.3 ± 1.0	IND GVI

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	Cypripedium arietinum	Ram's-Head Lady's-Slipper		-	Endangered	S1S2	278	36.1 ± 2.0	NS
P	Sanicula odorata	Clustered Sanicle			2.naan.goroa	S1S2	10	388+00	NS
P	Draha dahella	Rock Whitlow-Grass				S1S2	2	805+00	NS
P	Proserninaca intermedia	Intermediate Mermaidweed				S1S2	5	49.5 ± 0.0	NS
•	Anemone virginiana var					0102	Ũ	10.0 ± 0.0	NS
Р	alba	Virginia Anemone				S1S2	5	83.7 ± 7.0	NO
Р	Carex havdenii	Havden's Sedge				S1S2	4	725+10	NS
P	Platanthera huronensis	Fragrant Green Orchid				S1S2	1	39.5 ± 10.0	NS
P	Fuphrasia farlowii	Farlow's Evebright				S1S3	2	726+00	NS
P	Carex vacillans	Estuarine Sedge				S1S3	1	725+00	NS
P	Zizia aurea	Golden Alexanders				S2	38	625 ± 0.0	NS
P	Antennaria narlinii ssn. fallav	Parlin's Pussytoes				S2	23	37.6 ± 0.0	NS
D	Rudbeckia laciniata	Cut-Leaved Coneflower				S2	14	225 ± 7.0	NS
'	Pudbockia laciniata var	Cut-Leaved Collellower				02	14	22.0 ± 1.0	NS
Р	laciniata	Cut-Leaved Coneflower				S2	9	63.3 ± 3.0	NO
Р	Arabis pycnocarpa	Cream-flowered Rockcress				S2	1	81.6 ± 0.0	NS
Р	Cardamine maxima	Large Toothwort				S2	1	89.6 ± 0.0	NS
Р	Hudsonia ericoides	Pinebarren Golden Heather				S2	162	4.8 ± 0.0	NS
Р	Desmodium canadense	Canada Tick-trefoil				S2	12	66.2 ± 1.0	NS
Р	Hvlodesmum alutinosum	Large Tick-trefoil				S2	20	41.8 ± 0.0	NS
Р	Conopholis americana	American Cancer-root				S2	15	70.2 ± 3.0	NS
Р	Anemonastrum canadense	Canada Anemone				S2	13	13.2 ± 0.0	NS
P	Hepatica americana	Round-lobed Hepatica				S2	60	36 1 + 3 0	NS
P	Ranunculus sceleratus	Cursed Buttercup				S2	24	112 ± 0.0	NS
P	Galium boreale	Northern Bedstraw				S2	7	724+70	NS
P	Gratiola peglecta	Clammy Hedge-Hysson				S2	1	72.4 ± 7.0	NS
P	Diros polustris	Eastern Leatherwood				S2		72.0 ± 2.0	NS
Þ	Carey avnocrates	Northern Bog Sedge				S2	2	56.8 ± 0.0	NS
D	Carex gynocrates	Woolly Sodgo				S2	2	70.3 ± 10.0	NS
F		Livid Codeo				52	10	79.3 ± 10.0	NO NO
P		Creanala Buch				52	13	0.7 ± 0.0	NO NO
						32	10	10.9 ± 0.0	NO NO
P						52	48	76.8 ± 5.0	NS NO
Р	Lillum canadense	Canada Liiy				52	61	30.7 ± 7.0	NS NO
Р	cypripedium parvitiorum var. pubescens	Yellow Lady's-slipper				S2	22	16.9 ± 7.0	NS
-	, Cypripedium parviflorum var.					00	10	00 5 . 0 0	NS
Р	makasin	Small Yellow Lady's-Slipper				S2	13	38.5 ± 0.0	
Р	Cvpripedium reginae	Showy Lady's-Slipper				S2	49	34.1 ± 0.0	NS
Р	Platanthera flava var. flava	Southern Rein Orchid				S2	16	65.0 ± 7.0	NS
	Platanthera flava var.								NS
Р	herbiola	Pale Green Orchid				S2	11	63.5 ± 1.0	
Р	Platanthera macrophylla	Large Round-Leaved Orchid				S2	5	46.2 ± 1.0	NS
Р	Bromus latiglumis	Broad-Glumed Brome				S2	28	76.9 ± 0.0	NS
Р	Cinna arundinacea	Sweet Wood Reed Grass				S2	55	70.2 ± 0.0	NS
Р	Elymus wiegandii	Wiegand's Wild Rye				S2	6	14.9 ± 7.0	NS
Р	Festuca subverticillata	Nodding Fescue				S2	13	52.9 ± 7.0	NS
Р	Piptatheropsis pungens	Slender Ricegrass				S2	10	58.9 ± 10.0	NS
Р	Cryptogramma stelleri	Steller's Rockbrake				S2	3	45.0 ± 0.0	NS
Р	Cuscuta cephalanthi	Buttonbush Dodder				S2?	2	23.0 ± 0.0	NS
Р	Rumex persicarioides	Peach-leaved Dock				S2?	1	39.1 ± 0.0	NS
Р	Crataegus submollis	Quebec Hawthorn				S2?	5	29.0 ± 7.0	NS
Р	Carex peckii	White-Tinged Sedge				S2?	4	40.8 ± 5.0	NS
Р	Thuia occidentalis	Eastern White Cedar			Vulnerable	S2S3	36	2.8 ± 0.0	NS
Р	Osmorhiza longistylis	Smooth Sweet Cicely				S2S3	18	41.8 ± 0.0	NS
P	Frigeron philadelphicus	Philadelphia Fleabane				S2S3	2	80 2 + 1 0	NS
P	Eutrochium dubium	Coastal Plain Joe Pve Weed				S2S3	2	981+00	NS
P	Lactuca hirsuta	Hairy Lettuce				S2S3	5	35.0 ± 7.0	NS
P	Impatiens pallida	Pale lewelweed				S2S3	3	72 2 + 0 0	NS
•	inipations pallaa					5200	5	· Z.Z ± 0.0	110

	Taxonomic									_
_	Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	Р	Caulophyllum thalictroides	Blue Cohosh				S2S3	58	30.3 ± 7.0	NS
	Р	Boechera stricta	Drummond's Rockcress				S2S3	10	78.3 ± 1.0	NS
	Р	Draba arabisans	Rock Whitlow-Grass				S2S3	13	78.3 ± 1.0	NS
	Р	Stellaria humifusa	Saltmarsh Starwort				S2S3	4	69.9 ± 0.0	NS
	Р	Oxybasis rubra	Red Goosefoot				S2S3	2	81.7 ± 2.0	NS
	Р	Hypericum majus	Large St John's-wort				S2S3	5	11.4 ± 0.0	NS
	Р	Hypericum x dissimulatum	Disguised St. John's-wort				S2S3	6	9.7 ± 10.0	NS
	P	Empetrum atropurpureum	Purple Crowberry				S2S3	5	149+70	NS
	P	Eunhorbia polygonifolia	Seaside Spurge				S2S3	11	516 + 30	NS
	P	Myrionhyllum farwellii	Farwell's Water Milfoil				S2S3	9	243 ± 10	NS
	D	Hodoomo pulogioidos	Amorican Falso Doppyroval				6263	17	24.5 ± 1.0	NG
	Г	Oppethore frutioned con	Narrow looved Evening				5255	17	24.0 1 3.0	NG
	Р		Drimesoo				S2S3	7	14.4 ± 7.0	N3
	-		Philliose				0000		10.0 . 1.0	NO
	Р	Polygala polygama	Racemed Milkwort				\$2\$3	4	13.3 ± 1.0	NS
	Ρ	Polygonum aviculare ssp. buxiforme	Box Knotweed				S2S3	8	38.1 ± 7.0	NS
	Р	Polygonum oxyspermum ssp. raii	Ray's Knotweed				S2S3	5	35.5 ± 1.0	NS
	Р	Polygonum oxyspermum	Sharp-fruit Knotweed				S2S3	1	9.1 ± 0.0	NS
	Р	Rumex triangulivalvis	Triangular-valve Dock				S2S3	10	37.8 ± 0.0	NS
	Р	Primula mistassinica	Mistassini Primrose				S2S3	16	83.7 ± 7.0	NS
	Р	Anemone quinquefolia	Wood Anemone				S2S3	13	57.2 ± 0.0	NS
	Р	Caltha palustris	Yellow Marsh Marigold				S2S3	7	6.4 ± 0.0	NS
	P	Amelanchier fernaldii	Fernald's Serviceberry				S2S3	1	697 + 70	NS
	P	Potentilla canadensis	Canada Cinquefoil				S2S3	7	29+00	NS
	P	Galium obtusum	Blunt-leaved Bedstraw				S2S3	1	873+00	NS
	F D	Saliv pollita	Satiny Willow				8283	3	67.3 ± 0.0	NG
	F D	Tiorollo cordifolio	Heart looved Ecomflower				6263	16	62.0 ± 4.0	NG
	F D	Deebmerie evlindriee	Small anika Falsa nattla				6263	10	11.0 ± 0.0	NC
	P	Boenmena cylindrica					5253	49	41.0±0.0	NS NO
	P	Carex adusta	Lesser Brown Sedge				5253	6	11.2 ± 5.0	NS NO
	P	Carex capillaris	Hairlike Sedge				\$2\$3	1	90.1 ± 0.0	NS
	Р	Carex comosa	Bearded Sedge				S2S3	7	43.5 ± 5.0	NS
	Р	Carex houghtoniana	Houghton's Sedge				S2S3	2	65.9 ± 1.0	NS
	Р	Carex hystericina	Porcupine Sedge				S2S3	8	74.6 ± 0.0	NS
	Р	Eleocharis ovata	Ovate Spikerush				S2S3	4	18.6 ± 0.0	NS
	Р	Scirpus pedicellatus	Stalked Bulrush				S2S3	7	42.6 ± 0.0	NS
	Р	Vallisneria americana	Wild Celery				S2S3	11	43.6 ± 1.0	NS
	Р	Najas gracillima	Thread-Like Naiad				S2S3	3	30.7 ± 0.0	NS
	Р	Goodvera pubescens	Downy Rattlesnake-Plantain				S2S3	17	36.7 ± 0.0	NS
	Р	Spiranthes casei	Case's Ladies'-Tresses				S2S3	1	95.0 ± 0.0	NS
	P	Spiranthes lucida	Shining Ladies'-Tresses				S2S3	13	417 + 10	NS
	P	Potamogeton friesii	Fries' Pondweed				S2S3	10	726+10	NS
	P	Woodsia dahella	Smooth Cliff Fern				S2S3	2	90.0 + 1.0	NS
	P	Botrychium lanceolatum ssp.	Narrow Triangle Moonwort				S2S3	4	64.7 ± 5.0	NS
	P	angususegmentum Detruchium eimplex	-				6060	7	45 2 4 4 0	NC
							3233	1	40.3 ± 1.0	NO NO
	P	Opniogiossum pusilium	Northern Adder's-tongue				\$2\$3	5	10.5 ± 50.0	NS
	P	Potamogeton pulcher	Spotted Pondweed			Vulnerable	S3	20	66.5 ± 0.0	NS
	Ч	Angelica atropurpurea	Purple-stemmed Angelica				S3	1	79.6 ± 0.0	NS
	Р	Conioselinum chinense	Chinese Hemlock-parsley				S3	2	52.7 ± 0.0	NS
	Р	Hieracium robinsonii	Robinson's Hawkweed				S3	2	82.9 ± 1.0	NS
	Р	lva frutescens	Big-leaved Marsh-elder				S3	33	40.2 ± 0.0	NS
	Р	Senecio pseudoarnica	Seabeach Ragwort				S3	23	23.4 ± 0.0	NS
	Р	Symphyotrichum boreale	Boreal Aster				S3	6	27.2 ± 5.0	NS
	Р	Symphyotrichum undulatum	Wavv-leaved Aster				S3	119	7.5 ± 1.0	NS
	Р	Symphyotrichum ciliolatum	Fringed Blue Aster				S3	19	41.8 ± 0.0	NS
	P	Alnus serrulata	Smooth Alder				S3	484	737+00	NS
	P	Betula michauxii	Michaux's Dwarf Birch				S3	64	232+00	NS
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Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	Betula pumila	Bog Birch			-	S3	3	54.2 ± 0.0	NS
Р	Cardamine parviflora	Small-flowered Bittercress				S3	15	22.4 ± 50.0	NS
Р	Palustricodon aparinoides	Marsh Bellflower				S3	18	45.7 ± 1.0	NS
P	Mononeuria groenlandica	Greenland Stitchwort				S3	142	1.5 ± 0.0	NS
P	Sagina nodosa	Knotted Pearlwort				\$3	54	219+00	NS
P	Sagina nodosa ssn. horealis	Knotted Pearlwort				53	10	260+00	NS
D	Stollaria longifalia	Long looved Stanwort				63	10	475±50	NS
F D	Corotophyllum ochinotum	Drickly Hornwort				50 62	7	47.3 ± 3.0 70.4 ± 0.0	NG
г Р	Triosteum aurantiacum	Orange-fruited Tinker's				53 S3	34	70.4 ± 0.0	NS
P	Crassula aquatica	Weed Water Pygmyweed				53 53	1	25.7 ± 0.0	NS
D	Empetrum eamesii	Pink Crowberry				S3	03	1/0 + 7.0	NS
P	Vaccinium uliginosum	Alpine Bilberny				S3	30	14.3 ± 1.0 25.8 + 1.0	NS
F D	Vaccinium unginosum Holonia deflova	Spurred Contion				50 62	2	23.0 ± 1.0	NG
		Bieknell's Grene's hill				33 62	10	23.3 ± 0.0	NO NO
P		Bickheil S Grane S-bill				33 00	10	45.0 ± 5.0	INS NO
P	Myriopnyllum verticillatum	vvnoried vvater Militoli				S3	3	45.7 ± 3.0	NS
P	Utricularia resupinata	Inverted Bladderwort				\$3	11	85.0 ± 0.0	NS
Р	Epilobium strictum	Downy Willowherb				S3	8	62.7 ± 0.0	NS
Р	Polygala sanguinea	Blood Milkwort				S3	17	11.3 ± 0.0	NS
Р	Persicaria arifolia	Halberd-leaved Tearthumb				S3	10	54.0 ± 0.0	NS
Р	Plantago rugelii	Rugel's Plantain				S3	8	12.1 ± 0.0	NS
Р	Primula laurentiana	Laurentian Primrose				S3	21	72.3 ± 7.0	NS
Р	Samolus parviflorus	Seaside Brookweed				S3	47	8.8 ± 1.0	NS
Р	Pvrola minor	Lesser Pvrola				S3	2	18.3 ± 0.0	NS
Р	Anemone virginiana	Virginia Ánemone				S3	17	39.3 ± 5.0	NS
P	Cenhalanthus occidentalis	Common Buttonbush				\$3	1098	135 ± 0.0	NS
P	Galium labradoricum	Labrador Bedstraw				S3	79	539 ± 0.0	NS
P	Salix nedicellaris	Bog Willow				53	130	47.0 ± 0.0	NS
D	Salix soriooo	Silky Willow				63	100	47.0 ± 0.0	NS
P	Saxifraga paniculata ssp.	Laestadius' Saxifrade				55 53	4	72 4 + 7 0	NS
_	laestadii	Yellow-seeded False					_		NS
Р	Lindernia dubia	Pimperel				S3	9	41.5 ± 0.0	110
Р	Laportea canadensis	Canada Wood Nettle				S3	42	38.4 ± 0.0	NS
Р	Pilea pumila	Dwarf Clearweed				S3	6	23.4 ± 0.0	NS
Р	Viola nephrophylla	Northern Bog Violet				S3	7	57.7 ± 1.0	NS
Р	Carex bebbii	Bebb's Sedge				S3	24	38.5 ± 0.0	NS
Р	Carex castanea	Chestnut Sedge				S3	26	53.5 ± 0.0	NS
Р	Carex cryptolepis	Hidden-scaled Sedge				S3	13	28.2 ± 6.0	NS
P	Carex eburnea	Bristle-leaved Sedge				S3	10	639 + 10	NS
P	Carex hirtifolia	Pubescent Sedge				53	29	388+20	NS
P	Carex lunulina	Hon Sedge				53	52	275 ± 10	NS
D	Carex rosoa	Posy Sodgo				63	37	27.0 ± 1.0 37.7 ± 2.0	NS
		Rusy Seuge				33 62	37	37.7 ± 2.0	NO
P		Swan's Sedge				33 00	4	0.4 ± 0.0	NO NO
P	Carex tenera	Tender Sedge				53	6	41.5 ± 0.0	NS NO
P	Carex tribuloides	Blunt Broom Sedge				S3	13	40.1 ± 0.0	NS
Р	Carex tuckermanii	luckerman's Sedge				\$3	27	38.9 ± 2.0	NS
Р	Carex atratiformis	Scabrous Black Sedge				S3	3	91.5 ± 0.0	NS
Р	Eleocharis nitida Eleocharis flavescens var	Quill Spikerush				S3	11	40.9 ± 5.0	NS
Р	olivacea	Bright-green Spikerush				S3	8	16.2 ± 0.0	
Р	Eriophorum gracile	Slender Cottongrass				S3	6	34.6 ± 7.0	NS
Р	Coeloglossum viride	Long-bracted Frog Orchid				S3	13	60.0 ± 1.0	NS
Р	Cypripedium parviflorum	Yellow Lady's-slipper				S3	543	35.7 ± 1.0	NS
Р	Neottia bifolia	Southern Twayblade				S3	119	3.8 ± 0.0	NS
Р	Platanthera flava	Southern Rein-Orchid				S3	35	70.3 ± 0.0	NS
Р	Platanthera grandiflora	Large Purple Fringed Orchid				S3	65	13.4 ± 0.0	NS
P	Platanthera bookeri	Hooker's Orchid				53	16	40 2 + 1 0	NS
						00	10	70.2 ± 1.0	NO NO

Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	Dichanthelium linearifolium	Narrow-leaved Panic Grass				S3	11	44.4 ± 7.0	NS
Р	Piptatheropsis canadensis	Canada Ricegrass				S3	20	29.2 ± 1.0	NS
Р	Poa glauca	Glaucous Blue Grass				S3	8	421+10	NS
P	Potamogeton praelongus	White-stemmed Pondweed				S3	3	696+50	NS
P	Potamogeton richardsonii	Richardson's Pondweed				53	7	52.6 ± 0.0	NS
P	Potamogeton zosteriformis	Flat-stemmed Pondweed				53	15	47.7 ± 5.0	NS
D	Asplonium virido	Groop Sploopwort				63	10	47.7 ± 3.0	NS
	Aspienium vinde	Fregrant Wood Forn				62	12	00.4 ± 7.0	NG
	Dryopiens nagrans	Playiant Wood Fem				33	15	00.0 ± 0.0	NO NO
P	Sceptriaium aissectum	Dissected Moonwort				53	4	66.1 ± 0.0	NS NO
Р	Polypodium appalachianum Porpiogrio omphibio vor	Appalachian Polypody				53	20	44.4 ± 0.0	NS NC
Р	emersa	Long-root Smartweed				S3?	22	41.1 ± 0.0	NO
Р	Spiranthes ochroleuca	Yellow Ladies'-tresses				S3?	32	6.7 ± 7.0	NS
Р	Diphasiastrum x sabinifolium	Savin-leaved Ground-cedar				S3?	1	82.6 ± 0.0	NS
Р	Bidens vulgata	Tall Beggarticks				S3S4	6	10.4 ± 0.0	NS
Р	Erigeron hyssopifolius	Hyssop-leaved Fleabane				S3S4	24	36.7 ± 7.0	NS
Р	Hieracium paniculatum	Panicled Hawkweed				S3S4	26	33.8 ± 11.0	NS
Р	Bidens beckii	Water Beggarticks				S3S4	8	47.7 ± 5.0	NS
Р	Packera paupercula	Balsam Groundsel				S3S4	88	36.1 ± 0.0	NS
Р	Packera paupercula var. paupercula	Balsam Groundsel				S3S4	1	37.5 ± 0.0	NS
Ρ	Atriplex glabriuscula var. franktonii	Frankton's Saltbush				S3S4	14	46.0 ± 0.0	NS
P	Shenherdia canadensis	Soapherry				S3S4	101	305+70	NS
P	Vaccinium boreale	Northern Blueberry				S3S4	2	60.0 ± 1.0	NS
D	Vaccinium cospitosum	Dwarf Bilborny				6364 6364	55	28 4 ± 0.0	NS
	Vaccinium cespilosum	Lighbuch Pluchorn				5354 5254	33	20.4 ± 0.0	NG
	Fogue grandifalia	American Beech				5354 5254	3 262	11.2 ± 0.0	NO
	Pagus granuliolla	American Beech Vellew Bertenie				5354 5254	202	2.7 ± 0.0	NO NO
P	Bartonia virginica	Yellow Bartonia				5354	32	23.5 ± 0.0	NS NO
P	Proserpinaca pectinata	Comp-leaved Mermaldweed				\$3\$4	49	4.5 ± 1.0	NS
P	Decodon verticillatus	Swamp Loosestrife				\$3\$4	4	93.3 ± 0.0	NS
Р	Nuphar microphylla	Small Yellow Pond-lily				S3S4	1	28.1 ± 0.0	NS
Р	Persicaria pensylvanica	Pennsylvania Smartweed				S3S4	24	39.0 ± 7.0	NS
Р	Fallopia scandens	Climbing False Buckwheat				S3S4	16	22.0 ± 0.0	NS
Р	Rumex pallidus	Seabeach Dock				S3S4	1	49.6 ± 0.0	NS
Р	Pyrola asarifolia	Pink Pyrola				S3S4	9	45.0 ± 1.0	NS
Р	Endotropis alnifolia	alder-leaved buckthorn				S3S4	162	37.8 ± 0.0	NS
Р	Amelanchier spicata	Running Serviceberry				S3S4	46	35.1 ± 3.0	NS
Р	Crataegus succulenta	Fleshy Hawthorn				S3S4	1	11.1 ± 0.0	NS
Þ	Fragaria vesca ssp.	Woodland Strawberry				5354	68	373+10	NS
	americana					0004	00	57.5 ± 1.0	NO
P	Gallum aparine	Common Bedstraw				\$3\$4	35	15.5 ± 0.0	NS
P	Geocaulon lividum	Northern Comandra				\$3\$4	3	52.3 ± 0.0	NS
Р	Limosella australis	Southern Mudwort				S3S4	10	21.4 ± 3.0	NS
Р	Veronica serpyllifolia	Thyme-Leaved Speedwell				S3S4	53	5.9 ± 0.0	NS
Р	Ulmus americana	White Elm				S3S4	55	7.5 ± 0.0	NS
Р	Verbena hastata	Blue Vervain				S3S4	123	24.7 ± 7.0	NS
Р	Viola sagittata var. ovata	Arrow-Leaved Violet				S3S4	24	11.4 ± 1.0	NS
Р	Viola selkirkii	Great-Spurred Violet				S3S4	5	36.6 ± 4.0	NS
Р	Symplocarpus foetidus	Eastern Skunk Cabbage				S3S4	3	13.5 ± 0.0	NS
Р	Carex argyrantha	Silvery-flowered Sedge				S3S4	10	41.9 ± 1.0	NS
Р	Sisvrinchium atlanticum	Eastern Blue-Eved-Grass				S3S4	94	54.8 ± 0.0	NS
Р	Trialochin gaspensis	Gasp - Arrowgrass				S3S4	28	23.5 ± 0.0	NS
Р	Juncus acuminatus	Sharp-Fruit Rush				S3S4	9	113+00	NS
P	Juncus subcaudatus	Woods-Rush				S3S4	23	137+00	NS
	Luzula parviflora ssp.					0004	20	00.4 + 0.0	NS
۲	melanocarpa	BIACK-TRUITED WOODRUSH				5354	2	80.1 ± 0.0	
Р	Goodyera repens	Lesser Rattlesnake-plantain				S3S4	6	52.9 ± 0.0	NS

Taxonomic									
Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
Р	Liparis loeselii	Loesel's Twayblade				S3S4	8	12.2 ± 0.0	NS
Р	Platanthera obtusata	Blunt-leaved Orchid				S3S4	8	14.9 ± 10.0	NS
Р	Platanthera orbiculata	Small Round-leaved Orchid				S3S4	11	36.6 ± 4.0	NS
Р	Alopecurus aequalis	Short-awned Foxtail				S3S4	11	46.7 ± 0.0	NS
Р	Dichanthelium clandestinum	Deer-tongue Panic Grass				S3S4	286	9.4 ± 0.0	NS
Р	Coleataenia longifolia	Long-leaved Panicgrass				S3S4	789	84.0 ± 0.0	NS
Р	Panicum philadelphicum	Philadelphia Panicgrass				S3S4	14	41.5 ± 0.0	NS
Р	Koeleria spicata	Narrow False Oats				S3S4	16	37.8 ± 0.0	NS
Р	Asplenium trichomanes	Maidenhair Spleenwort				S3S4	15	61.0 ± 0.0	NS
Р	Equisetum pratense	Meadow Horsetail				S3S4	15	38.8 ± 0.0	NS
Р	Diphasiastrum complanatum	Northern Ground-cedar				S3S4	14	8.9 ± 1.0	NS
Р	Diphasiastrum sitchense	Sitka Ground-cedar				S3S4	2	65.9 ± 1.0	NS
Р	Huperzia appressa	Mountain Firmoss				S3S4	17	67.8 ± 7.0	NS
Р	Sceptridium multifidum	Leathery Moonwort				S3S4	10	52.6 ± 10.0	NS
Р	Botrychium matricariifolium	Daisy-leaved Moonwort				S3S4	5	30.4 ± 0.0	NS
Р	Viola canadensis	Canada Violet				SH	2	44.8 ± 0.0	NS
Р	Greeneochloa coarctata	Small Reedgrass				SH	1	10.5 ± 6.0	NS

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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 C

Archaeological Resource Impact Assessment



Blue Mountain- Birch Cove Lakes - Archaeological Resource Impact Assessment (ARIA)

HRP # A2022NS078

Final Report

June 21, 2023

Submitted to: Nova Scotia Department of Communities, Culture, Tourism & Heritage 1741 Brunswick Street 3rd Floor PO Box 456, STN Central Halifax, NS B3J 2R5

Prepared for: Halifax Regional Municipality (HRM) Parks & Recreation PO Box 1749 Halifax, NS B3J 3A5

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ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT (ARIA) FOR THE BLUE MOUNTAIN-BIRCH COVE LAKES, HALIFAX REGIONAL MUNICIPALITY, NOVA SCOTIA (2022)

This document entitled Archaeological Resource Impact Assessment (ARIA) for the Blue Mountain- Birch Cove Lakes, Halifax Regional Municipality, Nova Scotia (2022) was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Halifax Regional Municipality (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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1.0 INTRODUCTION

This report contains background information about lands within the Blue Mountain-Birch Cove Lake (BMBCL) Study Area as identified therein. The purpose of the review of these lands is to support a possible future park plan over public lands that are owned by Halifax Regional Municipality (HRM) and Province of Nova Scotia, and the Nova Scotia Nature Trust, that would occur with the agreement of these landowners. The Study Area (Figure 1, Appendix A) is located on the western edge of the Halifax urban core and comprises Acadian Forest, wetlands, and a system of lakes and headwaters with paddle routes, and walking, hiking and other trails.

At the request of HRM and other parties, Stantec Consulting Ltd. (Stantec) is preparing a series of background reports. As part of this study, an Archaeological Resource Impact Assessment (ARIA) was required to assess the potential for archaeological resources, including Mi'kmaw and African Nova Scotian communities, to be present within the Study Area. This preliminary archaeological assessment is intended to provide a baseline for a future comprehensive study, informed by Mi'kmaq knowledge. The ARIA consisted of background research, and a field-based archaeological survey (walkover). All work was completed in compliance with Nova Scotia's Archaeological Resource Impact Assessment (Category C) Guidelines (2014) as well as the *Special Places Protection Act* (Chapter 438 of the Revised Statutes, 1989).

The ARIA was conducted under Heritage Research Permit (HRP) No. A2022NS078 issued to Jonathan Kyte of Stantec and the fieldwork for the walkover component of the ARIA was conducted by Jonathan Kyte, MA, and Mike Rooney BA., between June 7 and 8, 2022.

2.0 PROJECT DEVELOPMENT AREA

The Study Area is detailed in Figure 1, Appendix A.



3.0 METHODOLOGY

3.1 BACKGROUND RESEARCH

Desktop historical background research was conducted for the Project using digital and archival information available from various government and non-government sources including published, unpublished, and on-line historical and environmental records. The scope of work for the desktop archaeological investigation included, but was not limited to, the following sources of information to determine the potential for archaeological resources within the Study Area of the Project and to gather an understanding of the general and specific history, including the Pre-Contact and Historic Periods:

- Engagement with the Kwilmu'kw Maw-klusuaqn Negotiation Office's Archaeological Research Division (KMKNO's ARD) to gather information pertaining to traditional or historical use of the Project areas
- Review of relevant Maritime Archaeological Resource Inventory (MARI) forms for information relating to recorded archaeological sites within a 1 km radius of the Project
- Review of previous archaeological investigations conducted near the Project area through consultations with Special Places Coordinator from the Nova Scotia Department of Communities, Culture, Tourism, and Heritage (NSCCTH)
- Review of historical maps and aerial photographs, maps, published sources, and historical and archival records of the Project area and adjoining properties to gain information on historical land use
- Review of the Canadian Register of Historic Places (CRHP) for any built heritage located within or near the Project Area
- Base mapping of the subject property to identify environmental and physiographic features such as topography and historic water margins that would have influenced human settlement and resource exploitation patterns
- Knowledge of the Stantec Archaeology Team
- Consultations with local historical experts, and archaeologists, as applicable

The results of the historical background research were used to identify leading archaeological and environmental indicators for the potential presence of archaeological resources within the Study Area. The results of the research are presented in the sections that follow.



