

APPENDIX A. FIGURES


FIGURE 1

Project Location

**Proposed McLellans Mountain Quarry Expansion Project
PID:00888537 and
65165748**

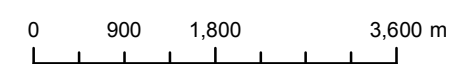
McLellans Brook, NS

Legend

 Study Area

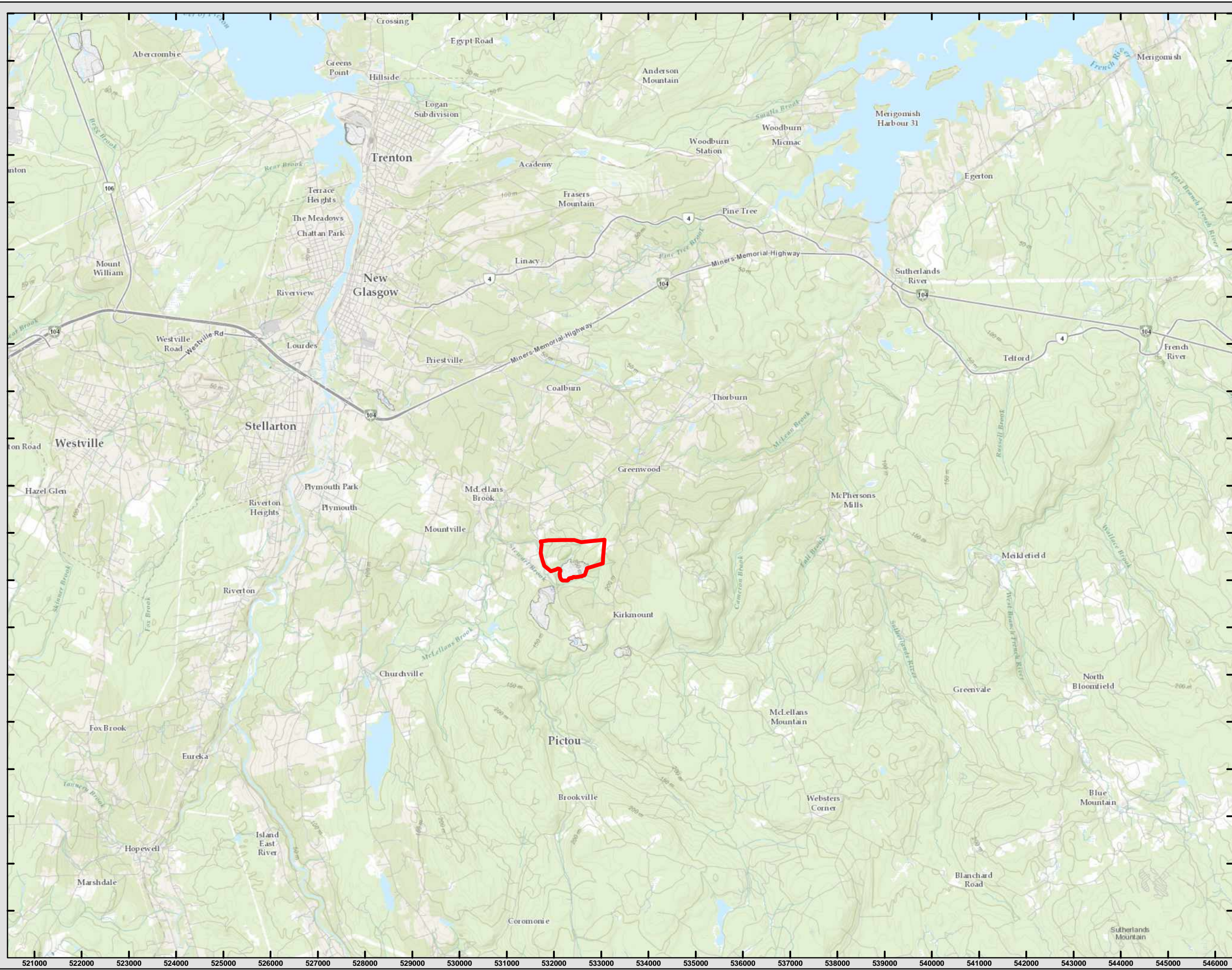


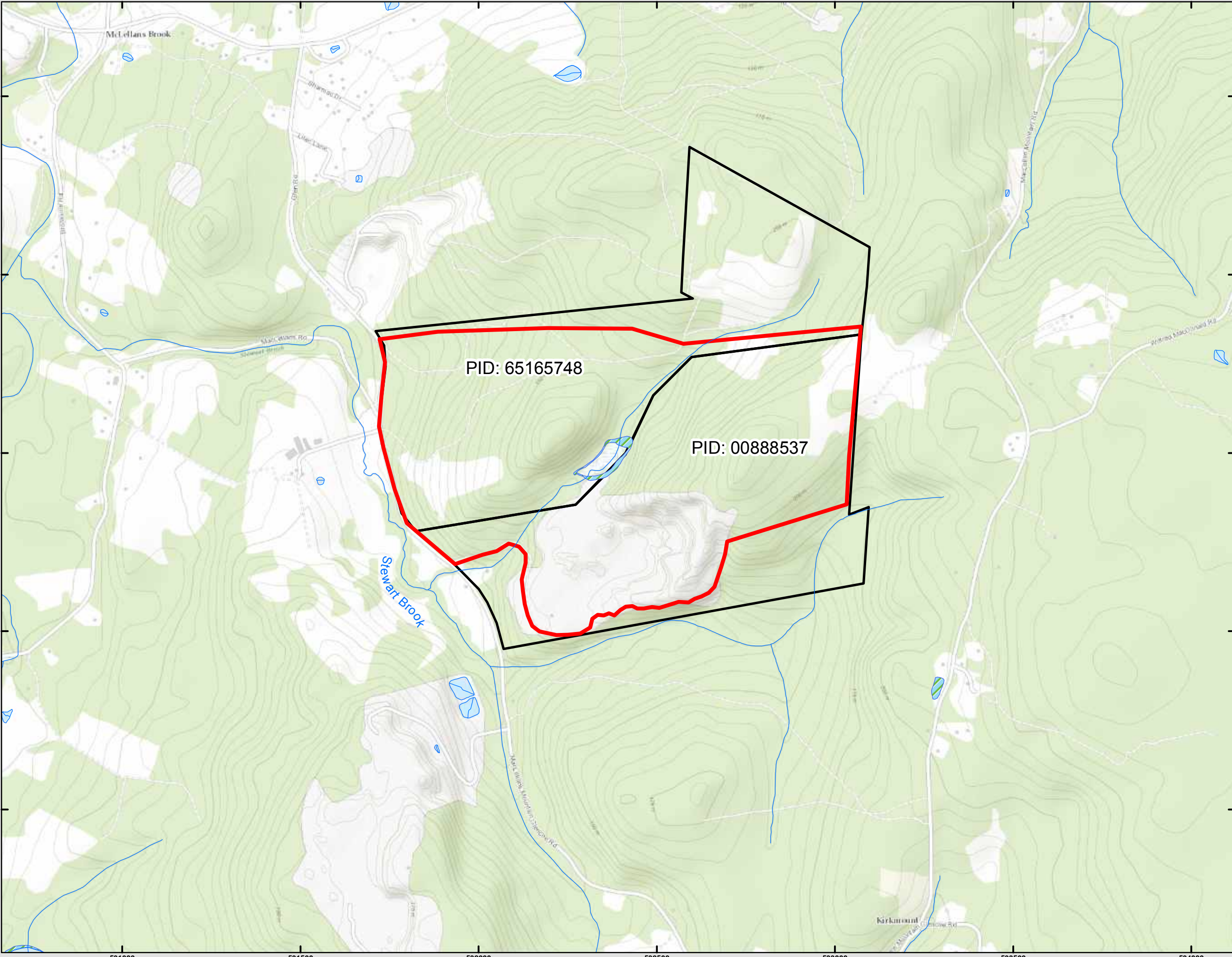
Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



1:75,000 Scale when printed @ 11" x 17"

Drawn By: TLG Date: 2018-03-08





Prepared For:







FIGURE 2

Project Overview

**Proposed MacLellans Mountain
Quarry Expansion
PID: 00888537 and 65165748**

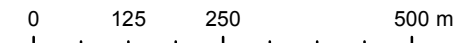
McLellans Brook, NS

Legend

-  Watercourses (NSE)
-  Wetlands (NSE)
-  Study Area
-  Approximate PID Boundary



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



1:10,000 Scale when printed @ 11" x 17"

Drawn By: TLG

Date: 2018-06-14



McCallum Environmental Ltd.

Prepared For:



FIGURE 3

Buildings and Wells Within a 1 km Buffer

Proposed MacLellans Mountain Quarry Project
PID: 00888537, 65165748

McLellans Brook, Nova Scotia

Legend

- Assumed Wells
- Wells (NSE)
- Closest Residences
- Buildings (NSTD)
- ▬▬▬▬▬ Maximum Potential Quarry Extent
- Mapped Watercourses
- ▭ Existing Quarry Footprint
- ▭ Study Area



Coordinate System: NAD 1983 UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983
 Units: Meter



0 125 250 500 m

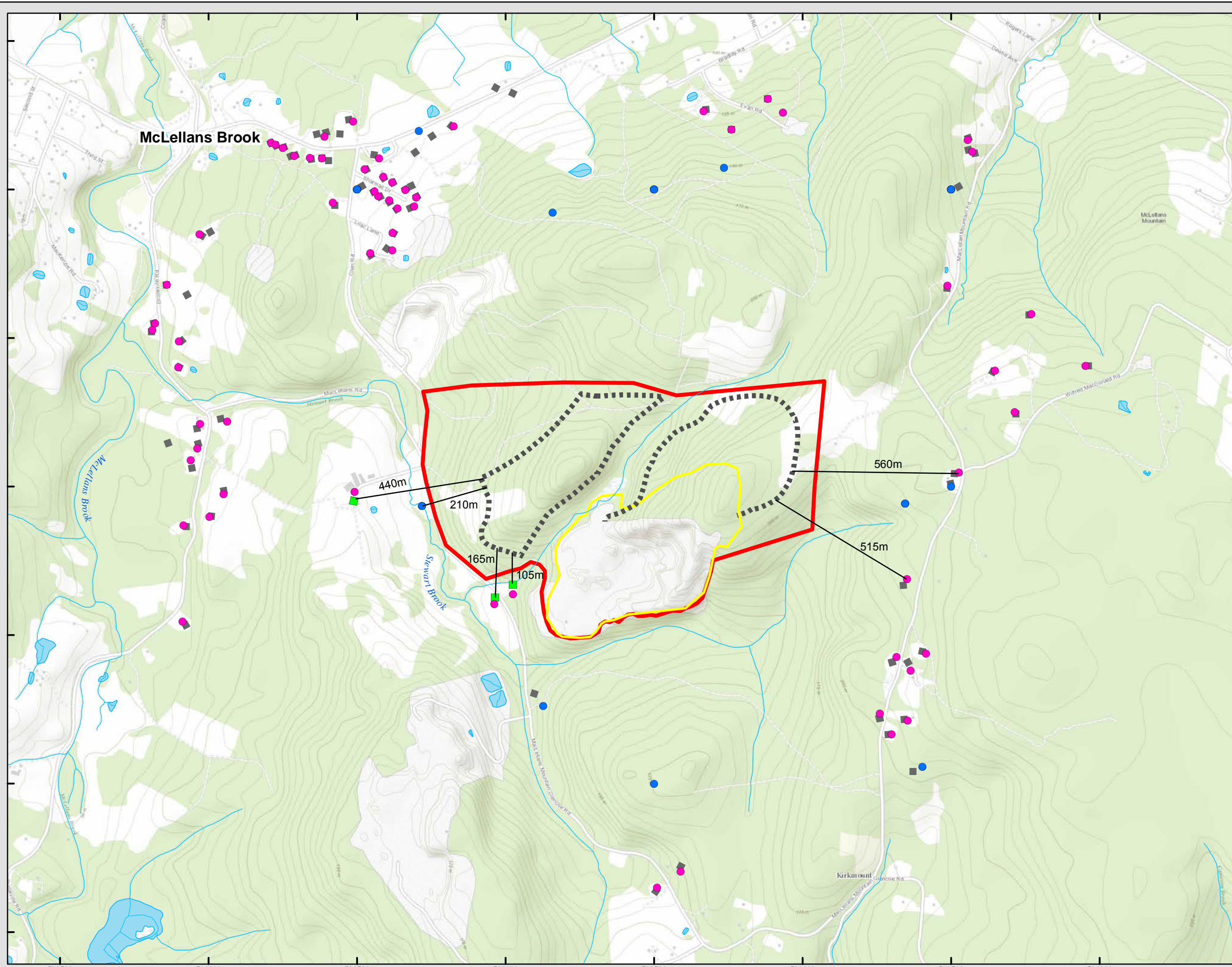
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Drawn By: LP

Date: 2018-06-19



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Prepared For:












FIGURE 4

Significant Habitat and Conservation Areas

Proposed MacLellans Mountain Quarry Expansion
PID: 00888537 and 65165748

McLellans Brook, NS

Legend

-  Wetland of Special Significance
-  Deer Wintering
-  Migratory Bird
-  Other Habitat
-  Species at Risk
-  Species of Concern
-  Mainland Moose Concentration Area
-  Protected Water Areas
-  Study Area



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



0 0.5 1 2 3 Kilometers

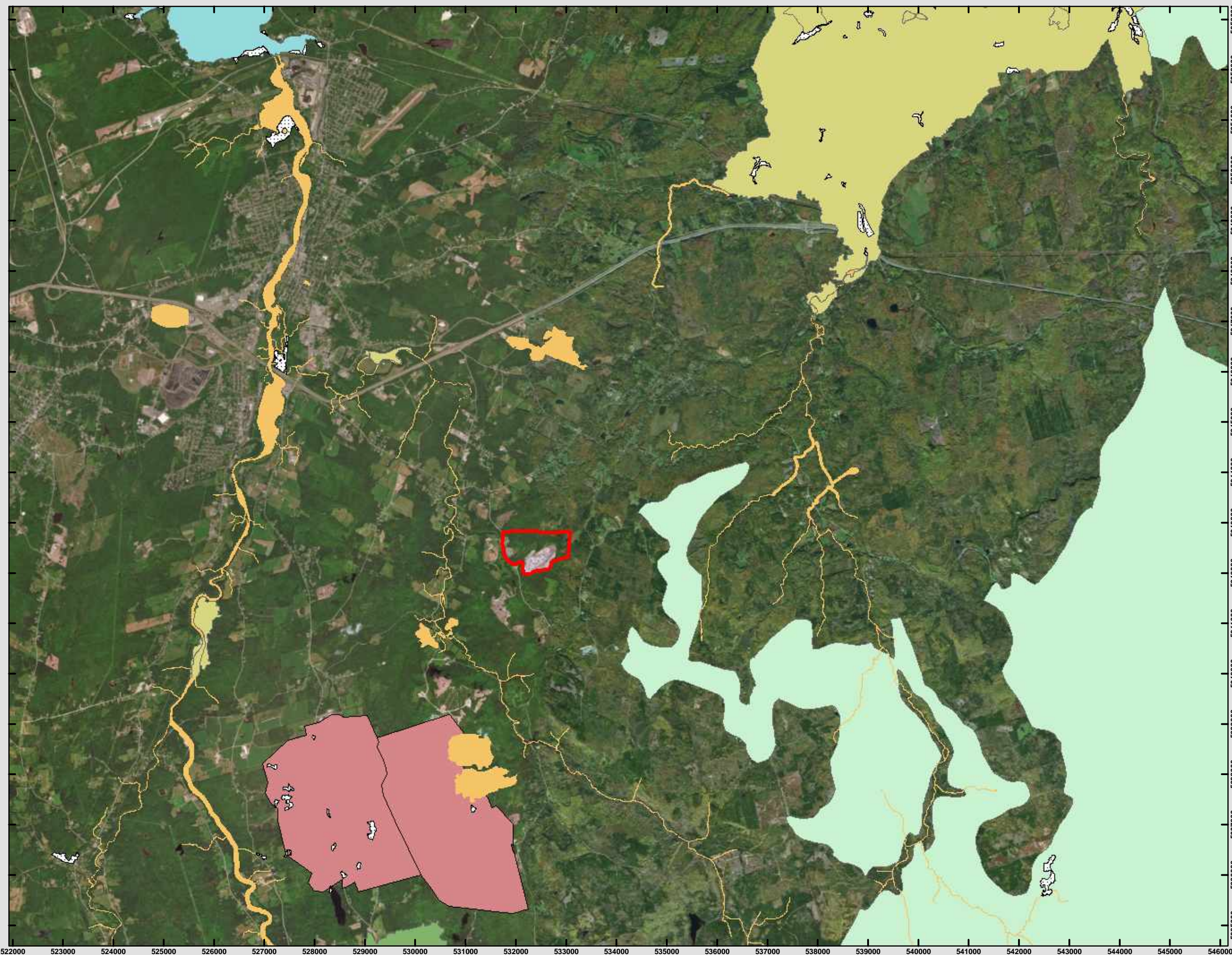
1:70,000 Scale when printed @ 11" x 17"

Drawn By: LP

Date: 2018-06-14



McCallum Environmental Ltd.



Prepared For:



FIGURE 5

Projected Development Areas

Proposed MacLellans Mountain
Quarry Expansion
PID: 00888537 and 65165748

McLellans Brook, NS

Legend

- Watercourses (NSE)
- Maximum Quarry Extent
- Field Delineated Watercourse
- Development Area A
- Development Area B
- Development Area C
- Field Delineated Wetland
- Study Area



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



0 50 100 200 m

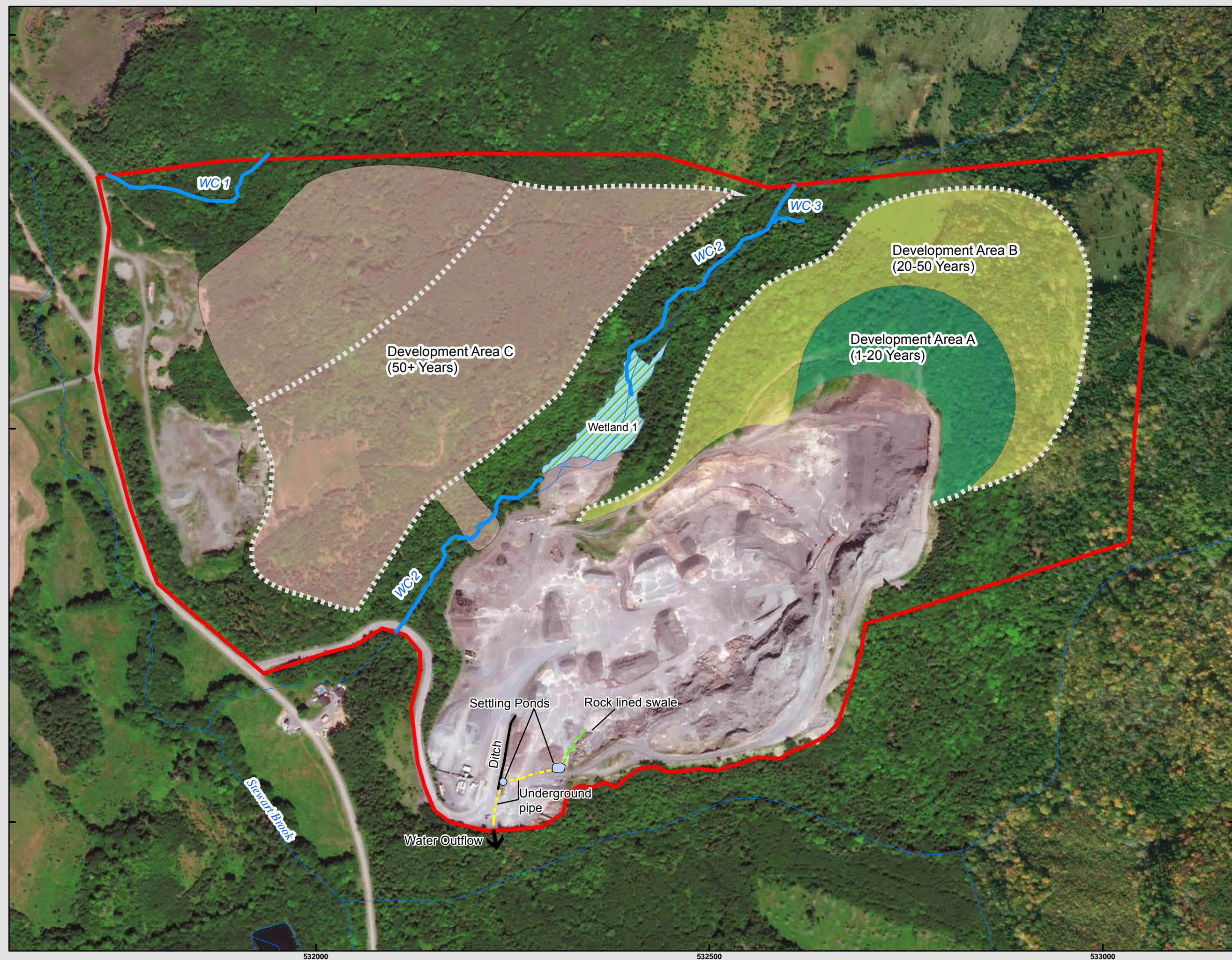
1:4,500 Scale when printed @ 11" x 17"

Drawn By: LP

Date: 2018-06-19



McCallum Environmental Ltd.



Prepared For:






FIGURE 6

Field Survey Locations

Proposed MacLellans Mountain
Quarry Expansion
PID: 00888537 and 65165748

McLellans Brook, NS

Legend

-  Surface Water Samples
-  Bird Survey Locations
-  Wildlife Transects
-  Watercourses (NSE)
-  Study Area



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



0 125 250 500 m

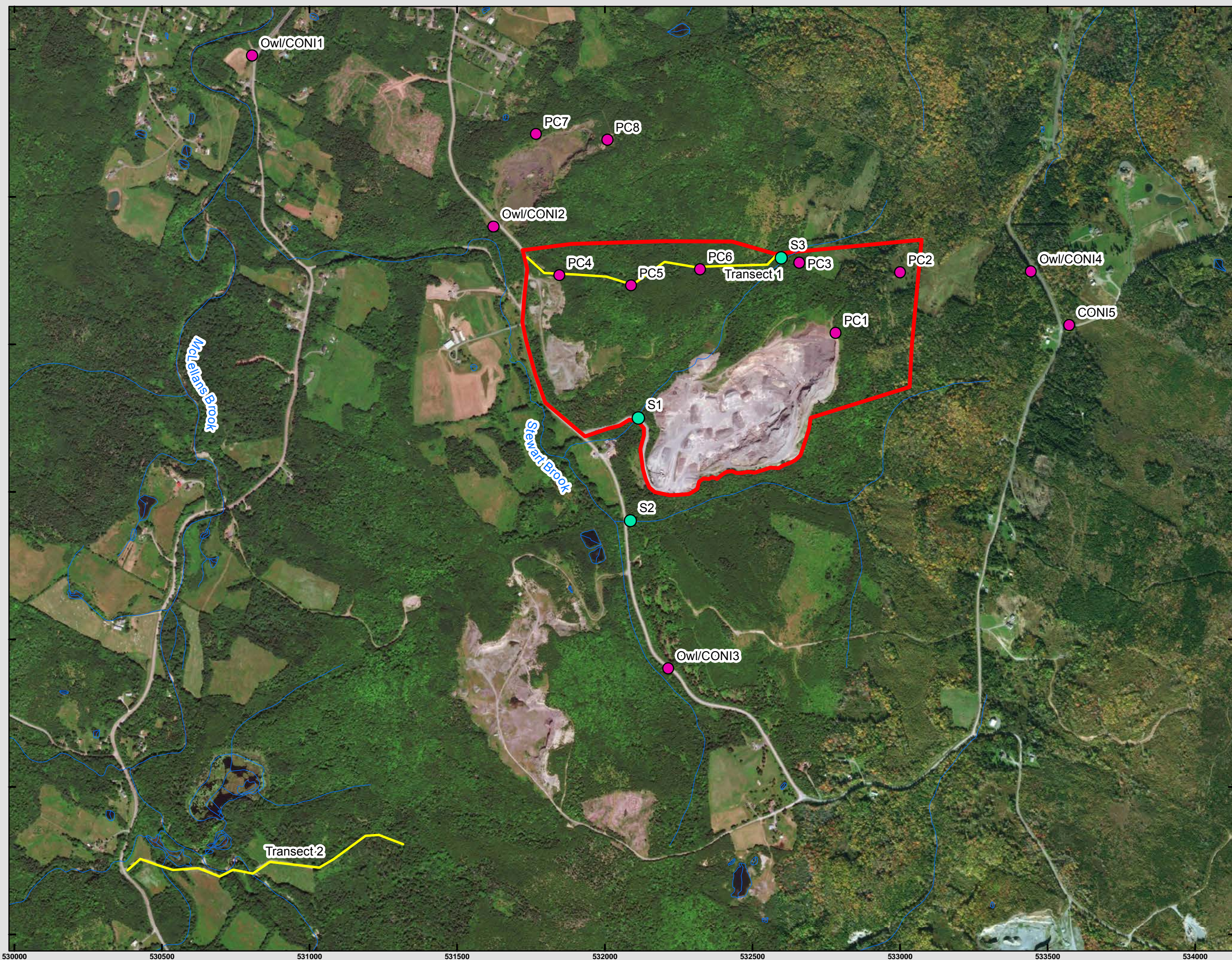
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Drawn By: LP

Date: 2018-06-18

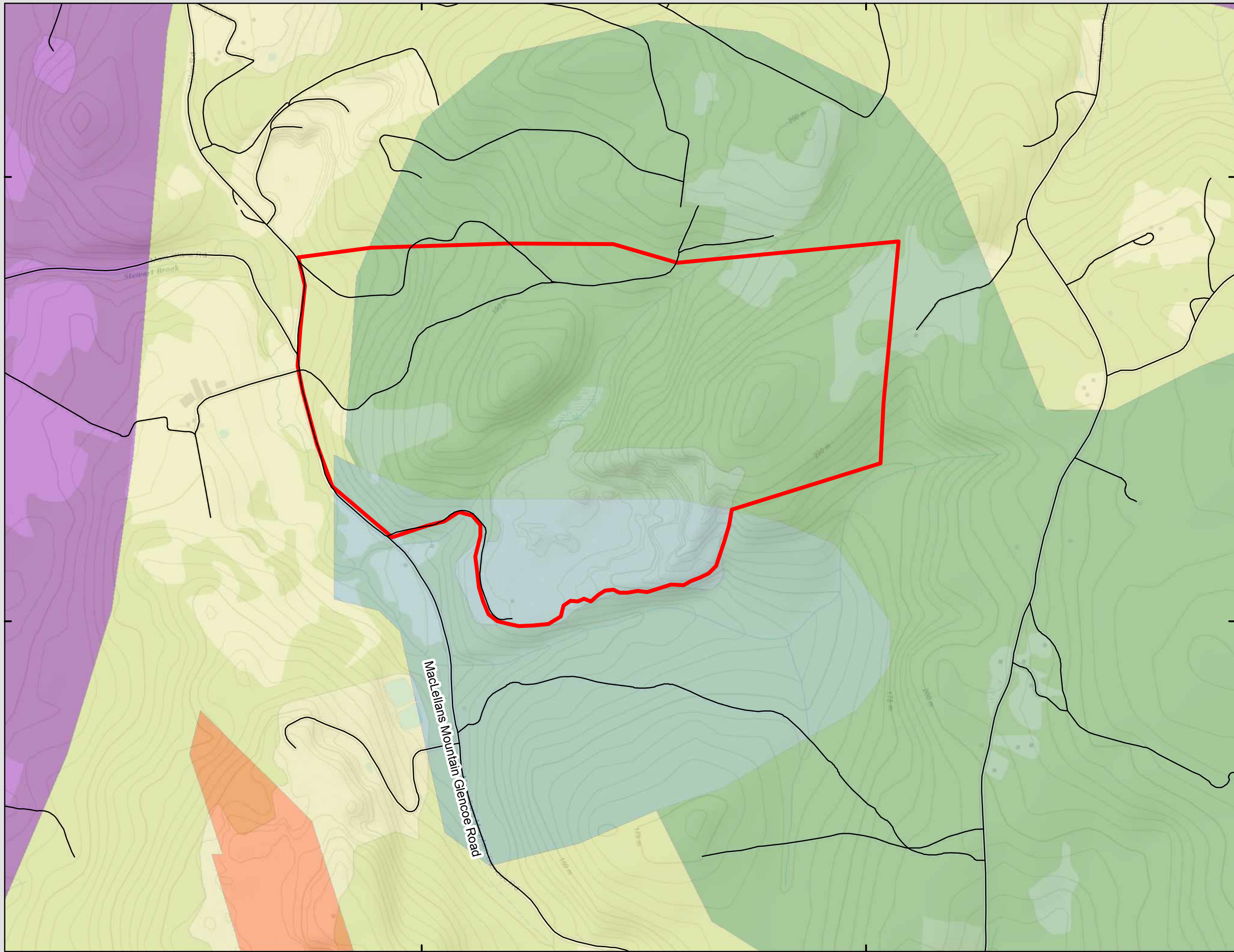


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530000 530500 531000 531500 532000 532500 533000 533500 534000

5043500
5043000
5042500
5042000
5041500
5041000
5040500



Prepared For:



FIGURE 7

Surficial Geology

**Proposed McLellans Mountain Quarry Expansion Project
PID:00888537 and 65165748**

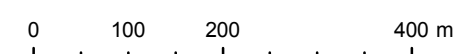
McLellans Brook, NS

Legend

- Provincial Roads
- Study Area
- Bedrock
- Kame Fields and Esker Systems
- Organic Deposits
- Silty Till Plain
- Stony Till Plain



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



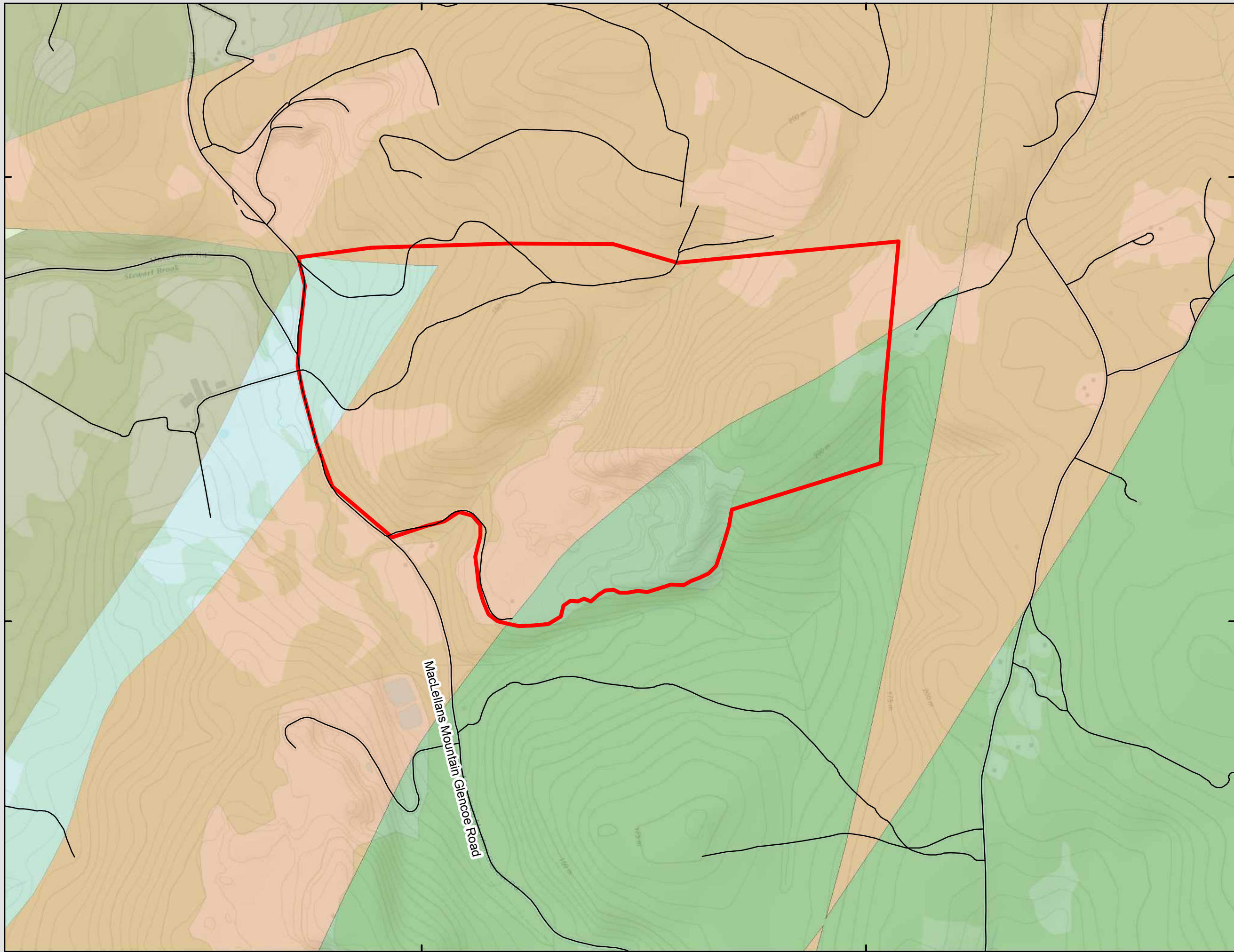
1:8,000 Scale when printed @ 11" x 17"

Drawn By: TLG

Date: 2018-03-08



McCallum Environmental Ltd.



