Environmental Impact Assessment
Registration Document

Geary Elementary School
Wastewater Treatment Plant Upgrade

Submitted to: **NB Department of Transportation and Infrastructure**
PO Box 6000
Fredericton, N.B.
E3B 5H1

Prepared by: **NATECH Environmental Services Inc.**
2492 Route 640
Hanwell, N.B.
E3E 2C2

Date: **February 24, 2015**

NATECH

TABLE OF CONTENTS

1 THE PROPONENT

1.1 Name of Proponent

Department of Education and Early Childhood Development

1.2 Address of Proponent

Mailing Address: Place 2000, 250 King Street, Fredericton, NB, E3B 9M9

1.3 Chief Executive Officer

Project Manager: Josh Nowlan, Senior Project Manager, EECD
Phone number: (506) 453-2362, **Fax number:** (506) 444-5529
Email: josh.nowlan@gnb.ca

1.4 Principal Contact for Purposes of Environmental Impact Assessment

Mr. Vincent Balland, P. Eng.
NATECH Environmental Services Inc., 2492 Route 640, Hanwell, N.B., E3E 2C2
Phone number: (506) 455-1085 , **Fax number:** (506) 455-1088
E-mail: vincent.b@natechenv.com

1.5 Property Ownership

“Education and Early Childhood Development” (Province of N.B.)
PID of property: No. 60183639

2 THE UNDERTAKING

2.1 Name of the undertaking

“Geary Elementary School Wastewater Treatment Plant Upgrade”.

2.2 Project overview

The project consists of decommissioning an existing wastewater treatment lagoon, and replacing it with an engineered wetland cell, followed by a sand filter infiltration cell. The new WWTP will be built over approximately the same footprint as t
he lagoon (see the proposed plans in Appendix A. Currently the lagoon discharges the treated effluent into an open farmer’s field on a neighbouring property. No negative environmental impacts to the surrounding environment are anticipated resulting from this project in the long term. There may be limited environmental impacts during the construction period. The positive impact includes the elimination of a point source discharge of contaminated wastewater and the elimination of the associated degradation of surface water quality and the removal of a potential risk to human health. The risk related to the current potential exposure to partially treated, non-disinfected sanitary effluent.

During construction of the wetland, the accumulated sludge from the lagoon will be dredged, dried and disposed of at an appropriate landfill facility. The discharge will be eliminated once the new WWTP is operational because the effluent will be infiltrated into the ground.