3.2 ARCHAEOLOGICAL WALKOVER

it was not practicable to conduct a comprehensive archaeological assessment of the entire BMBCL footprint. Rather, during the desktop research phase, combined with the knowledge of the general area by the Stantec Archaeology Team, areas of elevated archaeological potential were identified at the desktop level and then the archaeological walkover focused on these areas to assess the potential for there to be archaeological resources present. Additional areas were also reviewed during the walkover in as much as the allocated field time allowed. The findings of the walkover were documented, taking into consideration the results of the desktop historical background research and following the Provincial Guidelines (Category C, 2014) as well as the professional judgement of the Stantec Archaeology Team. Where areas of elevated archaeological potential were identified, these locations were delineated using Field maps mobile phone application and labeled as polygons, with the initials of the archaeologist, the year of the survey, and the number of the polygon (e.g., "Polygon XXX-ARCH-###"). Assessment notes were also taken to aid in the evaluation of potential onsite resources and recorded into field maps (see Figure 2, Appendix A).

4.0 BACKGROUND RESEARCH RESULTS

This section details the results from the historical background research gathered on the geology, environment, and cultural and historical background review of the Study Area.

4.1 THE NATURAL ENVIRONMENT

The Study Area consists mostly of woodland with lakes and intermittent wetlands along water courses. The Study Area also includes granite bedrock ridges, glacial erratics, and sections of barrens. The Study Area is situated between known historical settlements including Hammonds Plains in the north, Bedford to the northeast, Kearney Lake to the east and Timberlea to the south.

The Study Area is within the Granite Uplands Theme Region (Theme Region 451a.). The surficial geology of this Region consists of granite bedrock with scattered glacial erratics that were deposited across the landscape when the glacial ice receded at the end of the last glaciation period (circa 14,000 years before present (bp). The surface is thinly covered with coarse granite till with some areas of thicker Lawrencetown till. The primary soil is Gibraltar, a coarse-textured, well drained gravelly, sandy loam derived from granite, usually shallow, heavily leached, and very acidic. Gibraltar soils are also associated with poorly drained Bayswater and Aspotogan soils, along with many areas of peat (Davis and Brown 1996:81).

Fresh water within this area of the Halifax County segment of this theme region has several long northsouth orientated lakes running along fault lines within the granite bedrock. The forests within this region are mixed hardwoods and softwoods with spruce mostly predominating, with patches of barrens formed in areas of low soil development, exposed bedrock, and in areas of exposure.



The Study Area borders the Quartzite Barrens Theme Region (Theme Region 413a) where the area contains Halifax soils, being well drained, stony, sandy loams, developed on till derived principally from quartzite (Davis and Brown 1996).

4.2 CULTURAL AND HISTORICAL BACKGROUND

While knowledge from oral histories can be used to understand information on past ways of life of Indigenous peoples, the most readily available source of information on the Pre-Contact Period in Nova Scotia is through reports from previous archaeological research conducted in the general area. Several ARIAs have been completed in and around the Study Area. Most assessments provided for review from NSCCTH were associated with projects involving road improvements. Only two ARIAs were previously conducted in the Study Area. The first was an archaeological assessment carryout by Washburn & Gillis Associates Limited (WGA) for a planned connector 9.9 km highway (HWY 113), between HWY 102 (near exit 3) and HWY 103 (north of Exit 4) and located within the Study Area (WGA 2000). That assessment examined the proposed right of way for the planned highway and was followed up in 2009 by CRM group Limited (CRM) with an additional assessment and shovel testing to mitigate areas of high potential (CRM 2009).

There were also four other assessments relating to road improvements carried out, however the assessments were located outside the Study Area. An assessment was carried out by Jacques Whitford Environmental Limited (JWEL) for the development of Parkland Drive between Lacewood Road and Kearney Lake Road (JWEL 1994), near BMBCL although located on the other side of HWY 102. Another assessment was carried out for the twinning of HWY 103 by Davis Archaeological Consultants Limited (DACL) near but not within the Study Area (DACL 2002). An assessment for the Bicentennial Highway Interchange just east of Kearney Lake was carried out by JWEL (2008). CRM carried out an archaeological assessment on the Stillwater Lake bridge replacement and just outside the Study Area (CRM 2010).

Additional assessments carried out by CRM related to other developments around the Study Area were reviewed for pertinent information. These projects include the archaeological monitoring & emergency response for HRM natural gas distribution system (CRM 2012), and the Black Duck Brook West Bedford ARIA (CRM 2020). The final assessment provided was for the new Bedford High School carried out by In Situ Cultural Heritage Research Group in 2011 (ICHG 2011). Relevant, information provided by these assessments is presented below.

The earliest period of human occupation in Nova Scotia is *Sa'qewe'l L'nu'k* (the Ancient People) or "Palaeo-Indian" period (13,000 – 9,000 BP), which saw the arrival of peoples who harvested caribou, possibly along with a variety of other fauna, following deglaciation of the region (Bonnichsen, Keenlyside and Turnmire 1991). This period is best represented in Nova Scotia by the Debert-Belmont site complex near Truro, NS.

Sites of the following *Mu Awsami Kejihaw'k L'nu'k* (the Not so Recent People) or the Archaic Period (9,000-3,000 BP), are characterized in part by distinctive ground stone tool industries. In Nova Scotia, sites of this period are known primarily from interior locations, and for the most part date only to the latter


half of this period (the Late Archaic). Nevertheless, it is inferred that people were present in the province throughout this period, and that their lifeways included a focus on harvesting the resources of the coast as well as interior waterways. The scarcity of evidence for occupation early in the period and on the coast is seen to reflect the effects of rising sea levels; such sites now being situated in marine environments.

The last phase of the Pre-Contact Period, *Kejihawek L'nu'k* (the Recent People) or Woodland/Ceramic period (3,000- 500 BP), sees the appearance of ceramic technology in the context of wide-ranging interactions with other peoples of the greater northeast. Coastal archaeological sites are more clearly documented (albeit still threatened by rising sea levels and coastal erosion) and, in some cases, include substantial shell middens, indicating the harvesting of marine shellfish. Nevertheless, both marine and terrestrial resources figured in the seasonal round during this time, with some regional variation (Nash and Miller 1987; Davis 1991a).

The Study Area is within an area once part of a greater Mi'kmaw territory known as *Eskikewa'kik*, meaning "Skin dressers" (CMM 2007). The water systems would have been an important transportation route and resource base of the local Mi'kmaq and their ancestors for a long time prior to the founding of Halifax. A research inquiry was submitted for the Study Area with KMKNO-ARD and their review revealed 66 recorded traditional use sites within a 1 km radius of the Study Area used for hunting, fishing, and harvesting food, aquatic species, wood, and logs. There are many sites used by large groups of families who settled in the area including sites used during traveling (KMKNO-ARD 2022).

Three recorded Mi'kmaw archaeological sites are located within a 5 km radius of, but outside of, the Study Area: BeCv-15, BeCw-02, and BeCx-37 (Wrights Lake 5). KMKNO-ARD noted that the Study Area is located near Bedford Basin which was an area used extensively by the Mi'kmaq within all aspects of their lives and includes records of found diagnostics, quartz flakes, and petroglyphs (KMKNO-ARD 2002). The Study Area is a known travel route for the Mi'kmaw for accessing the variety of traditional use areas within a 5 km area which includes the Frasers Lake, Stillwater Lake, Cox Lake, Flat Lake (Maple Lake), and Long Lake, linking this area to traditional travel routes. There is no Mi'kmaw name for Blue Mountain although the Mi'kmaw name for Birch Cove in *Minkwaqnik*, which means "long river" and the Mi'kmaw name for Bedford Basin is *Asoqmapskiajk*, which means "at the rocky crossing" (KMKNO-ARD 2022).

The Study Area was also identified in KMKNO-ARD historical review as being connected to two referenced travel routes used between Shubenacadie and Halifax prior to its founding in 1749. The most favoured route ran from Shubenacadie Grand Lake to Rocky Lake. From here a short portage led to the Sackville River system close to the shoreline of Bedford Basin. A route was identified through a report stating "stone arrowheads found" near Dakin Drive and Lodge Drive, near Birch Cove and Prince's Lodge, suggesting this location as a connection route into the Study Area by the Mi'kmaw during the historical period (KMKNO-ARD 2022). An additional area used by the Mi'kmaw up until 1746 was in the area of Fairview were many Mi'kmaq died from exposure from measles contracted from the French who sheltered at this location during a failed campaign to retake the Fortress of Louisburg. This location is adjacent to the Study Area and was in use prior to this event. The Mi'kmaq name for this location in Fairview is "*Al-elsool-a-way-ga-deek*", or at the place with Measles (KMKNO-ARD 2022).



A review of the NSCCTH Maritime Archaeological Resource Inventory (MARI) online database indicates that there are no registered archaeological sites within the Study Area, however it is important to note that there has not been a formal comprehensive ARIA of the Study Area conducted. The three registered archaeological sites within 5 km of the Study Area consist of: a Pre-contact isolated projectile point located near Princes Lodge (BeCv-15) recorded by Preston in 1985; the Bedford Barrens Petroglyph site (BeCw-2), recorded in 1990 by Ruth Whitehead and Brian Molyneaux (Molyneaux 1993) (the age, origin, nature, meaning and function of the petroglyphs have not been established, nor has association with a specific Mi'kmaq settlement been determined (CRM 2009)); and a pre-contact quartz lithics site located at Wrights Lake (BeCx-37) that was identified by CRM in 2006.

The alignment of the original Lunenburg Road ran west of Flat (Maple) Lake and Frasers Lake, constructed in 1757 and was probably created from an existing path used by the Mi'kmaq prior to the establishment of Halifax (CRM 2009). This road was abandoned in 1840 when the St. Margaret's Bay Road (Trunk 3) was constructed (Withrow 1997). A segment of this abandoned road is located within the Study Area. Although there are no known registered archaeological sites associated with this segment, there is raised archaeological potential associated with earlier use by the Mi'kmaw.

Approximately 15 km outside of the Study Area, three additional known Woodland/Ceramic period archaeological sites that relate to usage of the Nine Mile River and Prospect River systems are BcCw-1, BcCw-8, and BdCw-3 and are located within the transition zone between fresh and ocean water along the southeast coast of the Chebucto Peninsula. The most notable site is the Skora / Whites Lake Burial Mound site (BcCw-1) overlooking Prospect Bay and was excavated and studied extensively by Stephen A. Davis in 1987 (Davis 1991b; DACL 2002). Another site was identified the following year by Davis at Camp Pool (BdCw-3) located on the east side and close to the mouth of the Nine Mile River system in Shad Bay. The Ryans Point site (BcCw-8) located underwater within an archipelago of islands in Lower Prospect was a recently identified coastal Woodland period site by Jonathan Kyte in 2015 (SCRMS 2016).

4.3 HISTORICAL PERIOD

The Historic Period is defined as the period from the arrival of mostly European-derived peoples to North America, approximately 500 years ago, until the modern era. For Mi'kmaq communities, this period is referred to as *Kiskukew'k L'nu'k* (Today's People) or Contact Period (500 BP- Present), which saw the growth of European settlement in the region, and with it, a variety of changes for *Kiskukew'k L'nu'k* associated with trade, conflict, and disease (Whitehead 1991).

The first European population to have a presence at the mouth of Halifax Harbour were the Acadians during the late 17th century; there was some seasonal use by New Englanders during the first half of the 18th century for the fishery, although, there was not a large population of European settlement until the British founded Halifax in 1749.



There appears to have been little evidence of early historical settlement within the Study Area after review of historical maps (Church 1865; Faribault 1908). Two areas were identified as having been used more recently during the historic period; one was a sawmill site just off Frasers Lake along the Nine Mile River system in Timberlea, and the other a granite quarry and dam located next to Susies Lake. An additional mill site was identified at the head of Cox Lake.

The lack of settlement within the Study Area is likely due to the uneven terrain, bedrock exposures and poor soil quality. The Study Area was used for the most part for resource extraction, such as timber harvesting. The area has several old lumbering routes along water courses and roads running through sections of the Study Area that were used to transport lumber to surrounding mills. One example of an historical sawmill site (BeCw-3) which could have processed timber from within the Study Area was built in 1818 and is located at the outlet of Paper Mill Lake, just outside the Study Area. A review of historical mapping indicated that there are approximately fifteen historical land grants within the Study Area or portions thereof. Six of the lots reviewed were near Timberlea, a community located at the southwest end of Frasers Lake associated with the historic lumbering activities. The original name for Timberlea was Nine Mile River and originally known by the Mi'kmaw name *"Wokumeak"* meaning "trail route." (Frame 1892:12; Brown 1922:104) By 1900 the name of the area changed to Bowser Station after Angus Bowser who kept a hotel and was postmaster after the rail line was constructed through the community. The area was also popular with sport fisherman during this time who would spend time on the many lakes within the community. The name changed before 1922 to Timberlea when it became a considerable milling district (PANS 1967).

The first land granted within the community was to George Boutilier, being two lots granted in 1821. In 1822, John, Peter, John Jr., and Jacob Boutilier who owned farms in St. Margaret's Bay, petitioned for 650-acre grant, to which they already cut a road on the Nine Mile River (Crown Grant Book K:32; PANS 1967) Cyrus Boutilier received 50-acre grant in 1841 and later operated a couple of sawmills within the community. The mill site was purchased from the estate of Cyrus Boutilier by George Fraser, who produced wooden boxes there, and whose sons Robert, Charles and Aubry Fraser were still operating a mill within the community until the 1950s. (PANS 1967:674)

The Fraser family originally came from St. Margaret's Bay to Timberlea where they were granted a lease of 100-acres in 1856 to bolster their lumber business (Fraser 2022). The Fraser sawmill site is located within a property lot granted along the Nine Mile River at the lower end of Frasers Lake. Lot 'B' annex 8 1/3 acres was not granted until 1879 to George G. Fraser and Charles Fraser, both farmers from St. Margaret's Bay.

The Fraser sawmill was constructed sometime after the property lots were granted to George Fraser as no improvements were referenced within the land documentation. The site was chosen to construct a mill that used a vertical saw powered by a waterwheel. The Mill was in operation until 1921 when a new sawmill was constructed further downstream. (Fraser 2022) An additional property Lot "A' 100-acres included in the deed was located abutted to John Fraser and Cycle Boutilier wood lot located at the head of Stillwater Lake (Crown Grant Book 52:152; Petition 14150). The abutted 100-acre lot was granted to two other St. Margaret's Bay farmers Cyrus and Norman Boutilier in 1881 (Crown Grant Book 53:472; Petition 15015, Plan 14981).



Another wood lot was granted north of Frasers Lake to Norman Boutilier in 1881 (Crown Grant Book 53:401). A survey report dated 1880, recorded that the lot had not been improved upon, that the rocks were granite, and that there were no mill sites standing on the property at that time (Petition 14897, Plan 13629; CRM 2009).

Two additional lots located abutted to the Fraser sawmill site property along the Nine Mile River were also reviewed. One lot was a 100-acre lot granted to a resident of Halifax named James W, Moir in 1902 (Crown Grant Book 72:161; Petition 20707). The adjacent lot along the Nine Mile River of 147-acres was granted to George Boutilier in 1821 (Crown Grant Book K:32).