Prepared For:



FIGURE 8

Bedrock Geology

**Proposed McLellans Mountain Quarry Expansion Project
PID:00888537 and 65165748**

McLellans Brook, NS

Legend

— Provincial Roads

Study Area

GROUP

Arisaig Group

Georgeville Group

Windsor Group (Middle)

Windsor Group (Upper)



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter



0 100 200 400 m

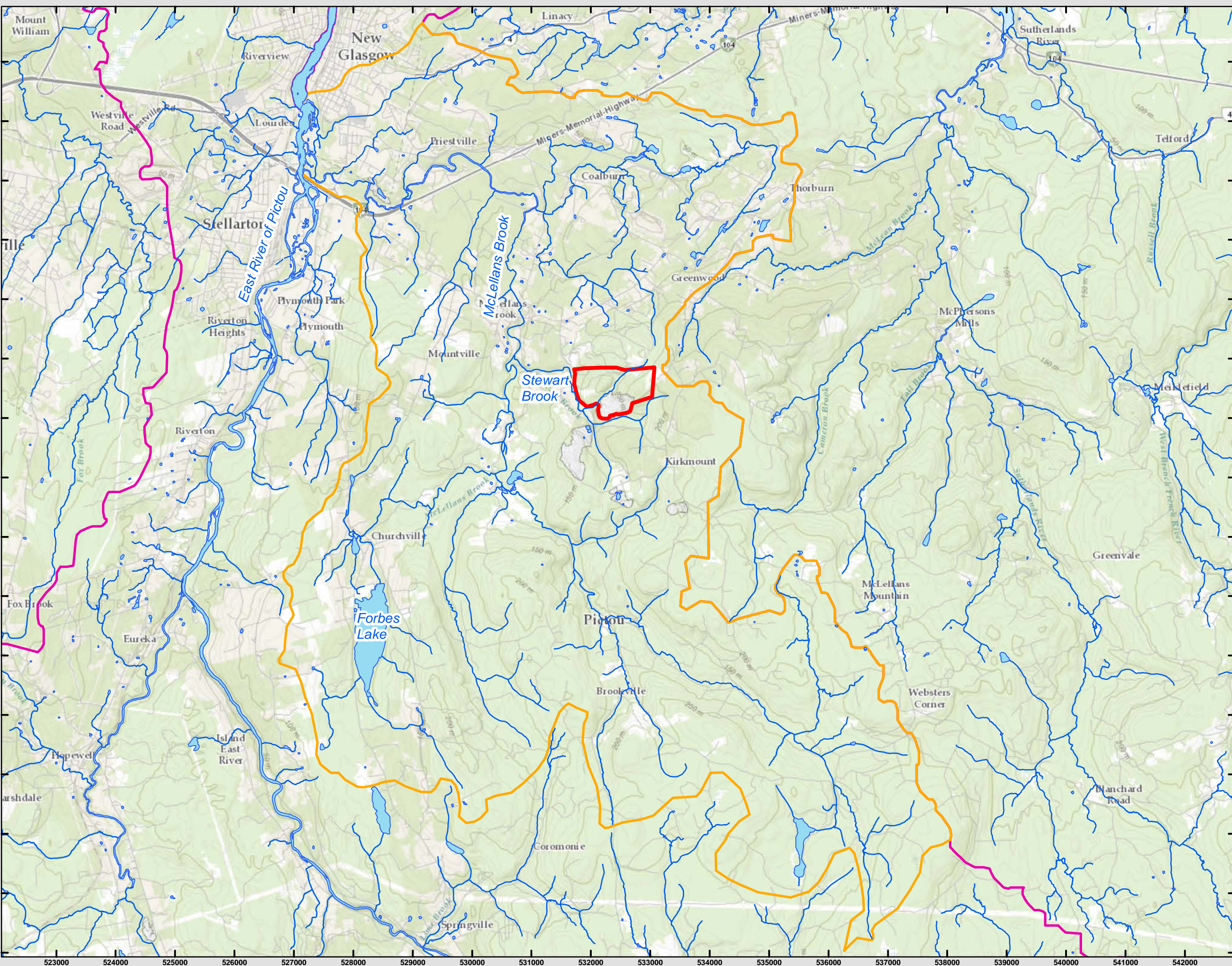
1:8,000 Scale when printed @ 11" x 17"

Drawn By: TLG

Date: 2018-03-08



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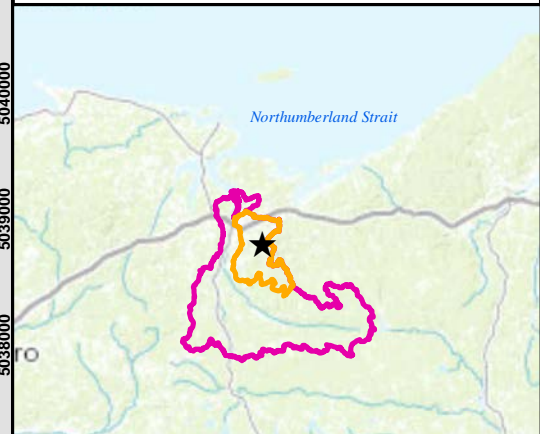

FIGURE 9

Watershed and Surface Watercourses

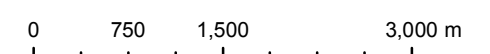
Proposed MacLellans Mountain Quarry Expansion Project
 PID:00888537 and 65165748

McLellans Brook, NS

- Legend**
-  Watercourse (NSE)
 -  Forbes Lake Tertiary Watershed
 -  East River Pictou Secondary Watershed
 -  Study Area



Coordinate System: NAD 1983 UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983
 Units: Meter



1:60,000 Scale when printed @ 11" x 17"

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McCallum Environmental Ltd.

Prepared For:



FIGURE 10

SAR/SOCI and ACCDC

**Proposed MacLellans Mountain Quarry Expansion Project
PID:00888537 and
65165748**

McLellans Brook, NS

Legend

- Hop Sedge (S3) locations
- Bird Survey Points
- ▲ ACCDC Records
- Streams (NSE)
- Field Delineated Watercourse
- ▨ Field Delineated Wetland
- 1 Km Buffer
- Study Area

Common Name	SARA	COSEWIC	NSESA	ACCDC S-Rank	Location	Season
Bobolink	T	T	V	S354B	PC 7 PC 4	Spring Breeding
Canada Warbler	T	T	E	S3B	PC 4	Spring
Chimney Swift	T	T	E	S2B, S1M	PC 4	Breeding
Eastern Wood-Peezee	SC	SC	V	S354B	Incidental	Breeding
Evening Grosbeak	-	SC	V	S354B, S3N	PC 1 PC 2	Spring Spring Incidental Spring
American Kestrel	-	-	-	S3B	PC 4	Breeding Incidental Fall
Bay-breasted Warbler	-	-	-	S354B	PC 2	Fall
	-	-	-	S354B	PC 1 PC 2 PC 3 PC 8	Fall Fall Fall Spring Spring, Fall
Blackpoll Warbler	-	-	-	S3	Incidental	Spring, Fall
Boreal Chickadee	-	-	-	S3	PC 2	Fall
Killdeer	-	-	-	S3B	Incidental	Spring, Breeding
Pine Siskin	-	-	-	S253	PC 5	Fall Fall
	-	-	-	S3	PC 1 PC 2 PC 3	Fall Spring, Breeding, Fall Spring, Breeding, Fall
Red-breasted Nuthatch	-	-	-	S3	PC 5 PC 6 PC 8	Fall Fall Fall
Rose-breasted Grosbeak	-	SC	V	S354B, S3N	Incidental	Spring, Fall
	-	-	-	S354B	PC 2 PC 3	Spring Spring, Breeding, Fall
Ruby-crowned Kinglet	-	-	-	S354B	PC 4 PC 6	Spring Spring, Fall Spring, Fall
Swainson's Thrush	-	-	-	S354B	PC 1 PC 2	Breeding Spring, Breeding Fall
Yellow-bellied Flycatcher	-	-	-	S354B	PC 6	Spring Breeding



Coordinate System: NAD 1983 UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter

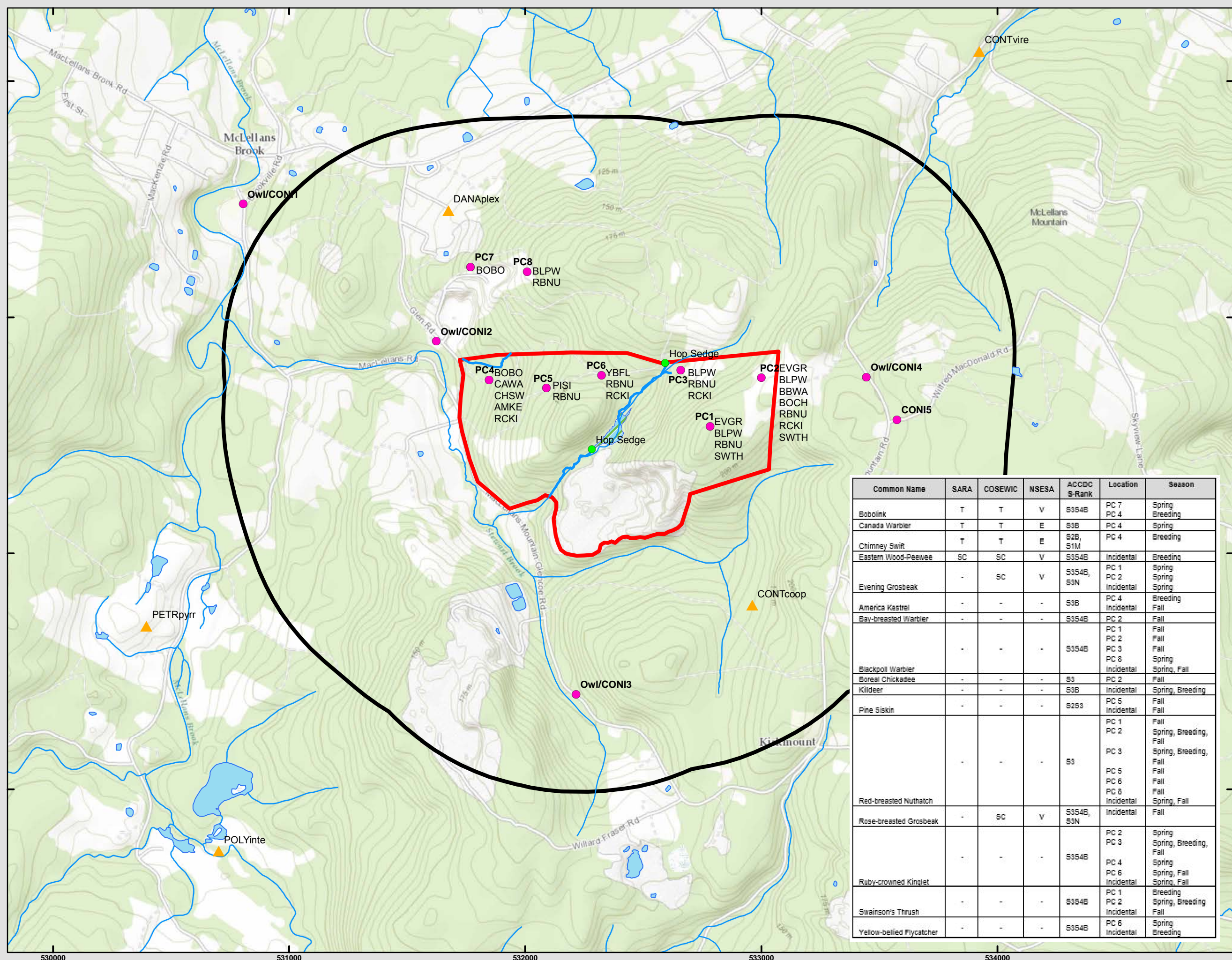
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Drawn By: LP Date: 2018-06-18



McCallum Environmental Ltd.



APPENDIX B. PROJECT TEAM MEMBERS' CVS

Years in Practice
18

Certifications

Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships

Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Education

- Master in Environmental Studies (MES), York University, Toronto, Ontario, 1997-1999
- BSc. (Biology), Dalhousie University, 1992-1997
- BA (Political Science), Honours, Dalhousie University, 1992-1997

Training

- Wetland Construction: Principles, Planning and Design, Rutgers, 2016
- Wetland Functional Assessment Training Workshop, NSE 2013
- Urban Wetland Restoration: A Watershed Approach, 2012
- Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2009;
- Water Management and Wetland Restoration Training Course, 2009;
- Identifying and Delineating Wetlands for Nova Scotia, 2008
- Saint John Ambulance Standard First Aid, AED, CPR(C). 2013

Summary

Ms. Milloy oversees, manages, and executes regulatory and environmental projects. She provides project management leadership for Federal and provincial environmental assessment processes. She manages and completes environmental baseline surveys including habitat surveys, species at risk and wildlife surveys, botany and bird surveys, wetland and watercourse delineations, characterizations and functional assessment, fish habitat evaluation and bat hibernacula identification. Ms. Milloy also completes watershed evaluations, and guides clients through the environmental and permitting stages of mining, industrial, alternative energy, and development projects.

Ms. Milloy supports clients through provincial and federal environmental assessment requirements and supports project teams to identify and evaluate project environmental risk. Ms. Milloy has completed several Federal and Provincial environmental assessment registration documents in the past two years and is currently preparing three Canadian Environmental Assessment Agency (CEAA) environmental impact statements (EIS) for three mining projects in Nova Scotia.

Ms. Milloy regularly completes applications for wetland and watercourse alteration and development across Atlantic Canada, and has developed and implemented wetland compensation programs and wetland restoration projects. Ms. Milloy is a trained wetland evaluator, biologist, and restoration professional.

Project Experience

- Project Manager and Team Lead for three Environmental Impact Statements (EIS) for submission to the Canadian Environmental Assessment Agency (CEAA) (2017-2018).
- Provision of biophysical project management and coordination of field surveys to support the Canadian Environmental Assessment Act (CEAA) environmental assessment process for three proposed mining projects in Nova Scotia (2014-current).
- Completion of biophysical field surveys to support expansion efforts for several mines in Nova Scotia (2014-2017) and a new rock quarry (2017/2018) to meet requirements under the provincial environmental assessment process.
- Completion of provincial environmental assessment for a quarry expansion in Nova Scotia (2016).
- Completion of environmental baseline surveys for the provincial environmental assessment process for a proposed re-development of a gold mine in eastern Nova Scotia in 2013.
- Completion of three provincial environmental assessments for community wind projects in Nova Scotia from 2013-2016.
- Completion of environmental baseline surveys for three Nova Scotian quarry expansion projects in 2012-2013.
- Watershed evaluation for wetlands and watercourses at a 500 hectares golf and residential development and associated wetland alteration permitting, compensation planning, wetland restoration activities, and enhancement of several wetlands to increase functionality.
- Surface water assessment and functional assessment, wetland permitting,

Meghan Milloy, BSc. (Bio), MES
meghan@mccallumenvironmental.com

Vice President

watercourse permitting, and compensation planning and implementation at an 18 hole golf course and residential development along the south shore of Nova Scotia in 2014. Provision of environmental project management and regulatory lead role for the Project.

- Completed the Provincial Environmental Assessment for the 80 MW Glen Dhu South Wind Power Project, Nova Scotia, for Shear Wind Inc.
- Project Management of regulatory permitting and environmental assessments for a 50 MW Wind Power Project in Nova Scotia for Sprott Power Corp.
- Evaluation of the Musquodoboit River Watershed for wetland restoration opportunities (GIS based and ecology/field based study).
- Evaluation of the Sackville River Watershed for wetland restoration opportunities (GIS based and ecology/field based study).
- Completion of 35-45 projects involving watershed evaluation, land use classification, wetland delineation and alteration and infill, and compensation planning for numerous residential and commercial large-scale developments across Nova Scotia and New Brunswick.

Work Experience

McCallum Environmental Ltd., Nova Scotia, 2010-Present

Vice President/Senior Project Manager - Provides project management expertise for site and/or route selection, constraints mapping, regulatory consultation, environmental assessments, environmental baseline surveys, wetland alteration and restoration planning, environmental protection plan development, regulatory applications, construction monitoring, and reclamation for small and large scale industrial projects. Other responsibilities include marketing, budget management, report preparation and client service.

Strum Environmental Services Ltd., Nova Scotia 2000-2010

Project Manager- From 2000- 2010, provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial and residential developments, wetland alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, phased site assessments, and risk assessment and management.

Environmental Sciences Group, Kingston, ON 1998

Environmental Scientist- in 1998, provided contaminant and project management expertise to Department of National Defense in the Canadian Arctic in support of remediation of several remote military sites. Identified areas required for remediation and completed associated boundary soil and sediment confirmatory sampling and analysis.

Years in Practice

10

Certifications

Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships

Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Education

- BSc. (Horticulture), Essex University (UK), 2003-2005

Training

- Wetland Functional Assessment Training Workshop, NSE 2013
- Urban Wetland Restoration: A Watershed Approach, 2012
- Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2010;
- Water Management and Wetland Restoration Training Course, 2014;
- Identifying and Delineating Wetlands for Nova Scotia, 2009
- Watercourse Alteration Certification (Nova Scotia Environment) (2008)
- Saint John Ambulance Emergency First Aid, AED, CPR(C). 2016

Summary

Mr. Walter is a trained biologist and wetland specialist, and has extensive experience managing technical biophysical projects within Atlantic Canada. Mr. Walter is knowledgeable in federal, provincial, and municipal environmental regulations and guidelines applicable to Atlantic Canada, and works closely with all necessary regulatory agencies to facilitate project implementation. As senior project manager, Mr. Walter ensures biophysical field programs are tailored to the needs of the client and project, while meeting regulatory standards. Mr. Walter has provided environmental support to the planning process in a wide range of project types including residential development, industrial projects (mining, pit and quarry), transmission line and hydro dam infrastructure and highway construction to name a few. Mr. Walter has managed the environmental processes associated with multiple wind energy developments in Nova Scotia, including compilation of provincial environmental assessment (EA) documents, and implementation of associated EA biophysical field surveys, as well as acquiring pertinent environmental information required for regulatory permitting.

As a trained field biologist, Mr. Walter has completed terrestrial and stream habitat assessments, and flora and fauna surveys, including desktop reviews and characterization of biophysical environments. Mr. Walter also completes numerous fish habitat/watercourse assessments for effects monitoring, watercourse alteration, and HADD authorization projects. Assessments have also included water quality sampling, benthic sampling, and biophysical characterization (channel depth and width, stream velocity, fish habitat assessment) of water bodies.

As a qualified wetland delineator and wetland function evaluator for Atlantic Canada, Andy has completed delineation of hundreds of wetlands. Projects often involve the completion of species at risk assessments, functions assessments, and detailed wetland characterization in support of provincial wetland alteration applications. In addition, Mr. Walter assists in the identification of potential wetland restoration and creation sites for wetland and fish habitat alterations, reviews databases, mapping, and aerial imagery, completes ground truthing and consults with local environmental groups and government to identify potential sites. Following alteration approval, Mr. Walter supervises construction activities for numerous construction projects in wetland habitat ensuring that erosion and sedimentation control measures are implemented prior to construction, and monitors activities during construction to ensure wetland protection measures are effective.

Project Experience

- Managing, and currently in the process of implementing a new wetland functional assessment tool for use in Nova Scotia. This Project included the collection of baseline wetland information across Nova Scotia by completing 120 wetland functional assessments using the Wetland Ecosystem Services Protocol (WESP). Ongoing collaboration with Nova Scotia Environment to support the rolling out of this method to wetland practitioners.
- Management and implementation of a 18 hectare agricultural wetland restoration project in Middle Stewiacke, NS.
- Management and completion of terrestrial habitat mapping, wetland delineation and vegetation surveys in support of EA and regulatory permitting for the South Canoe Wind Project (80MW wind Project in Nova Scotia) 2011-2014.

Andy Walter, BSc. (Hort)
andy@mccallumenvironmental.com
Senior Project Manager

- Management of a multi-faceted avian study in support of a provincial EA at Aulds Cove, NS.
- Completion of six provincial environmental assessments and baseline surveys for community wind projects in Nova Scotia in 2012-2014.
- Terrestrial habitat mapping, wetland delineation and vegetation surveys in support of a 65km distribution transmission line in central Nova Scotia.
- Wetland delineation, species at risk, watercourses and flora surveys at the site of a proposed quarry in Nova Scotia. Subsequent facilitation of wetland alteration permit to alter in excess of 20 hectares of wetland.
- Implemented the passive wetland restoration strategy at a disturbed wetland on NSDNR property. Completed regular monitoring of vegetation, soil, and hydrology conditions and developed project recommendations accordingly (2009-2011).
- Wetland delineation, species at risk, watercourses and flora surveys at the site of a proposed 22km railway line and shipping container terminal in eastern Nova Scotia (2012-2014).
- Completion of wetland delineation and watercourse identification and associated regulatory permitting at multiple developments in Nova Scotia (2009-2016).

Work Experience

Strum Environmental Services Ltd., Nova Scotia 2008-2015

Environmental Specialist/Project Manager- provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial, residential and wind power developments, wetland and watercourse alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, avian studies, and regulatory consultation.

Years in Practice

3

Education

B.Sc. (Geography),
University of Victoria,
2005-2009.

M.Sc. (Environmental
Science), Memorial
University of
Newfoundland and
Labrador, 2010-2013.

Training

- ◆ Saint John Ambulance
Standard First Aid,
AED, CPR(C), 2017
- ◆ Wildlife Awareness
training – 2015
- ◆ W.H.M.I.S – 2015
- ◆ Geographic Information
System (GIS) Training,
ESRI – 2013
- ◆ Facilitation Skills for
Technical
Professionals,
Dalhousie University –
2017

Summary

Ms. Posluns has been in the environmental consulting profession since 2015. She has worked on both project related and research related field assessments in Nova Scotia.

Ms. Posluns is responsible for completing biophysical assessments, including flora and fauna surveys, avian surveys, aquatic surveys, wetland monitoring and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Ms. Posluns has been responsible for the management of field data for multiple, large-scale initiatives in Nova Scotia, including a provincial infrastructure project and a mining development.

Selected Project Experience

- Conducted migratory bird surveys for a provincial infrastructure project.
- Completed ungulate and other wildlife surveys for a variety of Natural Resource projects.
- Surveyed environmental baseline data for the federal environmental assessment process for a proposed development of a gold mine in eastern Nova Scotia in 2017.
- Delineated wetlands, completed watercourse identification and vegetation assessments for two large-scale developments in Nova Scotia in 2016 and 2017.
- Collaborated with communities, local resource users, and First Nations to implement solutions.
- Coordinated spatial data organization, performed GIS analysis, and created dynamic maps for a variety of projects.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Environmental Scientist:

June 2017-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating data management and Geographical Information Systems (GIS). Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications. Preparing Phase 1 Environmental Site Assessments.

CBCL LTD., Halifax, Nova Scotia

Environmental Scientist

September 2015 – April 2017.

- Created GIS maps for over 20 projects, including six 100-page map books, effectively visualizing contaminated sites, ecologically sensitive habitats, and urban development.
- Aerially interpreted and delineated wetlands.
- Conducted species at risk background searches and field visits.
- Prepared reports for a variety of assessments, including permit applications and Environmental Management Plans.
- Assisted with marine water quality sampling.

OceanCanada Partnership, Halifax, Nova Scotia

Environmental Scientist

September 2015 – April 2017.

- Facilitated community meetings and provided expertise to help a group with local area development planning.
- Conducted interviews and community-wide surveys of a rural fishing village to create a database of local assets.
- Summarized findings of community assets into an accessible written document.
- Lead a marine-monitoring program in an ecologically sensitive bay, coordinating 15 volunteers in fieldwork, identifying and assessing eelgrass health and distribution, sample collection, and data entry.
- Investigated social, ecological, and economic changes within coastal communities to make suggestions on future development.

Saint Mary's University, Halifax, Nova Scotia

Professor of Geography

August 2015 – April 2016.

- Explained technical environmental information clearly and concisely to Canadian and International students, ensuring all students had a supportive learning atmosphere.
- Designed new course material that engaged students and enhanced their learning experience.
- Worked with students one-on-one to solve conflicts.

Regional District of North Okanagan, Vernon, British Columbia

Water Sustainability Coordinator

2013 – 2014.

- Worked under the BC Water Act, and maintained a comprehensive understanding of provincial and local policy, regulations, and bylaws.
- Compiled and analysed large datasets, assessing trends, and informing local policy.
- Determined drought risk using environmental indicators, and communicated with team members to decide on the necessary restriction required for meeting seasonal water level targets.

Years in Practice

4

Education

Master of
Environmental Science,
Memorial University of
Newfoundland 2015

B.Sc. Major in Biology,
St. Francis Xavier
University 2010

Certifications

- ♦ Certified Environmental Professional in Training, ECO Canada
- ♦ Wetland Plants and Delineation, Fern Hill Institute

Training

- ♦ Standard First Aid AED CPR "A", St. John Ambulance, Sept. 2015
- Construction Safety Training System, Sept. 2015
- ♦ Geographic Information System (GIS) Training, ESRI, Feb. 2015
 - ♦ WHMIS, AIX Safety, Mar. 2013
 - ♦ Green Defensive Driving, Canada Safety Council, July 2012
 - ♦ PADI Open Water certified scuba diver, Nov. 2010
 - ♦ MED A1, Canadian Sailing Expeditions Inc. and Transport Canada, May 2008

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Biologist and Environmental Project Technologist

Sept 2015 - Present

- Flora and Fauna field surveys
- Biophysical assessments including species at risk assessments
- Watercourse and Wetland identification and assessment
- Wetland Delineation, functions assessments and alteration applications
- Construction Monitoring
- Reporting of methodology and results
- Provincial regulatory applications
- GIS

Agriculture and Agri-Food Canada, NL and NS

Research Technician

2011- 2015.

- Led the collection of data in Newfoundland for a national research project
- Surveyed and staked research plots
- Entered and analyzed scientific data
- Conducted quadrat sampling and botanical separation
- Prepared samples for analysis
- Operated specialized laboratory instruments
- Entered and analyzed scientific data
- Supervised and trained laboratory visitors and volunteers
- Assisted research scientists and graduate students in their research
- Applied specialized laboratory procedures and techniques

Atlantic Developments Inc. - Halifax, NS

Office Manager & Assistant to Project Manager

Sept - Dec 2010

- Worked on site during the construction of a condominium complex
- Monitored construction progress
- Gave site tours to contractors and potential unit purchasers
- Assisted the project manager
- Organized and coordinated office operations and procedures

UNESCO Southwest Nova Biosphere Reserve Association – Middleton, NS

Community Outreach Coordinator

May - Sept. 2010

- Coordinated events and activities
- Developed and delivered educational programs
- Designed website and pamphlets

Years in Practice

4

Education

B.Sc. (Honours, Biology),
Waterloo University,
2009-2011.