2.3 Purpose/Rationale/Need for the undertaking

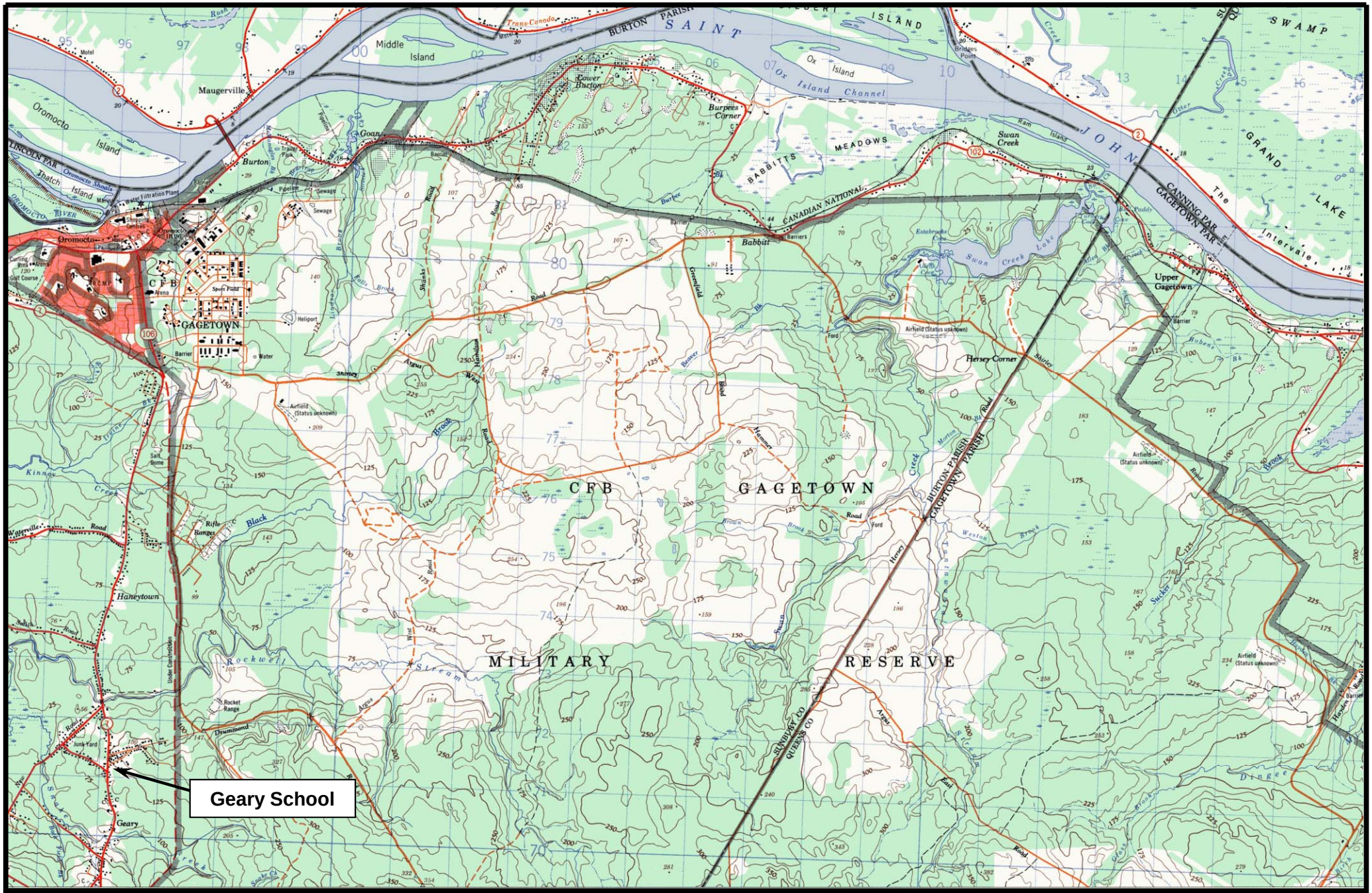
The lagoon was built in the 1970's. For many years, the effluent has not been meeting minimum effluent water quality standards. To date, the effluent is not disinfected and is

discharged onto a neighbouring property, from where it flows into a natural wetland through an open drainage ditch. With the recent upgrading of the school, the need for an upgrade to the wastewater treatment and disposal system was identified. There is no receiving stream nearby that would be sufficiently large to accept a point source discharge of wastewater, even if the water was properly treated and disinfected. The effluent flow from this 200 student, 25 staff facility is estimated at 12.0 m^3/d.

Given the site conditions and the nature of the effluent, if was decided that an on-site disposal system, combined with a pre-treatment system in form of an engineered wetland, would be the most cost effective and environmental responsible solution for this site.

2.4 Project location

The proposed project is located at 16 Lauvina Bye Road (PID 60183639) in Geary N.B., which is in the Local Service District of Burton, N.B, in the Parish of Burton, and in the County of Sunbury. The approximate coordinates of the center of the property are 2,501,970 m, 7,418,646 m (in the NB Stereographic system) or 45.76804°, -66.47467° (latitude and longitude). Figure 2-1 shows the location of the site using a topographic map of the area as a background.



Environmental Impact Assessment

Geary School WWTP Upgrade

Location Map

Environmental Services Inc.
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ph: (506) 455 1085, fax (506) 455 1088

DATE: 2015/02/18	FILE: GES-15-01
SCALE: 1 km grid	FIGURE: 2-1

2.5 Siting considerations

Other locations considered: the existing land within the school property is suitable for the new WWTP. There is no need to look for additional land. By re-using the lagoon location for the new WWTP, very little natural ground will be disturbed elsewhere on the property.

Zoning: The current zoning type is “rural” (RU) for the school property according to the map from the Burton Rural Plan (this map is attached in Appendix B). “Institutional use” is included under the permitted uses for RU zones in the plan.

Wetlands: Based on the publicly available wetland mapping (http://geonb.snb.ca/geonb/), provincially regulated wetlands are approximately one kilometer away from the Geary School Property. The wetland map layer from GeoNB as of February 19, 2015 is attached in Appendix C.