A lot broken into two sections between Maple Lake and Black Lake (Upper Sheldrake) was granted to Jacob Boutilier in 1845 (Crown Grant Book Y:70). The lot was granted five years after the old Lunenburg Road was abandoned in this location. The old road alignment runs through the center of property lots. There is a vacant section between the two property lots, one being Lot "B" a 75-acre section at the Head of Frasers Lake on the south side, and the other a 25-acre lot "A" between Maple Lake and Upper Sheldrake Lake. Abutted to the north of this lot was a Church Glebe which was land set aside for a rectory although it was never built and is located outside the Study Area. It appears the smaller lot was used for its timber resources.

The quarry and dam sites located at Quarry Lake and Birch Cove Lakes are within a property lot originally granted to Alexander Brymer Esq., in 1787. (Crown Grant Book 19:16). The quarry site and the dam site are not present on the Church map of 1865 although present on the Faribault map of 1908 and it can be concluded that this site was in use during the turn of the 20th century. A Club House or camp is also present on the Faribault map on the western shore of Quarry Lake and is possibly one of many camps located within the Study Area such as concrete foundations and a cribwork dock located at the south end of Ash Lake. A camp was also noted on the Faribault map located on a small island in Ash Lake. In addition, there are remains of a camp beside Crane Lake, near a known portage route between Ash Lake and Crane Lake.

The location of another historic sawmill site was provided by local informant Don Gordon located at the Head of Cox Lake. (Gordon 2021) The property lot was originally granted in 1786 to Elias Marshall and Leonard Dunn as a 800-acre plantation lot that stretch from Bedford Basin to Cox Lake. (Crown Grant Book 18:78). The mill was constructed sometime in the late 19th century by a man named Pulsifer and the mill was connected by a rough track from the Yankeetown Road, which later developed into the Cox Lake Road. Timber was cut from surrounding Crown land on Cox Lake, to produce barrel staves and fish boxes. A stone control structure was constructed at the outlet of Cox Lake to keep water levels up during the summer months and to keep the water cool for the diesel engine used at the mill. Stones from this structure are still visible onsite. In 1908 the mill was purchased by Frank Smith's grandfather, and some years later taken over by his father Russell Smith and his uncle Sam Smith. The mill operated until the early 1970s when the buildings were removed (Gordon 2001).

A review of the Canadian Register of Historic Places (CRHP 2022) found that there are no registered historic places or heritage sites located within 5 km of the Study Area. Furthermore, no buildings of heritage value were found during the ARIA.



5.0 SURVEY RESULTS

The implementation of the archaeological field survey (walkover) of the Study Area took place on June 7 and 8, 2022, under Heritage Research Permit A2022NS078. Seven areas of elevated archaeological potential and archaeological sites were identified as follows:

- Head of Frasers Lake and Mouth of Maple Lake
- Watercourse between Maple and Upper Sheldrake Lake
- Frasers Sawmill Site
- Cox Lake Potential Sawmill Site
- Blue Mountain
- Hobsons Lake
- Granite Quarry and Dam Site

Seven locations visited within the Study Area were identified as exhibiting high potential for encountering Pre-Contact and/or Historic Period archaeological resources. These locations include the area at the head of Frasers Lake as well as the watercourse that runs from Maple Lake, the watercourse between Maple Lake and Upper Sheldrake Lake, the Fraser sawmill site at the lower end of Frasers Lake, another sawmill site at the upper end of Cox Lake, and the watercourse between Hobsons Lake and Kearney Lake. The north slope of Blue Mountain was also seen as high in archaeological potential for use during the Pre-Contact Period because it offered a good vantage point overlooking the Study Area. The Susies Lake, Birch Cove Lakes granite quarry and dam site was also identified as areas to examine for archaeological resources based on the desk-based assessment.

5.1 HEAD OF FRASERS LAKE AND MOUTH OF MAPLE LAKE

The head of Frasers Lake was assessed as exhibiting high archaeological potential because of its location along the Nine Mile River system at a portage point between Frasers Lake and Maple Lake through a small watercourse (JRK-ARCH-008, Photo 1 to 2, Appendix B). This area was originally noted as having high archaeological potential in 1999 when the corridor for Highway 113 was initially assessed (WGA 2000). This assessment was followed up in 2009 by CRM who conducted archaeological shovel testing along the right of way (RoW) for the highway. The watercourse was tested on either side however, no Pre-Contact or Historic Period archaeological resources were encountered (CRM 2009).

During the walkover, two other areas associated with small coves at the north end of the lake were also determined to have elevated archaeological potential. The areas were delineated by Stantec during the 2022 field survey as Polygons MPR-POLY-001 (High Potential), MPR-POLY-002 (Medium Potential), and MPR-POLY-003 (High Potential) (Figure 2, Appendix A). Each area was associated with open to moderately dense mixed wood forest over level and relatively well-drained terrain with few hummocks (MPR-ARCH-006, Photo 3, Appendix B). Although the shoreline is rocky and not ideal for landing a canoe, there is a small beach at the point of land across from Armstrong's Island (JRK-ARCH-004, Photo 4 to 6, Appendix B). This point of land as well as the island itself were assessed as exhibiting high archaeological potential with the island. A small, isolated terrace located in the middle cove formed at the head of Frasers Lake and was assigned high potential and can be seen in Photo 7, Appendix B.



Two additional areas exhibiting high potential for Pre-Contact archaeological resources were noted on either side of the mouth of Maple Lake before it transitions back to the Nine Mile River that empties into Frasers Lake (MPR-ARCH-011, Photo 8, Appendix B). The two areas are delineated by Polygons MPR-POLY-004 and MPR-POLY-005 (Figure 2, Appendix A) and both exhibited dry level terrain suitable for past human habitation, particularly as a strategic location for harvesting resources at the point of constriction between the two lakes.

5.2 WATERCOURSE BETWEEN MAPLE AND UPPER SHELDRAKE LAKE

The watercourse between Maple Lake and Upper Sheldrake Lake was visited to assess the archaeological potential of the area. Water levels were extremely low and with no well-defined banks, the watercourse was unlikely to have been navigable even in the distant past, although it may have been used as a portage between the two lakes (MPR-ARCH-012, Photo 9, Appendix B). The old Lunenburg and or logging roads were noted throughout the area between the two lakes and a large open area completely covered in saw dust was noted on the west side of Maple Lake, which clearly indicated that this location was used for wood milling (JRK-ARCH-009, Photo 10, Appendix B).

A flat section of jutting land on the south side of Upper Sheldrake Lake was chosen to be tested in 2009 by CRM because it was found to be high in archaeological potential and would have been impacted through construction of highway 113. This flat area along the lake was tested with negative results (CRM 2009). This area was not investigated because it was already tested and determined to be low in potential for pre-contact resources.

5.3 FRASERS SAWMILL SITE

The sawmill was located during the desk-based study and review (Faribault 1908). The remains of the sawmill were located during the site visit. The sawmill was constructed sometime after George Fraser received title to the land in 1879. The sawmill operated until 1921 producing wooden boxes. The old road to the mill continued into the forest from the end of the current road and turned ninety degrees to the east and ended at the mill's stone foundation and wall located along the watercourse that runs from Frasers Pond down to the Nine Mile River. Both the old road and the mill location have been designated by data points JRK-HSF-001 and JRK-HSF-002 respectively (Figure 2, Appendix A, Photos 11 to 15, Appendix B).

The remains of a 40 m rock dam at the outflow of Stillwater Lake were observed. The watercourse was channeled, and the terrain altered in this area. The mouth of the watercourse that empties into Mill Pond was also altered and channeled.

Although no specific area was delineated by Polygons, the location in and around the mill is seen as having high potential for historical archaeological resources as well as high for pre-contact resources because of its position along the Nine Mile River system and the nature of the land being suitable for occupation. The shoreline to the north of Frasers Lake was also visited including the remains of an 20th century abandoned camp located at JRK-HSF-004 (Photo 16, Appendix B).



5.4 COX LAKE POTENTIAL SAWMILL SITE

Another possible historic mill site was located at the head of Cox Lake next to Yankeetown. The site was noted by Don Gordon who documented the location and history of a group of camps and houses built along the lake mostly during the mid-twentieth century (Gordon 2021). The possible mill location site was visited, and its location is designated by JRK-HSF-007 (Figure 2, Appendix A, Photos 17 to 18, Appendix B). It appears that a modern concrete block and wooden bridge were built on the footprint of the site. Large boulders reinforcing the watercourse banks under the bridge may have been previously used for the mill. Although there are modern impacts within this area, it is still viewed as exhibiting high potential for historic resources.

5.5 BLUE MOUNTAIN

The northern slope of Blue Mountain, an area of higher elevation, was found to be high in archaeological potential in 1999 (WGA 2000), and again in 2009 (CRM 2009) because it offers a good vantage point for traveling through the area and for hunting and gathering (JRK-ARCH-012, Photos 19 to 20, Appendix B). Although the potential is high in terms of Pre-Contact activity, this location was not found to be suitable for past human occupation because of the exposed nature of the area, the absence of level terrain, the undulating nature of the bedrock and frequent boulder scatters, and a fair distance to good sources of potable water.

5.6 HOBSONS LAKE

Two areas of high potential for Pre-Contact archaeological resources were identified at the north end of Hobsons Lake next to an unnamed watercourse serving as the lake's outlet that connects to Kearney Lake. The two areas were delineated by a single polygon labeled MPR-POLY-006 (Figure 2, Appendix A, JRK-ARCH-011, Photos 21 to 26, Appendix B). The first area can be characterized by a sheltered, bench-like terrace near the lake outlet, and the second area further to the north, an elevated level terrace overlooking the watercourse. These characteristics in combination with the area possibly being upstream from a portage route from Kearney Lake to the Bedford Basin, elevates the area's potential for past human occupation and use.

5.7 GRANITE QUARRY AND DAM SITE

A granite quarry and dam site were visited after being identified during the desktop review of historic maps and photographs of the Study Area. The road to the quarry, (JRK-ARCH-013, Photo 27, Appendix B), was followed to the lake shore where the site was located and designated by data point JRK-HSF-009 (Figure 2, Appendix A). Evidence of quarrying activity were still present on granite blocks showing signs of chisel marks (Photos 29 to 30, Appendix B). Approximately 150 m back from the quarry site adjacent to (west of) the quarry road, a foundation and possible cellar feature were found at the location where a building for the quarry was marked on historic maps (Photo 28, Appendix B). This location was designated by data point JRK-HSF-010 (Figure 2, Appendix A). Further north along the eastern side of Quarry Lake is the location of a historic dam site which was designated by data point JRK-HSF-011 but



was not visited as it continues to be an active dam site. It should be considered as having archaeological potential for Historic Period resources as well as Pre-Contact resources. Finally, a concrete slab from a former building was noted on the east side of Birch Cove Lake and designated by data point JRK-HSF-008 (Figure 2, Appendix A, Photo 31, Appendix B).

6.0 CONCLUSIONS

Following the desktop study and focused archaeological walkover, areas of elevated archaeological potential were identified within the Study Area. These consisted of seven (7) polygons that delineated elevated potential for Pre-Contact archaeological resources and several data points denoting historically significant features in areas with elevated potential for additional Historic Period archaeological resources.

As it was not practical to include the entire geographic area of the Study Area in the field component of the archaeological assessment, it is recommended that when development plans for the BMBCL are being considered that the results of this assessment as well as additional, more focused comprehensive archaeological field survey of these areas be completed. Should development or ground disturbing activities be proposed that would interact with areas already identified in this report as exhibiting elevated potential for archaeological resources, then additional investigations and mitigation (i.e., shovel testing) should be conducted.

It is important to note that while no Pre-Contact archaeological resources were identified during the field assessment, there is still potential for sub-surface archaeological resources to be present. If archaeological resources are discovered, contractors or HRM or any other applicable landowners (including the province and NS Nature Trust) are required to contact NSCCTH if potential archaeological resources are encountered during ground-breaking activities to assess the discovery and develop appropriate mitigation.



7.0 CLOSING

This report has been prepared as a requirement of Heritage Research Permit No. A2022NS078 for the sole benefit of HRM and may not be used by any other person or entity, other than for its intended purposes, without the express written consent of Stantec Consulting Ltd. (Stantec) and HRM. Any use which a third party makes of this report is the responsibility of such third party.

The information and recommendations contained in this report are based upon work undertaken in accordance with generally accepted scientific practices current at the time the work was performed. Further, the information and recommendations contained in this report are in accordance with our understanding of the Project as it was presented at the time of our report. The information provided in this report was compiled from existing documents, design and planning information provided by HRM, data provided by regulatory agencies and others, as well as the field survey carried out in 2022 specifically in support of this report. If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, Stantec requests that we be notified immediately, and permitted to reassess the conclusions provided herein. Any follow-up work recommended in this report must be reviewed and approved by Special Places, the Nova Scotia Department of Communities, Culture, Tourism, and Heritage.



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APPENDIX A

Figures





C Study Area

0 1,000 2,000 metres (At original document size of 8.5x11) 1:125,000

Notes 1. Coordinate System: NAD 1983 CSRS UTM Zone 20N 2. Data Sources: Government of NS, Client 3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Project Location P Blue Mountain Birch Cove Lakes WildernessArea Nova Scotia Prepared on 5/6/2022

Client/Project 121417394_001

Halifax Regional Municipality Blue Mountain Birch Cove Lakes Comprehensive Study Figure No. 1

TRIE Blue Mountain Birch Cove Lakes Study Area Location

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APPENDIX B

Photographs











HRP A2022NS078		
Photo 9 View north of the small watercourse between Maple Lake and Upper Sheldrake Lake, the old Lunenburg Road can be seen	Photo 10 View east of the large sawdust pile located next to Maple Lake.	
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HRP 4	2022NS078
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HRP A20	022NS078
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HRP A2022NS078		
Phote 20 View south of the quarty site showing the exposed eraptic		
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APPENDIX D

Land Use and Settlement Analysis



Blue Mountain Birch Cove Lakes Comprehensive Study - Land Use And Settlement Analysis

June 21, 2023

Prepared for: Halifax Regional Municipality

Prepared by: Stantec Consulting Ltd.

File: 121417394

BLUE MOUNTAIN BIRCH COVE LAKES COMPREHENSIVE STUDY - LAND USE AND SETTLEMENT ANALYSIS

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Acronyms / Abbreviations

BMBCL	Blue Mountain-Birch Cove Lakes
DA	Development Agreement
HRM	Halifax Regional Municipality
LUB	Land Use By-law
MPS	Municipal Planning Strategy
PID	Premises Identification
SPS	Secondary Planning Strategy



1.0 INTRODUCTION

This report contains background information about lands within the Blue Mountain-Birch Cove Lake (BMBCL) Study Area as identified therein. The purpose of the review of these lands is to support a possible future park plan over public lands that are owned by Halifax Regional Municipality (HRM) and Province of Nova Scotia, and the Nova Scotia Nature Trust, that would occur with the agreement of these landowners.