Training

- ◆ Saint John Ambulance
Standard First Aid,
AED, CPR(C), 2015
- ◆ Wildlife Awareness
training and ATV
training – 2015
- ◆ W.H.M.I.S – 2015
- ◆ H2S Alive - 2015

Summary

Mr. Gallop has been in the environmental consulting profession since 2011. He has worked on both project related and research related field assessments in Nova Scotia, Alberta and Saskatchewan.

Mr. Gallop is responsible for completing biophysical assessments, including flora and fauna surveys, avian surveys, and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Mr. Gallop has been responsible for the implementation of 4 environmental baseline programs for mining, quarry development and energy sector development projects in Nova Scotia and Saskatchewan in advance of environmental assessment registration.

Selected Project Experience

- Completion of migratory bird surveys for a large scale renewable energy project.
- Completion of ungulate and other wildlife surveys for a variety of Natural Resource projects.
- Completion of environmental baseline surveys for the federal environmental assessment process for a proposed development of a gold mine in eastern Nova Scotia in 2016
- Completion of wetland delineation, watercourse identification and vegetation assessments of two large scale developments in Saskatchewan and Nova Scotia in 2015 and 2016.
- Responsible for collecting baseline data for the calibration of the Wetland Ecosystems Services Protocol (WESP) for the Province of Nova Scotia.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Biologist and Environmental Specialist:

April 2016-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating migratory bird monitoring. Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications.

Basin Environmental LTD., - Edmonton, Alberta.

Environmental Technologist

September 2014 – February 2016..

- Utilized the Alberta Wetland Classification system to assess wetlands and the Wetland Rapid Evaluation Tool to determine compensation required for impacts to classified wetlands.
- Aerially interpreted and delineated wetlands.
- Conducted species at risk background searches and field visits.
- Conducted pre-disturbance assessments for oil and gas activities, road improvements and residential developments, including: watercourses/waterbodies, soil profiling, vegetation, wildlife, eco-sites and timber volumes.
- Prepared reports for a variety of assessments, including: wetlands, pre-disturbance, bio-physicals, fish habitats for access road watercourse crossings, EAP/EFR supplements and applications.
- Monitored the water quality of horizontal directional drilling on fish bearing permanent watercourses.
- Assisted surveyors and construction engineers on-site in the design of oil and gas well leases and facilities, pipelines and access roads to ensure compliance with EAP Standards and Guidelines.

Years in Practice

13

Education

Masters of Resource and Environmental Management, Dalhousie University, 2009-2011

B.Sc. Advanced Major in Biology & Interdisciplinary Studies in Aquatic Resources, St. Francis Xavier University, 2001-2005

Training

- ◆ Field Hike Leader Certification, Basic and Winter modules, Outdoor Council of Canada, 2015 & 2018
- ◆ Wetland Ecosystem Services Protocol (WESP-AC) training, 2017
- ◆ WHMIS, 2017
- ◆ Saint John Ambulance Standard First Aid, AED, CPR(C), 2016
- ◆ Electrofishing Crew Leader, 2015
- ◆ Wetland Delineation Certification, 2013
- ◆ Health Safety and Environmental Leadership training and Advanced Safety Audit training, 2009
- ◆ Small Vessel Operator Proficiency & Marine Emergency Duties A3 certified, 2006
- ◆ Emergency Operations Centre crisis management training, 2006-2008
- ◆ Bear Awareness & ATV training – Alberta Safety Council, 2006

Summary

Ms. MacDonald has been in the environmental consulting profession since 2005. She has worked on both project related and research related field assessments in Nova Scotia, Prince Edward Island, and Alberta.

In her academic career, Ms. MacDonald studied environmental ecology of aquaculture, oceanography, marine biology and recent case studies of Salmon aquaculture environmental assessments in Nova Scotia. She completed research on the Blue Mussel aquaculture industry in Nova Scotia and participated in a two-week ground fish survey in the Southern Gulf of St. Lawrence with the Department of Fisheries and Oceans.

Ms. MacDonald is responsible for completing biophysical assessments and ecological inventories, including flora and fauna surveys, avian surveys, and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector.

Ms. MacDonald is an ecologist, and is highly skilled at completing ecological habitat assessments via geo-spatial desktop review (GIS), and implementation of field studies. During the past six years of her career, Ms. MacDonald has gained extensive experience completing habitat and ecological integrity studies across the Nova Scotia landscape. Her in-depth knowledge of Nova Scotia flora and fauna has provided her with the tools to effectively determine habitat uniqueness, and ecological sensitivity.

Ms. MacDonald coordinates all field biologists required to complete all environmental baseline and ecological inventory programs for Provincial and Federal Environmental Assessment registration. Ms. MacDonald has been responsible for the implementation of more than ten environmental baseline programs for mining, quarry development and energy sector development projects in Nova Scotia in advance of environmental assessment registration. In addition, Ms. MacDonald has been largely responsible for communicating the results of baseline environmental conditions to industry and project related stakeholders. Her effective communication skills, and personable demeanor has furthered her involvement in multiple community liaison committees, and other community organizations.

Selected Project Experience

- Completion of environmental baseline surveys for the federal environmental assessment process for proposed development of three separate gold mines in eastern Nova Scotia from 2015-2018
- Completed baseline studies on 125 wetlands across the province to implement a new wetland functional assessment technique (WESP-AC) to the Nova Scotian regulatory landscape.
- Completed watershed planning for the Sackville River Secondary watershed and Musquodoboit River Secondary Watershed to

Melanie MacDonald, BSc. (ISAR & Bio), MREM
melanie@mccallumenvironmental.com

evaluation wetland restoration potential and to aid in better land use planning, source water protection and water resource management.

- Completion of surveys associated with wetland alteration applications and associated compensation for multiple wetlands associated with residential, commercial and industrial development in Nova Scotia.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Senior Environmental Specialist & Field Coordinator

May-Aug 2011, Jan 2012-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating migratory bird and bat monitoring. Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications.
- Instructed Wetland Delineation course with Fern Hills Institute, Summer 2016-2017.

Amec Colt, Shell/Albian Sands Expansion 1 - Fort McMurray, Alberta.

Environmental Specialist and Area Environmental Lead

July 2008 – October 2009.

- Proactively monitored construction activities via inspections, audits and Environmental Work Permits & Protection Plans to ensure compliance with regulatory approvals, the projects' Environmental Control Plan, and best management practices. Investigated and reported incidents, and liaised between contractors and project owners. Implemented Environmental Awareness training programs and communicated issues via weekly newsletters. Worked as an independent contractor to Amec Colt.

Canadian Natural Resources Ltd. - Fort McMurray, Alberta

Regulatory and Environmental Specialist October 2005 – July 2008

- Conducted extensive field work in various fish and wildlife programs. Communicated issues with government agencies, contractors and external stakeholders. Performed on-call duties, spill response, and non-compliance reporting and response. Expanded upon site wide procedures for protection of water, wildlife and waterbirds. Chaired the regional 'Oil Sands Bird and Wildlife Protection Committee.
- Played a pivotal role in planning & completion of a fish salvage of 38 km of the Tar River, and in construction of a 77 hectare fish habitat compensation lake (Horizon Lake). Horizon Lake earned the CAPP Steward of Excellence Award for Environmental Performance (2009).

Years in Practice
7

Education

Bachelor of Natural
Resource Science,
Thompson Rivers
University, 2014

Renewable Resource
Management Diploma,
Lethbridge College, 2011

Training

- ♦ Wetland Delineation Certification, 2013
- ♦ Saint John Ambulance Standard First, AED, CPR(C), 2014
- ♦ ATV Training Course, 2015
- ♦ Certified Crew Supervisor Backpack Electrofishing, June 2015
- ♦ Wildlife Awareness, April 2015

Tessa Giroux, B.NRSc , BIT

tessa@mccallumenvironmental.com

Summary

Ms. Giroux has been in the environmental consulting profession since 2011. She has worked on project related field assessments in Alberta, British Columbia, Manitoba, Nova Scotia and Saskatchewan.

Ms. Giroux is responsible for completing biophysical assessments, including flora and fauna surveys, bird surveys, aquatic surveys, wetland monitoring and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Ms. Giroux coordinates field programs required to complete environmental baseline programs for Provincial Environmental Assessment registration. Ms. Giroux has been responsible for the implementation of an environmental baseline biophysical programs for mining development a project in Nova Scotia in advance of environmental assessment registration.

Selected Project Experience

- Completion of environmental baseline surveys for the federal environmental assessment process for a proposed development of a gold mine in eastern Nova Scotia in 2016
- Project Scientist; Storm Water Ponds Sediment Sampling; City of Calgary; Alberta; 2015. Conducted storm water pond sediment sampling as crew lead for a municipality-regulated project. Prepared sediment samples for the lab. Assisted in compiling field data for the technical report.
- Water Quality Monitoring; ATCO Pipeline Ltd.; Alberta; 2015. Conducted water quality monitoring on various wetlands along the pipeline corridor.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Biologist and Environmental Specialist:

April 2016-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating migratory bird and bat monitoring. Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications.

CH2M Hill, Calgary, Alberta

Intermediate Wetland Ecologist:

2011-2016

- Experienced field biologist who collected field data, including soil, vegetation, noxious weeds, wildlife, hydrologic parameters for various temporary and permanent disturbances to wetlands associated with linear construction projects, including transmission line and pipeline projects, lease sites and facility projects throughout western Canada. Crew lead for wetlands surveys, water quality monitoring, sediment sampling, environmental integrity screenings and reclamation surveys, including noxious weed surveys, soil compaction and crop surveys. Assisted with compiling field data and writing technical reports for various federally, provincially and municipally-regulated projects.

APPENDIX C. PRIORITY SPECIES, ACCDC, MBBA AND NSCCH REPORT

DATA REPORT 5742: McLellans rd, NS

Prepared 30 January 2017
by J. Churchill, Data Manager

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

2.0 Rare and Endangered Species

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

3.0 Special Areas

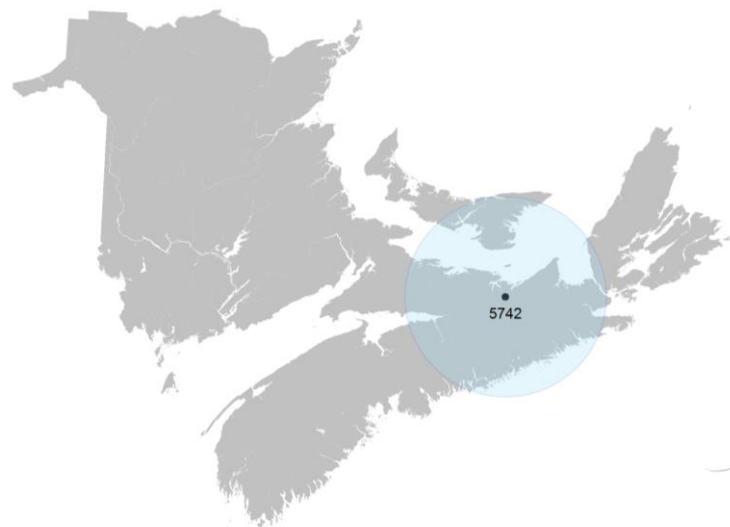
- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

4.0 Rare Species Lists

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

5.0 Rare Species within 100 km

- 5.1 Source Bibliography



Map 1. A 100 km buffer around the study area

1.0 PREFACE

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

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

1.1 DATA LIST

Included datasets:

Filename	Contents
McLellansRdNS_5742ob.xls	All Rare and legally protected <i>Flora and Fauna</i> within 5 km of your study area
McLellansRdNS_5742ob100km.xls	A list of Rare and legally protected <i>Flora and Fauna</i> within 100 km of your study area
McLellansRdNS_5742ma.xls	All <i>Managed Areas</i> in your study area

1.2 RESTRICTIONS

The ACCDC 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 ACCDC 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 ACCDC 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) ACCDC 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) ACCDC 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 ACCDC data response.

1.3 ADDITIONAL INFORMATION

The attached file DataDictionary 2.1.pdf provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries

Sean Blaney, Senior Scientist, Executive Director
Tel: (506) 364-2658
sblaney@mta.ca

Animals (Fauna)

John Klymko, Zoologist
Tel: (506) 364-2660
jklymko@mta.ca

Plant Communities

Sarah Robinson, Community Ecologist
Tel: (506) 364-2664
srobinson@mta.ca

Data Management, GIS

James Churchill, Data Manager
Tel: (902) 679-6146
jlchurchill@mta.ca

Billing

Jean Breau
Tel: (506) 364-2657
jrbreau@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (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 Stewart Lusk, Natural Resources: (506) 453-7110.

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 Sherman Boates, NSDNR: (902) 679-6146. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NSDNR Regional Biologist:

Western: Duncan Bayne
(902) 648-3536
Duncan.Bayne@novascotia.ca

Western: Donald Sam
(902) 634-7525
Donald.Sam@novascotia.ca

Central: Shavonne Meyer
(902) 893-6353
Shavonne.Meyer@novascotia.ca

Central: Kimberly George
(902) 893-5630
Kimberly.George@novascotia.ca

Eastern: Mark Pulsifer
(902) 863-7523
Mark.Pulsifer@novascotia.ca

Eastern: Donald Anderson
(902) 295-3949
Donald.Anderson@novascotia.ca

Eastern: Terry Power
(902) 563-3370
Terrance.Power@novascotia.ca

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

2.0 RARE AND ENDANGERED SPECIES

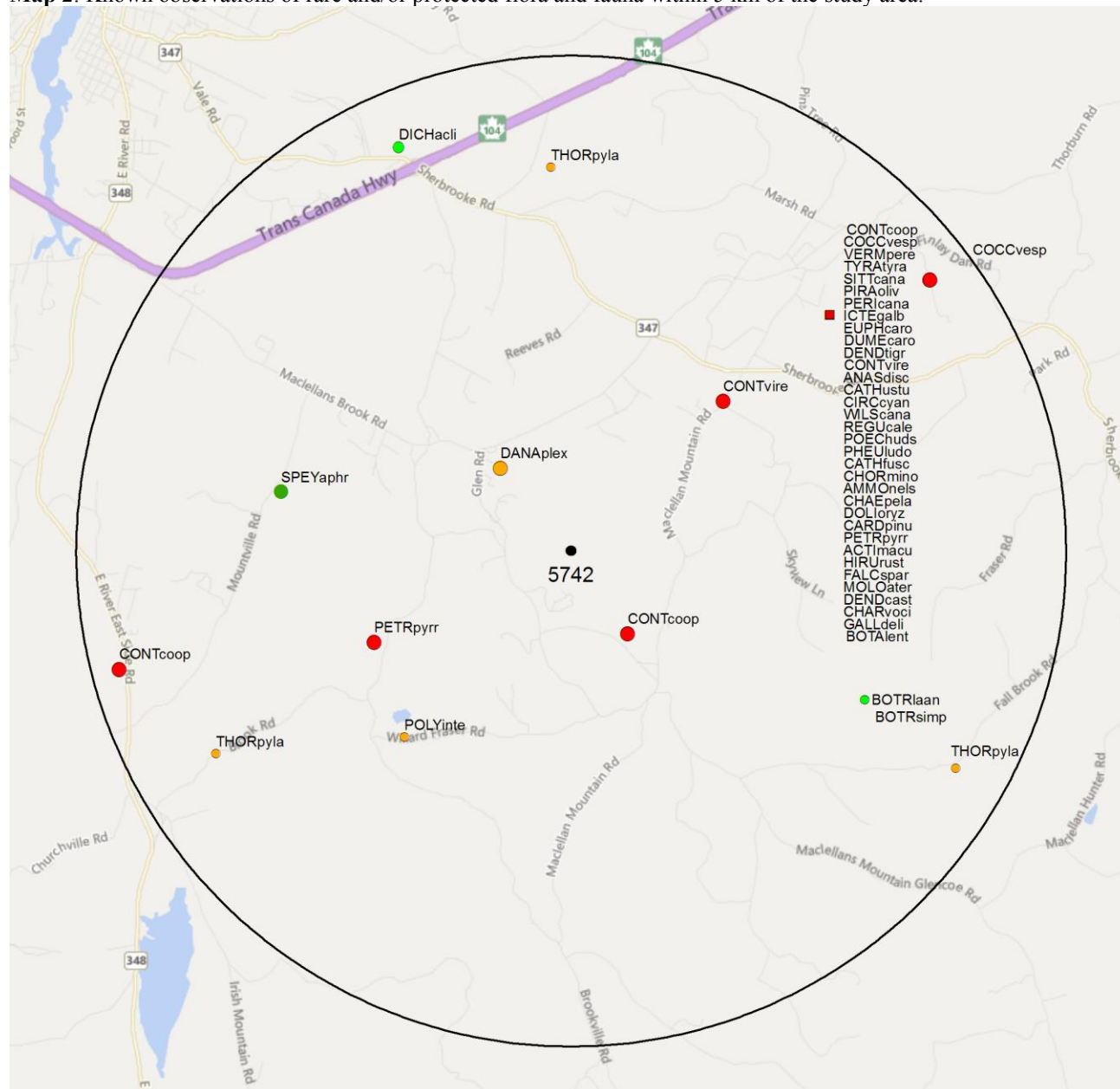
2.1 FLORA

A 5 km buffer around the study area contains 3 records of 3 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

A 5 km buffer around the study area contains 112 records of 34 vertebrate, 6 records of 4 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 5 km of the study area.



RESOLUTION

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

HIGHER TAXON

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

3.0 SPECIAL AREAS

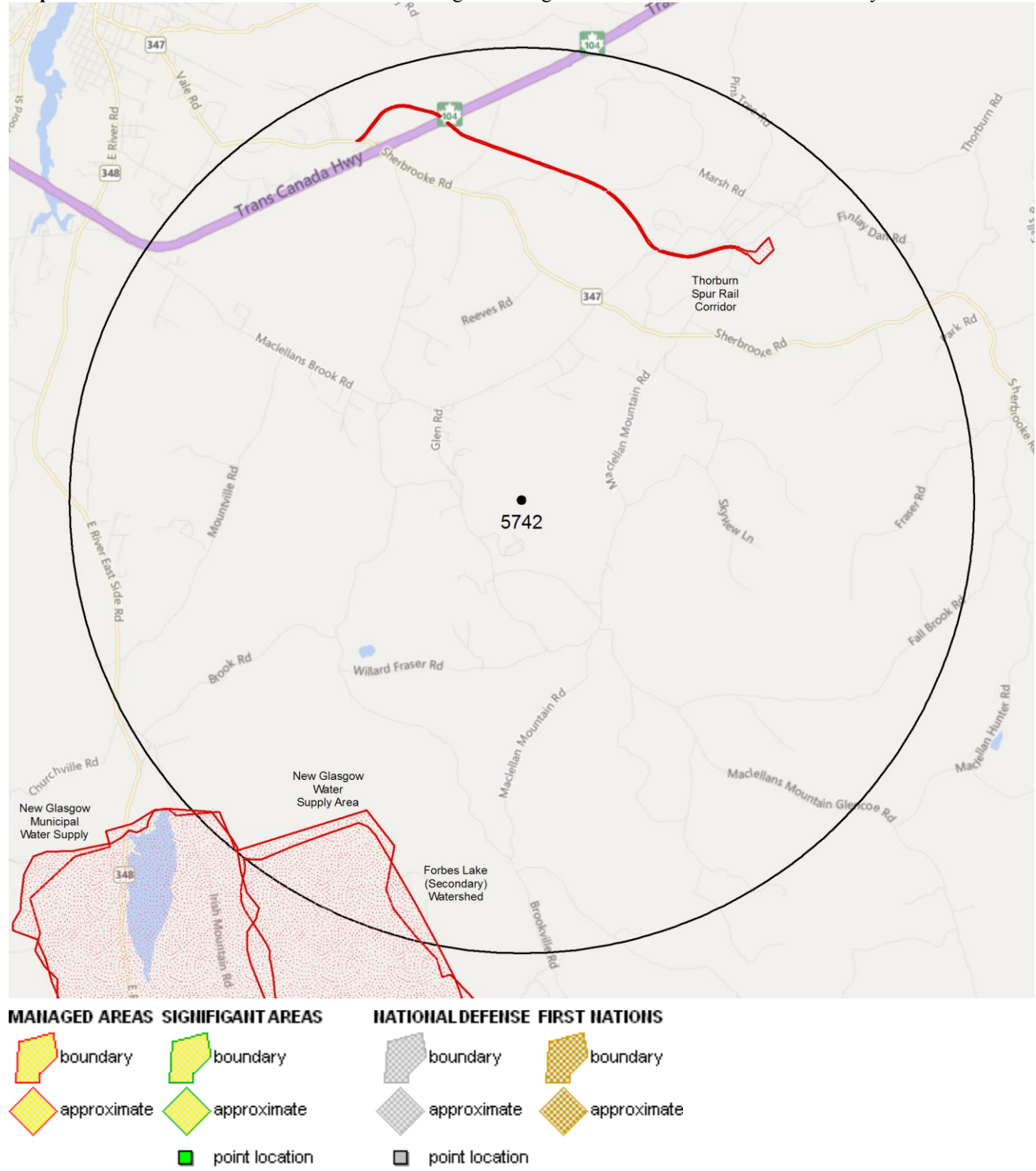
3.1 MANAGED AREAS

The GIS scan identified 4 managed areas in the vicinity of the study area (Map 3 and attached file: *ma*.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 5 km of the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding “location-sensitive” species, section 4.3) within the 5 km-buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (\pm the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	<i>Dichanthelium acuminatum</i> var. <i>lindheimeri</i>	Woolly Panic Grass				S1?	5 Undetermined	1	4.4 \pm 0.0
P	<i>Botrychium lanceolatum</i> var. <i>angustisegmentum</i>	Lance-Leaf Grape-Fern				S2S3	3 Sensitive	1	3.3 \pm 0.0
P	<i>Botrychium simplex</i>	Least Moonwort				S2S3	3 Sensitive	1	3.3 \pm 0.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Endangered	S2B,S1M	1 At Risk	1	3.5 \pm 7.0
A	<i>Chordeiles minor</i>	Common Nighthawk	Threatened	Threatened	Threatened	S2S3B	1 At Risk	1	3.5 \pm 7.0
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	5	3.5 \pm 7.0
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B	1 At Risk	5	1.0 \pm 0.0
A	<i>Wilsonia canadensis</i>	Canada Warbler	Threatened	Threatened	Endangered	S3S4B	1 At Risk	2	3.5 \pm 7.0
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened		Vulnerable	S3S4B	3 Sensitive	5	3.5 \pm 7.0
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	2 May Be At Risk	2	3.5 \pm 7.0
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern		Vulnerable	S3S4B	3 Sensitive	4	2.2 \pm 0.0
A	<i>Circus cyaneus</i>	Northern Harrier	Not At Risk			S3S4B	4 Secure	3	3.5 \pm 7.0
A	<i>Ammodramus nelsoni</i>	Nelson's Sparrow	Not At Risk			S3S4B	4 Secure	3	3.5 \pm 7.0
A	<i>Dendroica tigrina</i>	Cape May Warbler				S2B	3 Sensitive	2	3.5 \pm 7.0
A	<i>Piranga olivacea</i>	Scarlet Tanager				S2B	5 Undetermined	1	3.5 \pm 7.0
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S2B	4 Secure	1	3.5 \pm 7.0
A	<i>Carduelis pinus</i>	Pine Siskin				S2S3	3 Sensitive	5	3.5 \pm 7.0
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B	2 May Be At Risk	4	2.2 \pm 0.0
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S2S3B	3 Sensitive	7	3.5 \pm 7.0
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	2 May Be At Risk	2	3.5 \pm 7.0
A	<i>Perisoreus canadensis</i>	Gray Jay				S3	3 Sensitive	1	3.5 \pm 7.0
A	<i>Poecile hudsonica</i>	Boreal Chickadee				S3	3 Sensitive	4	3.5 \pm 7.0
A	<i>Sitta canadensis</i>	Red-breasted Nuthatch				S3	4 Secure	4	3.5 \pm 7.0
A	<i>Falco sparverius</i>	American Kestrel				S3B	4 Secure	4	3.5 \pm 7.0
A	<i>Charadrius vociferus</i>	Killdeer				S3B	3 Sensitive	3	3.5 \pm 7.0
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3B	3 Sensitive	2	3.5 \pm 7.0
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3B	3 Sensitive	2	3.5 \pm 7.0
A	<i>Dumetella carolinensis</i>	Gray Catbird				S3B	2 May Be At Risk	4	3.5 \pm 7.0
A	<i>Botaurus lentiginosus</i>	American Bittern				S3S4B	3 Sensitive	2	3.5 \pm 7.0
A	<i>Anas discors</i>	Blue-winged Teal				S3S4B	2 May Be At Risk	1	3.5 \pm 7.0
A	<i>Actitis macularia</i>	Spotted Sandpiper				S3S4B	3 Sensitive	4	3.5 \pm 7.0
A	<i>Regulus calendula</i>	Ruby-crowned Kinglet				S3S4B	3 Sensitive	8	3.5 \pm 7.0
A	<i>Catharus fuscescens</i>	Veery				S3S4B	4 Secure	5	3.5 \pm 7.0
A	<i>Catharus ustulatus</i>	Swainson's Thrush				S3S4B	4 Secure	4	3.5 \pm 7.0
A	<i>Vermivora peregrina</i>	Tennessee Warbler				S3S4B	3 Sensitive	2	3.5 \pm 7.0
A	<i>Dendroica castanea</i>	Bay-breasted Warbler				S3S4B	3 Sensitive	2	3.5 \pm 7.0
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak				S3S4B,S3N	4 Secure	7	3.5 \pm 7.0
I	<i>Danaus plexippus</i>	Monarch	Special Concern	Special Concern		S2B	3 Sensitive	1	1.1 \pm 0.0
I	<i>Thorybes pylades</i>	Northern Cloudywing				S2S3	3 Sensitive	3	3.9 \pm 0.0
I	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3	4 Secure	1	3.0 \pm 100.0
I	<i>Polygonia interrogatoris</i>	Question Mark				S3B	4 Secure	1	2.5 \pm 0.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species “location sensitive”. Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting a 5 km buffer of your study area are indicated below with “YES”.

Nova Scotia

Scientific Name	Common Name	SARA	Prov Legal Prot	Known within 5 km of Study Site?
<i>Fraxinus nigra</i>	Black Ash		Threatened	No
<i>Emydoidea blandingii</i>	Blanding's Turtle - Nova Scotia pop.	Endangered	Vulnerable	No
<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	YES
<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
<i>Bat Hibernaculum</i>		[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.

4.4 SOURCE BIBLIOGRAPHY

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

# recs	CITATION
65	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
47	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
5	Klymko, J.J.D. 2014. Maritimes Butterfly Atlas, 2012 submissions. Atlantic Canada Conservation Data Centre, 8552 records.
3	Staff, DNR 2007. Restricted & Limited Use Land Database (RLUL).
2	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
1	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
1	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/ . 582 recs.
1	NSDNR website

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 23234 records of 130 vertebrate and 725 records of 53 invertebrate fauna; 3756 records of 263 vascular, 713 records of 53 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. All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (\pm the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Myotis lucifugus</i>	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	48	2.8 \pm 0.0	NS
A	<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	51	53.4 \pm 1.0	PE
A	<i>Perimyotis subflavus</i>	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	1 At Risk	4	80.0 \pm 5.0	NS
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered		S1	2 May Be At Risk	14	26.9 \pm 0.0	NS
A	<i>Charadrius melodus melodus</i>	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B	1 At Risk	1105	12.7 \pm 7.0	NS
A	<i>Sterna dougallii</i>	Roseate Tern	Endangered	Endangered	Endangered	S1B	1 At Risk	50	70.3 \pm 0.0	NS
A	<i>Morone saxatilis pop. 2</i>	Striped Bass- Bay of Fundy pop.	Endangered			S1B	2 May Be At Risk	1	89.1 \pm 0.0	NS
A	<i>Calidris canutus rufa</i>	Red Knot rufa ssp	Endangered		Endangered	S2M	1 At Risk	31	15.9 \pm 0.0	NS
A	<i>Caprimulgus vociferus</i>	Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	1 At Risk	7	44.4 \pm 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	<i>Glyptemys insculpta</i>	Wood Turtle	Threatened	Threatened	Threatened	S2	3 Sensitive	207	2.4 ± 5.0	NS
A	<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Threatened			S2	2 May Be At Risk	2	78.2 ± 0.0	NS
A	<i>Anguilla rostrata</i>	American Eel	Threatened			S2	4 Secure	7	78.2 ± 0.0	NS
A	<i>Chaetura pelagica</i>	Chimney Swift	Threatened	Threatened	Endangered	S2B,S1M	1 At Risk	131	3.5 ± 7.0	NS
A	<i>Chordeiles minor</i>	Common Nighthawk	Threatened	Threatened	Threatened	S2S3B	1 At Risk	291	3.5 ± 7.0	NS
A	<i>Riparia riparia</i>	Bank Swallow	Threatened			S2S3B	2 May Be At Risk	400	5.9 ± 0.0	NS
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	842	3.5 ± 7.0	NS
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B	1 At Risk	862	1.0 ± 0.0	NS
A	<i>Wilsonia canadensis</i>	Canada Warbler	Threatened	Threatened	Endangered	S3S4B	1 At Risk	651	3.5 ± 7.0	NS
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened		Vulnerable	S3S4B	3 Sensitive	560	3.5 ± 7.0	NS
A	<i>Hylocichla mustelina</i>	Wood Thrush	Threatened			SUB	5 Undetermined	33	14.4 ± 7.0	NS
A	<i>Passerculus sandwichensis princeps</i>	Savannah Sparrow princeps ssp	Special Concern	Special Concern		S1B	3 Sensitive	2	78.7 ± 7.0	NS
A	<i>Falco peregrinus pop. 1</i>	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Vulnerable	S1B,SNAM	3 Sensitive	3	88.6 ± 0.0	PE
A	<i>Bucephala islandica (Eastern pop.)</i>	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern		S1N	1 At Risk	4	19.1 ± 0.0	NS
A	<i>Asio flammeus</i>	Short-eared Owl	Special Concern	Special Concern		S1S2B	2 May Be At Risk	9	7.8 ± 7.0	NS
A	<i>Euphagus carolinus</i>	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	2 May Be At Risk	234	3.5 ± 7.0	NS
A	<i>Histrionicus histrionicus pop. 1</i>	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S2N	1 At Risk	28	72.1 ± 2.0	NS
A	<i>Phalaropus lobatus</i>	Red-necked Phalarope	Special Concern			S2S3M	3 Sensitive	1	76.7 ± 0.0	NS
A	<i>Morone saxatilis pop. 1</i>	Striped Bass- Southern Gulf of St Lawrence pop.	Special Concern			S2S3N	2 May Be At Risk	1	53.0 ± 1.0	NS
A	<i>Chelydra serpentina</i>	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	3 Sensitive	42	15.6 ± 0.0	NS
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern		Vulnerable	S3S4B	3 Sensitive	583	2.2 ± 0.0	NS
A	<i>Phocoena phocoena (NW Atlantic pop.)</i>	Harbour Porpoise - Northwest Atlantic pop.	Special Concern	Threatened		S4		1	86.5 ± 5.0	PE
A	<i>Accipiter cooperii</i>	Cooper's Hawk	Not At Risk			S1?B	5 Undetermined	2	15.7 ± 0.0	NS
A	<i>Fulica americana</i>	American Coot	Not At Risk			S1B	5 Undetermined	17	32.6 ± 7.0	NS
A	<i>Sorex dispar</i>	Long-tailed Shrew	Not At Risk	Special Concern		S2	3 Sensitive	2	89.3 ± 5.0	NS
A	<i>Aegolius funereus</i>	Boreal Owl	Not At Risk			S2?B	5 Undetermined	14	38.4 ± 0.0	NS
A	<i>Globicephala melas</i>	Long-finned Pilot Whale	Not At Risk			S2S3		1	67.9 ± 100.0	NS
A	<i>Hemidactylium scutatum</i>	Four-toed Salamander	Not At Risk			S3	4 Secure	14	55.7 ± 0.0	NS
A	<i>Sterna hirundo</i>	Common Tern	Not At Risk			S3B	3 Sensitive	382	12.7 ± 7.0	NS
A	<i>Sialia sialis</i>	Eastern Bluebird	Not At Risk			S3B	3 Sensitive	44	10.6 ± 7.0	NS
A	<i>Buteo lagopus</i>	Rough-legged Hawk	Not At Risk			S3N	4 Secure	2	80.5 ± 4.0	NS
A	<i>Accipiter gentilis</i>	Northern Goshawk	Not At Risk			S3S4	4 Secure	93	7.8 ± 7.0	NS
A	<i>Circus cyaneus</i>	Northern Harrier	Not At Risk			S3S4B	4 Secure	393	3.5 ± 7.0	NS
A	<i>Ammodramus nelsoni</i>	Nelson's Sparrow	Not At Risk			S3S4B	4 Secure	160	3.5 ± 7.0	NS
A	<i>Alces americanus</i>	Moose			Endangered	S1	1 At Risk	32	11.2 ± 0.0	NS
A	<i>Salmo salar</i>	Atlantic Salmon				S1	2 May Be At Risk	80	5.8 ± 0.0	NS
A	<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S1?	5 Undetermined	7	64.9 ± 0.0	NS
A	<i>Passerina cyanea</i>	Indigo Bunting				S1?B	5 Undetermined	15	59.5 ± 0.0	PE
A	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron				S1B	2 May Be At Risk	1	57.2 ± 7.0	NS
A	<i>Anas acuta</i>	Northern Pintail				S1B	2 May Be At Risk	35	55.5 ± 10.0	PE
A	<i>Oxyura jamaicensis</i>	Ruddy Duck				S1B	4 Secure	6	42.7 ± 7.0	NS
A	<i>Gallinula chloropus</i>	Common Moorhen				S1B	5 Undetermined	10	39.4 ± 7.0	NS
A	<i>Myiarchus crinitus</i>	Great Crested Flycatcher				S1B	2 May Be At Risk	10	17.5 ± 7.0	NS
A	<i>Mimus polyglottos</i>	Northern Mockingbird				S1B	4 Secure	25	7.8 ± 7.0	NS
A	<i>Toxostoma rufum</i>	Brown Thrasher				S1B	5 Undetermined	10	7.8 ± 7.0	NS
A	<i>Vireo gilvus</i>	Warbling Vireo				S1B	5 Undetermined	16	43.6 ± 7.0	NS
A	<i>Dendroica pinus</i>	Pine Warbler				S1B	5 Undetermined	8	17.5 ± 7.0	NS
A	<i>Calidris minutilla</i>	Least Sandpiper				S1B,S3M	4 Secure	110	15.0 ± 0.0	NS
A	<i>Charadrius semipalmatus</i>	Semipalmated Plover				S1B,S3S4M	4 Secure	341	15.0 ± 0.0	NS
A	<i>Pluvialis dominica</i>	American Golden-Plover				S1S2M	3 Sensitive	20	15.0 ± 0.0	NS
A	<i>Limosa haemastica</i>	Hudsonian Godwit				S1S2M	3 Sensitive	19	53.7 ± 0.0	NS

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A	<i>Vireo philadelphicus</i>	Philadelphia Vireo				S2?B	5 Undetermined	42	38.1 ± 0.0	NS
A	<i>Anas clypeata</i>	Northern Shoveler				S2B	2 May Be At Risk	21	77.6 ± 0.0	NS
A	<i>Anas strepera</i>	Gadwall				S2B	2 May Be At Risk	30	58.9 ± 0.0	NS
A	<i>Empidonax traillii</i>	Willow Flycatcher				S2B	3 Sensitive	10	44.4 ± 7.0	NS
A	<i>Dendroica tigrina</i>	Cape May Warbler				S2B	3 Sensitive	144	3.5 ± 7.0	NS
A	<i>Piranga olivacea</i>	Scarlet Tanager				S2B	5 Undetermined	10	3.5 ± 7.0	NS
A	<i>Pooecetes gramineus</i>	Vesper Sparrow				S2B	2 May Be At Risk	37	8.1 ± 7.0	NS
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S2B	4 Secure	108	3.5 ± 7.0	NS
A	<i>Bucephala clangula</i>	Common Goldeneye				S2B,S5N	4 Secure	155	15.9 ± 9.0	NS
A	<i>Phalacrocorax carbo</i>	Great Cormorant				S2S3	3 Sensitive	179	45.8 ± 7.0	PE
A	<i>Asio otus</i>	Long-eared Owl				S2S3	2 May Be At Risk	34	19.0 ± 0.0	NS
A	<i>Carduelis pinus</i>	Pine Siskin				S2S3	3 Sensitive	310	3.5 ± 7.0	NS
A	<i>Cathartes aura</i>	Turkey Vulture				S2S3B	3 Sensitive	2	81.0 ± 0.0	NS
A	<i>Rallus limicola</i>	Virginia Rail				S2S3B	5 Undetermined	41	17.7 ± 7.0	NS
A	<i>Tringa semipalmata</i>	Willet				S2S3B	2 May Be At Risk	565	8.8 ± 0.0	NS
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S2S3B	2 May Be At Risk	210	2.2 ± 0.0	NS
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S2S3B	3 Sensitive	425	3.5 ± 7.0	NS
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	2 May Be At Risk	52	3.5 ± 7.0	NS
A	<i>Pinicola enucleator</i>	Pine Grosbeak				S2S3B,S5N	2 May Be At Risk	90	8.1 ± 7.0	NS
A	<i>Numenius phaeopus hudsonicus</i>	Hudsonian Whimbrel				S2S3M	3 Sensitive	41	15.9 ± 0.0	NS
A	<i>Calidris melanotos</i>	Pectoral Sandpiper				S2S3M	4 Secure	21	15.0 ± 0.0	NS
A	<i>Perisoreus canadensis</i>	Gray Jay				S3	3 Sensitive	411	3.5 ± 7.0	NS
A	<i>Poecile hudsonica</i>	Boreal Chickadee				S3	3 Sensitive	640	3.5 ± 7.0	NS
A	<i>Sitta canadensis</i>	Red-breasted Nuthatch				S3	4 Secure	692	3.5 ± 7.0	NS
A	<i>Alosa pseudoharengus</i>	Alewife				S3	3 Sensitive	21	5.8 ± 0.0	NS
A	<i>Salvelinus fontinalis</i>	Brook Trout				S3	3 Sensitive	33	5.8 ± 0.0	NS
A	<i>Calidris maritima</i>	Purple Sandpiper				S3?N	3 Sensitive	20	26.2 ± 0.0	NS
A	<i>Calcarius lapponicus</i>	Lapland Longspur				S3?N	4 Secure	1	79.2 ± 0.0	NS
A	<i>Falco sparverius</i>	American Kestrel				S3B	4 Secure	409	3.5 ± 7.0	NS
A	<i>Charadrius vociferus</i>	Killdeer				S3B	3 Sensitive	460	3.5 ± 7.0	NS
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3B	3 Sensitive	516	3.5 ± 7.0	NS
A	<i>Sterna paradisaea</i>	Arctic Tern				S3B	2 May Be At Risk	56	48.7 ± 7.0	NS
A	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3B	2 May Be At Risk	94	7.8 ± 7.0	NS
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3B	3 Sensitive	244	3.5 ± 7.0	NS
A	<i>Dumetella carolinensis</i>	Gray Catbird				S3B	2 May Be At Risk	326	3.5 ± 7.0	NS
A	<i>Wilsonia pusilla</i>	Wilson's Warbler				S3B	3 Sensitive	67	12.7 ± 7.0	NS
A	<i>Tringa melanoleuca</i>	Greater Yellowlegs				S3B,S3S4M	3 Sensitive	471	15.9 ± 0.0	NS
A	<i>Oceanodroma leucorhoa</i>	Leach's Storm-Petrel				S3B,S5M	4 Secure	57	71.3 ± 7.0	NS
A	<i>Rissa tridactyla</i>	Black-legged Kittiwake				S3B,S5N	3 Sensitive	1	55.7 ± 0.0	NS
A	<i>Fratercula arctica</i>	Atlantic Puffin				S3B,S5N	3 Sensitive	2	71.3 ± 7.0	NS
A	<i>Pluvialis squatarola</i>	Black-bellied Plover				S3M	4 Secure	340	15.9 ± 0.0	NS
A	<i>Tringa flavipes</i>	Lesser Yellowlegs				S3M	4 Secure	235	15.0 ± 0.0	NS
A	<i>Arenaria interpres</i>	Ruddy Turnstone				S3M	4 Secure	108	15.9 ± 0.0	NS
A	<i>Calidris pusilla</i>	Semipalmated Sandpiper				S3M	3 Sensitive	274	15.0 ± 0.0	NS
A	<i>Calidris fuscicollis</i>	White-rumped Sandpiper				S3M	4 Secure	30	17.4 ± 0.0	NS
A	<i>Limnodromus griseus</i>	Short-billed Dowitcher				S3M	4 Secure	115	15.9 ± 0.0	NS
A	<i>Calidris alba</i>	Sanderling				S3M,S2N	4 Secure	126	15.9 ± 0.0	NS
A	<i>Chroicocephalus ridibundus</i>	Black-headed Gull				S3N	4 Secure	1	99.6 ± 7.0	NS
A	<i>Somateria mollissima</i>	Common Eider				S3S4	4 Secure	375	15.9 ± 9.0	NS
A	<i>Picoides arcticus</i>	Black-backed Woodpecker				S3S4	3 Sensitive	143	8.1 ± 7.0	NS
A	<i>Loxia curvirostra</i>	Red Crossbill				S3S4	4 Secure	112	14.4 ± 7.0	NS
A	<i>Sorex palustris</i>	American Water Shrew				S3S4	4 Secure	2	63.8 ± 0.0	PE
A	<i>Botaurus lentiginosus</i>	American Bittern				S3S4B	3 Sensitive	268	3.5 ± 7.0	NS
A	<i>Anas discors</i>	Blue-winged Teal				S3S4B	2 May Be At Risk	232	3.5 ± 7.0	NS
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B	3 Sensitive	591	3.5 ± 7.0	NS
A	<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	599	7.8 ± 7.0	NS
A	<i>Regulus calendula</i>	Ruby-crowned Kinglet				S3S4B	3 Sensitive	1528	3.5 ± 7.0	NS

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A	<i>Catharus fuscescens</i>	Veery				S3S4B	4 Secure	400	3.5 ± 7.0	NS
A	<i>Catharus ustulatus</i>	Swainson's Thrush				S3S4B	4 Secure	1238	3.5 ± 7.0	NS
A	<i>Vermivora peregrina</i>	Tennessee Warbler				S3S4B	3 Sensitive	289	3.5 ± 7.0	NS
A	<i>Dendroica castanea</i>	Bay-breasted Warbler				S3S4B	3 Sensitive	417	3.5 ± 7.0	NS
A	<i>Dendroica striata</i>	Blackpoll Warbler				S3S4B	3 Sensitive	98	8.1 ± 7.0	NS
A	<i>Passerella iliaca</i>	Fox Sparrow				S3S4B	4 Secure	76	20.0 ± 0.0	NS
A	<i>Coccothraustes vespertinus</i>	Evening Grosbeak				S3S4B,S3N	4 Secure	376	3.5 ± 7.0	NS
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3S4B,S5N	4 Secure	91	8.1 ± 7.0	NS
A	<i>Bucephala albeola</i>	Bufflehead				S3S4N	4 Secure	25	54.8 ± 10.0	NS
A	<i>Leucophaeus atricilla</i>	Laughing Gull				SHB	4 Secure	1	93.5 ± 0.0	NS
A	<i>Progne subis</i>	Purple Martin				SHB	2 May Be At Risk	4	71.7 ± 7.0	NS
A	<i>Eremophila alpestris</i>	Horned Lark				SHB,S4S5N	4 Secure	5	64.8 ± 7.0	PE
A	<i>Morus bassanus</i>	Northern Gannet				SHB,S5M	4 Secure	13	46.7 ± 13.0	PE
I	<i>Barnea truncata</i>	Atlantic Mud-piddock	Threatened			S1	1 At Risk	1	94.9 ± 1.0	NS
I	<i>Alasmidonta varicosa</i>	Brook Floater	Special Concern		Threatened	S1S2	3 Sensitive	17	26.2 ± 0.0	NS
I	<i>Danaus plexippus</i>	Monarch	Special Concern	Special Concern		S2B	3 Sensitive	35	1.1 ± 0.0	NS
I	<i>Bombus terricola</i>	Yellow-banded Bumblebee	Special Concern			S3	3 Sensitive	2	85.8 ± 0.0	PE
I	<i>Satyrium acadica</i>	Acadian Hairstreak				S1	5 Undetermined	9	19.3 ± 1.0	NS
I	<i>Erora laeta</i>	Early Hairstreak				S1	2 May Be At Risk	1	94.9 ± 0.0	PE
I	<i>Neurocordulia michaeli</i>	Broadtailed Shadowdragon				S1		26	27.4 ± 0.0	NS
I	<i>Polygonia satyrus</i>	Satyr Comma				S1?	3 Sensitive	4	80.8 ± 0.0	PE
I	<i>Nymphalis l-album</i>	Compton Tortoiseshell				S1S2	4 Secure	6	56.5 ± 1.0	NS
I	<i>Somatochlora kennedyi</i>	Kennedy's Emerald				S1S2	2 May Be At Risk	1	85.4 ± 1.0	PE
I	<i>Coenagrion resolutum</i>	Taiga Bluet				S1S2	2 May Be At Risk	44	50.5 ± 1.0	PE
I	<i>Stylurus scudderi</i>	Zebra Clubtail				S1S2	2 May Be At Risk	3	85.5 ± 0.0	NS
I	<i>Lycaena hyllus</i>	Bronze Copper				S2	4 Secure	9	49.0 ± 0.0	PE
I	<i>Lycaena dospassosi</i>	Salt Marsh Copper				S2	1 At Risk	30	25.6 ± 0.0	NS
I	<i>Satyrium calanus</i>	Banded Hairstreak				S2	5 Undetermined	2	69.8 ± 1.0	NS
I	<i>Boloria chariclea</i>	Arctic Fritillary				S2	3 Sensitive	3	58.6 ± 1.0	NS
I	<i>Aglais milberti</i>	Milbert's Tortoiseshell				S2	4 Secure	8	75.6 ± 1.0	NS
I	<i>Epitheca princeps</i>	Prince Baskettail				S2	3 Sensitive	2	76.4 ± 0.0	NS
I	<i>Somatochlora williamsoni</i>	Williamson's Emerald				S2	2 May Be At Risk	3	95.4 ± 0.0	PE
I	<i>Williamsonia fletcheri</i>	Ebony Boghaunter				S2	2 May Be At Risk	4	76.4 ± 0.0	NS
I	<i>Margaritifera margaritifera</i>	Eastern Pearlshell				S2	3 Sensitive	132	6.0 ± 0.0	NS
I	<i>Pantala hymenaea</i>	Spot-Winged Glider				S2?B	3 Sensitive	1	53.9 ± 1.0	NS
I	<i>Thorybes pylades</i>	Northern Cloudywing				S2S3	3 Sensitive	14	3.9 ± 0.0	NS
I	<i>Amblyscirtes hegon</i>	Pepper and Salt Skipper				S2S3	4 Secure	4	39.3 ± 0.0	NS
I	<i>Satyrium liparops</i>	Striped Hairstreak				S2S3	5 Undetermined	3	68.1 ± 0.0	NS
I	<i>Satyrium liparops strigosum</i>	Striped Hairstreak				S2S3	3 Sensitive	1	89.0 ± 10.0	PE
I	<i>Euphydryas phaeton</i>	Baltimore Checkerspot				S2S3	4 Secure	28	21.2 ± 1.0	NS
I	<i>Gomphus descriptus</i>	Harpoon Clubtail				S2S3	3 Sensitive	1	84.6 ± 1.0	NS
I	<i>Ophiogomphus mainensis</i>	Maine Snaketail				S2S3	2 May Be At Risk	14	27.2 ± 0.0	NS
I	<i>Ophiogomphus rupinsulensis</i>	Rusty Snaketail				S2S3	2 May Be At Risk	39	32.0 ± 0.0	NS
I	<i>Somatochlora forcipata</i>	Forcinate Emerald				S2S3	2 May Be At Risk	3	80.8 ± 1.0	PE
I	<i>Somatochlora franklini</i>	Delicate Emerald				S2S3	3 Sensitive	4	77.6 ± 1.0	PE
I	<i>Alasmidonta undulata</i>	Triangle Floater				S2S3	4 Secure	18	44.3 ± 1.0	NS
I	<i>Callophrys henrici</i>	Henry's Elfin				S3	4 Secure	3	43.5 ± 0.0	NS
I	<i>Callophrys lanoraieensis</i>	Bog Elfin				S3	2 May Be At Risk	4	40.7 ± 0.0	NS
I	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3	4 Secure	13	3.0 ± 100.0	NS
I	<i>Polygonia faunus</i>	Green Comma				S3	4 Secure	14	20.5 ± 0.0	NS
I	<i>Megisto cymela</i>	Little Wood-satyr				S3	4 Secure	6	83.2 ± 0.0	NS
I	<i>Oeneis jutta</i>	Jutta Arctic				S3	2 May Be At Risk	7	43.5 ± 0.0	NS
I	<i>Aeshna clepsydra</i>	Mottled Darner				S3	4 Secure	4	68.7 ± 1.0	NS
I	<i>Aeshna constricta</i>	Lance-Tipped Darner				S3	4 Secure	24	18.2 ± 1.0	NS
I	<i>Boyeria grafiana</i>	Ocellated Darner				S3	3 Sensitive	11	39.0 ± 0.0	NS
I	<i>Gomphaeschna furcillata</i>	Harlequin Darner				S3	3 Sensitive	3	81.5 ± 0.0	PE
I	<i>Nannothemis bella</i>	Elfin Skimmer				S3	4 Secure	3	96.4 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
I	<i>Sympetrum danae</i>	Black Meadowhawk				S3	3 Sensitive	10	46.2 ± 1.0	NS
I	<i>Enallagma vernale</i>	Vernal Bluet				S3	5 Undetermined	4	78.4 ± 1.0	NS
I	<i>Amphiagrion saucium</i>	Eastern Red Damsel				S3	4 Secure	2	37.5 ± 0.0	NS
I	<i>Polygonia interrogationis</i>	Question Mark				S3B	4 Secure	38	2.5 ± 0.0	NS
I	<i>Erynnis juvenalis</i>	Juvenal's Duskywing				S3S4	4 Secure	2	49.1 ± 1.0	NS
I	<i>Amblyscirtes vialis</i>	Common Roadside-Skipper				S3S4	4 Secure	4	19.3 ± 1.0	NS
I	<i>Polygonia progne</i>	Grey Comma				S3S4	4 Secure	21	25.3 ± 1.0	NS
I	<i>Lanthus parvulus</i>	Northern Pygmy Clubtail				S3S4	4 Secure	34	32.4 ± 0.0	NS
I	<i>Lampsilis radiata</i>	Eastern Lampmussel				S3S4	3 Sensitive	46	5.5 ± 0.0	NS
N	<i>Erioderma pedicellatum</i> (Atlantic pop.)	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	1 At Risk	360	39.7 ± 0.0	NS
N	<i>Erioderma mollissimum</i>	Graceful Felt Lichen	Endangered		Endangered	S1S2	2 May Be At Risk	5	69.3 ± 0.0	NS
N	<i>Peltigera hydrothyria</i>	Eastern Waterfan	Threatened			S1	2 May Be At Risk	2	51.8 ± 1.0	NS
N	<i>Anzia colpodes</i>	Black-foam Lichen	Threatened			S3	3 Sensitive	2	69.0 ± 0.0	NS
N	<i>Sclerophora peronella</i> (Nova Scotia pop.)	Frosted Glass-whiskers Lichen - Nova Scotia pop.	Special Concern	Special Concern		S1?		7	50.9 ± 0.0	NS
N	<i>Degelia plumbea</i>	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	4 Secure	28	25.4 ± 0.0	NS
N	<i>Pseudevernia cladonia</i>	Ghost Antler Lichen	Not At Risk			S2S3	3 Sensitive	2	85.2 ± 0.0	NS
N	<i>Aloina rigida</i>	Aloe-Like Rigid Screw Moss				S1?	2 May Be At Risk	1	76.0 ± 0.0	NS
N	<i>Campylostelium saxicola</i>	a Moss				S1?	3 Sensitive	1	94.6 ± 0.0	PE
N	<i>Tortula obtusifolia</i>	a Moss				S1?	5 Undetermined	2	54.9 ± 2.0	NS
N	<i>Lichina confinis</i>	Marine Seaweed Lichen				S1?	6 Not Assessed	1	81.3 ± 2.0	NS
N	<i>Timmia megapolitana</i>	Metropolitan Timmia Moss				S1S2	3 Sensitive	1	75.0 ± 0.0	NS
N	<i>Cyrtio-hypnum minutulum</i>	Tiny Cedar Moss				S1S2	3 Sensitive	1	41.7 ± 0.0	NS
N	<i>Bryohaplocladium microphyllum</i>	Tiny-leaved Haplocladium Moss				S1S2		1	75.5 ± 5.0	NS
N	<i>Anomodon viticulosus</i>	a Moss				S2?	3 Sensitive	1	76.3 ± 5.0	NS
N	<i>Atrichum angustatum</i>	Lesser Smoothcap Moss				S2?	3 Sensitive	3	46.7 ± 3.0	NS
N	<i>Campyllum polygamum</i>	a Moss				S2?	5 Undetermined	1	99.4 ± 0.0	PE
N	<i>Ditrichum rhynchostegium</i>	a Moss				S2?	3 Sensitive	1	57.1 ± 0.0	PE
N	<i>Kiaeria starkei</i>	Starke's Fork Moss				S2?	3 Sensitive	1	92.5 ± 10.0	NS
N	<i>Philonotis marchica</i>	a Moss				S2?	5 Undetermined	2	47.8 ± 0.0	NS
N	<i>Saelania glaucescens</i>	Blue Dew Moss				S2?	3 Sensitive	1	53.1 ± 0.0	NS
N	<i>Sphagnum subnitens</i>	Lustrous Peat Moss				S2?	3 Sensitive	1	90.7 ± 2.0	NS
N	<i>Tetraplodon angustatus</i>	Toothed-leaved Nitrogen Moss				S2?	3 Sensitive	1	90.7 ± 2.0	NS
N	<i>Cyrtomnium hymenophylloides</i>	Short-pointed Lantern Moss				S2?	3 Sensitive	1	53.1 ± 0.0	NS
N	<i>Leptogium teretiusculum</i>	Beaded Jellyskin Lichen				S2?	3 Sensitive	1	13.7 ± 0.0	NS
N	<i>Peltigera collina</i>	Tree Pelt Lichen				S2?	3 Sensitive	3	54.3 ± 5.0	NS
N	<i>Ephemerum serratum</i>	a Moss				S2S3	3 Sensitive	1	35.4 ± 3.0	NS
N	<i>Eurhynchium hians</i>	Light Beaked Moss				S2S3	3 Sensitive	1	75.8 ± 25.0	NS
N	<i>Platydictya subtilis</i>	Bark Willow Moss				S2S3	3 Sensitive	1	94.6 ± 0.0	PE
N	<i>Tortula truncata</i>	a Moss				S2S3	3 Sensitive	1	63.8 ± 300.0	NS
N	<i>Fuscopannaria leucosticta</i>	Rimmed Shingles Lichen				S2S3	2 May Be At Risk	4	54.3 ± 0.0	NS
N	<i>Leptogium tenuissimum</i>	Birdnest Jellyskin Lichen				S2S3	6 Not Assessed	1	78.4 ± 0.0	NS
N	<i>Collema nigrescens</i>	Blistered Tarpaper Lichen				S3	3 Sensitive	2	71.7 ± 0.0	NS
N	<i>Sticta fuliginosa</i>	Peppered Moon Lichen				S3	3 Sensitive	11	19.7 ± 2.0	NS
N	<i>Leptogium subtile</i>	Appressed Jellyskin Lichen				S3	3 Sensitive	1	54.3 ± 0.0	NS
N	<i>Fuscopannaria ahlneri</i>	Corrugated Shingles Lichen				S3	4 Secure	29	41.4 ± 0.0	NS
N	<i>Heterodermia speciosa</i>	Powdered Fringe Lichen				S3	4 Secure	2	25.4 ± 0.0	NS
N	<i>Leptogium corticola</i>	Blistered Jellyskin Lichen				S3	3 Sensitive	13	41.4 ± 0.0	NS
N	<i>Nephroma bellum</i>	Naked Kidney Lichen				S3	3 Sensitive	1	34.0 ± 0.0	NS
N	<i>Moelleropsis nebulosa</i>	Blue-gray Moss Shingle Lichen				S3	4 Secure	28	50.3 ± 0.0	NS
N	<i>Calliergon giganteum</i>	Giant Spear Moss				S3?	3 Sensitive	1	83.8 ± 2.0	PE
N	<i>Anomodon tristis</i>	a Moss				S3?	3 Sensitive	2	89.1 ± 15.0	NS
N	<i>Helodium blandowii</i>	Wetland-plume Moss				S3?	4 Secure	1	32.6 ± 3.0	NS
N	<i>Cladina stygia</i>	Black-footed Reindeer Lichen				S3?	3 Sensitive	3	72.7 ± 0.0	NS
N	<i>Encalypta procera</i>	Slender Extinguisher Moss				S3S4	4 Secure	2	53.1 ± 0.0	NS