Land use describes the human use of land and represents the economic and cultural activities (e.g., recreation, residential, commercial, industrial) that are practiced in each place. In this report, Stantec Consulting Ltd. (Stantec) has analyzed current land use, including both developed and undeveloped land, and settlement types in the Study Area and vicinity (Figure 1.1). For this particular report (Land Use and Settlement Analysis), the Study Area includes the Conceptual Park Area defined on Map 11 of the 2014 Regional Plan, plus lands added by the Province and obtained by HRM and the Nature Trust of Nova Scotia. The Study Area for the Land Use Analysis (herein referred to as the Study Area) also includes lands within one kilometer of the perimeter of the foregoing as the surrounding lands provide the land use context for the park's proposed development.

Stantec's analysis of land use and settlement emphasizes the proposed BMBCL public lands' interface with urban settlement features and the resulting relationship with park access. Analyzing existing land use and settlement is an essential component of the broader comprehensive background study and future BMBCL park planning process. Examination of historical and projected future land use and settlement patterns, and community character helps to identify the likely path of future development surrounding the park.

The land use and settlement analysis in this report provides a land use inventory, a review of land use policies and regulations, and a summary of development activity and land development trends, leading to an assessment of planning implications. Recommendations synthesize the land use and settlement analysis and make recommendations for access and transportation to the Study Area.



BLUE MOUNTAIN BIRCH COVE LAKES COMPREHENSIVE STUDY - LAND USE AND SETTLEMENT ANALYSIS



Source: HRM and Nova Scotia Open Data

Figure 1.1 Study Area for the Land Use Analysis, Including Regional Plan Map 11 and Significant Land Acquisitions Since 2017

2.0 LAND USE INVENTORY

In this report section, land use patterns in the Study Area and vicinity are examined by inventorying land use from varied sources, including zoning and building use based on the land areas devoted to each use, and describing the relevant planning issues.



BLUE MOUNTAIN BIRCH COVE LAKES COMPREHENSIVE STUDY - LAND USE AND SETTLEMENT ANALYSIS

Land use data was compiled from zoning information to indicate existing and potential future land uses in Study Area. High-level land use categories include Residential, Commercial, Institutional, Mixed-Use, Community Use, Industrial, Resource Use, and Comprehensive Development. The land use inventory is summarized in Figure 2.1 and illustrated in Figure 2.2. The categories included in Figure 2.1 are from data compiled from zoning information to indicate existing and potential future land use. A description of related land use policies and development regulations is included in Section 3 of this report.



Figure 2.1 Land Use Inventory Summary, Study Area for the Land Use Analysis





Source: HRM and Nova Scotia Open Data

Figure 2.2 Land Use Inventory, Study Area for the Land Use Analysis, 2022



BLUE MOUNTAIN BIRCH COVE LAKES COMPREHENSIVE STUDY - LAND USE AND SETTLEMENT ANALYSIS

The areas summarized in the inventory based on land use zoning (Figure 2.1 and Figure 2.2) include a total area of 66 km² of land on 6,850 unique parcel identifiers (PIDs) within the Study Area. The zoningbased inventory shows a mix of land uses within the Study Area.

The inventory generally shows that the primary high-level land use category within the Study Area is residential. Residential uses are generally located along the proposed BMBCL park interface in the Plan Areas of Beaver Bank, Hammonds Plains and Upper Sackville, Halifax, and Timberlea/Lakeside/ Beechville. The almost 20 km² or 29% of residential land in the Study Area represents a mix of existing neighbourhoods found within the communities of Timberlea and Lakeside, Stillwater Lake, Hammonds Plains, and Bedford but also substantial undeveloped areas, including large swaths of residentially zoned land within the Halifax (Mainland) Plan Area (and within the Concept Park Boundary shown on Map 11 in the Regional Plan) as well as within the Timberlea/Lakeside/Beechville Community Plan Area.

Community Use covers just over 21 km² or 32%, of the Study Area. Community uses include the land use zoning of specific proposed BMBCL public lands, including the Wilderness Area, along with a strip of community land use owned by both public (Department of Natural Resources and Renewables) and the Nova Scotia Nature Trust between the subdivisions of Haliburton and Highland Park (Figure 2.1, above). Mixed Use areas include those characterized by semi-rural development consisting of a traditional mix of low-density residential, home business, and resource uses. Mixed-use areas are found in the most northern extent of the Study Area along Hammonds Plains Road and in Highland Park Subdivision (developed) and on the western edge of the Haliburton Subdivision (undeveloped).

Resource Uses comprise 12% of the Study Area and include lands identified for resource use, resource industries, recreation uses, communication transmission stations, and low-density development in the form of single unit dwellings, mobile dwellings, and business activities in association with residential uses on lots which have a minimum area of 80,000 sq. ft.

The remaining approximately 27% of inventoried lands include those zoned as Mixed-Use, Comprehensive Development, Industrial, and Commercial. While Comprehensive Development Areas represent a relatively small portion of the Study Area (~7%), they are also areas, like the Resource Use and Mixed-Use areas identified in the zoning-based inventory, where residential development can be found, in addition to Commercial and Institutional uses.

The zoning-based land use inventory does not fully account for undeveloped lands within the Study Area. To supplement the zoning-based information, Stantec used HRM's open data on 5.479 buildings within the Study Area. HRM's building data which offers improved distinction between developed and undeveloped land uses, was created through various means including civic addressing, building permit records, fire inspection, and asset management. The data includes information on building classification and building use. It was current to July 14, 2022, when it was retrieved by Stantec. Based on the building data, Stantec estimates approximately 46 km² of the land within the Study Area (60%) is undeveloped. HRM specifies that the dataset is a work in progress and the Municipality is working to improve its quality and completeness. Figure 2.3 shows the inventory of building use by footprint area in square feet based on building location data. Data shown in Figure 2.3 is exclusive of undeveloped lands (approximately 60% of the Study Area).



BLUE MOUNTAIN BIRCH COVE LAKES COMPREHENSIVE STUDY - LAND USE AND SETTLEMENT ANALYSIS



Figure 2.3 Building Use Inventory Summary, Study Area for the Land Use Analysis

As with the zoning-based land use inventory, the building use inventory shows that the predominant land use is residential with 17 million square feet of building coverage in the Study Area, or 73% of all building coverage. Of the residential building coverage located within the Study Area, 67% is single unit dwellings, 17% for muti-unit buildings, 10% for two-unit buildings, 4% for townhouses, and the remaining 4% for other residential building types.

Commercial buildings make up 18% of building coverage (4.3 million square feet), followed by industrial buildings at 6% (1.3 million square feet), then institutional buildings at 3% (660,000 square feet). Commercial buildings found in the Study Area include bars/restaurants/supermarkets, offices, strip malls, entertainment uses, hotels/motels, commercial storage, repair garages, medical offices, gas stations, and personal service uses. Industrial uses include manufacturing facilities, recycling facilities, and warehousing uses. Institutional uses within the Study Area include daycares, fire halls, nursing homes, places of worship, and schools. A small proportion (less than 1%) of building coverage is dedicated to other uses. Three percent of total building coverage in the Study Area did not have a building use assigned.


Figure 2.4 shows the density of residential, commercial, and industrial buildings in the Study Area as a heat map and includes other buildings as graduated symbols based on building footprint area. Within the Study Area, the highest density of residential buildings is found in the Timberlea and Clayton Park West areas, while the main areas of commercial building are in the Bayer's Lake and Larry Uteck areas. Industrial buildings in the Study Area are concentrated in the Beechville Industrial Park.





Source: HRM and Nova Scotia Open Data

Figure 2.4 Building Use Heat Map, Study Area for the Land Use Analysis



3.0 LAND USE POLICIES AND DEVELOPMENT REGULATIONS

To supplement the land use inventory, Stantec reviewed the land use policies, zoning, and subdivision regulations applicable in the Study Area to account for past and expected future development trends. Our review describes and discusses the land use policies and regulations as they relate to the existing land use patterns and outlines current regulations that provide the framework for further development of the Study Area and vicinity.

3.1 REGIONAL PLAN

The Regional Municipal Planning Strategy establishes long-range, region-wide planning policies outlining where, when, and how future growth and development should take place between 2014, when the current plan was adopted, and 2031. The vision of the Regional Plan is to enhance the quality of life in HRM by fostering the growth of healthy and vibrant communities, a strong and diverse economy, and a sustainable environment. The Plan seeks to address the needs of all sectors of the region, recognizing the diversity of HRM's residents, community, and geography. The Regional Plan is regularly reviewed to ensure it continues to reflect the region's goals for growth and development. In February 2020, Regional Council initiated a review of the current plan offering opportunities to address the proposed BMBCL park in the context of the National Urban Park Initiative and HRM's rising growth.

The proposed BMBCL park is described in Chapter 2: Environment, Energy, and Climate Change of the Regional Plan as a Regional Park. Other park classifications in the Regional Plan include Neighbourhood, Community, and District Parks. The description of the Regional Park classification in Table 2-2 of the Regional Plan is as follows:

The primary objective of a Regional Park is to preserve and protect significant natural or cultural resources. The essential feature of a Regional Park may include, but not be limited to, open space, wilderness, scenic beauty, flora, fauna, and recreational, archaeological, historical, cultural and/or geological resources. A Regional Park will have sufficient land area to support outdoor recreational opportunities for the enjoyment and education of the public. The size of a Regional Park must be sufficient to ensure that its significant resources can be managed so as to be protected and enjoyed. Regional Parks may be federal, provincial or municipal properties and are intended to serve the educational, cultural and recreation needs of the population of the entire region as well as for visitors to HRM.

Subsection 2.2.3 of the Regional Plan describes lands within the proposed BMBCL park as being both privately and publicly owned at the time of the Plan's adoption, and references Map 11 in the plan as showing the conceptual geographic area for the proposed park. While the Regional Plan identifies the need for further analysis to determine appropriate geographic boundaries for the proposed BMBCL park, it describes the desire to acquire the necessary private lands within the park for public use, over time, citing a range of acquisition methods including provincial and municipal partnerships, as financial resources permit; land trades; and conservation easements. Following the Plan review, public lands within the park are expected to be redesignated as Open Space and Natural Resource and zoned Regional Park. Lands outside the park will be designated and zoned for development as appropriate.



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The Study Area encompasses a number of Regional Plan Generalized Future Land Use designations including Open Space and Natural Resource, Urban Reserve, Industrial Parks, and Urban Settlement, and Rural Commuter as shown in Figure 3.1 and further summarized in Table 3.1 and Figure 3.2. Private lands that are designated as Urban Reserve are intended to ensure that a supply of land is available for serviced development over the long term (i.e., where serviced development may be provided after the life of the Regional Plan). Regional Plan policy requires applicable land use by-laws to establish Urban Reserve Zones to regulate development of lands within the Urban Reserve Designation by permitting open space uses and limiting residential development to existing lots and to single lots subdivided from existing lots.

In 2015, the Province added two additional areas of Provincial land to the existing BMBCL Wilderness Area (between the core area and Cox Lake). Since 2017, HRM has obtained several private properties in support of the proposed park and contributed funding to the Nova Scotia Nature Trust for its acquisition of private lands linking distinct portions of the provincial wilderness area. Lands acquired by HRM since adoption of the Regional Plan (and additional lands added by the Province), as identified in Figure 1.1, above, have not been redesignated as Open Space and Natural Resource nor zoned Regional Park under applicable Land Use By-laws.

Designation	Intent	Policy Direction	
Urban Settlement	Encompass areas where serviced development exists or is proposed under the Regional Plan.	Consider amendments to the boundary to achieve growth targets.	
Urban Reserve	Ensure that a supply of land is available for serviced development over a longer-term	To provide serviced development after the life of the Regional Plan.	
	horizon.	Permit open space uses and limit residential development to existing lots and to one lot subdivided from an existing lot.	
Rural Commuter	Encompass those areas within commuting distance of the Regional Centre that are heavily influenced by low-density residential	Protect the character of rural communities and conserve open space and natural resources by focusing growth within a series of centres.	
development.	development.	Control the amount and form of development between centres.	
		Protect the natural resource base and preserve the natural features that foster the traditional rural community character.	
Open Space and Natural	The area encompassing a natural network of open space in the interior of HRM.	To preserve the interconnected system of open space and minimize fragmentation.	
Resource		Prohibit residential development on new roads.	
Industrial Park*	A sub-designation that represents priority areas for an integrated mix of industrial,	Obtain guidance from the Business Parks Functional Plan.	
	commercial, service and support uses.	Strategic industrial acquisition to support economic development objectives.	
* Note that the Industrial Park designation is overlaid on the Urban Settlement designation in the southwestern corner of the Study Area.			

Table 3.1 Regional Plan Land Use Designations





Source: HRM and Nova Scotia Open Data

Figure 3.1 Study Area for the Land Use Analysis, Regional Plan Future Land Use Designations



File: 121417394



Figure 3.2 Study Area, Regional Plan Future Land Use Designations

Additional relevant planning considerations for the BMBCL Area under HRM's Regional Plan include:

- Settlement and Transportation: Map 1 of the Regional Plan shows an Urban District Growth Centre (Highway 102 West Corridor) and an Urban Local Growth Centre (Kearney Lake) within the Study Area. The Highway 102 West Corridor is within the Urban Settlement Designation and is identified in the Regional Plan as a future serviced community, subject to HRM approval of secondary planning. The Kearney Lake Growth Centre is within Urban Settlement and Rural Commuter Designations.
- Highway 113 has been under consideration since 1999 and the Province has preserved a corridor for its construction; however, the roadway is not included in the Province's current 5-year Highway Improvement Plan and a recent HRM Information Report (Halifax Regional Council, January 28, 2020) stated that it is not expected any time soon.
- 3. Active Transportation: Map 3 of the Regional Plan shows an interconnected system of open spaces within the BMBCL area that includes several water routes and land-based greenways.
- 4. Natural Corridors: Map 4 of the Regional Plan shows a natural corridor that interconnects the natural areas of the Protected Wilderness Area/Conceptual Park Boundary to provide opportunity for wildlife to migrate between habitat patches and maintain natural ecological functions.



3.2 **REGIONAL SUBDIVISION BY-LAW**

The Regional Subdivision By-law establishes regulations for the subdivision of land throughout HRM. It also establishes design standards for public streets, sidewalks, and municipal parkland dedication. It also includes the Urban Service Area, which establishes areas that may be developed with municipal water, wastewater, and stormwater services. In areas of HRM where municipal services do not exist and on-site septic systems and wells are required, developments involving more than eight lots on a new road are subject to the Conservation Design Development process. Conservation Design seeks to conserve open space in rural areas and protect environmental features by locating homes on the portion of a subdivision site best suited for development while retaining the remainder of the land as open space.

In the mid-1990s, concerns related to the impacts of uncontrolled residential growth led to discussions for options to residential growth management and the adoption of the Residential Growth Management policy in 1998. These policies were focused on the Hammonds Plains and Cow Bay areas to slow the rate of unserviced subdivision. In 2004, a subdivision moratorium was imposed until the adoption of the 2006 Regional Plan, which tightened the earlier growth controls for Hammonds Plains and Beaver Bank. However, lots with active or completed tentative or final applications or concepts were permitted to retain some development rights depending on the location and dates of their applications. These proposed subdivisions were restricted to a limited rate of development (25 lots per year). Section 4.3 of this report provides more information on these "legacy" subdivisions.

Sections 82 to 86 of the Regional Subdivision By-law set out park dedication requirements. Prior to subdivision approval, HRM requires subdividers to deed to the Municipality land equal to 10% of the total area of the lots being created for use as public parkland. Where it is not feasible to provide the necessary area of land, cash in lieu of land will be accepted. A cash donation is based on 10% of the assessed value of the lots being created. There are some exemptions that reduce the cash donation to 5% for a limited number of lots. This is outlined in Section 82. All cash is used for the acquisition of and improvements to park areas.

3.3 COMMUNITY PLAN AREAS

Community Plan Areas are communities of interest that have their own set of land use policies (i.e., Municipal Planning Strategies) and by-laws (i.e., Land Use By-laws). Currently, HRM has 21 community plan areas that apply to specific communities within the Municipality. The Study Area includes portions of five Community Plan Areas: Bedford; Timberlea/Lakeside/Beechville; Halifax (Mainland); Planning Districts 1 & 3; and Beaver Bank, Hammonds Plains and Upper Sackville. Figure 3.3 shows the Study Area in relation to HRM Community Plan Areas; Figure 3.4 shows the resulting breakdown in land areas allocated to each Plan Area.

The largest share of the Study Area (58.4%) is in the Beaver Bank, Hammonds Plains, and Upper Sackville Plan Area, with smaller areas falling within the Halifax and Timberlea/Lakeside/Beechville Plan Areas. The Community Plan Areas of Bedford and Planning Districts 1 & 3 fall within the extended buffer of this particular report's Study Area. Considered together, there are presently ten community plan area documents that may influence land use and settlement in the Study Area.



File: 121417394



Source: HRM and Nova Scotia Open Data

Figure 3.3 Study Area, Community Plan Areas





Figure 3.4 Community Plan Areas Summary, Study Area for the Land Use Analysis

3.3.1 BEDFORD COMMUNITY PLAN AREA

The Bedford Community Plan area does not include any part of the Map 11 BMBCL Area but reaches into the one-kilometer buffer that encircles it. The portion of Bedford within the Study Area is known as Bedford West and is subject to a Secondary Planning Strategy (SPS) in the Bedford Municipal Planning Strategy (MPS). The Bedford West area is generally west of Highway 102, south of Hammonds Plains Road, east of the community of Kingswood, and north of the Map 11 BMBCL Area.

The Bedford West SPS was first approved by Regional Council in 2006. Under the plan, the area is expected to house a significant portion of HRM's urban growth over the 25 years to 2031. The Bedford West SPS area is divided into twelve sub areas. Relevant Bedford West SPS policies require all development in Bedford West be by development agreement. Development agreements have been approved for Sub Areas 2, 3, 4, 5, 7, 8, 9, and 10. Plans for Sub Areas 7 and 8, which directly abut the Map 11 BMBCL Area, include a conceptual regional park entrance.

In March 2022, the Province of Nova Scotia designated nine special planning areas in HRM to support the development of as many as 22,600 new residential units. To help accelerate an increase in the supply of housing, as outlined in the *Halifax Regional Municipality Act*, the designation allows the Minister of Municipal Affairs and Housing to make decisions on planning matters in these areas. Two special planning areas were identified in Bedford West: Bedford West 10 (for which Regional Council approved a proposal in December 2021) and Bedford West 12 and 1 (for which Regional Council initiated a planning process in June 2021).



3.3.2 TIMBERLEA/LAKESIDE/BEECHVILLE COMMUNITY PLAN AREA

Beechville, Lakeside, and Timberlea extend along Highway 3, westward from Bayers Lake. The three communities are further defined to the south by the major Provincial arterial Highway 103 and to the north by a series of waterbodies including Fraser Lake, Governor Run, Governor Lake, and Lovett Lake. Approximately 16% of the Study Area falls within the Plan Area for this community, including portions of the designated Wilderness Area and lands acquired by HRM since 2017. These lands are designated Mixed Resource in the Plan Area MPS and are zoned Mixed Resource, Urban Reserve, and Regional Park in the Land Use Bylaw (LUB).

3.3.3 HALIFAX (MAINLAND) COMMUNITY PLAN AREA

Twenty-two percent of the Study Area falls within the Mainland North Planning Area in the Halifax (Mainland) MPS. Map 1 of the MPS shows portions of the BMBCL Area as not permitting development due to environmental sensitivity and lack of municipal services (per Policy 2.1.5, only single-detached residential dwellings and community facilities with on-site services shall be permitted). Lands in the Study Area are designated Holding Area in the MPS and zoned Regional Park, Urban Reserve, Urban Settlement, with a small area of Two Family Dwelling zoning in the LUB. The Halifax MPS also includes the Bedford West Comprehensive Development District (refer to section 3.3.1 Bedford Community Plan Area).

3.3.4 PLANNING DISTRICTS 1 & 3 COMMUNITY PLAN AREA

The Planning Districts 1 & 3 Community Plan Area is outside the Map 11 BMBCL Area but is within the one-kilometer buffer around the Study Area (Figure 3.3), representing less than 2% of the Study Area. Study Area lands include areas south of Highway 103 and portions of St. Margaret's Bay Road between Sheldrake Lake and Five Islands Lake. Plan Area lands are designated Residential and Mixed Rural Residential in the MPS and have Single-Unit Dwelling, Mixed Rural Residential, Mixed Use 1, and Salvage Yard zoning in the LUB.

3.3.5 BEAVER BANK, HAMMONDS PLAINS, AND UPPER SACKVILLE COMMUNITY PLAN AREA

With over 45 km² of land area within the Study Area, the Beaver Bank, Hammonds Plains, and Upper Sackville Community Plan Area comprises the largest allocation at close to 60% of the Study Area. Most of the parkland area is in Hammonds Plains. Lands in the Study Area are designated Rural Resource, Mixed Use B, Residential, and Provincial Park in the MPS with zoning that includes Single Unit Dwelling Zone, Mixed Use 1, Mixed Resource, Regional Park, Community Facility (P-2), and Bedford West Comprehensive Development District.

There are public lands, some of which that have recently been acquired, and others with varying designations as Crown Lands that are beyond the Map 11 BMBCL Area.



4.0 DEVELOPMENT ACTIVITY AND LAND DEVELOPMENT TRENDS

Stantec has prepared an analysis of development activity and trends for the available record years to help describe existing land use patterns and assist in gauging development pressures on lands abutting the Study Area. A map showing an overview of development activity and land development trends is shown in Figure 4.1 (building permits), Figure 4.2 (growth centres), and Figure 4.3 (recent and active planning applications, regional plan specific requests, legacy subdivisions).

In this section of the report, we characterize how new development is likely to locate and integrate in terms of use, infrastructure, and access; identify trends and development pressures; and assess and summarize development assumptions identified with the Study Area.





Source: HRM and Nova Scotia Open Data

Figure 4.1 Development Activity - Building Permits, Study Area for the Land Use Analysis, 2022





Figure 4.2 Development Activity – Growth Centres, Study Area for the Land Use Analysis, 2022





Figure 4.3 Development Activity - Recent and Active Planning Applications, Regional Plan Specific Requests, Legacy Subdivisions, Study Area for the Land Use Analysis, 2022



4.1 RECENT AND ACTIVE PLANNING APPLICATIONS

HRM has been considering 17 recent and active planning applications within the Study Area based on monthly HRM open data dating back to 2015 (Table 4.1). The sites listed in the table are intended to provide more detailed information on selected recent and current land use applications requiring discretionary approval as shown in Figure 4.3.

Cases 20265 and 20284 are relevant as they involve closed applications for properties that included the Study Area. Case 20265 is an approved planning application that enabled the development of commercial uses adjacent to the Bayers Lake Business Park on lands acquired from HRM in March 2013. Case 20284 is also a closed discretionary planning application to develop a 9-hole golf course at the northernmost extent of the Study Area between Flat Lake and Hammonds Plains Road.

Case Number	Application Status	Project Name
Case 19625	Closed	Sub Area 5 - DA Amendments
Case 20141	Closed	Application by WSP Group to Amend Existing DA
Case 20265	Closed	Amend Halifax Mainland LUB
Case 20284	Closed	Application for development agreement for 9 hole golf course (3 PIDS 00421248, 40702474, 41189002)
Case 20325	Closed	Application by Emscote Limited for a substantive amendment to the development agreement
Case 20401	Active	Bedford West
Case 20450	Closed	Application by API Consultants Limited to amend Stage 2 development agreement
Case 20795	Closed	Rezoning and Development Agreement - St. Margaret's Bay Road, Lakeside
Case 20996	Closed	Non-substantive amendments to an existing development agreement within Subarea 9 of the West Bedford SPS to allow additional commercial uses
Case 21971	Closed	Discharge an existing DA, rezone the property from schedule K to R- 1 and enter into a new DA for a Daycare use
Case 22097	Active	Enter into an amended development agreement to permit horse shows, educational horse clinics and the boarding of more than 10 horses as commercial recreation uses.
Case 22450	Closed	Requesting a substantive amendment to an existing development agreement to relocate density (162 persons) on lands on Hogan Court, Bedford.
Case 22898	Closed	Requesting non-substantive amendments to an existing development (Links at Brunello) to allow for 3 multi-unit buildings on portions of PID 41404567, Timberlea.
Case 22980	Closed	Amesbury Gate, Bedford

Table 4.1 Active Planning Applications, Study Area for the Land Use Analysis



Case Number	Application Status	Project Name
Case 23016	Active	Amend an existing Development Agreement alongside holes 1, 2, 9, and 16 of the Links At Brunello Golf Course.
Case 23061	Closed	Enter into a development agreement for a Dog Care Facility (Kennel) with outdoor dog run at lot 1 Glen Arbour Way, Hammonds Plains.
Case 23512	Closed	Amend the development agreement for the property at Civic 27 and 65 Dellridge Lane, Bedford to define and add 'Dog Care Facility' to the list of permitted uses in the General Commercial area.

Table 4.1 Active Planning Applications, Study Area for the Land Use Analysis

4.2 **REGIONAL PLAN: SITE SPECIFIC REQUESTS**

As mentioned in Section 3.1, in February 2020, Regional Council initiated a review of the current Regional Plan that is currently ongoing. Three site-specific requests are currently active within the Study Area, identified in Figure 4.1 as C104, C006, and C337, and described in Table 4.2.

Table 4.2	Regional	Plan Site	Specific	Requests
	<u> </u>			

Request ID	Phase	Туре	Name
C104	Phase 4: Draft Regional Plan	Urban Plan Amendment	Lands on Susie Lake Drive, Bayers Lake Business Park, Halifax
C006	Advance Outside of Regional Plan Review	Future Serviced Communities	Lands west of Highway 102, Halifax
C337	Phase 5, Future Growth	Service Boundary Adjustment	Fraser Lake, St. Margaret's Bay Rd
C522	New Request	Service Boundary Adjustment	Voyageur Lakes, Hammonds Plains

C104¹ is a request to allow residential development in a private business park, together with commercial and institutional uses (a community outpatient center and supporting uses). The lands border the provincial designated Wilderness Area.

C006² ("The Lakes") is a request to initiate secondary planning being advanced outside the Regional Plan review. These lands are identified in the Regional Plan as a growth centre ("the Highway 102 West Corridor"), which requires a comprehensive neighbourhood planning process, supported by a series of background studies, before development takes place. In October 2022, HRM issued a Request For Proposals for a consultant to undertake these studies for a series of Future Serviced Communities, including the Highway 102 West Corridor lands.

² HRM, "Case 22257 – Regional Plan Review – Themes and Directions What We Heard", January 25, 2022, https://www.halifax.ca/city-hall/regional-council/january-25-2022-committee-whole



¹ HRM, "Phase 4 -Site Specific Requests", February 28, 2022, <u>https://www.shapeyourcityhalifax.ca/regional-plan/news_feed/phase-4-individual-requests</u>

The proponent has requested the Municipality enable the development of a high-density, mixed-use community with transit integration, an active transportation network, a linked system of natural areas, and continuous public frontage on the natural lakes as the front stage to access the proposed BMBCL park. The proposal identifies access to the Regional Plan Park and "a potential staging area" will be provided for visitors from the region close to the highway interchange. The new park will also be accessible to residents of the new community, who will be able to enter the park through a lakefront trail system connected to the neighborhood's active transportation network. The concept shows 65 acres of land set aside for the potential Regional Park (Figure 4.4).



Figure 4.4 Regional Park Access, C006 ("The Lakes") Development Concept

C337³ is a request for HRM to consider the extension of the serviceable boundary to include approximately 115 acres abutting Fraser Lake in Timberlea with frontage on the St. Margaret's Bay Road. The request would enable serviced residential growth on lands near the Wilderness Area, opposite of Fraser Lake. In August 2022, Council accepted a staff recommendation C337 be considered in Phase 5: Future Growth.

³ HRM, "New Requests", February 28, 2022, <u>https://www.shapeyourcityhalifax.ca/regional-plan/news_feed/new-requests</u>



C522⁴ is a request for HRM to consider the extension of the city water service the lands in that area of Hammonds Plains Road, Voyageur Way, Citation Drive and the current water service boundary at St. George Blvd. The request would establish a loop which will strengthen Halifax Water's distribution capability and enhance fire service protection to the properties served.

4.3 LEGACY SUBDIVISIONS

The Regional Subdivision Bylaw prohibits residential subdivision within certain designations, except as provided for through exemptions. Some of these exemptions relate to "Legacy subdivisions" that were submitted prior to specific dates as outlined in the Regional Plan and Regional Subdivision Bylaw. HRM Planning and Development staff track the remaining legacy applications that have some remaining development potential with estimated lot yields. However, eligibility is determined at the time of application and the exact number of lots is not determined until the final subdivision application.

Further to the discussion in subsection 3.2 Regional Subdivision By-law, there are three "legacy subdivisions" that are located within the Study Area (Figure 4.3). Subdivisions for Sheldrake, Voyageur Lakes, and Leeward Phase 4 are regulated by the Land Use By-Law for Beaver Bank, Hammonds Plains and Upper Sackville. Voyageur Lakes is also regulated by "Schedule J" of the Regional Subdivision By-Law.

4.3.1 SHELDRAKE AND LEEWARD PH 4

For properties that are within the Beaver Bank, Hammonds Plains, Upper Sackville Plan Area and are outside of Schedule J, the Regional Subdivision By-law limits development to a maximum of 8 lots. The properties must also meet the conditions of Section 12 of the Regional Subdivision Bylaw. Alternatively, the properties may be eligible for more than 8 lots through a Conservation Design development agreement under Section 3.4.1A of the Regional MPS. However, the subdivisions for Sheldrake and Leeward Phase 4, are considered "Legacy Subdivisions" and have protected subdivision rights under Section 11(2)(a) the Regional Subdivision Bylaw.

4.3.2 VOYAGEUR LAKES

For properties that are within the Beaver Bank, Hammonds Plains, and Upper Sackville Plan Area and are within Schedule J, the Regional Subdivision By-Law prohibits residential subdivision under Section 11(1). These properties are also not eligible to apply for development through Conservation Design development agreement policies (Policy S-15B of the Regional Plan). However, Voyageur Lakes is considered a "Legacy Subdivision" and has protected development rights under Section 11(1a) of the Regional Subdivision Bylaw.