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N	<i>Myurella julacea</i>	Small Mouse-tail Moss				S3S4	3 Sensitive	1	53.1 ± 0.0	NS
N	<i>Schistidium agassizii</i>	Elf Bloom Moss				S3S4	4 Secure	1	64.4 ± 3.0	NS
N	<i>Leptogium saturninum</i>	Bearded Jellyskin Lichen				S3S4	5 Undetermined	1	13.7 ± 0.0	NS
N	<i>Parmeliopsis hyperopta</i>	Gray Starburst Lichen				S3S4	5 Undetermined	1	28.9 ± 1.0	NS
N	<i>Physconia detersa</i>	Bottlebrush Frost Lichen				S3S4	3 Sensitive	1	69.0 ± 0.0	NS
N	<i>Coccocarpia palmicola</i>	Salted Shell Lichen				S3S4	4 Secure	159	48.9 ± 0.0	NS
N	<i>Anaptychia palmulata</i>	Shaggy Fringed Lichen				S3S4	4 Secure	2	69.0 ± 0.0	NS
N	<i>Heterodermia neglecta</i>	Fringe Lichen				S3S4	4 Secure	11	52.9 ± 0.0	NS
P	<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	Branched Bartonia	Threatened	Threatened		SNA		1	41.4 ± 10.0	NS
P	<i>Lilaeopsis chinensis</i>	Eastern Lilaeopsis	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	16	96.6 ± 0.0	NS
P	<i>Isoetes prototypus</i>	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	10	85.2 ± 0.0	NS
P	<i>Floerkea proserpinacoides</i>	False Mermaidweed	Not At Risk			S2	3 Sensitive	4	50.6 ± 7.0	NS
P	<i>Cypripedium arietinum</i>	Ram's-Head Lady's-Slipper			Endangered	S1	1 At Risk	8	76.2 ± 0.0	NS
P	<i>Thuja occidentalis</i>	Eastern White Cedar			Vulnerable	S1	1 At Risk	18	44.4 ± 7.0	NS
P	<i>Sanicula odorata</i>	Clustered Sanicle				S1	2 May Be At Risk	4	13.2 ± 0.0	NS
P	<i>Zizia aurea</i>	Golden Alexanders				S1	2 May Be At Risk	41	37.4 ± 0.0	NS
P	<i>Antennaria parlinii</i>	a Pussytoes				S1	2 May Be At Risk	2	35.5 ± 0.0	NS
P	<i>Bidens hyperborea</i>	Estuary Beggarticks				S1	2 May Be At Risk	3	53.7 ± 1.0	NS
P	<i>Ageratina altissima</i>	White Snakeroot				S1	2 May Be At Risk	2	54.1 ± 7.0	NS
P	<i>Barbarea orthoceras</i>	American Yellow Rocket				S1	2 May Be At Risk	7	54.4 ± 0.0	NS
P	<i>Cochlearia tridactylites</i>	Limestone Scurvy-grass				S1	2 May Be At Risk	8	77.0 ± 0.0	NS
P	<i>Lobelia spicata</i>	Pale-Spiked Lobelia				S1	2 May Be At Risk	4	74.8 ± 7.0	NS
P	<i>Stellaria crassifolia</i>	Fleshy Stitchwort				S1	2 May Be At Risk	2	98.3 ± 1.0	PE
P	<i>Suaeda maritima</i> ssp. <i>richii</i>	White Sea-blite				S1	5 Undetermined	3	56.4 ± 1.0	NS
P	<i>Hudsonia tomentosa</i>	Woolly Beach-heath				S1	2 May Be At Risk	7	12.7 ± 7.0	NS
P	<i>Desmodium canadense</i>	Canada Tick-trefoil				S1	2 May Be At Risk	20	6.1 ± 0.0	NS
P	<i>Ribes americanum</i>	Wild Black Currant				S1	5 Undetermined	2	57.6 ± 5.0	NS
P	<i>Fraxinus americana</i>	White Ash				S1	2 May Be At Risk	83	7.0 ± 2.0	NS
P	<i>Fraxinus pennsylvanica</i>	Red Ash				S1	2 May Be At Risk	2	71.6 ± 0.0	PE
P	<i>Polygonum careyi</i>	Carey's Smartweed				S1	5 Undetermined	1	63.7 ± 3.0	NS
P	<i>Montia fontana</i>	Water Blinks				S1	2 May Be At Risk	2	96.1 ± 3.0	NS
P	<i>Ranunculus pensylvanicus</i>	Pennsylvania Buttercup				S1	2 May Be At Risk	3	79.6 ± 0.0	NS
P	<i>Salix myrtillifolia</i>	Blueberry Willow				S1	2 May Be At Risk	1	75.6 ± 0.0	NS
P	<i>Salix serissima</i>	Autumn Willow				S1	2 May Be At Risk	2	75.5 ± 0.0	NS
P	<i>Agalinis pauperula</i> var. <i>borealis</i>	Small-flowered Agalinis				S1		1	12.5 ± 0.0	NS
P	<i>Scrophularia lanceolata</i>	Lance-leaved Figwort				S1	5 Undetermined	1	85.4 ± 1.0	NS
P	<i>Dirca palustris</i>	Eastern Leatherwood				S1	2 May Be At Risk	5	82.5 ± 7.0	NS
P	<i>Boehmeria cylindrica</i>	Small-spike False-nettle				S1	2 May Be At Risk	2	90.6 ± 0.0	NS
P	<i>Pilea pumila</i>	Dwarf Clearweed				S1	2 May Be At Risk	7	12.1 ± 6.0	NS
P	<i>Carex alopecoidea</i>	Foxtail Sedge				S1	2 May Be At Risk	2	63.4 ± 0.0	NS
P	<i>Carex chordorrhiza</i>	Creeping Sedge				S1	2 May Be At Risk	1	98.8 ± 1.0	PE
P	<i>Carex garberi</i>	Garber's Sedge				S1	2 May Be At Risk	4	39.2 ± 0.0	NS
P	<i>Carex gynocrates</i>	Northern Bog Sedge				S1	2 May Be At Risk	2	75.5 ± 0.0	NS
P	<i>Carex haydenii</i>	Hayden's Sedge				S1	2 May Be At Risk	2	30.0 ± 5.0	NS
P	<i>Carex pellita</i>	Woolly Sedge				S1	2 May Be At Risk	12	6.0 ± 0.0	NS
P	<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S1	2 May Be At Risk	3	34.0 ± 0.0	NS
P	<i>Carex prairea</i>	Prairie Sedge				S1	2 May Be At Risk	1	95.6 ± 0.0	PE
P	<i>Carex tincta</i>	Tinged Sedge				S1	2 May Be At Risk	1	63.4 ± 1.0	NS
P	<i>Carex viridula</i> var. <i>saxillitoralis</i>	Greenish Sedge				S1	2 May Be At Risk	4	83.3 ± 0.0	NS
P	<i>Carex grisea</i>	Inflated Narrow-leaved Sedge				S1	2 May Be At Risk	6	52.8 ± 0.0	NS
P	<i>Cyperus lupulinus</i> ssp. <i>macilentus</i>	Hop Flatsedge				S1	2 May Be At Risk	10	17.2 ± 0.0	NS
P	<i>Iris prismatica</i>	Slender Blue Flag				S1	2 May Be At Risk	2	48.1 ± 1.0	NS
P	<i>Juncus vaseyi</i>	Vasey Rush				S1	2 May Be At Risk	2	44.1 ± 0.0	NS
P	<i>Allium tricoccum</i>	Wild Leek				S1	2 May Be At Risk	8	38.3 ± 0.0	NS
P	<i>Malaxis brachypoda</i>	White Adder's-Mouth				S1	2 May Be At Risk	1	82.6 ± 7.0	NS
P	<i>Bromus latiglumis</i>	Broad-Glumed Brome				S1	2 May Be At Risk	28	37.2 ± 0.0	NS
P	<i>Elymus wiegandii</i>	Wiegand's Wild Rye				S1	2 May Be At Risk	16	11.7 ± 0.0	NS

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P	<i>Elymus hystrix</i> var. <i>bigeloviana</i>	Spreading Wild Rye				S1	2 May Be At Risk	4	12.4 ± 1.0	NS
P	<i>Potamogeton nodosus</i>	Long-leaved Pondweed				S1	2 May Be At Risk	1	75.3 ± 5.0	NS
P	<i>Adiantum pedatum</i>	Northern Maidenhair Fern				S1	2 May Be At Risk	1	59.2 ± 1.0	NS
P	<i>Solidago hispida</i>	Hairy Goldenrod				S1?	2 May Be At Risk	1	37.7 ± 7.0	NS
P	<i>Crataegus robinsonii</i>	Robinson's Hawthorn				S1?	5 Undetermined	3	12.7 ± 50.0	NS
P	<i>Carex pensylvanica</i>	Pennsylvania Sedge				S1?	2 May Be At Risk	1	89.6 ± 0.0	NS
P	<i>Carex rostrata</i>	Narrow-leaved Beaked Sedge				S1?	2 May Be At Risk	1	96.7 ± 5.0	PE
P	<i>Schoenoplectus robustus</i>	Sturdy Bulrush				S1?	5 Undetermined	2	74.8 ± 7.0	NS
P	<i>Dichanthelium acuminatum</i> var. <i>lindheimeri</i>	Woolly Panic Grass				S1?	5 Undetermined	1	4.4 ± 0.0	NS
P	<i>Fraxinus nigra</i>	Black Ash			Threatened	S1S2	1 At Risk	100	6.9 ± 0.0	NS
P	<i>Rudbeckia laciniata</i>	Cut-Leaved Coneflower				S1S2	2 May Be At Risk	14	38.4 ± 0.0	NS
P	<i>Proserpinaca intermedia</i>	Intermediate Mermaidweed				S1S2	2 May Be At Risk	1	81.9 ± 0.0	NS
P	<i>Anemone virginiana</i> var. <i>alba</i>	Virginia Anemone				S1S2	3 Sensitive	5	48.4 ± 5.0	NS
P	<i>Hepatica nobilis</i> var. <i>obtusa</i>	Round-lobed Hepatica				S1S2	2 May Be At Risk	23	29.4 ± 0.0	NS
P	<i>Parnassia palustris</i> var. <i>parviflora</i>	Marsh Grass-of-Parnassus				S1S2	2 May Be At Risk	1	41.1 ± 1.0	NS
P	<i>Gratiola neglecta</i>	Clammy Hedge-Hyssop				S1S2	3 Sensitive	5	55.3 ± 0.0	NS
P	<i>Carex livida</i> var. <i>radicalis</i>	Livid Sedge				S1S2	2 May Be At Risk	12	53.5 ± 0.0	NS
P	<i>Juncus greenei</i>	Greene's Rush				S1S2	2 May Be At Risk	3	61.7 ± 1.0	NS
P	<i>Platanthera huronensis</i>	Fragrant Green Orchid				S1S2	5 Undetermined	3	32.7 ± 10.0	NS
P	<i>Cinna arundinacea</i>	Sweet Wood Reed Grass				S1S2	2 May Be At Risk	19	49.4 ± 0.0	NS
P	<i>Festuca subverticillata</i>	Nodding Fescue				S1S2	2 May Be At Risk	2	87.1 ± 1.0	NS
P	<i>Sparganium hyperboreum</i>	Northern Burreed				S1S2	3 Sensitive	2	86.2 ± 0.0	NS
P	<i>Carex vacillans</i>	Estuarine Sedge				S1S3	5 Undetermined	3	63.4 ± 0.0	NS
P	<i>Conioselinum chinense</i>	Chinese Hemlock-parsley				S2	3 Sensitive	2	24.5 ± 5.0	NS
P	<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2	2 May Be At Risk	15	6.4 ± 0.0	NS
P	<i>Erigeron philadelphicus</i>	Philadelphia Fleabane				S2	3 Sensitive	3	44.4 ± 7.0	NS
P	<i>Lactuca hirsuta</i> var. <i>sanguinea</i>	Hairy Lettuce				S2	3 Sensitive	2	86.7 ± 5.0	PE
P	<i>Symphotrichum ciliolatum</i>	Fringed Blue Aster				S2	3 Sensitive	17	7.2 ± 0.0	NS
P	<i>Impatiens pallida</i>	Pale Jewelweed				S2	3 Sensitive	2	55.5 ± 7.0	NS
P	<i>Caulophyllum thalictroides</i>	Blue Cohosh				S2	2 May Be At Risk	44	6.4 ± 0.0	NS
P	<i>Arabis drummondii</i>	Drummond's Rockcress				S2	3 Sensitive	6	45.3 ± 0.0	NS
P	<i>Cardamine parviflora</i> var. <i>arenicola</i>	Small-flowered Bittercress				S2	3 Sensitive	4	85.7 ± 0.0	NS
P	<i>Stellaria humifusa</i>	Saltmarsh Starwort				S2	3 Sensitive	8	70.4 ± 0.0	NS
P	<i>Stellaria longifolia</i>	Long-leaved Starwort				S2	3 Sensitive	12	38.4 ± 0.0	NS
P	<i>Chenopodium rubrum</i>	Red Pigweed				S2	2 May Be At Risk	6	14.4 ± 7.0	NS
P	<i>Hudsonia ericoides</i>	Pinebarren Golden Heather				S2	3 Sensitive	3	98.1 ± 0.0	PE
P	<i>Hypericum majus</i>	Large St John's-wort				S2	3 Sensitive	2	94.9 ± 0.0	PE
P	<i>Crassula aquatica</i>	Water Pygmyweed				S2	3 Sensitive	1	94.8 ± 5.0	PE
P	<i>Myriophyllum farwellii</i>	Farwell's Water Milfoil				S2	3 Sensitive	9	27.5 ± 1.0	NS
P	<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil				S2	3 Sensitive	1	48.9 ± 0.0	NS
P	<i>Oenothera fruticosa</i> ssp. <i>glauca</i>	Narrow-leaved Evening Primrose				S2	5 Undetermined	3	23.6 ± 7.0	NS
P	<i>Polygonum arifolium</i>	Halberd-leaved Tearthumb				S2	3 Sensitive	15	49.6 ± 1.0	PE
P	<i>Rumex salicifolius</i> var. <i>mexicanus</i>	Triangular-valve Dock				S2	3 Sensitive	2	89.3 ± 0.0	NS
P	<i>Primula mistassinica</i>	Mistassini Primrose				S2	3 Sensitive	16	38.9 ± 7.0	NS
P	<i>Anemone canadensis</i>	Canada Anemone				S2	2 May Be At Risk	2	81.2 ± 1.0	NS
P	<i>Anemone quinquefolia</i>	Wood Anemone				S2	3 Sensitive	17	47.3 ± 0.0	NS
P	<i>Anemone virginiana</i>	Virginia Anemone				S2	3 Sensitive	21	7.0 ± 1.0	NS
P	<i>Anemone virginiana</i> var. <i>virginiana</i>	Virginia Anemone				S2	3 Sensitive	1	63.7 ± 7.0	NS
P	<i>Caltha palustris</i>	Yellow Marsh Marigold				S2	3 Sensitive	17	16.3 ± 0.0	NS
P	<i>Galium boreale</i>	Northern Bedstraw				S2	2 May Be At Risk	1	86.0 ± 5.0	NS
P	<i>Galium labradoricum</i>	Labrador Bedstraw				S2	3 Sensitive	83	47.8 ± 0.0	NS
P	<i>Salix pedicellaris</i>	Bog Willow				S2	3 Sensitive	53	23.6 ± 7.0	NS
P	<i>Comandra umbellata</i>	Bastard's Toadflax				S2	2 May Be At Risk	11	59.8 ± 5.0	NS
P	<i>Tiarella cordifolia</i>	Heart-leaved Foamflower				S2	3 Sensitive	217	19.1 ± 7.0	NS
P	<i>Viola nephrophylla</i>	Northern Bog Violet				S2	3 Sensitive	9	7.0 ± 0.0	NS

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P	<i>Carex bebbii</i>	Bebb's Sedge				S2	3 Sensitive	16	46.0 ± 0.0	NS
P	<i>Carex castanea</i>	Chestnut Sedge				S2	2 May Be At Risk	22	75.3 ± 0.0	NS
P	<i>Carex comosa</i>	Bearded Sedge				S2	3 Sensitive	3	67.8 ± 7.0	NS
P	<i>Carex hystericina</i>	Porcupine Sedge				S2	2 May Be At Risk	5	42.1 ± 0.0	NS
P	<i>Carex tenera</i>	Tender Sedge				S2	3 Sensitive	8	23.8 ± 1.0	NS
P	<i>Carex tuckermanii</i>	Tuckerman's Sedge				S2	3 Sensitive	4	19.6 ± 0.0	NS
P	<i>Vallisneria americana</i>	Wild Celery				S2	2 May Be At Risk	4	67.3 ± 1.0	NS
P	<i>Allium schoenoprasum var. sibiricum</i>	Wild Chives				S2	2 May Be At Risk	1	60.0 ± 7.0	NS
P	<i>Lilium canadense</i>	Canada Lily				S2	2 May Be At Risk	86	5.6 ± 0.0	NS
P	<i>Cypripedium parviflorum var. pubescens</i>	Yellow Lady's-slipper				S2	3 Sensitive	7	28.3 ± 7.0	NS
P	<i>Cypripedium reginae</i>	Showy Lady's-Slipper				S2	2 May Be At Risk	41	24.3 ± 0.0	NS
P	<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain				S2	3 Sensitive	1	85.0 ± 1.0	NS
P	<i>Platanthera flava var. herbiola</i>	Pale Green Orchid				S2	5 Undetermined	8	38.2 ± 7.0	NS
P	<i>Platanthera macrophylla</i>	Large Round-Leaved Orchid				S2	3 Sensitive	11	35.0 ± 5.0	NS
P	<i>Spiranthes lucida</i>	Shining Ladies'-Tresses				S2	2 May Be At Risk	21	5.8 ± 1.0	NS
P	<i>Calamagrostis stricta</i>	Slim-stemmed Reed Grass				S2	3 Sensitive	5	80.4 ± 0.0	PE
P	<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S2	3 Sensitive	4	7.8 ± 7.0	NS
P	<i>Piptatherum canadense</i>	Canada Rice Grass				S2	3 Sensitive	6	63.7 ± 3.0	NS
P	<i>Potamogeton friesii</i>	Fries' Pondweed				S2	2 May Be At Risk	17	53.2 ± 0.0	PE
P	<i>Potamogeton richardsonii</i>	Richardson's Pondweed				S2	2 May Be At Risk	6	16.8 ± 0.0	NS
P	<i>Dryopteris fragrans var. remotiuscula</i>	Fragrant Wood Fern				S2	3 Sensitive	5	48.0 ± 7.0	NS
P	<i>Woodsia glabella</i>	Smooth Cliff Fern				S2	3 Sensitive	1	80.6 ± 1.0	NS
P	<i>Symphotrichum boreale</i>	Boreal Aster				S2?	3 Sensitive	16	60.0 ± 7.0	NS
P	<i>Cuscuta cephalanthi</i>	Buttonbush Dodder				S2?	5 Undetermined	5	13.4 ± 1.0	NS
P	<i>Epilobium coloratum</i>	Purple-veined Willowherb				S2?	3 Sensitive	3	10.9 ± 1.0	NS
P	<i>Rumex maritimus var. persicarioides</i>	Peach-leaved Dock				S2?	2 May Be At Risk	2	83.6 ± 5.0	PE
P	<i>Crataegus submollis</i>	Quebec Hawthorn				S2?	5 Undetermined	5	25.8 ± 7.0	NS
P	<i>Carex peckii</i>	White-Tinged Sedge				S2?	2 May Be At Risk	3	54.9 ± 0.0	NS
P	<i>Eleocharis ovata</i>	Ovate Spikerush				S2?	3 Sensitive	4	42.6 ± 0.0	NS
P	<i>Scirpus pedicellatus</i>	Stalked Bulrush				S2?	3 Sensitive	9	50.6 ± 0.0	NS
P	<i>Potamogeton pulcher</i>	Spotted Pondweed			Vulnerable	S2S3	3 Sensitive	3	53.7 ± 2.0	NS
P	<i>Hieracium robinsonii</i>	Robinson's Hawkweed				S2S3	3 Sensitive	3	37.2 ± 7.0	NS
P	<i>Senecio pseudoarnica</i>	Seabeach Ragwort				S2S3	3 Sensitive	18	60.0 ± 7.0	NS
P	<i>Betula michauxii</i>	Michaux's Dwarf Birch				S2S3	3 Sensitive	15	55.9 ± 1.0	NS
P	<i>Sagina nodosa</i>	Knotted Pearlwort				S2S3	4 Secure	9	72.5 ± 1.0	NS
P	<i>Sagina nodosa ssp. borealis</i>	Knotted Pearlwort				S2S3	4 Secure	8	81.7 ± 0.0	NS
P	<i>Ceratophyllum echinatum</i>	Prickly Hornwort				S2S3	3 Sensitive	7	50.4 ± 0.0	NS
P	<i>Hypericum dissimulatum</i>	Disguised St John's-wort				S2S3	3 Sensitive	2	86.5 ± 1.0	NS
P	<i>Triosteum aurantiacum</i>	Orange-fruited Tinker's Weed				S2S3	3 Sensitive	75	6.3 ± 0.0	NS
P	<i>Shepherdia canadensis</i>	Soapberry				S2S3	3 Sensitive	2	98.9 ± 0.0	NS
P	<i>Empetrum eamesii ssp. eamesii</i>	Pink Crowberry				S2S3	3 Sensitive	1	86.2 ± 5.0	PE
P	<i>Chamaesyce polygonifolia</i>	Seaside Spurge				S2S3	3 Sensitive	9	23.3 ± 2.0	NS
P	<i>Halenia deflexa</i>	Spurred Gentian				S2S3	3 Sensitive	19	63.1 ± 1.0	NS
P	<i>Hedeoma pulegioides</i>	American False Pennyroyal				S2S3	3 Sensitive	6	7.8 ± 5.0	NS
P	<i>Polygonum buxiforme</i>	Small's Knotweed				S2S3	5 Undetermined	3	8.8 ± 0.0	NS
P	<i>Polygonum raii</i>	Sharp-fruited Knotweed				S2S3	5 Undetermined	4	88.2 ± 1.0	NS
P	<i>Potentilla canadensis</i>	Canada Cinquefoil				S2S3	3 Sensitive	1	76.2 ± 5.0	NS
P	<i>Galium aparine</i>	Common Bedstraw				S2S3	3 Sensitive	16	19.6 ± 4.0	NS
P	<i>Salix pellita</i>	Satiny Willow				S2S3	3 Sensitive	5	55.3 ± 0.0	NS
P	<i>Veronica serpyllifolia ssp. humifusa</i>	Thyme-Leaved Speedwell				S2S3	3 Sensitive	1	35.3 ± 0.0	NS
P	<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	3 Sensitive	5	57.2 ± 0.0	NS
P	<i>Carex hirtifolia</i>	Pubescent Sedge				S2S3	3 Sensitive	40	6.4 ± 0.0	NS
P	<i>Carex houghtoniana</i>	Houghton's Sedge				S2S3	3 Sensitive	1	68.1 ± 1.0	NS
P	<i>Eleocharis olivacea</i>	Yellow Spikerush				S2S3	3 Sensitive	7	47.1 ± 0.0	NS
P	<i>Eriophorum gracile</i>	Slender Cottongrass				S2S3	3 Sensitive	7	57.0 ± 10.0	NS
P	<i>Coeloglossum viride var. virescens</i>	Long-bracted Frog Orchid				S2S3	2 May Be At Risk	1	88.7 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Cypripedium parviflorum</i>	Yellow Lady's-slipper				S2S3	3 Sensitive	20	6.9 ± 0.0	NS
P	<i>Stuckenia filiformis</i>	Thread-leaved Pondweed				S2S3	3 Sensitive	3	86.6 ± 0.0	PE
P	<i>Stuckenia filiformis ssp. alpina</i>	Thread-leaved Pondweed				S2S3	3 Sensitive	1	98.8 ± 1.0	PE
P	<i>Botrychium lanceolatum var. angustisegmentum</i>	Lance-Leaf Grape-Fern				S2S3	3 Sensitive	5	3.3 ± 0.0	NS
P	<i>Botrychium simplex</i>	Least Moonwort				S2S3	3 Sensitive	2	3.3 ± 0.0	NS
P	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue				S2S3	3 Sensitive	2	37.8 ± 0.0	NS
P	<i>Angelica atropurpurea</i>	Purple-stemmed Angelica				S3	4 Secure	6	50.1 ± 1.0	PE
P	<i>Erigeron hyssopifolius</i>	Hyssop-leaved Fleabane				S3	3 Sensitive	19	39.6 ± 0.0	NS
P	<i>Hieracium paniculatum</i>	Panicled Hawkweed				S3	4 Secure	6	33.1 ± 0.0	NS
P	<i>Megalodonta beckii</i>	Water Beggarticks				S3	4 Secure	12	11.6 ± 0.0	NS
P	<i>Packera paupercula</i>	Balsam Groundsel				S3	4 Secure	53	6.3 ± 0.0	NS
P	<i>Betula pumila</i>	Bog Birch				S3	3 Sensitive	19	75.8 ± 0.0	NS
P	<i>Campanula aparinoides</i>	Marsh Bellflower				S3	3 Sensitive	31	7.0 ± 0.0	NS
P	<i>Minuartia groenlandica</i>	Greenland Stitchwort				S3	3 Sensitive	2	88.6 ± 0.0	NS
P	<i>Viburnum edule</i>	Squashberry				S3	3 Sensitive	2	30.0 ± 0.0	NS
P	<i>Empetrum eamesii</i>	Pink Crowberry				S3	3 Sensitive	1	98.1 ± 0.0	PE
P	<i>Vaccinium boreale</i>	Northern Blueberry				S3	3 Sensitive	3	72.9 ± 1.0	NS
P	<i>Vaccinium caespitosum</i>	Dwarf Bilberry				S3	4 Secure	53	27.7 ± 0.0	NS
P	<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	4 Secure	1	76.6 ± 2.0	NS
P	<i>Proserpinaca palustris</i>	Marsh Mermaidweed				S3	4 Secure	14	49.5 ± 0.0	NS
P	<i>Proserpinaca palustris var. crebra</i>	Marsh Mermaidweed				S3	4 Secure	19	47.6 ± 0.0	NS
P	<i>Proserpinaca pectinata</i>	Comb-leaved Mermaidweed				S3	4 Secure	2	35.2 ± 1.0	NS
P	<i>Teucrium canadense</i>	Canada Germander				S3	3 Sensitive	21	17.9 ± 5.0	NS
P	<i>Decodon verticillatus</i>	Swamp Loosestrife				S3	4 Secure	1	99.2 ± 0.0	PE
P	<i>Epilobium strictum</i>	Downy Willowherb				S3	3 Sensitive	14	57.0 ± 5.0	NS
P	<i>Polygala sanguinea</i>	Blood Milkwort				S3	3 Sensitive	12	7.8 ± 1.0	NS
P	<i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed				S3	4 Secure	14	7.0 ± 0.0	NS
P	<i>Polygonum scandens</i>	Climbing False Buckwheat				S3	3 Sensitive	32	6.6 ± 0.0	NS
P	<i>Plantago rugelii</i>	Rugel's Plantain				S3	4 Secure	5	12.5 ± 0.0	NS
P	<i>Samolus valerandi ssp. parviflorus</i>	Seaside Brookweed				S3	3 Sensitive	13	48.5 ± 1.0	NS
P	<i>Pyrola asarifolia</i>	Pink Pyrola				S3	4 Secure	10	41.0 ± 0.0	NS
P	<i>Pyrola minor</i>	Lesser Pyrola				S3	3 Sensitive	1	38.2 ± 0.0	NS
P	<i>Ranunculus gmelinii</i>	Gmelin's Water Buttercup				S3	4 Secure	60	39.4 ± 0.0	NS
P	<i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn				S3	4 Secure	138	47.7 ± 0.0	NS
P	<i>Agrimonia gryposepala</i>	Hooked Agrimony				S3	4 Secure	105	11.7 ± 0.0	NS
P	<i>Amelanchier stolonifera</i>	Running Serviceberry				S3	4 Secure	8	25.1 ± 2.0	NS
P	<i>Geocaulon lividum</i>	Northern Comandra				S3	4 Secure	5	68.5 ± 5.0	NS
P	<i>Limosella australis</i>	Southern Mudwort				S3	4 Secure	21	53.4 ± 1.0	PE
P	<i>Lindernia dubia</i>	Yellow-seeded False Pimperel				S3	4 Secure	16	8.0 ± 0.0	NS
P	<i>Laportea canadensis</i>	Canada Wood Nettle				S3	3 Sensitive	33	11.7 ± 0.0	NS
P	<i>Verbena hastata</i>	Blue Vervain				S3	4 Secure	92	5.7 ± 1.0	NS
P	<i>Carex cryptolepis</i>	Hidden-scaled Sedge				S3	4 Secure	11	48.5 ± 0.0	NS
P	<i>Carex eburnea</i>	Bristle-leaved Sedge				S3	3 Sensitive	27	39.7 ± 0.0	NS
P	<i>Carex lupulina</i>	Hop Sedge				S3	4 Secure	24	11.7 ± 0.0	NS
P	<i>Carex rosea</i>	Rosy Sedge				S3	4 Secure	16	6.4 ± 0.0	NS
P	<i>Carex tribuloides</i>	Blunt Broom Sedge				S3	4 Secure	8	41.8 ± 2.0	NS
P	<i>Carex wiegandii</i>	Wiegand's Sedge				S3	3 Sensitive	3	53.4 ± 5.0	PE
P	<i>Carex foenea</i>	Fernald's Hay Sedge				S3	4 Secure	13	29.1 ± 0.0	NS
P	<i>Elodea canadensis</i>	Canada Waterweed				S3	4 Secure	5	42.6 ± 0.0	NS
P	<i>Juncus subcaudatus var. planisepalus</i>	Woods-Rush				S3	3 Sensitive	7	9.9 ± 5.0	NS
P	<i>Juncus dudleyi</i>	Dudley's Rush				S3	4 Secure	37	6.1 ± 0.0	NS
P	<i>Goodyera repens</i>	Lesser Rattlesnake-plantain				S3	3 Sensitive	3	50.6 ± 1.0	PE
P	<i>Listera australis</i>	Southern Twayblade				S3	4 Secure	36	52.3 ± 0.0	NS
P	<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	4 Secure	95	30.5 ± 0.0	NS
P	<i>Platanthera hookeri</i>	Hooker's Orchid				S3	4 Secure	4	48.8 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	<i>Platanthera orbiculata</i>	Small Round-leaved Orchid				S3	4 Secure	27	26.9 ± 0.0	NS
P	<i>Spiranthes ochroleuca</i>	Yellow Ladies'-tresses				S3	4 Secure	4	49.9 ± 0.0	NS
P	<i>Alopecurus aequalis</i>	Short-awned Foxtail				S3	4 Secure	13	36.7 ± 1.0	NS
P	<i>Dichanthelium clandestinum</i>	Deer-tongue Panic Grass				S3	4 Secure	84	37.1 ± 0.0	NS
P	<i>Potamogeton obtusifolius</i>	Blunt-leaved Pondweed				S3	4 Secure	9	34.4 ± 0.0	NS
P	<i>Potamogeton praelongus</i>	White-stemmed Pondweed				S3	3 Sensitive	32	5.8 ± 5.0	NS
P	<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed				S3	3 Sensitive	13	50.7 ± 0.0	NS
P	<i>Sparganium natans</i>	Small Burreed				S3	4 Secure	15	24.6 ± 1.0	NS
P	<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3	4 Secure	1	93.2 ± 0.0	NS
P	<i>Asplenium trichomanes-ramosum</i>	Green Spleenwort				S3	3 Sensitive	2	87.4 ± 7.0	NS
P	<i>Equisetum pratense</i>	Meadow Horsetail				S3	3 Sensitive	9	48.7 ± 0.0	NS
P	<i>Equisetum variegatum</i>	Variiegated Horsetail				S3	4 Secure	21	6.1 ± 0.0	NS
P	<i>Isoetes acadensis</i>	Acadian Quillwort				S3	3 Sensitive	2	75.2 ± 1.0	NS
P	<i>Lycopodium sitchense</i>	Sitka Clubmoss				S3	4 Secure	5	50.2 ± 1.0	NS
P	<i>Huperzia appalachiana</i>	Appalachian Fir-Clubmoss				S3	3 Sensitive	6	53.0 ± 5.0	NS
P	<i>Botrychium dissectum</i>	Cut-leaved Moonwort				S3	4 Secure	4	15.2 ± 1.0	NS
P	<i>Polypodium appalachianum</i>	Appalachian Polypody				S3	5 Undetermined	10	37.8 ± 0.0	NS
P	<i>Asclepias incarnata ssp. pulchra</i>	Swamp Milkweed				S3?	5 Undetermined	43	53.1 ± 0.0	NS
P	<i>Polygonum amphibium var. emersum</i>	Water Smartweed				S3?	5 Undetermined	1	89.2 ± 0.0	NS
P	<i>Lycopodium sabiniifolium</i>	Ground-Fir				S3?	4 Secure	6	24.7 ± 1.0	NS
P	<i>Atriplex franktonii</i>	Frankton's Saltbush				S3S4	4 Secure	3	49.4 ± 2.0	NS
P	<i>Suaeda calceoliformis</i>	Horned Sea-blite				S3S4	4 Secure	12	15.2 ± 2.0	NS
P	<i>Myriophyllum sibiricum</i>	Siberian Water Milfoil				S3S4	4 Secure	14	48.5 ± 0.0	NS
P	<i>Nuphar lutea ssp. pumila</i>	Small Yellow Pond-lily				S3S4	4 Secure	3	13.2 ± 2.0	NS
P	<i>Sanguinaria canadensis</i>	Bloodroot				S3S4	4 Secure	101	6.4 ± 0.0	NS
P	<i>Polygonum fowleri</i>	Fowler's Knotweed				S3S4	4 Secure	6	54.4 ± 0.0	NS
P	<i>Rumex maritimus</i>	Sea-Side Dock				S3S4		10	16.5 ± 0.0	NS
P	<i>Rumex maritimus var. fueginus</i>	Tierra del Fuego Dock				S3S4	4 Secure	13	82.9 ± 0.0	NS
P	<i>Crataegus succulenta</i>	Fleshy Hawthorn				S3S4	5 Undetermined	2	95.1 ± 5.0	PE
P	<i>Fragaria vesca ssp. americana</i>	Woodland Strawberry				S3S4	4 Secure	63	36.6 ± 0.0	NS
P	<i>Salix petiolaris</i>	Meadow Willow				S3S4	4 Secure	18	30.0 ± 0.0	NS
P	<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S3S4	4 Secure	2	90.7 ± 0.0	NS
P	<i>Viola sagittata var. ovata</i>	Arrow-Leaved Violet				S3S4	4 Secure	2	86.3 ± 1.0	PE
P	<i>Carex argyrantha</i>	Silvery-flowered Sedge				S3S4	4 Secure	1	58.6 ± 5.0	PE
P	<i>Eriophorum russeolum</i>	Russet Cottongrass				S3S4	4 Secure	9	31.1 ± 5.0	NS
P	<i>Triglochin gaspensis</i>	Gasp Arrowgrass				S3S4	5 Undetermined	19	81.5 ± 0.0	NS
P	<i>Juncus acuminatus</i>	Sharp-Fruit Rush				S3S4	4 Secure	1	91.2 ± 0.0	NS
P	<i>Luzula parviflora</i>	Small-flowered Woodrush				S3S4	4 Secure	2	35.8 ± 0.0	NS
P	<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	4 Secure	12	49.5 ± 5.0	PE
P	<i>Panicum tuckermanii</i>	Tuckerman's Panic Grass				S3S4	4 Secure	5	78.8 ± 0.0	NS
P	<i>Trisetum spicatum</i>	Narrow False Oats				S3S4	4 Secure	9	7.6 ± 0.0	NS
P	<i>Cystopteris bulbifera</i>	Bulblet Bladder Fern				S3S4	4 Secure	124	39.7 ± 0.0	NS
P	<i>Equisetum hyemale var. affine</i>	Common Scouring-rush				S3S4	4 Secure	19	47.5 ± 0.0	NS
P	<i>Equisetum scirpoides</i>	Dwarf Scouring-Rush				S3S4	4 Secure	36	48.3 ± 0.0	NS
P	<i>Lycopodium complanatum</i>	Northern Clubmoss				S3S4	4 Secure	6	32.8 ± 0.0	NS
P	<i>Schizaea pusilla</i>	Little Curlygrass Fern				S3S4	4 Secure	1	80.8 ± 0.0	NS
P	<i>Solidago simplex var. randii</i>	Sticky Goldenrod				SH	0.1 Extirpated	2	72.7 ± 1.0	NS
P	<i>Viola canadensis</i>	Canada Violet				SH	0.1 Extirpated	1	50.6 ± 7.0	NS

5.1 SOURCE BIBLIOGRAPHY (100 km)

The recipient of these data shall acknowledge the ACCDC 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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61	Blaney, C.S. 2000. Fieldwork 2000. Atlantic Canada Conservation Data Centre. Sackville NB, 1265 recs.
56	Blaney, C.S.; Mazerolle, D.M.; Oberdorfer, E. 2007. Fieldwork 2007. Atlantic Canada Conservation Data Centre. Sackville NB, 13770 recs.
56	Pulsifer, M.D. 2002. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 369 recs.
54	Blaney, C.S.; Spicer, C.D.; Popma, T.M.; Hanel, C. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 2252 recs.
48	Burns, L. 2013. Personal communication concerning bat occurrence on PEI. Winter 2013. Pers. comm.
48	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
45	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
45	Nova Scotia Nature Trust. 2013. Nova Scotia Nature Trust 2013 Species records. Nova Scotia Nature Trust, 95 recs.
44	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
43	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
42	Klymko, J.J.D. 2012. Maritimes Butterfly Atlas, 2010 and 2011 records. Atlantic Canada Conservation Data Centre, 6318 recs.
40	Curley, F.R. 2005. PEF&W Collection 2003-04. PEI Fish & Wildlife Div., 716 recs.
39	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
38	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
35	Hall, R.A. 2001. S. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 178 recs.
35	Hall, R.A. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 189 recs.
33	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
32	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
31	Popma, T.M. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 113 recs.

# recs	CITATION
30	Blaney, C.S. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre. Sackville NB, 1042 recs.
28	Archibald, D.R. 2003. NS Freshwater Mussel Fieldwork. Nova Scotia Dept Natural Resources, 213 recs.
26	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
26	Sollows, M.C., 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
25	MacDonald, M. 2008. PEI Power Corridor Floral Surveys, 2004-08. Jacques Whitford Ltd, 2238 recs (979 rare).
24	Neily, T.H. 2013. Email communication to Sean Blaney regarding <i>Listera australis</i> observations made from 2007 to 2011 in Nova Scotia. , 50.
23	Pepper, Chris. 2012. Observations of breeding Canada Warbler's along the Eastern Shore, NS. Pers. comm. to S. Blaney, Jan. 20, 28 recs.
22	Erskine, D. 1960. The plants of Prince Edward Island, 1st Ed. Research Branch, Agriculture Canada, Ottawa., Publication 1088. 1238 recs.
21	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
20	Blaney, C.S.; Mazerolle, D.M.; Klymko, J.; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
19	Cameron, R.P. 2013. 2013 rare species field data. Nova Scotia Department of Environment, 71 recs.
19	Cameron, R.P. 2014. 2013-14 rare species field data. Nova Scotia Department of Environment, 35 recs.
18	Neily, T.H. 2012. 2012 <i>Erioderma pedicellatum</i> records in Nova Scotia.
18	Powell, B.C. 1967. Female sexual cycles of <i>Chrysemys picta</i> & <i>Clemmys insculpta</i> in Nova Scotia. Can. Field-Nat., 81:134-139. 26 recs.
17	Gilhen, J. 1984. Amphibians & Reptiles of Nova Scotia, 1st Ed. Nova Scotia Museum, 164pp.
16	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
15	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of <i>C. insculpta</i> sightings. Acadia University, Wolfville NS, 88 recs.
15	Chaput, G. 2002. Atlantic Salmon: Maritime Provinces Overview for 2001. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-14. 39 recs.
14	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
14	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
14	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
14	Robinson, S.L. 2011. 2011 ND dune survey field data. Atlantic Canada Conservation Data Centre, 2715 recs.
14	Robinson, S.L. 2015. 2014 field data.
14	Spicer, C.D. 2002. Fieldwork 2002. Atlantic Canada Conservation Data Centre. Sackville NB, 211 recs.
13	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
11	Cameron, R.P. 2012. Rob Cameron 2012 vascular plant data. NS Department of Environment, 30 recs.
11	Downes, C. 1998-2000. Breeding Bird Survey Data. Canadian Wildlife Service, Ottawa, 111 recs.
10	Doucet, D.A. 2009. Census of Globally Rare, Endemic Butterflies of Nova Scotia Gulf of St Lawrence Salt Marshes. Nova Scotia Dept of Natural Resources, Species at Risk, 155 recs.
10	Harding, R.W. 2008. Harding Personal Insect Collection 1999-2007. R.W. Harding, 309 recs.
9	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobeatic Research Institute, 296 records. 296 recs.
9	Benjamin, L.K. 2009. D. Anderson Odonata Records for Cape Breton, 1997-2004. Nova Scotia Dept Natural Resources, 1316 recs.
9	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
9	Cameron, R.P. 2005. <i>Erioderma pedicellatum</i> unpublished data. NS Dept of Environment, 9 recs.
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9	O'Neil, S. 1998. Atlantic Salmon: Northumberland Strait Nova Scotia part of SFA 18. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-08. 9 recs.
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8	Giberson, D. 2008. UPEI Insect Collection. University of Prince Edward Island, 157 recs.
8	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (<i>Isoetes prototypus</i>). Committee on the Status of Endangered Wildlife in Canada, 111 recs.
8	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J.; ONHIC, 487 recs.
7	Cameron, B. 2006. <i>Hepatica americana</i> Survey at Scotia Mine Site in Gays River, and Discovery of Three Yellow-listed Species. Conestoga-Rovers and Associates, (a consulting firm), october 25. 7 recs.
7	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
6	Amirault, D.L. 1997-2000. Unpublished files. Canadian Wildlife Service, Sackville, 470 recs.
6	Basquill, S.P. 2012. 2012 rare vascular plant field data. Nova Scotia Department of Natural Resources, 37 recs.
6	Dibblee, R.L. 1999. PEI Cormorant Survey. Prince Edward Island Fisheries, Aquaculture & Environment, 1p. 21 recs.
6	Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
6	Hall, R. 2008. Rare plant records in old fieldbook notes from Truro area. Pers. comm. to C.S. Blaney. 6 recs, 6 recs.
6	Hill, N.M. 1994. Status report on the Long's bulrush <i>Scirpus longii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
6	Layberry, R.A. 2012. Lepidopteran records for the Maritimes, 1974-2008. Layberry Collection, 1060 recs.
6	Smith, M.E.M. 2008. AgCan Collection. Agriculture Canada, Charlottetown PE, 44 recs.
6	Stevens, C. 1999. Cam Stevens field data from PEI vegetation plots. Sent along with specimens to C.S. Blaney. UNB masters research project, 732 recs.
6	Whittam, R.M. 1999. Status Report on the Roseate Tern (update) in Canada. Committee on the Status of Endangered Wildlife in Canada, 36 recs.
5	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
5	Belland, R.J. 2012. PEI moss records from Devonian Botanical Garden. DBG Cryptogam Database, Web site: https://secure.devonian.ualberta.ca/bryo_search.php 748 recs.
5	Belliveau, A.G. 2014. Plant Records from Southern and Central Nova Scotia. Atlantic Canada Conservation Data Centre, 919 recs.
5	Bredin, K.A. 2002. NS Freshwater Mussel Fieldwork. Atlantic Canada Conservation Data Center, 30 recs.
5	Kelly, G. 2005. <i>Fraxinus nigra</i> . Dept of Agriculture, Fisheries, Aquaculture & Forestry. Pers. comm. to C.S. Blaney, Mar. 2, 11 recs.
5	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
5	Speers, L. 2001. Butterflies of Canada database. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 190 recs.

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5	Towell, C. 2014. 2014 Northern Goshawk and Common Nighthawk email reports, NS. NS Department of Natural Resources.
5	Whittam, R.M. 1997. Status Report on the Roseate Tern (<i>Sterna dougallii</i>) in Canada. Committee on the Status of Endangered Wildlife in Canada, 5 recs.
4	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
4	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
4	Clayden, S.R. 2007. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, download Mar. 2007, 6914 recs.
4	Daury, R.W. & Bateman, M.C. 1996. The Barrow's Goldeneye (<i>Bucephala islandica</i>) in the Atlantic Provinces and Maine. Canadian Wildlife Service, Sackville, 47pp.
4	Edsall, J. 2007. Personal Butterfly Collection: specimens collected in the Canadian Maritimes, 1961-2007. J. Edsall, unpubl. report, 137 recs.
4	Glen, W. 1991. 1991 Prince Edward Island Forest Biomass Inventory Data. PEI Dept of Energy and Forestry, 10059 recs.
4	O'Neil, S. 1998. Atlantic Salmon: Eastern Shore Nova Scotia SFA 20. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-10. 4 recs.
4	Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
3	Benjamin, L.K. 2006. <i>Cyripedium arietinum</i> . Pers. comm. to D. Mazerolle. 9 recs, 9 recs.
3	Blaney, C.S. Miscellaneous specimens received by ACCDC (botany). Various persons. 2001-08.
3	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
3	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
3	Rousseau, J. 1938. Notes Floristiques sur l'est de la Nouvelle-Ecosse in Contributions de l'Institut Botanique de l'Universite de Montreal. Universite de Montreal, 32, 13-62. 11 recs.
3	Sollows, M.C., 2009. NBM Science Collections databases: molluscs. New Brunswick Museum, Saint John NB, download Jan. 2009, 6951 recs (2957 in Atlantic Canada).
2	Bagnell, B.A. 2001. New Brunswick Bryophyte Occurrences. B&B Botanical, Sussex, 478 recs.
2	Basquill, S.P. 2012. 2012 Bryophyte specimen data. Nova Scotia Department of Natural Resources, 37 recs.
2	Cameron, B. 2005. <i>C. palmicola</i> , <i>E. pedicellatum</i> records from Sixth Lake. Pers. comm. to C.S. Blaney. 3 recs, 3 recs.
2	Cameron, R.P. 2009. Nova Scotia nonvascular plant observations, 1995-2007. Nova Scotia Dept Natural Resources, 27 recs.
2	Curley, F.R. 2003. Glen Kelly records for <i>Betula pumila</i> & <i>Asclepias syriaca</i> on PEI. , Pers. comm. to C.S. Blaney. 9 recs.
2	Curley, F.R. 2007. PEF&W Collection. PEI Fish & Wildlife Div., 199 recs.
2	Frittaion, C. 2012. NSNT 2012 Field Observations. Nova Scotia Nature Trust, Pers comm. to S. Blaney Feb. 7, 34 recs.
2	Hill, N. 2003. <i>Floerkea proserpinacoides</i> at Heatherdale, Antigonish Co. 2002. , Pers. comm. to C.S. Blaney. 2 recs.
2	Hinds, H.R. 1989. Greenwich, Blooming Point plant collections in Plant locations. Pers. Comm. to Robin Day (Ag. Can). 2pp, 8 recs, 8 recs.
2	Macaulay, M. Notes on newly discovered <i>Hepatica nobilis</i> var. <i>obtusa</i> population in Cumberland Co. NS. Pers. comm. to S. Blaney, 1 rec.
2	Macaulay, M. 2008. Email to Sean Blaney regarding rich hardwood floodplain site at Howards Pool, Wallace River, NS.
2	Neily, T.H.; Smith, C.; Whitman, E. 2011. NCC Logging Lake (Halifax Co. NS) properties baseline survey data. Nature Conservancy of Canada, 2 recs.
2	Sabine, D.L. 2013. Dwaine Sabine butterfly records, 2009 and earlier.
2	Spicer, C.D. 2004. Specimens from CWS Herbarium, Mount Allison Herbarium Database. Mount Allison University, 5939 recs.
2	Standley, L.A. 2002. <i>Carex haydenii</i> in Nova Scotia. , Pers. comm. to C.S. Blaney. 4 recs.
2	Thomas, H.H., Jones, G.S. & Diblee, R.L. 1980. <i>Sorex palustris</i> on Prince Edward Island. Can. Field Nat., vol 94:329-331. 2 recs.
2	Whittam, R.M. et al. 1998. Country Island Tern Restoration Project. Canadian Wildlife Service, Sackville, 2 recs.
2	Williams, M. Cape Breton University Digital Herbarium. Cape Breton University Digital Herbarium. 2013.
1	Amiro, Peter G. 1998. Atlantic Salmon: Inner Bay of Fundy SFA 22 & part of SFA 23. Dept of Fisheries & Oceans, Atlantic Region, Science Stock Status Report D3-12. 4 recs.
1	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
1	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
1	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
1	Bridgehouse, D. Email communication (July 3, 2014) to John Klymko regarding hairstreak butterfly observations made Nova Scotia. 2014.
1	Bruce, J. 2014. 2014 Wood Turtle email report, Nine Mile River, NS. NS Department of Natural Resources.
1	Cairns, D. 1998. Atlantic Salmon: Prince Edward Island SFA 17. Dept of Fisheries & Oceans, Atlantic Region, Science. Stock Status Report D3-07. 1 rec.
1	Cameron, R.P. 2012. Additional rare plant records, 2009. , 7 recs.
1	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
1	Clayden, S.R. 2006. <i>Pseudevernia cladonia</i> records. NB Museum. Pers. comm. to S. Blaney, Dec, 4 recs.
1	Doucet, D.A. ACCDC Reference Collection. Atlantic Canada Conservation Data Centre, Sackville NB. 2008.
1	Gagnon, J. 2004. Specimen data from 2002 visit to Prince Edward Island. , 104 recs.
1	Gillis, J. 2015. Rare plant records from Cape Breton gypsum sites. Pers. comm., 25 rare plant records.
1	Jacques Whitford Ltd. 2003. Cananda Lily location. Pers. Comm. to S. Blaney. 2pp, 1 rec, 1 rec.
1	Kelly, Glen 2004. Botanical records from 2004 PEI Forestry fieldwork. Dept of Environment, Energy & Forestry, 71 recs.
1	MacPhail, V. Bee and syrphid specimens from MSc research. Pers. comm., J. Klymko. 2006.
1	McAlpine, D.F. 1998. NBM Science Collections databases to 1998. New Brunswick Museum, Saint John NB, 241 recs.
1	Neily, P.D. Plant Specimens. Nova Scotia Dept Natural Resources, Truro. 2006.
1	Neily, T.H. 2013. Email communication to Sean Blaney regarding <i>Agalinis paupercula</i> observations made in 2013 in Nova Scotia. , 1 rec.
1	Newell, R.B.; Sam, D. 2014. 2014 Bloodroot personal communication report, Antigonish, NS. NS Department of Natural Resources.
1	Quigley, E.J. 2006. Plant records, Mabou & Port Hood. Pers. comm. to S.P. Basquill, Jun. 12. 4 recs, 4 recs.
1	Robinson, C.B. 1907. Early intervale flora of eastern Nova Scotia. Transactions of the Nova Scotia Institute of Science, 10:502-506. 1 rec.
1	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
1	Whittam, R.M. 2000. <i>Senecio pseudoarnica</i> on Country Island. , Pers. comm. to S. Gerriets. 1 rec.

# recs	CITATION
1	Wilson, G. 2013. 2013 Snapping Turtle email report, Wentworth, NS. Pers. comm.



**Communities,
Culture & Heritage**

1741 Brunswick Street
3rd Floor
P.O. Box 456
Halifax, NS
B3J 2R5

Tel: (902) 424-6475
Fax: (902) 424-0560

December 21, 2016

John Gallop
McCallum Environmental Ltd.
Suite 135, 2 Bluewater Road,
Bedford, NS B4B 1G7

Dear Ms. Levy:

**RE: Environmental Screening 17-01-19
McLellan's Brook Quarry**

Further to your request of January 19th, 2017 staff at Communities, Culture and Heritage has reviewed their files for reference to the presence of natural and heritage resources in the study area. Please be aware that the information is not comprehensive, and may include varying degrees of accuracy with respect to the precise location and condition of natural resources.

It should be noted that the amount and degree of disturbance from previous developments could have a significant role in establishing the presence, absence or condition of natural and heritage resources in this area.

Botany

The following plant species-at-risk are known from the Kirkmount area and should be considered prior to any development.

The presence/absence of the following plant species should be determined through field study and the results included in any final reports. Plant inventory work should be conducted during the growing season, when their identity can be determined with certainty.

Campanula aparinoides yellow
Carex hirtifolia yellow
Carex pellita orange
Caulophyllum thalictroides orange
Cypripedium reginae orange
Dichanthelium linearifolium yellow
Elymus wiegandii orange
Epilobium coloratum yellow
Fallopia scandens yellow
Fraxinus nigra yellow
Hepatica nobilis var obtusa orange
Laportea Canadensis yellow
Lilium canadense yellow



**Communities,
Culture & Heritage**

1741 Brunswick Street
3rd Floor
P.O. Box 456
Halifax, NS
B3J 2R5

Tel: (902) 424-6475
Fax: (902) 424-0560

Boreal Chickadee
Cape May Warbler
Ruby-crowned Kinglet
Golden-crowned Kinglet
Eastern Wood-peewee
Olive-sided Flycatcher
Eastern Phoebe
Eastern Kingbird
Pied-billed Grebe

If you have any questions, please contact me at 424-6475.

Sincerely,

Sean Weseloh-McKeane
Coordinator, Special Places

Enclosure



Square Summary (20NR34)

#species (1st atlas)		#species (2nd atlas)		#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total
8	6	78	92	27	34	36	97
				1st	2nd	road	offrd
				130	41.9	15	1

Region summary (#21: Cobequid)

#squares	#sq with data		#species		#pc done	target	#pc
	1st	2nd	1st	2nd			
67	62	65	146	167	508	251	

Target number of point counts in this square: 14 road side, 1 off road (1 in Young forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Canada Goose		FY	0	53	Northern Harrier	FL	AE	46	76	<u>North Saw-whet Owl</u>	ON		11	36
Wood Duck		FY	20	52	Sharp-shinned Hawk		H	22	38	Common Nighthawk †	H	H	29	55
Gadwall ‡			0	3	Northern Goshawk			12	20	Chimney Swift †	H	H	32	23
Eurasian Wigeon ‡			0	0	Broad-winged Hawk	FL	H	32	55	Ruby-thr Hummingbird	C	T	61	100
American Wigeon			12	26	Red-tailed Hawk	FL	P	46	72	Belted Kingfisher	FL	FY	51	93
American Black Duck	AY	FY	66	81	Virginia Rail †			6	9	Yellow-bellied Sapsucker	AY	T	50	83
<u>Mallard</u>			9	60	Sora	T	T	16	52	Downy Woodpecker	AY	P	48	89
<u>Blue-winged Teal</u>	P		27	26	Common Gallinule †			3	1	Hairy Woodpecker	NY	NY	54	87
Northern Shoveler ‡			3	4	American Coot †			4	0	Am Three-toed Woodpecker †			0	0
Northern Pintail			8	1	Semipalmated Plover †			6	0	<u>Black-back Woodpecker</u>	H		20	26
Green-winged Teal	FL	H	24	56	Piping Plover †			3	3	Northern Flicker	AY	AE	80	98
Ring-necked Duck		FY	32	72	Killdeer	FL	H	56	64	Pileated Woodpecker	FL	T	45	80
Greater Scaup †			0	0	Spotted Sandpiper	FL	H	50	70	American Kestrel	FL	H	50	75
Common Eider ‡§			0	1	Greater Yellowlegs †			0	3	<u>Merlin</u>	H		16	47
Hooded Merganser		FY	9	50	Willet			14	24	Olive-sided Flycatcher †	AY	P	38	66
Common Merganser	AY	T	25	55	Wilson's Snipe	H	S	62	73	Eastern Wood-Pewee	AY	S	56	70
Red-breast Merganser			4	7	American Woodcock	ON	T	22	81	<u>Yellow-bellied Flycatcher</u>	H		30	56
Gray Partridge			6	4	Ring-billed Gull ‡§			0	0	Alder Flycatcher	AY	T	79	100
<u>Ring-necked Pheasant</u>			20	69	Herring Gull §			8	10	Willow Flycatcher †			1	1
Ruffed Grouse	FL	FY	58	86	Great Black-backed Gull §			8	6	Least Flycatcher	ON	S	59	84
Spruce Grouse			20	30	Common Tern §			9	12	Eastern Phoebe	ON	NY	12	58
Common Loon			29	35	Arctic Tern ‡§			1	0	Gr Crested Flycatcher			6	4
Pied-billed Grebe	FL	FY	24	30	Black Guillemot ‡§			0	3	<u>Eastern Kingbird</u>	AY		45	47
Double-crest Cormorant §			8	12	Rock Pigeon		AE	59	78	Blue-headed Vireo	NY	T	61	92
American Bittern		S	22	55	Mourning Dove		FY	27	95	Philadelphia Vireo ‡			1	3
Great Blue Heron §			29	13	Black-billed Cuckoo			9	26	Red-eyed Vireo	AY	T	82	100
Turkey Vulture ‡¶			0	0	Great Horned Owl	NY	AE	40	63	<u>Gray Jay</u>	FL		45	58
<u>Osprey</u>			22	50	Barred Owl		T	35	69	Blue Jay	FL	FY	70	96
Bald Eagle ¶	H	P	27	83	Short-eared Owl †			1	1	American Crow	FL	AE	87	100

[next page >>](#)

Maritimes Breeding Bird Atlas - Summary Sheet for Square 20NR34 (page 2 of 2)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Common Raven	FL	FY	69	100	<u>Tennessee Warbler</u>	AY		75	43	<u>Scarlet Tanager</u> †	T		4	1
Horned Lark †			1	1	Nashville Warbler	AY	T	48	86	Northern Cardinal ‡			0	10
Tree Swallow	AY	AE	80	93	Mourning Warbler		S	33	49	Rose-breast Grosbeak	AY	P	69	56
Bank Swallow §			56	43	Common Yellowthroat	AY	DD	82	100	Indigo Bunting ‡			1	3
Cliff Swallow §	NB	AE	38	36	American Redstart	AY	T	85	98	Bobolink	AY	P	70	69
Barn Swallow	NB	FY	85	90	Cape May Warbler	AY	S	32	16	Red-wing Blackbird	AY	FY	67	84
Black-capp Chickadee	AY	FY	67	98	Northern Parula	AY	T	72	96	<u>Rusty Blackbird</u> †	FL		24	21
Boreal Chickadee	FL	H	53	66	Magnolia Warbler	AY	T	72	96	Common Grackle	AY	FY	75	96
Red-breast Nuthatch	AY	FY	70	81	Bay-breasted Warbler	FL	S	40	49	Brown-head Cowbird		S	43	18
White-breast Nuthatch			11	15	Blackburnian Warbler	AY	T	54	83	<u>Baltimore Oriole</u>	ON		11	13
Brown Creeper	H	S	14	50	Yellow Warbler	AY	T	74	92	Pine Grosbeak			29	4
Winter Wren		S	38	80	Chestn-sided Warbler	AY	T	61	86	Purple Finch	AY	T	67	93
Golden-crown Kinglet		FY	69	87	Blackpoll Warbler			12	12	House Finch †			1	4
Ruby-crown Kinglet	FL	FY	79	92	Black-thr Blue Warbler		S	8	43	Red Crossbill †			17	15
Eastern Bluebird †			1	16	<u>Palm Warbler</u>			22	75	<u>White-winged Crossbill</u>			54	64
Veery	AY	S	54	61	Yellow-rumped Warbler	FL	T	67	98	Pine Siskin	FL	S	59	58
Bicknell's Thrush †			1	0	Black-thr Green Warbler		T	69	83	American Goldfinch	FL	P	82	100
Swainson's Thrush	AY	S	66	89	Canada Warbler †	C	S	35	52	Evening Grosbeak	AY	P	50	55
Hermit Thrush	FL	T	74	96	Wilson's Warbler			11	10	House Sparrow	ON	P	79	36
Wood Thrush †			4	9	Chipping Sparrow	AY	T	69	86					
American Robin	NY	FY	90	100	Vesper Sparrow †			4	10					
Gray Catbird	AY	S	54	58	Savannah Sparrow	AY	CF	74	86					
Northern Mockingbird †			4	3	Nelson's Sh.-tail Sparrow	A	S	16	21					
European Starling	FL	NY	77	93	Song Sparrow	AY	DD	87	100					
Bohemian Waxwing ‡			0	0	Lincoln's Sparrow	AY	S	45	63					
Cedar Waxwing	AY	P	70	100	Swamp Sparrow		CF	51	95					
Ovenbird	AY	D	70	93	White-throat Sparrow	AY	T	77	100					
North Waterthrush	AY	FY	30	55	White-crown Sparrow ‡			0	1					
Black-white Warbler	AY	FY	77	87	Dark-eyed Junco	AY	FY	70	92					

This list includes all species found during the Maritimes Breeding Bird Atlas (1st atlas: 1986-1990, 2nd atlas: 2006-2010) in the region #21 (Cobequid). Underlined species are those that you should try to add to this square (20NR34). They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. "Code" is the code for the highest breeding evidence for that species in square 20NR34 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #21). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), † (rare in the Maritimes) or ‡ (rare in the Maritimes, documentation only required for confirmed records). Current as of 18/06/2018. An up-to-date version of this sheet is available from <http://www.mba-aom.ca/jsp/summaryform.jsp?squareID=20NR34?lang=en>

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**Appendix C: MacLellans Mountain Quarry Expansion Project
Priority Species List**



Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
VASCULAR PLANTS						
<i>Conopholis americana</i>	American Cancer-root				S1S2	Associated with oaks and other deciduous species, known only in the western half of the province.
<i>Polypodium appalachianum</i>	Appalachian Polypody				S3?	Cliffs and rocky slopes, distribution unclear.
<i>Viola sagittata</i>	Arrow-Leaved Violet				S3S4	Sterile woods, clearing and fields, common from Yarmouth to Halifax and Hants Counties.
<i>Geranium bicknellii</i>	Bicknell's Crane's-bill				S3	Colonizes recently burned or cleared land; recently exposed lakeshores, Sporadic from southern counties to central Nova Scotia.
<i>Fraxinus nigra</i>	Black Ash			Threatened	S1S2	Typical habitat includes poorly drained soils and swampy woods
<i>Juncus bulbosus</i>	Bulbous Rush				S1	Found along the edges of fresh water: ditches, ponds canals, and especially in disturbed alkaline conditions on Sable Island and Eastern CB.
<i>Potentilla canadensis</i>	Canada Cinquefoil				S2S3	Found on dry rock barrens and other open areas in Yarmouth, Halifax, Kings, Shelburne and Hants Co.
<i>Polygonum careyi</i>	Carey's Smartweed				S1	Anthropogenic (man-made or disturbed habitats), meadows and fields, shores of rivers or lakes.
<i>Spiranthes casei var. casei</i>	Case's Ladies'-Tresses				S1	Dry to moderately moist sandy soils, deep to shallow, and sand filled crevices of igneous rock, roadsides and pastures.
<i>Spiranthes casei</i>	Case's Ladies'-Tresses				S2	Look for this species in acidic, sandy soils on rock barrens or even roadsides. So far restricted to southwestern counties, Jordan Falls to Pubnico, Belleville and the Annapolis Valley.
<i>Conioselinum chinense</i>	Chinese Hemlock-parsley				S2	Treed swamps, mossy coniferous forest, seepy coastal slopes. Scattered on Digby Neck. Common on Saint Paul Island and infrequent elsewhere.
<i>Clethra alnifolia</i>	Coast Pepper-Bush	SC	SC	Vulnerable	S1	Lacustrine headwaters and shores, swamps, thickets and in nearby sandy forests. Its distribution in Nova Scotia is limited to Belliveau's Lake, Digby Co., Canoe Lake and Louis Lake, Yarmouth Co. Mill Lake, Pretty Mary Lake and Mudflat Lake, Annapolis Co. The mapped sites in Halifax County are introductions.
<i>Sisyrinchium fuscatum</i>	Coastal Plain Blue-eyed-grass				S1	Grows on sandy soils. Rare. Collected only from western counties.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Eupatorium dubium</i>	Coastal Plain Joe-pye-weed				S2	Found in wet meadows, damp thickets, shores, and along the roadside. It grows best in full sun but can also grow in semi-shade and enjoys grows well-drained soil that is moisture retentive.
<i>Proserpinaca pectinata</i>	Comb-leaved Mermaidweed				S3	Grows in sphagnum peatlands, lacustrine peaty sands and gravels. Frequently seen in Yarmouth and Shelburne counties, becoming scarcer to Cumberland county.
<i>Galium aparine</i>	Common Bedstraw				S2S3	Pastures, fields, ditches and streamsides. Very common throughout.
<i>Pinguicula vulgaris</i>	Common Butterwort				S1	Grows in moist habitats as on rock ledges and streamsides, especially of basic rocks.
<i>Humulus lupulus var. lupuloides</i>	Common Hop				S1?	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, shrublands or thickets.
<i>Botrychium lunaria</i>	Common Moonwort				S1	Open slopes. Sand or gravel; shores and meadows. Basic soils. Known from Conrad's Beach, Halifax County and from New Campbellton and Indian Brook in northern Cape Breton.
<i>Equisetum hyemale</i>	Common Scouring-rush				S3S4	Grows in sandy, gravelly soil, on banks or in low areas; often in calcareous regions. Scattered, mostly from Digby County, through the Annapolis Valley, northward to Cape Breton.
<i>Equisetum hyemale var. affine</i>	Common Scouring-rush				S3S4	Grows in sandy, gravelly soil, on banks or in low areas; often in calcareous regions. Scattered, mostly from Digby County, through the Annapolis Valley, northward to Cape Breton.
<i>Carex chordorrhiza</i>	Creeping Sedge				S1	Grows in wetlands: bogs, fens and marshes. It has been recently found in the Amherst area of Cumberland county.
<i>Ranunculus sceleratus</i>	Cursed Buttercup				S1S2	Anthropogenic (man-made or disturbed habitats), fresh tidal marshes or flats, marshes, swamps.
<i>Ranunculus sceleratus var. sceleratus</i>	Cursed Buttercup				S1S2	Anthropogenic (man-made or disturbed habitats), fresh tidal marshes or flats, marshes, swamps.
<i>Goodyera pubescens</i>	Downy Rattlesnake-Plantain				S2	Forms large colonies in woodlands and thickets; Only recently discovered in Nova Scotia (1963) and so far known from Queens, Kings, Annapolis, Hants and Halifax counties.
<i>Arabis drummondii</i>	Drummond's Rockcress				S2	Cliff or talus slope.
<i>Juncus dudleyi</i>	Dudley's Rush				S3	A habitat generalist; known from Annapolis, Hants and Lunenburg counties.

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McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Vaccinium caespitosum</i>	Dwarf Bilberry				S3	Cliff or talus slope, disturbed sites, field meadow.
<i>Vaccinium caespitosum var. caespitosum</i>	Dwarf Bilberry				S3	Cliff or talus slope, disturbed sites, field meadow.
<i>Pilea pumila var. pumila</i>	Dwarf Clearweed				S1	Unusually grows in cool shady habitats as found on forested slopes of maple-beech, in the centre of the Province. So far, only known from West Branch, Pictou Co.; Little River, near Brookfield, Halifax Co.; and along the Herbert River, Hants Co. at Woodville.
<i>Baccharis halimifolia</i>	Eastern Baccharis		T	Threatened	S1	Anthropogenic (man-made or disturbed habitats), brackish or salt marshes and flats, coastal beaches (sea beaches), marshes.
<i>Lilaeopsis chinensis</i>	Eastern Lilaeopsis	SC	SC	Vulnerable	S2	Estuarine in muck, mud or on stony banks. Tuskey and Annis Rivers, Yarmouth Co.; Roseway River, Shelburne Co.; Medway River, Queens Co. and LaHave River, Lunenburg Co.; and River Philip, Cumberland Co.
<i>Thuja occidentalis</i>	Eastern White Cedar			Vulnerable	S1	Limited to wet acidic soil as on lakeshores, swamps and old pastures. Native trees are know from the north-facing old pastures of the South Mountain above the Annapolis Valley as well as on the Valley flore, Yarmouth, Digby and Cumberland counties All other localities are introduced trees.
<i>Panicum dichotomiflorum var. puritanorum</i>	Fall Panic Grass				S1?	Anthropogenic (man-made or disturbed habitats), shores of rivers or lakes.
<i>Artemisia campestris</i>	Field Wormwood				S1	Favours natural talus slopes. Collected only once at Lockhart Brook, Salmon River, Victoria Co.
<i>Artemisia campestris ssp. borealis</i>	Field Wormwood				S1	Favours natural talus slopes. Collected only once at Lockhart Brook, Salmon River, Victoria Co.
<i>Artemisia campestris var. borealis</i>	Field Wormwood				S1	Favours natural talus slopes. Collected only once at Lockhart Brook, Salmon River, Victoria Co.
<i>Stellaria crassifolia</i>	Fleshy Stitchwort				S1	Frequents pond edges and wet seepy slopes.
<i>Stellaria crassifolia var. crassifolia</i>	Fleshy Stitchwort				S1	Frequents pond edges and wet seepy slopes.
<i>Trichostema dichotomum</i>	Forked Bluecurls				S1	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields, sandplains and barrens.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Carex alopecoidea</i>	Foxtail Sedge				S1	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, marshes.
<i>Dryopteris fragrans</i>	Fragrant Wood Fern				S2	Look for it in dryish cliff overhangs and in crevices along streams of waterfalls. Not common. Scattered along the Cobequids between Earltown and Parrsborough and streamside in northern Cape Breton.
<i>Symphotrichum ciliolatum</i>	Fringed Blue Aster				S2	Open fields, lawns and edges. Scattered from Hants and Colchester counties to Cumberland, Pictou and Inverness counties.
<i>Ranunculus gmelinii</i> +	Gmelin's Water Buttercup				S3	Riverine (in rivers or streams), swamps.
<i>Zizia aurea</i>	Golden Alexanders				S1	Meadows, shores, thickets and even wooded swamps. Occasionally reported: Pomquet and South River, Antigonish Co., Upper Musqhodoboit, Halifax Co.
<i>Lactuca hirsuta</i>	Hairy Lettuce				S2	Grows in dryish soils in open forest and cut-overs scattered through western NS
<i>Lactuca hirsuta var. sanguinea</i>	Hairy Lettuce				S2	Grows in dryish soils in open forest and cut-overs scattered through western NS
<i>Polygonum arifolium</i>	Halberd-leaved Tearthumb				S2	Rich swamps subject to long duration of inundation; swamps range from alder thickets to black ash stands. Collected from Kings, Annapolis, Colchester, Cumberland and Pictou counties.
<i>Carex haydenii</i>	Hayden's Sedge				S1	Marshes, meadows and fields, shores of rivers or lakes.
<i>Tiarella cordifolia</i>	Heart-leaved Foamflower				S2	Alluvial soils, deciduous forests even stony roadsides. Centered about Colchester and Pictou counties, with a small population near Huntington Point, Kings Co.
<i>Tiarella cordifolia var. cordifolia</i>	Heart-leaved Foamflower				S2	Alluvial soils, deciduous forests even stony roadsides. Centered about Colchester and Pictou counties, with a small population near Huntington Point, Kings Co.
<i>Platanthera hookeri</i>	Hooker's Orchid				S3	Grows in open dry forests of mixed conifers. Scattered in most of the province, local in the southwestern counties. So far absent from the eastern shore.
<i>Cyperus lupulinus</i>	Hop Flatsedge				S1	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
<i>Cyperus lupulinus ssp. macilentus</i>	Hop Flatsedge				S1	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
<i>Carex lapponica</i>	Lapland Sedge				S1?	Sphagnum bogs, wet, nutrient-poor areas, mostly lowlands

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Carex adusta</i>	Lesser Brown Sedge				S2S3	Found in dry, open forest or recent clearings on acidic, gravelly soils. Most frequent after fire - Scattered and not common, from Kejimikujik National Park to Cumberland Co.; northern Cape Breton. Recently collected from Williams Lake area of Halifax Co.
<i>Pyrola minor</i>	Lesser Pyrola				S3	Characteristic of mature coniferous forests. Scattered north from Digby neck to Kentville and east to Cape Breton.
<i>Goodyera repens</i>	Lesser Rattlesnake-plantain				S3	Look for it beneath conifers, with few other plants. Locally distributed but abundant where found. Atlantic counties of Shelburne and Queens, to Guysborough. Local about the head of the Bay of Fundy and in northern Cape Breton.
<i>Carex granularis</i>	Limestone Meadow Sedge				S1	Anthropogenic (man-made or disturbed habitats), meadows and fields, shores of rivers or lakes, wetland margins (edges of wetlands).
<i>Rhinanthus minor ssp. groenlandicus</i>	Little Yellow Rattle				S1	Alpine or subalpine zones, anthropogenic (man-made or disturbed habitats), meadows and fields, mountain summits and plateaus, talus and rocky slopes
<i>Liparis loeselii</i>	Loesel's Twayblade				S3S4	Anthropogenic (man-made or disturbed habitats), fens (calcium-rich wetlands), lacustrine (in lakes or ponds), meadows and fields, shores of rivers or lakes.
<i>Asplenium trichomanes</i>	Maidenhair Spleenwort				S3	Frequents damp shady cliffs and talus, especially on acidic rocks such as granite, basalt and sandstone. Rare and local in Cape Breton. Locally abundant at Big Intervale, Margaree. Few mainland NS locations: scattered in the Cobequids and in Annapolis and Kings counties.
<i>Pedicularis palustris</i>	Marsh Lousewort				S1	Wet substrates as in marshes or meadows. Rare and local: Bay St. Lawrence, Baleine and Sydney area. Reported from Guysborough Co.
<i>Hordeum brachyantherum</i>	Meadow Barley				S1	Anthropogenic (man-made or disturbed habitats).
<i>Hordeum brachyantherum ssp. brachyantherum</i>	Meadow Barley				S1	Anthropogenic (man-made or disturbed habitats).
<i>Salix petiolaris</i>	Meadow Willow				S3	Wet soils as in meadows. Known from the western part of the province, from Digby to Lunenburg Co., east to Cumberland and Colchester counties.
<i>Goodyera oblongifolia</i>	Menzies' Rattlesnake-plantain				S3	Found in deciduous upland forests and ravines. So far known only from northern Cape Breton, where it is scattered, in Victoria and Inverness Counties.
<i>Primula mistassinica</i>	Mistassini Primrose				S2	Springs, dripping cliffs and streambanks, crevices. Locally prominent along a sandstone bank of the Salmon River and at Upper Stewiacke, Colchester Co.; scattered in northern Cape Breton.

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Priority Species List**



Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Amelanchier nantucketensis</i>	Nantucket Serviceberry				S1	Found in disturbed habitats such as roadsides, fields, sandplains, riparian meadows and barrens. Its NS distribution is limited to Cumberland, Shelburne and Halifax counties. No collection for the Halifax Co. locality.
<i>Trisetum spicatum</i>	Narrow False Oats				S3S4	Grows in rocky soils on outcrops, cliffs, streamsides. Found on Cape Blomidon Cape d'Or and scattered from Halifax and Hants counties to northern Cape Breton.
<i>Festuca subverticillata</i>	Nodding Fescue				S1	A woodland species of fertile deciduous forested slopes and alluvial soils. Local about Cape Blomidon, Kings Co.; Five Mile River, Hants Co., Economy River, Colchester Co. and southern Cumberland Co.
<i>Betula borealis</i>	Northern Birch				S2	Bogs and wooded swamps.
<i>Lycopodium complanatum</i>	Northern Clubmoss				S3S4	Open woodlands, thickets, heathland and rocky slopes;
<i>Huperzia selago var. selago</i>	Northern Firmoss				S1?	Grows in rock crevices along streams and moist ravines. Limited to the northern half of the province, as far west as Brier Island, Digby Co. Many localities clustered about the Bay of Fundy, inland to the south-facing slopes of the Cobequids and along the slopes of northern Cape Breton.
<i>Thalictrum venulosum</i>	Northern Meadow-rue				S1	Shores of rivers or lakes.
<i>Spiraea septentrionalis</i>	Northern Meadowsweet				S1?	open, moist areas
<i>Agalinis neoscotica</i>	Nova Scotia Agalinis				S3	Grows in acidic soils in damp locations where there is little competition from shrubs, lakeshores and woods roads Found from Annapolis County around the coast to Queens Co.
<i>Potamogeton oblongus</i>	Oblong-leaved Pondweed				S1	Ponds and ephemeral pools. Known from Sable Island where it is abundant Southwestern collection.
<i>Torreyochloa pallida var. pallida</i>	Pale False Manna Grass				S1	Lacustrine (in lakes or ponds), riverine (in rivers or streams), swamps.
<i>Platanthera flava var. herbiola</i>	Pale Green Orchid				S2	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forest edges, forests, fresh tidal marshes or flats, grassland, meadows and fields, riverine (in rivers or streams), shrublands or thickets, swamps, wetland margins (edges of wetlands), woodlands.
<i>Impatiens pallida</i>	Pale Jewelweed				S2	Alluvial soils as along intervalles and in thickets. Uncommon from Kings Co., Isle Haute, to northern Cape Breton and more frequent eastward.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Hieracium paniculatum</i>	Panicled Hawkweed				S3	Mixed forest on dryish soils, especially oak. Occasional from Yarmouth east to Kings and Halifax counties. Common about Kentville and at Keji.
<i>Rumex persicarioides</i>	Peach-leaved Dock				S2?	Anthropogenic (man-made or disturbed habitats), brackish or salt marshes and flats, coastal beaches (sea beaches), meadows and fields.
<i>Ranunculus pensylvanicus</i>	Pennsylvania Buttercup				S1	Anthropogenic (man-made or disturbed habitats), marshes, shores of rivers or lakes, swamps.
<i>Carex pensylvanica</i>	Pennsylvania Sedge				S1?	Grows in dry, rocky soils as in dry open woodlands. Scattered from Annapolis and Lunenburg counties to Northern Cape Breton.
<i>Polygonum pensylvanicum</i>	Pennsylvania Smartweed				S3	Frequently seen in roadside ditches, edges of cultivated fields and along dyked marshes. Generally northern, from Annapolis and Queens to Cape Breton counties.
<i>Empetrum eamesii</i> ssp. <i>atropurpureum</i>	Pink Crowberry				S2S3	barrens, beach or coastal shore, bog, exposed rock or sand, headland
<i>Empetrum eamesii</i> ssp. <i>eamesii</i>	Pink Crowberry				S2S3	barrens, beach or coastal shore, bog, exposed rock or sand, headland
<i>Empetrum eamesii</i>	Pink Crowberry				S3	barrens, beach or coastal shore, bog, exposed rock or sand, headland
<i>Pyrola asarifolia</i>	Pink Pyrola				S3	Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>).
<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	Pink Pyrola				S3	Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>). Found in moist and riparian forests and in swamps dominated by northern white-cedar (<i>Thuja occidentalis</i>).

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Carex plantaginea</i>	Plantain-Leaved Sedge				S1	Forests.
<i>Rosa acicularis</i>	Prickly Rose				S1	Cliffs, balds, or ledges, ridges or ledges. Inhabits areas of calcareous rock or rich sediments.
<i>Rosa acicularis ssp. sayi</i>	Prickly Rose				S1	Cliffs, balds, or ledges, ridges or ledges. Inhabits areas of calcareous rock or rich sediments.
<i>Angelica atropurpurea</i>	Purple-stemmed Angelica				S3	Grows in swamps, meadows, in ditches and along streams. Ditches at Quinan, Yarmouth Co. Very abundant in northern Cape Breton and known from Mahoney's Beach area, Antigonish Co.
<i>Epilobium coloratum</i>	Purple-veined Willowherb				S2?	Low grounds and seepy soils. Scattered from Digby to Guysborough counties.
<i>Fraxinus pennsylvanica</i>	Red Ash				S1	Floodplain (river or stream floodplains), forests, shores of rivers or lakes, swamps.
<i>Blysmus rufus</i>	Red Bulrush				S1	salt marsh
<i>Lachnanthes caroliniana</i>	Redroot	SC	SC	Vulnerable	S2	Shores of rivers or lakes.
<i>Draba glabella var. glabella</i>	Rock Whitlow-Grass				S1	Limited to rock ledges and crevices, talus slopes. Rare; known from Cape Blomidon and several Cumberland County sites across the Bay. Also in Cape Breton.
<i>Hepatica nobilis</i>	Round-lobed Hepatica				S1S2	Dry, mixed deciduous forests. Local and rare at Bridgewater, New Minas, Windsor, Pictou, Stewiacke, Antigonish and at a couple of North Mountain sites. Recently discovered along the Cogmagun River, Hants Co. Long known from along the St. Andrews River. Populations at Wolfville and St. Croix appear to be extirpated.
<i>Plantago rugelii</i>	Rugel's Plantain				S2S3	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
<i>Plantago rugelii var. rugelii</i>	Rugel's Plantain				S2S3	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
<i>Amelanchier stolonifera</i>	Running Serviceberry				S3?	Frequents sandy, stony areas as on barrens and in boggy depressions. Scattered in southwestern counties. Common across Annapolis and Kings counties and possibly northern Cape Breton.
<i>Salix pellita</i>	Satiny Willow				S2S3	Found in riparian habitats. Scattered from Annapolis and Cumberland counties to Colchester Inverness and Victoria counties.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Carex atratifomis</i>	Scabrous Black Sedge				S2	Moist cliffs, streamsides, and associated rock crevices. Common in northern Cape Breton. Collected from McAlese Brook, Cumberland Co.
<i>Samolus valerandi ssp. parviflorus</i>	Seaside Brookweed				S3	Stream beds, freshwater, tidal marshes – highly flooded stations in muck to gravel substrate. Not common, from the Tusket River, Yarmouth Co. to Bridgewater; Northumberland coastal plain.
<i>Alopecurus aequalis</i>	Short-awned Foxtail				S3	river or stream. Rare and Northern: Kings and Cumberland Counties to central Victoria county.
<i>Scirpus pedicellatus</i>	Stalked Bulrush				S2?	Low land marshes, swales and swamps. River Inhabitats, Inverness Co.
<i>Veronica serpyllifolia ssp. humifusa</i>	Thyme-Leaved Speedwell				S2S3	Moist soils, fields and roadsides. Common Throughout
<i>Lysimachia quadrifolia</i>	Whorled Yellow Loosestrife				S1	Disturbed habitat, grassland, woodlands
<i>Dichanthelium acuminatum var. lindheimeri</i>	Woolly Panic Grass				S1?	Open sites and sandy soils. Widespread and common.
OTHER VERTEBRATES						
<i>Salmo salar</i> pop. 1	Atlantic Salmon - Inner Bay of Fundy pop.	E	E		S2	Found in freshwater rivers and streams that are clear, cool, and well oxygenated, with gravel, cobble, or boulder bottoms.
<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon		T		S1?	Primarily marine, but close to shore, when not breeding; migrates to rivers for spawning, moves downstream afterward (may stay upstream in winter in some northern areas).
<i>Lynx canadensis</i>	Canadian Lynx	NAR	NAR	Endangered	S1	Prefers old growth boreal forests with dense undercover, but the lynx will live in other habitats where undercover and prey numbers are adequate. They are often found in regenerating forests after a fire - where the snowshoe hare population has increased. When prey is scarce in the forested areas, the lynx will venture on to the tundra for food.
<i>Perimyotis subflavus</i>	Eastern Pipistrelle	E	E	Endangered	S1	Prefers partly open country with large trees and woodland edges. Avoids deep woods and open fields. Probably roosts in the summer in tree foliage and occasionally in buildings; may use cave as night roost between foraging forays. Usually hibernates in caves and mines with high humidity. Generally, maternity colonies utilize manmade structures or tree cavities; often in open sites that would not be tolerated by most other bats
<i>Lasiurus borealis</i>	Eastern Red Bat				S1	The red bat lives in forests, forest edges and hedgerows. It roosts among foliage, usually in deciduous trees, but it will sometimes roost in coniferous

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
						trees.
<i>Pekania pennanti</i>	Fisher				S2	Fishers inhabit upland and lowland forests, including coniferous, mixed, and deciduous forests. They occur primarily in dense coniferous or mixed forests, including early successional forest with dense overhead cover. Fishers commonly use hardwood stands in summer but prefer coniferous or mixed forests in winter. They generally avoid areas with little forest cover or significant human disturbance. Cape Breton Population is provincially endangered.
<i>Hemidactylium scutatum</i>	Four-toed Salamander		NAR		S3	The habitat of the four-toed salamander is moist mossy woods, particularly in peat moss. Peat bogs or mossy areas bordering streams are good breeding sites. Adults lay eggs deep between the moss plants. The little larvae live in the water for a short while, then move to live on land. The four-toed salamander is the least common salamander species in Nova Scotia, and most reports are from the south central part of the province.
<i>Lasiurus cinereus</i>	Hoary Bat				S1	Hoary bats are thought to be rare in Nova Scotia. Insectivorous, migratory. Poorly known. Authorities disagree as to the bat's preference for coniferous versus broadleaf trees. Hoary bats are thought to prefer trees at the edge of clearings, but have been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks.
<i>Myotis lucifugus</i>	Little Brown Myotis	E	E	Endangered	S1	For <i>Myotis lucifugus</i> , the maternity colonies often exist in warm sites that facilitate pup growth rates, such as attics of buildings and under bridges, in rock crevices, or in cavities of canopy trees in forests. Males roost during daytime in a wide variety of structures, including buildings and bridges (mainly <i>M. lucifugus</i>), rock crevices, behind flaking bark, and within tree cavities, often at many different sites during the summer. <i>Myotis</i> species generally roost in tall, large-diameter snags that are in the early to middle stages of decay and located in open areas within mature-overmature forest. <i>Myotis lucifugus</i> congregates in caves and abandoned mines used for hibernation through the winter. About 16 hibernation sites are known in Nova Scotia.
<i>Alces americanus</i>	Moose			Endangered	S1	Moose are herbivores who live in boreal and mixed-wood forests. They are often found where there is an abundance of food (twigs, stems, and foliage of young deciduous trees and shrubs). In spring, islands and peninsulas are often used by cows when giving birth. In summer, access to wetlands (and aquatic vegetation) is important.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	E	E	Endangered	S1	The Northern Long-eared Bat (<i>Myotis septentrionalis</i>) is found in many regions of Canada. Although there are numerous records of its presence in eastern Canada and the United States, it has only been recorded sporadically in the west. This particular type of bat has two habitats: a winter hibernation habitat as well as a summer roosting and foraging habitat. The Northern Long-eared Bat hibernates in caves or abandoned mines during the cold winter months. During the summer months the Bats commonly use crevices behind peeling bark or cavities in partially-decayed trees as summer day roosts. Within thick forests, summer activity may be focused along watercourses and small ponds
<i>Microtus chrotorrhinus</i>	Rock Vole				S2	Optimal habitat for the rock vole is ferns/mossy debris near flowing water in coniferous forests. It also occupies deciduous forest/spruce clearcuts (mainly recent cuts), forest ecotones, grassy balds near forest, and sterile-looking rocky road fills. Occupies shallow burrows and runways. Nests probably are placed under logs or in similar protected sites. They are made of moss with a lining of grass and have multiple entrance tunnels. Breeding season is from March to mid-October.
<i>Lasionycteris noctivagans</i>	Silver-haired Bat				S1	Scarce in eastern Canada. During the summer months, silver-haired bats are found in forested habitats, particularly coniferous woodlands, adjacent to aquatic habitats like ponds, lakes and streams. Both sexes fly south between the middle of August and early October.
<i>Synaptomys cooperi</i>	Southern Bog Lemming				S3S4	The southern bog lemming is rarely found in bogs in Nova Scotia; generally rare and very local in forest habitats, especially rocky ones, except on periphery of Cape Breton Highlands where it is fairly common on forested talus slopes.
<i>Glaucomys volans</i>	Southern Flying Squirrel		NAR		S2S3	The southern flying squirrel are found in hardwood forests, they prefer older forest stands.
BIRDS						
<i>Picoides dorsalis</i>	American Three-toed Woodpecker				S1S2	The American three-toed woodpecker is the most northerly woodpecker species; it breeds in boreal coniferous forests nearly to the arctic tree-line. Breeding of this species in Nova Scotia is limited to Cape Breton Island.
<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	The Baltimore oriole is an adaptable species (found breeding in diverse habitats), but typically favors woodland edge (especially riparian) and open areas with scattered trees; strong preference for deciduous over coniferous trees. During spring and fall migration, it is found in variety of habitats, but generally favors open woodlands, woodland margins, hedgerows, and urban parks.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Riparia riparia</i>	Bank Swallow		T		S3B	The bank swallow breeds wherever suitable nesting sites in banks and cliffs are available. Nesting colonies are usually found near open areas, and often close to water. Bank swallows will also nest in artificial banks, such as road cuttings and gravel pits. Found in all regions of the Maritimes, but scarce in many inland forested areas.
<i>Hirundo rustica</i>	Barn Swallow		T	Endangered	S2S3B	In the Maritimes the barn swallow breeds everywhere there are buildings and other structures that provide sheltered, dry nest-sites, even nesting on isolated cabins in deep woodland and on fishing shacks on offshore islands. A recent innovation, in remote logging areas with no alternatives, has been their basing nests on bolt-heads low in the sides of large corrugated metal culverts. However, nests in natural situations, in caves or under overhanging cliffs, usually close to water, are very rare.
<i>Dendroica castanea</i>	Bay-breasted Warbler				S3S4B	The Bay-breasted is one of the less widespread warblers, breeding in a narrow band across the closed boreal forests from northeast British Columbia to western Newfoundland, and south just into the U.S.A. Although during migrations and while foraging it is often seen in mixed stands, this bird nests only in conifers, reaching highest densities in balsam fir forest infested with spruce budworm.
<i>Catharus bicknelli</i>	Bicknell's Thrush	T	T	Endangered	S1S2B	The Bicknell's Thrush is a habitat specialist, generally associated with undisturbed dense habitat or disturbed areas undergoing vigorous succession (mid-successional) of Balsam Fir-dominated habitat and high stem densities (>10,000–15,000 stems/ha). In Nova Scotia, the Bicknell's thrush occupies coastal maritime spruce-fir forests; breeding in the Northern Highlands of Cape Breton Island as well as nearby St. Paul and Scaterie Islands. During spring and fall migration, it is reported as being a habitat generalist.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Picoides arcticus</i>	Black-backed Woodpecker				S3S4	In the Maritimes, the black-backed woodpecker is widely but thinly distributed in conifer forests throughout, becoming more common farther north. The black-backed woodpecker is very local in southwest Nova Scotia. These birds forage on trees damaged by forest insects, especially bark beetles, and their characteristic flaking-off of bark fragments in search of food can be an aid in detecting them. Nests here are often in quite open situations, such as cut-over areas, open jack pine stands, and the edges of woodland gardens.
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo				S3?B	In the northern parts of its range, the black-billed cuckoo's numbers vary greatly from year to year in response to outbreaks of both the forest and orchard species of tent caterpillars, on which it feeds. It is associated with open woodland and forest edge and nests in small trees and tall shrubs.
<i>Dendroica striata</i>	Blackpoll Warbler				S3S4B	In the Maritimes, the blackpoll warbler breeds mainly in cool, damp spruce forests. During spring and fall migration, it uses a variety of habitats, although often partial to spruces, even when they are only a small component of the habitat.
<i>Dolichonyx oryzivorus</i>	Bobolink		T	Vulnerable	S3S4B	The distribution of bobolinks in the Maritimes, expectably in a largely forested region, is patchy; they were not found in large areas of north and central New Brunswick, nor in parts of southwest and eastern mainland Nova Scotia, nor in the Cape Breton Highlands. Preferred habitat is lush meadows and open habitats.
<i>Poecile hudsonica</i>	Boreal Chickadee				S3	The Boreal chickadee prefers conifer, and especially spruce, forests all across the northern regions of Canada. Boreal Chickadees are found in all parts of the Maritimes. Most are residents, but some wander after breeding season.
<i>Aegolius funereus</i>	Boreal Owl		NAR		S1B	The Boreal owl breeds across the boreal forests of North America and Eurasia, and nests in woodpecker holes and other tree cavities. In Nova Scotia, the only breeding records are from Cape Breton island.
<i>Toxostoma rufum</i>	Brown Thrasher				S1?B	The brown thrasher frequents shrubbery, thickets, and wood-edges rather than forest. No confirmed reports of breeding exist for Nova Scotia.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Molothrus ater</i>	Brown-headed Cowbird				S2S3B	The brown-headed cowbird mainly breeds in settled areas, this species is widespread in the Maritimes, but is virtually absent in the forested regions of northern and central New Brunswick and eastern Nova Scotia. Farming areas in southern New Brunswick, central Nova Scotia, and central Prince Edward Island had more continuous Cowbird distribution than elsewhere. Species most frequently parasitized in the Maritimes, relative to the numbers of their nests found, were Veery, Solitary and Red-eyed Vireos; Chestnut-sided, Magnolia, Yellow-rumped, and Blackand- White Warblers; and American Redstart.
<i>Wilsonia canadensis</i>	Canada Warbler	T	T	Endangered	S3B	In Nova Scotia, the Canada warbler has only been found sparsely on Cape Breton Island and in the extreme southwest of the province. They are less predictable from habitat than most warblers, they are usually found in dense understory vegetation of mature to mid-aged mixed forest, most closely associated with broad-leafed trees and shrubs, but with conifers usually present too.
<i>Dendroica tigrina</i>	Cape May Warbler				S3?B	In summer, the Cape May warbler is found in northern conifer forests. One of several warbler species that attain high densities during spruce budwork outbreaks but is more usual in mature spruces than in balsam fir stands. Activity is mostly at the tops of tall spruces. Rarely observed in the southwest of Nova Scotia due to unsuitable habitat.
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S3B	Cliff swallows are sparse in Nova Scotia, especially farther east and towards the Atlantic coast, where the humid climate may make the mud nests less stable than in drier areas. Historically they inhabited open canyons, foothills, escarpments, and river valleys that offered a vertical cliff face with a horizontal overhang for nest attachment. With the present use of artificial nesting structures such as bridges and buildings, the species is now found in a wide variety of habitats: grasslands, towns, broken forest, riparian edge. Avoids heavy forest, desert, and alpine areas. Most colony sites are located near open fields or pastures where the birds forage, and a water source is often nearby. Proximity to mud source (for nest-building) is often cited as a breeding-habitat requirement, although some colonies are located several kilometers from the nearest mud supply.
<i>Chordeiles minor</i>	Common Nighthawk	T	T	Threatened	S3B	Common nighthawks nest on sparsely vegetated or bare ground in open "wastelands" such as pine barrens, forest cut-overs, or burns, and secondarily on flat roofs of buildings.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	SRank	Habitat Requirements
<i>Accipiter cooperii</i>	Cooper's Hawk		NAR		S1?B,S NAN	The Cooper's hawk is a bird of broad-leafed and mixed woodlands, often hunting along wood-edges in settled areas.
<i>Sialia sialis</i>	Eastern Bluebird		NAR		S3B	The Eastern bluebird nests in woodpecker holes, as well as nest-boxes. They forage in open areas of low vegetation with scattered trees for nesting.
<i>Sayornis phoebe</i>	Eastern Phoebe				S3S4B	The eastern phoebe is generally thought to be a bird of woodland and edge habitats in the vicinity of water, but such features often coexist with nest sites (bridges, culverts, buildings, rock outcrops). Nevertheless, in the latter sites, phoebes sometimes nest in woodlands several hundred meters from water and openings.
<i>Contopus virens</i>	Eastern Wood-Pewee		SC	Vulnerable	S3S4B	The eastern wood-peewee is a bird of openings and edges more than of closed forest, in the Maritimes, and they readily use well-spaced shade trees in rural and urban settlements. Associated with broad-leafed trees.
<i>Passerella iliaca</i>	Fox Sparrow				S3S4B	The fox sparrow is often associated with dense damp shrubbery of alders and other small broad-leafed trees in its inland range. On Nova Scotia's outer coasts, they will also frequent stunted spruces and shrubby bogs.
<i>Dumetella carolinensis</i>	Gray Catbird				S3B	The gray catbird inhabits shrubbery in both upland and river-edge situations, mostly in areas where tree cover is of broad-leafed species. The Maritimes are at the northeast edge of its range, and catbirds are nearly absent in upland areas of northern New Brunswick, in Prince Edward Island and Cape Breton Island, as well as in regions with extensive conifer forest cover.
<i>Perisoreus canadensis</i>	Gray Jay				S3	The gray jay breeds in boreal regions and occurs year-round in the conifer forests. These birds are found all over the Maritimes except where extensive conifer forests are lacking. They seldom leave the spruce and fir forests where they nest.