⁴ HRM, "New Requests", March 31, 2023, <u>https://www.shapeyourcityhalifax.ca/regional-plan/news_feed/new-requests</u>



A Final Subdivision application has been made for Voyager Way for 42 lots in total as well as 2 parkland lots, 1 remainder, and 1 new street. As of November 2022, the Municipal Servicing Agreement has been signed for this application to allow construction of services. Once the construction of services is complete, the applicant must apply for HRM to accept these services and approve the lots.

4.3.3 BUILDING PERMIT ACTIVITY

Stantec reviewed available open data building permit records (2017- June 2022) issued by HRM Planning and Development from the new permit licensing application, PPL&C, in addition to legacy permits issued before the new application was in place. At the time of data retrieval, permit information was current to July 4, 2022. An overview of building activity by community is summarized in Figure 4.5 and Table 4.3. Permits include projects involving new construction, additions, and renovations. It should be noted that the 2022 data set is from January to June 2022.

Within the Study Area, between 2017 and 2022 (January to June 2022), nearly 50% of the issued permits were in Bedford, 18% were issued in Halifax and Timberlea, and 14% were issued in Hammonds Plains. Most permits issued in Bedford were for single-unit dwelling projects, which occurred most frequently in 2020. Development of single-unit homes has also led the way in the communities of Hammonds Plains and Timberlea since 2017. In Halifax, commercial permits have outpaced residential permits since 2018. The building permit activity summary is complementary to the land use inventory; that is, residential activities are dominant in the Study Area, particularly in areas identified in planning documents for serviced growth.



Figure 4.5 Building Permit Activity, Halifax – Bedford West, 2017-2022



COMMUNITY	2017	2018	2019	2020	2021	2022
Permit Category	2017	2010	2013	2020	2021	2022
BEDFORD	33	21	52	147	146	14
Single Unit Dwelling	30	16	39	116	133	9
Two Unit Dwelling				16		
Three Unit Dwelling	2			2	1	
Four Unit Dwelling			1	5	1	
Multi Unit Dwelling		2	6	1		2
Commercial	1	3	6	7	11	3
HALIFAX	33	32	41	16	17	12
Single Unit Dwelling	17	12	15	5	5	3
Two Unit Dwelling			1			
Three Unit Dwelling				1		1
Four Unit Dwelling	2			1		
Multi Unit Dwelling	2			2	2	
Commercial	11	20	25	7	10	8
Institutional	1					
HAMMONDS PLAINS	18	24	25	23	17	10
Single Unit Dwelling	17	23	21	20	14	8
Two Unit Dwelling	1		2	1	1	
Multi Unit Dwelling					1	
Commercial		1	2	2	1	2
HUBLEY		1	3	3		1
Single Unit Dwelling		1	3	3		1
TIMBERLEA	11	16	15	9	75	28
Single Unit Dwelling	8	14	11	7	70	27
Two Unit Dwelling	2	1	3	1	2	
Three Unit Dwelling	1	1				
Multi Unit Dwelling					1	
Commercial			1	1	2	1

 Table 4.3
 Building Permit Activity Summary, Halifax – Bedford West, 2017-2022



5.0 LAND USE ANALYSIS FINDINGS

This report provides an in-depth analysis of land use and settlement patterns within the Blue Mountain Birch Cove Study Area that interface Map 11 BMBCL Area of the 2014 Regional Plan. Considering how land use conditions have changed since 2014, it becomes critical to clearly update the planning for the proposed BMBCL park and update the Regional Plan within that new context. The Regional Plan Review currently underway is the opportune time to provide this guidance.

Areas to focus include:

- **Defined Geographic Boundary** HRM, other levels of government and stakeholders should work cooperatively to clearly define the geographic boundary of the proposed BMBCL park within the context of the National Urban Park Initiative, land acquisition (both provincial, municipal, and private such as NS Nature Trust), development trends, and adjacent development activity (or proposed activity).
- Park Edges, Entrances and Access proposed and approved subdivision applications along the edges of park boundaries should be carefully considered and developed at an appropriate scale and designed to complement the park. Further, potential park entrances should be identified in advance of future urban development. Where entire parcels of private lands are not obtained for park purposes, partial lands should be acquired to serve as entrances and trail heads and provided with appropriate infrastructure.
- **Zoning** consideration should be given towards the inclusion of HRM, Provincial, or NS Nature Trust acquired lands since 2017 as Open Space and Natural Resource in the Regional Plan and zoned Regional Park and appropriate zoning under their respective Land Use By-laws.



APPENDIX E

Governance Model Review



Blue Mountain Birch Cove Lakes -Governance Options and Considerations

June 21, 2023

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BLUE MOUNTAIN BIRCH COVE LAKES - GOVERNANCE OPTIONS AND CONSIDERATIONS

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1.0 INTRODUCTION

This report contains background information about lands within the Blue Mountain-Birch Cove Lake (BMBCL) Study Area as identified therein. The purpose of the review of these lands is to support a possible future park plan over public lands that are owned by Halifax Regional Municipality (HRM) and Province of Nova Scotia, and the Nova Scotia Nature Trust, that would occur with the agreement of these landowners. To support the BMBCL Comprehensive Study and the pre-feasibility assessment through the Parks Canada national urban park program, Stantec Consulting Ltd. (Stantec) conducted research and review of available recent literature on parks and governance models. A list of sources reviewed is provided in Section 7. The sources of information included reports provided by the HRM Staff as well as internet research. The following report provides a summary of valuable items, articles, and reports to develop a comprehensive typology of accepted and interesting parks governance approaches.

2.0 HISTORICAL PARKS DEVELOPMENT

The development of parks is connected to urbanization. In rural areas, open space is readily available and there are many opportunities to recreate informally. The need for parks arises from the desire to reserve natural areas for community use while protecting their environmental values. As urban and rural development have extended and intensified, and recreation activities have grown in sophistication, rural residents have also found value in designated parks and protected areas that provide formal amenities with a degree of supervision and maintenance as well as protection for ecological connectivity and biodiversity.

HRM has a notable legacy of parks development. From the early days of European settlement on the Halifax Peninsula lands were set aside at Point Pleasant and the Halifax Commons for public use and enjoyment. The Dartmouth Commons provided similar amenity on the east side of the harbour. The generosity of Sir Sandford Fleming added Fleming Park in the late nineteenth century and other important parks have been added through a variety of means since.

As Paul Sherer has pointed out, however, the commitment to developing large urban parks waned in the twentieth century.¹ The main source of parkland became land dedications associated with subdivision development that were typically small before the recent trend to larger scale community master planning. While suburban communities provided more private open space and increased active outdoor recreation spaces for baseball, soccer, and similar activities, the public increasingly relied on legacy parks for passive recreation experiences and opportunities to connect with nature. Contemporary recreation preferences have turned back to more natural environments. Walking is well-recognized as the most common recreation activity of Canadians, particularly older demographics. While many young people also enjoy walking and hiking, a range of highly active pursuits have drawn them to outdoor open spaces including bicycling, running, cross-country skiing, canoeing, and kayaking, and other options that not only provide beneficial exercise but also facilitate and enhance the enjoyment of natural areas.

¹ Paul Sherer, *The Benefits of Parks: Why America Needs More City Parks and Open Space*, Trust for Public Land, 2006 (Reprint of "Parks for People" white paper, published in 2003), pp. 10-11.



In many respects, the result is a perfect marriage between public interest and environmental priorities. Properly managed parks and open spaces preserve the natural environment, provide benefits for stormwater management, and are an important tool to counter climate change. To these can be added human benefits in improved public health and social equity.

3.0 RECENT TRENDS IN PARKS DEVELOPMENT AND MANAGEMENT

With its impressive legacy of traditional parks, HRM is fortunate to be in much better shape than many newer urban centres in North America. The region has however grown substantially in the past century with a particularly notable surge in the past two decades. The Study Area is ideally positioned to address important areas of recent growth in Mainland North and Hammonds Plains.

The area has been under consideration as a potential park area since the 1970s. In the 1990s a study by Dillon Consulting assessed its land use potential. A 2006 study by Environmental Design and Management (EDM) went further to develop a concept for park development in conjunction with the expected development of Highway 113, which the Department of Public Works is still planning as a potential connection between Mainland North and Bedford and St. Margarets Bay.

As parks dedication has grown, evolved, subsided, and revived, approaches to owning and managing parkland have also changed. Point Pleasant Park and the Dartmouth and Halifax Commons were created by the British military as part of the original plan for Halifax testified to by the charming annual ceremony through which HRM pays a shilling for use of the land. Sir Sanford Fleming Park, as noted, resulted from the bequest of a prominent and successful community member. Other important parks owe their existence to diverse causes. Needham Park, for example, was part of Thomas Adams' famous plan to rebuild the North End in the wake of the horrific Halifax Explosion, which the park now memorializes while providing recreation areas and community facilities for the population living in the community he laid out. The development plan prepared by the Province of Nova Scotia for Lower Sackville similarly allocated lands around the community's multiple lakes to be recreation areas for the thousands of residents accommodated there since the 1970s. The primary ongoing responsibility for all these parks now lies with the Municipality, which organizes, maintains, and programs them with assistance and funding, at times, from both the Provincial and Federal Governments.

The Province of Nova Scotia and the Government of Canada, of course, also own and maintain parks of their own that benefit HRM residents both as community assets and recreation facilities, and as tourist attractions. The Province has designated in excess of 500,000 hectares across the province as provincial parks, wilderness areas and nature reserves. Within the HRM, there are approximately 56 parks and protected areas (totaling approximately 87,000 hectares in area) consisting of provincial parks, wilderness areas, nature reserves and land trust properties. These lands are managed by Nova Scotia Environment and Climate Change (wilderness areas, nature reserves), Nova Scotia Department of Natural Resources and Renewables (provincial parks), Nova Scotia Nature Trust or Nature Conservancy of Canada. Blue Mountain-Birch Cove Lakes Wilderness Area comprises of 1,767 hectares of this area. For its part, the Federal Government, through Parks Canada, maintains Georges Island, sites on McNabs Island, York Redoubt, and the heavily visited Halifax Citadel National Historic Site.



4.0 THE NEED FOR COLLABORATION

BMBCL represents a new era of collaboration in which the municipal, provincial and federal government as well as the Mi'kmaq of Nova Scotia have an interest. The Federal government has recognized the diverse benefits of urban parks and has developed a program to be led by Parks Canada to create a new network of national urban parks across the country. The Province of Nova Scotia shares in the interest of the national government based on its interests in sports and recreation and the environment, as does HRM, which we have noted has had a long standing interest in considering the establishment of a regional park within the Study Area.

We have also considerably advanced the parts of public engagement and partnership as well as formal consultation. Indigenous groups have strong interests in lands with which their people have ancestral connections. Many citizens have increased interest in direct involvement in the planning and operation of parks and facilities. The range of interests among these citizens is also diverse. Multiple users have a stake in the development and stewardship of trails and similar improvements, often raising questions concerning both the satisfaction and reconciliation of specific needs. The requirement for coordination and compromise is, furthermore, not confined to recreation users. Adjacent property owners and environmentalists also act as critical parties, whose legitimate expectations must be considered. A final issue is financial responsibility, which should be reasonably allocated in relation to the interests of the parties involved and consideration of relative abilities to contribute.

5.0 GOVERNANCE APPROACHES

Governance is an important component of overall parks management. According to the Report Partnerships for Parks, it "includes decisions on who may participate in [parks governance], their level of involvement, the allocation of decision-making authority, and the terms under which the partnership continues or is dissolved."² The same publication classifies it as one of four components of "partnership decision-making" along with, "project and program design, implementation, and management."³

Not all parks management arrangements are partnerships. The traditional approach, in fact, is management by a single agency. Most municipal parks, for example, are overseen directly by a municipal line department like HRM Parks and Recreation. Municipal departments are, of course, responsible to Council, which broadly represents citizen interests. In many municipal organizations a citizens parks body may advise Council. The Province of Nova Scotia manages most of its parks through the Nova Scotia Provincial Parks branch of the Department of Natural Resources and Renewables (NRR), and Nova Scotia Environment and Climate Change (ECC) is responsible for wilderness areas and nature reserves. Parks Canada typically manages national parks for the Federal Government. In some cases, these provincial and federal agencies use agreements or other legal instruments to delegate specified management authority to other parties, including municipalities and trail groups.

² Chris Walker, *Partnerships For Parks: Lessons from the Lila Wallace-Reader's Digest Urban Parks Program*, The Urban Institute, April 1999, p. 16. ³ Loc cit.



BLUE MOUNTAIN BIRCH COVE LAKES - GOVERNANCE OPTIONS AND CONSIDERATIONS

HRM has advisory groups for planning, heritage, and transportation among other services, but not for parks and recreation. The Municipality does, on the other hand, have advisory committees for specific parks and recreation facilities. A prominent example is the Point Pleasant Park Advisory Committee (PPPAC), which was established in 1996. The PPPAC consists of members including the Mayor and the area Councillor as ex officio members, an honorary member, and seven additional members including three frequent users and one from the immediate neighborhood. The Committee is supported by HRM staff. It advises the Municipality on matters related to the park, assists with park planning, monitors park operations, and contributes in other ways, including participation in ceremonial functions related to the park.⁴

In 2016, HRM created a similar advisory committee for the Western Commons, which is located immediately to the south of BMBCL. Like BMBCL, the Western Commons is being established as an regional wilderness park. Its nine-member advisory committee is comprised of an HRM Councillor and eight appointed members providing specific expertise and/or representing designated community interests. The main responsibility of the Western Commons Advisory Committee (WCAC) is to monitor the development of the park in accordance with its Master Plan, which was prepared by EDM in 2010.

HRM has other management models that it has applied to parks and recreation assets. Halifax Forum management, for example, is advised by the Halifax Forum Community Association, comprised of municipal staff members, a sitting Councillor, and community members. Several parks and outdoor recreation facilities are also subject to agreements between HRM and community groups including:

- Penhorn Lake Area Trail Association Agreement in 2022 for the construction and maintenance of a new recreational trail within Penhorn Lake Park, including culverts and a pedestrian bridge, and the installation of wayfinding signage and benches.
- *McIntosh Run Watershed Association* Agreement in 2016 for the construction and maintenance of a non-motorized single track trail network on HRM owned properties.
- *Friends of First Lake Society* Agreement in 2012 for construction and maintenance of open space infrastructure over lands for the purpose of public access.

While the agreement documents have evolved over the years, their essential purpose in all three of the above cited situations is to permit the named group, association, or society to access the HRM-owned parklands in question to make the identified improvements and maintain those improvements. Each agreement also identifies the Municipality's obligations while limiting its liability and specifying the liability of the partner group.

https://cdn.halifax.ca/sites/default/files/documents/city-hall/boards-committees-commissions/PointPleasantPark-TermsofReference.pdf



⁴ Halifax Regional Municipality, Point Pleasant Park Advisory Committee Terms of Reference,

In connection with its National Urban Parks Initiative, the Federal government has classified governance arrangements in three categories:

- 1. Federally administered places
- 2. Third party administered places
- 3. Partnership models⁵

Federally administered places are parks that are directly administered by Parks Canada, including most of the government's traditional national parks. They are parallel to most Nova Scotia's Provincial Parks and the many municipal parks and facilities managed mainly by HRM Parks and Recreation, with some also managed under agreements with NS Natural Resources and Renewables and by third parties.