APPENDIX D. VEGETATION LIST

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Latin Name	Common Name	Srank
<i>Abies balsamea</i>	Balsam Fir	S5
<i>Acer negundo</i>	Manitoba Maple	SNA
<i>Acer pensylvanicum</i>	Striped Maple	S5
<i>Acer rubrum</i>	Red Maple	S5
<i>Acer saccharum</i>	Sugar Maple	S4S5
<i>Acer spicatum</i>	Mountain Maple	S5
<i>Actaea rubra</i>	Red Baneberry	S5
<i>Agrostis scabra</i>	Rough Bent Grass	S5
<i>Agrostis stolonifera</i>	Creeping Bent Grass	S5
<i>Alnus incana</i>	Speckled Alder	S5
<i>Amelanchier bartramiana</i>	Bartram's Shadbush	S5
<i>Anaphalis margaritacea</i>	Pearly Everlasting	S5
<i>Anthoxanthum odoratum</i>	Large Sweet Vernal Grass	SNA
<i>Aquilegia vulgaris</i>	European Columbine	SNA
<i>Aralia nudicaulis</i>	Wild Sasparilla	S5
<i>Athyrium filix-femina</i>	Northern Lady Fern	S5
<i>Betula alleghaniensis</i>	Yellow Birch	S5
<i>Betula papyrifera</i>	Paper Birch	S5
<i>Bidens cernua</i>	Nodding Beggarticks	S5
<i>Bromus inermis</i>	Smooth Brome	SNA
<i>Callitriche palustris</i>	Marsh Water-starwort	S5
<i>Cardamine diphylla</i>	Two-leaved Toothwort	S4
<i>Carex atlantica</i> spp. <i>atlantica</i>	Atlantic Sedge	S4
<i>Carex brunnescens</i>	Brown Sedge	S5
<i>Carex communis</i>	Fibrous-root Sedge	S5
<i>Carex crinita</i>	Fringed Sedge	S5
<i>Carex deflexa</i>	Northern Sedge	S4
<i>Carex deweyana</i>	Dewey's Sedge	S5
<i>Carex echinata</i>	Star Sedge	S5
<i>Carex flava</i>	Yellow Sedge	S5
<i>Carex gracillima</i>	Graceful Sedge	S4S5
<i>Carex gynandra</i>	Nodding Sedge	S5
<i>Carex lasiocarpa</i>	Slender Sedge	S5
<i>Carex leptalea</i>	Bristly Stalk Sedge	S5
<i>Carex lupulina</i>	Hop Sedge	S3*
<i>Carex lurida</i>	Sallow Sedge	S5
<i>Carex novae-angliae</i>	New England Sedge	S5
<i>Carex pallescens</i>	Pale Sedge	S5
<i>Carex pedunculata</i>	Long-stalked Sedge	S4
<i>Carex radiata</i>	Eastern Star Sedge	S4
<i>Carex scabrata</i>	Rough Sedge	S5

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Latin Name	Common Name	Srank
<i>Carex scoparia</i>	Broom Sedge	S5
<i>Carex stipata</i>	Awl-fruited Sedge	S5
<i>Centaurea nigra</i>	Black Knapweed	SNA
<i>Chelone glabra</i>	White Turtlehead	S5
<i>Chimaphila umbellata</i>	Common Pipsissewa	S4
<i>Chrysosplenium americanum</i>	American Golden Saxifrage	S5
<i>Circaea alpina</i>	Small Enchanter's Nightshade	S5
<i>Coptis trifolia</i>	Goldthread	S5
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	S5
<i>Cornus sericea</i>	Red Osier Dogwood	S5
<i>Cornus canadensis</i>	Bunchberry	S5
<i>Corylus cornuta</i>	Beaked Hazel	S5
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5
<i>Danthonia spicata</i>	Poverty Oat Grass	S5
<i>Dennstaedtia punctilobula</i>	Eastern Hay-Scented Fern	S5
<i>Deparia acrostichoides</i>	Silvery Glade Fern	S4
<i>Doellingeria umbellata</i>	Hairy Flat-top White Aster	S5
<i>Drosera intermedia</i>	Spoon-leaved Sundew	S5
<i>Dryopteris campyloptera</i>	Mountain Wood Fern	S5
<i>Dryopteris cristata</i>	Crested Wood Fern	S5
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5
<i>Dryopteris marginalis</i>	Marginal Wood Fern	S5
<i>Elymus repens</i>	Quack Grass	SNA
<i>Epifagus virginiana</i>	Beechdrops	S4
<i>Epilobium ciliatum</i>	Northern Willowherb	S5
<i>Epilobium leptophyllum</i>	Bog Willowherb	S5
<i>Epipactis helleborine</i>	Helleborine	SNA
<i>Equisetum arvense</i>	Field Horsetail	S5
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5
<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed	S5
<i>Eupatorium perfoliatum</i>	Boneset	S5
<i>Eurybia macrophylla</i>	Large-leaved Aster	S5
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	S5
<i>Fagus grandifolia</i>	American Beech	S5
<i>Festuca filiformis</i>	Hair Fescue	SNA
<i>Fragaria virginiana</i>	Wild Strawberry	S5
<i>Frangula alnus</i>	Glossy Buckthorn	SNA
<i>Fraxinus americana</i>	White Ash	S5
<i>Galeopsis tetrahit</i>	Common Hemp-nettle	SNA
<i>Galium asprellum</i>	Rough Bedstraw	S5
<i>Galium mollugo</i>	Smooth Bedstraw	SNA
<i>Galium palustre</i>	Common Marsh Bedstraw	S5
<i>Galium tinctorium</i>	Dyer's Bedstraw	S5

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Latin Name	Common Name	Srank
<i>Galium trifidum</i>	Three-petaled Bedstraw	S5
<i>Galium triflorum</i>	Three-flowered Bedstraw	S5
<i>Galium verum</i>	Yellow Bedstraw	SNA
<i>Gaultheria procumbens</i>	Eastern Teaberry	S5
<i>Geranium robertianum</i>	Herb Robert	S4
<i>Geum aleppicum</i>	Yellow Avens	S5
<i>Geum rivale</i>	Water Avens	S5
<i>Glyceria canadensis</i>	Canada Manna Grass	S5
<i>Glyceria striata</i>	Fowl Manna Grass	S5
<i>Glyceria grandis</i>	Common Tall Manna Grass	S4S5
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	S5
<i>Hesperis matronalis</i>	Dame's Rocket	SNA
<i>Hieracium aurantiacum</i>	Orange Hawkweed	SNA
<i>Hieracium lachenalii</i>	Common Hawkweed	SNA
<i>Hieracium pilosella</i>	Mouse-eared Hawkweed	SNA
<i>Hieracium piloselloides</i>	Tall hawkweed	SNA
<i>Hydrocotyle americana</i>	American Marsh Pennywort	S5
<i>Impatiens capensis</i>	Spotted Jewelweed	S5
<i>Juncus effusus</i>	Soft Rush	S5
<i>Lactuca canadensis</i>	Canada Lettuce	S5
<i>Lemna turionifera</i>	Turion Duckweed	S5
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA
<i>Linnaea borealis</i>	Twinflower	S5
<i>Lolium arundinaceum</i>	Tall Fescue	SNA
<i>Lonicera canadensis</i>	Canada Fly Honeysuckle	S5
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	SNA
<i>Ludwigia palustris</i>	Marsh Seedbox	S5
<i>Luzula multiflora</i>	Common Woodrush	S5
<i>Lycopodium dendroideum</i>	Round-branched Tree-clubmoss	S5
<i>Lycopus americanus</i>	American Water Horehound	S5
<i>Lycopus uniflorus</i>	Northern Water Horehound	S5
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5
<i>Malus pumila</i>	Common Apple	SNA
<i>Matteuccia struthiopteris</i>	Ostrich Fern	S5
<i>Medicago lupulina</i>	Black Medick	SNA
<i>Melampyrum lineare</i>	American Cow Wheat	S5
<i>Melilotus albus</i>	White Sweet-clover	SNA
<i>Melilotus officinalis</i>	Yellow Sweet-clover	SNA
<i>Mentha arvensis</i>	Wild Mint	S5
<i>Monotropa hypopithys</i>	Pinesap	S4
<i>Monotropa uniflora</i>	Indian Pipe	S5
<i>Morella pensylvanica</i>	Northern Bayberry	S5
<i>Myosotis laxa</i>	Small Forget-me-not	S5

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Latin Name	Common Name	Srank
<i>Myosotis scorpioides</i>	Water Forget-me-not	SNA
<i>Oclemena acuminata</i>	Whorled Wood Aster	S5
<i>Oenothera perennis</i>	Perennial Evening Primrose	S5
<i>Onoclea sensibilis</i>	Sensitive Fern	S5
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5
<i>Osmunda claytoniana</i>	Interrupted Fern	S5
<i>Ostrya virginiana</i>	Ironwood	S5
<i>Oxalis stricta</i>	European Wood Sorrel	S5
<i>Phalaris arundinacea</i>	Reed Canary Grass	S5
<i>Phegopteris connectilis</i>	Northern Beech Fern	S5
<i>Phleum pratense</i>	Common Timothy	SNA
<i>Photinia melanocarpa</i>	Black Chokeberry	S5
<i>Picea glauca</i>	White Spruce	S5
<i>Picea mariana</i>	Black Spruce	S5
<i>Plantago major</i>	Common Plantain	SNA
<i>Platanthera psycodes</i>	Small Purple Fringed Orchid	S4
<i>Poa compressa</i>	Canada Blue Grass	SNA
<i>Poa palustris</i>	Fowl Blue Grass	S5
<i>Poa pratensis</i>	Kentucky Blue Grass	S5
<i>Polygonum cilinode</i>	Fringed Black Bindweed	S5
<i>Polygonum sagittatum</i>	Arrow-leaved Smartweed	S5
<i>Polystichum acrostichoides</i>	Christmas Fern	S5
<i>Populus grandidentata</i>	Large-toothed Aspen	S5
<i>Populus tremuloides</i>	Trembling Aspen	S5
<i>Potamogeton confervoides</i>	Alga Pondweed	S5
<i>Potentilla norvegica</i>	Rough Cinquefoil	S5
<i>Potentilla simplex</i>	Old Field Cinquefoil	S5
<i>Prenanthes trifoliata</i>	Three-leaved Rattlesnakeroot	S5
<i>Prunella vulgaris</i>	Common Self-heal	S5
<i>Prunus pensylvanica</i>	Pin Cherry	S5
<i>Prunus virginiana</i>	Chokecherry	S5
<i>Pteridium aquilinum</i>	Bracken Fern	S5
<i>Puccinellia distans</i>	Spreading Alkali Grass	SNA
<i>Pyrola elliptica</i>	Shinleaf	S5
<i>Quercus rubra</i>	Northern Red Oak	S5
<i>Ranunculus acris</i>	Common Buttercup	SNA
<i>Ranunculus repens</i>	Creeping Buttercup	SNA
<i>Rhinanthus minor</i>	Little Yellow Rattle	SNA
<i>Ribes glandulosum</i>	Skunk Currant	S5
<i>Ribes lacustre</i>	Bristly Black Currant	S5
<i>Rosa canina</i>	Dog Rose	SNA
<i>Rosa multiflora</i>	Multiflora Rose	SNA
<i>Rosa multifloraXvirginiana</i>	NA	NA

**Appendix D: MacLellans Mountain Quarry Expansion Project
Vegetation List**

Latin Name	Common Name	Srank
<i>Rubus allegheniensis</i>	Alleghaney Blackberry	S5
<i>Rubus idaeus</i>	Red Raspberry	S5
<i>Rubus pubescens</i>	Dwarf Red Raspberry	S5
<i>Rumex acetosella</i>	Sheep Sorrel	SNA
<i>Salix bebbiana</i>	Bebb's Willow	S5
<i>Salix discolor</i>	Pussy Willow	S5
<i>Salix eriocephala</i>	Cottony Willow	S5
<i>Salix lucida</i>	Shining Willow	S5
<i>Sambucus racemosa</i>	Red Elderberry	S5
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	S5
<i>Scirpus cyperinus</i>	Common Woolly Bulrush	S5
<i>Scutellaria galericulata</i>	Marsh Skullcap	S5
<i>Senecio jacobaea</i>	Tansy Ragwort	SNA
<i>Solanum dulcamara</i>	Bittersweet Nightshade	SNA
<i>Solidago bicolor</i>	White Goldenrod	S5
<i>Solidago canadensis</i>	Canada Goldenrod	S4S5
<i>Solidago gigantea</i>	Giant Goldenrod	S5
<i>Solidago juncea</i>	Early Goldenrod	S5
<i>Solidago nemoralis</i>	Gray-stemmed Goldenrod	S4S5
<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	S5
<i>Sorbus aucuparia</i>	European Mountain Ash	SNA
<i>Sparganium americanum</i>	American Burreed	S5
<i>Sparganium angustifolium</i>	Narrow-leaved Burreed	S5
<i>Spiraea alba</i>	White Meadowsweet	S5
<i>Spiraea tomentosa</i>	Steeplebush	S5
<i>Stellaria graminea</i>	Little Starwort	SNA
<i>Streptopus lanceolatus</i>	Rose Twisted-stalk	S5
<i>Symphyotrichum lateriflorum</i>	Calico Aster	S5
<i>Symphyotrichum novi-belgii</i>	New York Aster	S5
<i>Taraxacum officinale</i>	Common Dandelion	SNA
<i>Thelypteris noveboracensis</i>	New York Fern	S5
<i>Tragopogon dubius</i>	Yellow Goatsbeard	SNA
<i>Trientalis borealis</i>	Northern Starflower	S5
<i>Trifolium arvense</i>	Rabbit's-foot Clover	SNA
<i>Trifolium pratense</i>	Red Clover	SNA
<i>Trifolium repens</i>	White Clover	SNA
<i>Trillium cernuum</i>	Nodding Trillium	S4
<i>Tsuga canadensis</i>	Eastern Hemlock	S4S5
<i>Tussilago farfara</i>	Coltsfoot	SNA
<i>Typha angustifolia</i>	Narrow-leaved Cattail	S5
<i>Typha latifolia</i>	Broad-leaved Cattail	S5
<i>Uvularia sessilifolia</i>	Sessile-leaved Bellwort	S4S5
<i>Valeriana officinalis</i>	Common Valerian	SNA

Appendix D: MacLellans Mountain Quarry Expansion Project Vegetation List

Latin Name	Common Name	Srank
<i>Veronica officinalis</i>	Common Speedwell	S5
<i>Veronica scutellata</i>	Marsh Speedwell	S5
<i>Veronica serpyllifolia</i>	Thyme-leaved Speedwell	SNA
<i>Viburnum lantanoides</i>	Hobblebush	S4S5
<i>Vicia cracca</i>	Tufted Vetch	SNA
<i>Vicia sativa</i>	Common Vetch	SNA
<i>Viola cucullata</i>	Marsh Blue Violet	S5
<i>Viola sororia</i>	Woolly Blue Violet	S5
<i>Viola macloskeyi</i>	Small White Violet	S5

* *Species of Conservation Interest [at time of report compilation (May 24, 2018)].*

APPENDIX E. WESP RESULTS

Assessment Area (AA) Results:

Wetland ID: **WL1 - MacLellans Mountain Quarry**

Date: **August 29, 2017**

Observer: **R. Gardiner**

Latitude & Longitude (decimal degrees): **532374.00 m E 5042493.55 m N**

Scores will appear below after data are entered in worksheets OF, F, and S. See Manual for definitions and descriptions of how scores were computed.

Nova Scotia Normalization Reference Values

Wetland Functions or Other Attributes:	Function Score (Normalised)	Function Rating	Benefits Score (Normalised)	Benefits Rating	Function Score (raw)	Benefits Score (raw)										
							Min	Max	Range	F_JenksLo	F_JenksHigh	Min	Max	Range	B_JenksLo	B_JenksHigh
Water Storage & Delay (WS)	2.16	Lower	7.16	Higher	3.56	3.18	1.95	9.41	7.46	3.80	7.63	0.00	4.43	4.43	3.02	6.17
Stream Flow Support (SFS)	3.00	Moderate	8.66	Higher	2.42	5.65	0.00	8.06	8.06	1.51	4.62	0.00	6.53	6.53	2.15	6.33
Water Cooling (WC)	6.08	Higher	2.92	Moderate	4.06	1.56	0.00	6.67	6.67	1.50	4.67	0.00	5.34	5.34	1.72	5.67
Sediment Retention & Stabilisation (SR)	3.53	Lower	2.27	Moderate	4.95	1.11	2.20	10.00	7.80	3.75	7.27	0.00	4.90	4.90	1.13	3.13
Phosphorus Retention (PR)	2.20	Lower	3.04	Higher	5.12	2.36	3.75	10.00	6.25	4.84	6.67	0.00	7.78	7.78	1.07	2.59
Nitrate Removal & Retention (NR)	2.99	Moderate	5.67	Moderate	5.01	5.67	2.88	10.00	7.12	2.30	4.62	0.00	10.00	10.00	3.50	7.50
Carbon Sequestration (CS)	1.79	Lower			6.04		5.19	9.93	4.74	3.31	6.36					
Organic Nutrient Export (OE)	6.09	Moderate			5.10		2.86	6.54	3.68	4.13	7.10					
Anadromous Fish Habitat (FA)	4.40	Higher	2.37	Moderate	2.88	1.51	0.00	6.55	6.55	0.00	2.22	0.00	6.36	6.36	1.35	4.34
Resident Fish Habitat (FR)	5.19	Moderate	2.25	Moderate	2.75	1.41	0.00	5.30	5.30	1.90	5.48	0.00	6.26	6.26	1.38	4.54
Aquatic Invertebrate Habitat (INV)	4.05	Moderate	6.43	Higher	5.20	4.58	3.56	7.60	4.04	2.83	5.10	1.28	6.41	5.13	2.60	5.96
Amphibian & Turtle Habitat (AM)	6.68	Higher	4.54	Moderate	6.58	5.79	3.07	8.32	5.26	3.69	6.57	2.28	10.00	7.72	2.29	5.10
Waterbird Feeding Habitat (WBF)	6.56	Moderate	5.00	Moderate	5.04	5.00	0.00	7.68	7.68	0.00	6.66	0.00	10.00	10.00	2.50	6.67
Waterbird Nesting Habitat (WBN)	4.02	Moderate	5.00	Moderate	2.91	5.00	0.00	7.25	7.25	2.36	6.34	0.00	10.00	10.00	2.50	6.67
Songbird, Raptor, & Mammal Habitat (SBM)	8.50	Higher	5.00	Moderate	7.32	5.00	0.00	8.61	8.61	0.00	7.69	0.00	10.00	10.00	3.33	6.67
Pollinator Habitat (POL)	8.25	Higher	0.00	Lower	6.84	0.00	0.00	8.29	8.29	0.00	7.95	0.00	10.00	10.00	0.00	6.67
Native Plant Habitat (PH)	3.55	Moderate	4.72	Lower	5.32	4.72	3.91	7.89	3.97	3.19	5.72	0.00	10.00	10.00	5.36	7.71
Public Use & Recognition (PU)			4.82	Higher	3.61							0.30	7.16	6.87	1.41	4.42
Wetland Sensitivity (Sens)			6.23	Higher	4.63							2.74	5.78	3.03	3.67	6.19
Wetland Ecological Condition (EC)			5.36	Moderate	7.78							5.21	10.00	4.79	3.91	6.52
Wetland Stressors (STR) (higher score means more stress)			6.73	Higher	3.42							0.20	4.98	4.78	2.91	6.05
Summary Ratings for Grouped Functions:																
HYDROLOGIC Group (WS)	2.16	Lower	7.16	Higher	3.56	3.18									3.02	6.17
WATER QUALITY SUPPORT Group (max+avg/2 of SR, PR, NR, CS)	3.22	Lower	4.66	Moderate	5.66	4.36									2.84	6.16
AQUATIC SUPPORT Group (max+avg/2 of SFS, INV, OE, WC)	5.45	Moderate	7.33	Higher	4.69	4.79									1.73	5.11
AQUATIC HABITAT Group (max+avg/2 of FA, FR, AM, WBF, WBN)	6.02	Moderate	4.42	Moderate	5.30	4.76									2.75	5.92
TRANSITION HABITAT Group (max+avg/2 of SBM, PH, POL)	7.63	Higher	4.12	Lower	6.91	4.12									5.50	8.31
WETLAND CONDITION (EC)			5.36	Moderate	7.78										3.91	6.52
WETLAND RISK (average of Sensitivity & Stressors)			6.48	Higher	4.03										3.85	5.78

NOTE: A score of 0 does not mean the function or benefit is absent from the wetland. It means only that this wetland has a capacity that is equal or less than the lowest-scoring one, for that function or benefit, from among all the NS calibration wetlands that were assessed previously.

APPENDIX F. WATER QUALITY RESULTS

**MacLellans Mountain Quarry Expansion Project
Surface Water Samples Results**



Parameters	CCME Guidelines	Units	S1	S2	S3
TSS	Maximun increase of 25mg/L (short-term) or 5mg/L (long-term) from baseline levels	mg/L	74	ND	6
Anion Sum	NV	me/L	3.21	3.26	0.590
Bicarb. Alkalinity (calc. as CaCO3)	NV	mg/L	150	100	20
Calculated TDS	NV	mg/L	170	180	35
Carb. Alkalinity (calc. as CaCO3)	NV	mg/L	ND	ND	ND
Cation Sum	NV	me/L	3.33	3.08	0.580
Hardness (CaCO3)	NV	mg/L	140	120	21
Ion Balance (% Difference)	NV	%	1.83	2.84	0.850
Langelier Index (@ 20C)	NV	N/A	0.255	0.138	-1.93
Langelier Index (@ 4C)	NV	N/A	0.00500	-0.112	-2.18
Nitrate (N)	3	mg/L	ND	2.9	ND
Saturation pH (@ 20C)	NV	N/A	7.55	7.83	9.21
Saturation pH (@ 4C)	NV	N/A	7.80	8.08	9.47
Total Alkalinity (Total as CaCO3)	NV	mg/L	150 (1)	100 (1)	20
Dissolved Chloride (Cl)	640 (short-term) or 120 (long-term)	mg/L	6.0	25	4.9
Colour	Shall not be significantly higher than the seasonally adjusted expected value	TCU	5.5	6.6	6.6
Nitrate + Nitrite (N)	NV	mg/L	ND	2.9	ND

MacLellans Mountain Quarry Expansion Project
Surface Water Samples Results



Parameters	CCME Guidelines	Units	S1	S2	S3
Nitrite (N)	550(long-term) or 13 (short-term)	mg/L	ND	ND	ND
Nitrogen (Ammonia Nitrogen)	NV	mg/L	0.071	0.065	ND
Total Organic Carbon (C)	NV	mg/L	3.4	1.8	2.0
Orthophosphate (P)	NV	mg/L	ND	ND	ND
pH	6.5 to 9.0	pH	7.80	7.96	7.28
Reactive Silica (SiO2)	NV	mg/L	6.2	6.2	3.8
Dissolved Sulphate (SO4)	NV	mg/L	ND	15	2.6
Turbidity	Maximum increased of 8 NTUs (short-term) or 2 NTUs (long-term) from background levels	NTU	0.76	0.32	0.96
Conductivity	NV	uS/cm	290	320	61
Total Aluminum (Al)	100	ug/L	1300	18	48
Total Antimony (Sb)	NV	ug/L	ND	ND	ND
Total Arsenic (As)	5	ug/L	ND	ND	ND
Total Barium (Ba)	NV	ug/L	150	120	65
Total Beryllium (Be)	NV	ug/L	ND	ND	ND
Total Bismuth (Bi)	NV	ug/L	ND	ND	ND
Total Boron (B)	1500	ug/L	ND	ND	ND
Total Cadmium (Cd)	0.04	ug/L	0.094	ND	ND
Total Calcium (Ca)	NV	ug/L	44000	36000	6000
Total Chromium (Cr)	NV	ug/L	10	ND	ND
Total Cobalt (Co)	NV	ug/L	1.4	ND	ND
Total Copper (Cu)	2	ug/L	2.7	ND	ND
Total Iron (Fe)	300	ug/L	2500	ND	53
Total Lead (Pb)	1	ug/L	4.6	ND	ND

**MacLellans Mountain Quarry Expansion Project
Surface Water Samples Results**



Parameters	CCME Guidelines	Units	S1	S2	S3
Total Magnesium (Mg)	NV	ug/L	8100	7800	1500
Total Manganese (Mn)	NV	ug/L	57	4.3	21
Total Molybdenum (Mo)	73	ug/L	ND	6.3	ND
Total Nickel (Ni)	25	ug/L	5.2	ND	ND
Total Phosphorus (P)	NV	ug/L	110	ND	ND
Total Potassium (K)	NV	ug/L	2000	1800	210
Total Selenium (Se)	1	ug/L	ND	ND	ND
Total Silver (Ag)	0.1	ug/L	ND	ND	ND
Total Sodium (Na)	NV	ug/L	7000	14000	3400
Total Strontium (Sr)	NV	ug/L	110	130	15
Total Thallium (Tl)	0.8	ug/L	ND	ND	ND
Total Tin (Sn)	NV	ug/L	ND	ND	ND
Total Titanium (Ti)	NV	ug/L	160	ND	ND
Total Uranium (U)	15	ug/L	0.45	0.53	ND
Total Vanadium (V)	NV	ug/L	5.1	ND	ND
Total Zinc (Zn)	30	ug/L	22	ND	ND

ND= Not detected, N/A= Not Applicable, NV= No value, (1)= Elevated reporting limit due to sample matrix

Highlighted values exceed the CCME FWAL Guidelines