Third-party administered places are parks and facilities managed by an agency, body, or other group separate from the government. The approach is common in public-private partnerships through which government engages a private company or not-for-profit to provide a service or operate a facility. A managing agency might also be a commission or authority created by the government such as the Halifax Port Authority and Halifax International Airport Authority created by the Federal Government, the Halifax Bridge Commission provided by the Province, or Halifax Water, which owns, operates, and manages HRM's water and wastewater infrastructure.

Partnership models are potentially even more varied. In HRM, they are exemplified by the arrangements for First Lake, MacIntosh Run, and Penhorn Lakes described above. They can, however, take many forms and involve more than one partner. Four examples of partnerships for national parks illustrate some possibilities:

- Rouge National Urban Park The first park created under the Federal National Urban Parks Initiative
 is federally administered and has an advisory committee like HRM's PPPAC and WCAC. While
 ultimately administered by Parks Canada under federal legislation, the Advisory Committee is
 comprised of a First Nations Advisory Circle representing ten local First Nations; representatives of
 the Cities of Markham, Pickering, and Toronto; the Regional Municipalities of Durham and York; the
 Town of Whitchurch-Stouffville; the Township of Uxbridge; the Toronto and Region Conservation
 Authority; and the Province of Ontario; as well as six public members appointed from applicants for
 four-year terms to represent multiple communities, interests and knowledge areas, including park
 ecology and restoration, species at risk, Indigenous perspectives, agricultural heritage, nature-based
 education, volunteerism, conservation, cultural heritage, and diversity and equity.
- Torngat Mountains National Park The Torngat Mountains area at the northern tip of Labrador was
 designated as a national park in 2008 as part of Inuit Land Claims Agreements and is cooperatively
 managed with the Inuit of Nunavik (Quebec) and the Inuit of Nunatsiavut (Labrador) through the
 Cooperative Management or Co-management Board, which advises the Federal Minister responsible
 for the Parks Canada Agency on matters related to park management. The Board consists of two
 members appointed by Nunatsiavut Government, two appointed by Makivik Corporation, two
 appointed by Parks Canada, and an independent Chairperson. All current members are Inuit.

⁵ Parks Canada Agency, "News release: Network will help ensure that all Canadians have access to green space," Saskatoon, Saskatchewan, August 4, 2021, https://www.canada.ca/en/parks-canada/news/2021/08/government-of-canada-invests-130-millionto-work-with-partners-to-create-a-network-of-national-urban-parks.html



- Gwaii Haanas National Park The Gwaii Haanas National Park was created in 1988 between the
 northern tip of Vancouver Island and the southern edge of the Alaska Panhandle to protect 138
 Islands in the Haida Gwaii Archipelago. It is managed cooperatively by the Council of the Haida
 Nation and the Government of Canada through the Archipelago Management Board consisting of
 three members from the Haida Nation and three from Federal government agencies (two from Parks
 Canada and one from Department of Fisheries and Oceans).
- The Gulf of Georgia Cannery National Historic Site The Gulf of Georgia Cannery in Steveston, British Columbia, was preserved through community initiative. The building was bought by the Federal Government in 1979 and later transferred to Parks Canada. The Gulf of Georgia Cannery Society, a local not-for-profit organization, was formed in 1986 to work with Parks Canada to develop and operate the site and, today, manages it through a third-party arrangement on behalf of Parks Canada.

6.0 GOVERNANCE AND BLUE MOUNTAIN-BIRCH COVE LAKES

6.1 GOVERNANCE MODELS OVERVIEW

The following sections provide details on the potential governance models that could be applied to the proposed BMBCL park, either wholly or a combination thereof. This includes an advisory committee, stewardship, third-party administration, and partnership agreement either equal authorities or single authority. In the case of the proposed BMBCL park, land within the Study Area is owned by different jurisdictions (the municipality, the province and Nova Scotia Nature Trust) as well as potential interests from Parks Canada and the Mi'kmaq of Nova Scotia. Each jurisdiction and partner has respective mandates in which to follow with respect to park planning and development. These are described in Table 6.1.

Jurisdiction / Partner	Mandates / Policies
Halifax Regional Municipality	The proposed BMBCL Regional Park is supported by the 2014 Regional MPS, which states a municipal interest to acquire private lands for integration in the proposed Park using "provincial and municipal partnerships, as financial resources permit, land trades, and conservation easements." HRM has acquired several parcels within the Study Area
Province of Nova Scotia	The Province has designated 1,767 hectares of the candidate park as Blue Mountain-Birch Cove Lakes Wilderness Area under the Province's <i>Wilderness Areas Protection Act</i> .

Table 6.1 Jurisdictional Mandates



Jurisdiction / Partner	Mandates / Policies
Nova Scotia Nature Trust	The Nova Scotia Nature Trust has purchased 227 hectares (560 acres) that it calls the Blue Mountain Wilderness Connector and at least one separate parcel.
	The Nature Trust regards the land as a bridge between separate parcels of the Provincially-owned Blue Mountain Birch Cove Lakes Wilderness Area. The organization intends to protect the land under its Land Conservation Program for integration in the conceptual Blue Mountain Birch Cove Lakes Park.
Parks Canada	Parks Canada is collaborating with partners, including Indigenous peoples, to create a network of national urban parks in Canada's large urban centers and regards the BMBCL Park as a candidate park for inclusion in the program. Parks Canada may or may not eventually own land within the Blue Mountain Birch Cove Lakes Park.
Mi'kmaq of Nova Scotia	Sipkne'katik First Nation has property at Wallace Hill near the northern end of the study area. The Mi'kmaq in Nova Scotia are pursuing initiatives to promote land conservation, most notably the Sespite'tmnej Kmitkinu Conservancy, which has been established to acquire lands considered culturally significant, need restoration, have species at risk or have archeological importance. The Mi'kmaq may acquire additional land in the conceptual Study Area. In addition, under aboriginal and treaty rights, the Mi'kmaq also have an interest in all the lands, unrelated to current ownership.

 Table 6.1
 Jurisdictional Mandates

The model selected for BMBCL will need to integrate the multiple jurisdictional entities as well as a diverse group of interests. The Province of Nova Scotia, the Nature Trust, and HRM all own substantial areas of land. Sipekne'katik First Nation owns nearby land at Wallace Hill on Hammonds Plains Road, and other Nova Scotia First Nations undoubtedly have interests in their ancestral land. Traditionally African-Nova Scotian communities are also nearby in Beechville and Lucasville. Groups with strong interests in preserving the ecology of the area, and others interested in advancing recreational interests such as hiking, bicycling, swimming, canoeing, and camping will also likely seek a voice, as will adjacent residents and, possibly, business interests.

Stakeholder involvement in governance of the proposed Park need not be confined to an advisory structure. Subject to objectives for development of the proposed park, presumably developed in a management plan similar to those in place for the Rouge, Torngat, and Gwaii Hanaas, there may very well be a place for agreements that will facilitate trails development and management by interested groups such as those involved with First Lake, MacIntosh Run, and Penhorn Lakes. There may also be roles for private entities providing and managing needs such as parking areas, shuttle services, and campgrounds.

Unquestionably, there will be varied and strong views on these subjects as community members have differing opinions on the roles and efficacy of potential options. The planned public engagement for this assignment will be critical to determine the views of stakeholders concerning governance approaches and related issues such as charging for uses such as parking and camping on the site.



BLUE MOUNTAIN BIRCH COVE LAKES - GOVERNANCE OPTIONS AND CONSIDERATIONS

Drawing on the foregoing, five collaborative governance model options are suggested, in addition to the "standard" approach in which operations and management are handled by a line department within the responsible government bureaucracy (i.e., in the case of parks at each level of government, Parks Canada, Nova Scotia Environment and Climate Change (NSECC), and HRM Parks and Recreation).

These options include an advisory committee, stewardship, third party administration, partnership agreement (equal authorities), and partnership agreement (single authority). These governance models are described below.

6.2 ADVISORY COMMITTEE



In the Advisory Committee model, the authority responsible for governing a park or facility manages through a line department and is advised by a committee representing external interests. In addition to members of the general public, external interests could include other government entities, landowners, and special interest groups. Committee members are usually appointed; however, they may include ex officio members whose position qualifies them for inclusion (e.g., the area Councillor on the Point Pleasant Park Advisory Committee). Examples of the Advisory Committee model include Point Pleasant Park, the Western Commons and the Rouge Urban Park.

6.3 STEWARDSHIP





BLUE MOUNTAIN BIRCH COVE LAKES - GOVERNANCE OPTIONS AND CONSIDERATIONS

In the Stewardship model, the responsible authority turns management over to an external service provider. The service provider will typically be a non-government organization (i.e., a citizens group or club), although it can also be a private business operating the park or facility under a contract or in return for revenue generated. The management of MacIntosh Run by the McIntosh Run Watershed Association is an example of a Stewardship arrangement as is the management of the southeast portion of Long Lake Provincial Park by the Long Lake Provincial Park Association. The identified community groups have, respectively, been licensed by HRM and the Province of Nova Scotia, to develop trails and similar park improvements.

6.4 THIRD-PARTY ADMINISTRATION



The Third-Party Administration model, as noted, can take varied forms. Some municipalities have commissions that manage parks and recreation infrastructure in a similar manner to Halifax Water's provision of water and wastewater services, although a parks and recreation commission, unlike Halifax Water, can be expected to require funding from sponsoring governments to supplement the usually modest revenues generated from recreation user fees and related sources. A commission will normally be overseen by an appointed board that may include ex officio representatives of the authority.

Commissions have traditionally been employed to separate service delivery from the political authority in the interest of efficient operation. Critics of the approach, on other hand, contend that there may be a lack of political control and a commission might become a power unto itself that may be difficult to coordinate with other government priorities.



6.5 PARTNERSHIP AGREEMENT (EQUAL AUTHORITIES)



Partnership Agreements are appropriate where more than one authority has a clear interest in the park, such as the various above examples of national parks involving Indigenous groups. While external interests can be represented in the Advisory model, expectations have risen, particularly among groups with land interests such as First Nations. Co-management arrangements, like the partnership between the Haida and Parks Canada for managing Gwaii Haanas National Park respond to this desire of partners to be involved in decision-making. Partnerships may also be formed between levels of government with interests and involving governments and non-governmental groups.

6.6 PARTNERSHIP AGREEMENT (SINGLE AUTHORITY)



A Partnership Agreement may also be formed among governments and groups with interests in a park where management is delegated to one of the partners. This type of arrangement is commonly used between municipalities where two or more may have an interest in a obtaining a particular service and one agrees to supply that service to the others. In Nova Scotia, inter-municipal agreements of this type are called joint service agreements (JSAs). Similar agreements would be required to document the relationships and responsibilities across different levels of government.


While the Rouge National Park is currently managed by Parks Canada, its management could, for the sake of illustration, be assigned to the municipal level and the seven municipalities involved might delegate operations and maintenance responsibilities to whichever of the seven was deemed most able or interested in taking on the role. In a situation involving a park (i.e., the proposed BMBCL park), where each level of government owns portions of the potential parklands, it would be a question of which of Canada, Nova Scotia, or HRM is most able to provide the necessary management or operations service. Criteria for assignment of responsibility would likely include resources available to each entity at the site, the intended role of the park, and technical capacity.

6.7 GOVERNANCE MODEL OPTIONS SUMMARY

Governance models are not mutually exclusive. An advisory committee, for example, could be incorporated in any of the other noted models. For another example, an authority delegated to provide a service might create partnership agreements to deal with its responsibilities or might choose to provide service through a commission or other third-party arrangement.

A key consideration in choosing a model is the degree of community and stakeholder input. Advisory arrangements give appointees who are considered representatives of the public or specific interests "a say" in planning and operations. Partnership models give chosen partners direct input to decision-making depending on the specifications of the partnership agreement but will not necessarily enhance the engagement of the broader public. Third-party arrangements have traditionally been employed to isolate service delivery from public and political influence. While this can be very effective when dealing with technically defined services, it creates concerns if qualitative issues must be considered. Partnerships may suffer the same issue to a lesser degree, if authority is diffused among partners or, if a single partner is designated as the service provider and creates a barrier between the public and the remaining partners.

To address the latter issue, and enhance relations with the public in general, a secondary and important aspect of governance arrangements is their presentation to the public. In the stewardship and partnership arrangements, governments may want to promote their involvement to ensure the public "knows where their tax dollars are going." Moreover, it may be important for the public to know the entities responsible for service delivery so that they can obtain assistance or information, offer their ideas, and register complaints.

Another important consideration when dealing with parks is planning. A parks management plan, such as the plan Parks Canada has developed for the Rouge National Urban Park, is a critical document to define goals, objectives, and service delivery standards. Planning processes are a vital opportunity to engage interested parties and obtain their input. Adopted planning documents provides a framework for elected and appointed officials, as well as employees and others engaged in service delivery. They provide a degree of assurance to the public that park development will follow a community-endorsed direction.

Table 6.2 summarizes leading features of each model and the potential risks and challenges associated with them.



Table 6.2 Governance Model Options Summary

Model	Oversight	Participation	Risks / Challenges	Sustainability
Advisory Committee	Responsible governing body (i.e., Federal or Provincial Minister, or municipal council)	 Line department responsible to a council or other elected body Engagement of representative community members and stakeholders 	Ensuring Committee participation is effective	 Funding requirements are typically modest Securing members is usually not an issue in jurisdictions with large populations such as HRM Retaining members is normally dependent on their satisfaction with the effectiveness of their roles
Stewardship	Responsible governing body (i.e., Federal or Provincial Minister or municipal council)	Line department responsible to a council or other elected body	Ensuring adequate volunteer participation and funding to support service delivery	 Depends on volunteer interest and adequacy of funding If a private sector provider is engaged, their commitment will largely depend on adequate financial return
Third Party Administration	Commission Board	Commission or similar structure responsible to a Board	 Ensuring adequate funding 	Ensuring adequate funding or, if own source revenue is sufficient or more than sufficient, controlling expenditure and ensuring the third-party objectives align with those of the governing authority
Partnership Agreement (equal authorities)	 As determined by the agreement Usually, a collaborative board or committee 	 Committee or board responsible to governing authority as defined in the agreement 	 Satisfying multiple partners that benefits are commensurate with their costs Ensuring service provider performs satisfactorily 	 Ongoing risk that one or more partners may choose to abandon the agreement Unsatisfactory performance by the service provider
Partnership Agreement (single authority)	 As determined by the agreement Usually, a collaborative board or committee 	Committee or board responsible to governing authority as defined in the agreement	Ensuring the delegated authority has the capacity to provide the required service	 Ongoing risk that one or more partners may choose to abandon the agreement Unsatisfactory performance by the service provider



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