2.6 Physical components and dimensions of the project

The components of the proposed development are shown on the two attached figures in Appendix A. The proposed project involves the re-development of the wastewater treatment lagoon site (1,140 m^2). An engineered wetland will be built in its place to treat the wastewater effluent (septic tanks located near the school will intercept solids and provide pre-treatment). The wetland consists of a lined cell, followed by an infiltration cell. Effluent will be infiltrated into the ground and there will be no discharge of effluent to the local watercourses.

The area of impervious surfaces will be reduced, as approximately 2/3rd of the former lagoon area will be converted into an infiltration cell for the treated effluent.

The activities associated with the undertaking include:

- ❏ gradually draining the lagoon,
- ❏ removing and drying any sludge prior to transporting it to an approvaed disposal facility
- ❏ removing/reshaping some of the berms,
- ❏ importing sand, clay and gravel, and
- ❏ re-building a new fence.

These activities will increase vehicular traffic at times. No off-site facilities or processes were identified as part of this project. Any sludge that is excavated from the lagoon cell will be dried in a sludge drying bed prior to transfer to an approved disposal facility (Fredericton Solid Waste Commission or the Envirem Composting Site)

2.7 Construction details

The construction will occur between July 1st and August 31st when the school is not in use.

The estimated hours of construction would be from 7am to 6pm, Monday through Friday.

The following equipment will be used on-site:

- ❑ An excavator and bull dozer will be used to reshape the berms
- ❑ Small compactors will be used to compact the berm
- ❑ Dump trucks will be used to transport fill material to and from the site as required.

The potential sources of pollutants during the construction period are outlined below:

- ❑ Release of water from the lagoon during the drainage period,
- ❑ Air and noise emissions from construction equipment;
- ❑ Accidental release of hazardous materials such as petroleum products from the construction equipment;

The lagoon effluent will quadruple in flow over a two week period. The flow will be controlled by either a stand pipe or a syphon. Proper erosion protection (check dams , silt fences, erosion control blankets and hay mulch) will be used to prevent erosion down-gradient and silt runoff.

Clay and other berm material from the lagoon will be used to build the new berm of the wetland cell.

The lagoon has an estimated sludge volume of 500 m^3 and a similar tonnage. After pushing the sludge into rows, it will be placed into a sludge drying bed for de-watering and drying. Pile heights will not exceed 1.5 m. Any seepage from the pipes will be routed back into the lagoon. The sludge is expected to de-water from approximately 90% water to 80% moisture content, resulting in a significant weight and volume reduction. Upon completion of the project, an estimated 30 truck loads (400 t or 270 m^3) are expected to require disposal. The lagoon sludge will be disposed of at an

appropriate facility (Fredericton Solid Waste Commission or the Envirem Composting Site).

The sand, gravel and clay needed will be obtained from local sources.

2.8 Operation and maintenance details

The engineered wetland will require little maintenance. Routine activities during the operational phase of the proposed project may include mowing grass on the berms.

The life span of the project is estimated to be more than 50 years.

2.9 Future modifications, extensions, or abandonment

No modifications, extensions or abandonment are envisioned in the foreseeable future.

2.10 Project-related documents (attached)

Appendix A – Drawings

Appendix B – Zoning Map

Appendix C – Wetland Map

Appendix D – Historical Aerial Photographs

Appendix E – ACCDC Report

Appendix F – Contamination Records check

Appendix G – Project Notification Letter for neighbouring property owners

Appendix H – Photographs

Appendix I – Newspaper Article of Thursday, August 28, 2014

3 DESCRIPTION OF THE EXISTING ENVIRONMENT

3.1 Physical and natural features

Site topography: minimum elevation: 33 m, maximum: 42 m. Minimum gradient: 1%, maximum natural gradient: 3%.

General surface drainage: toward the South, see Figure 3-1

Watercourses and wetlands: there are no mapped watercourses or mapped wetlands on the property. The lagoon effluent is discharged onto a farmer's field on an adjacent property. From there water travels through the woods to the closest mapped watercourse located 330 m to the South, and is an unnamed tributary to Snake Creek. Maps showing local watercourses are provided in Appendix C (from GeoNB).

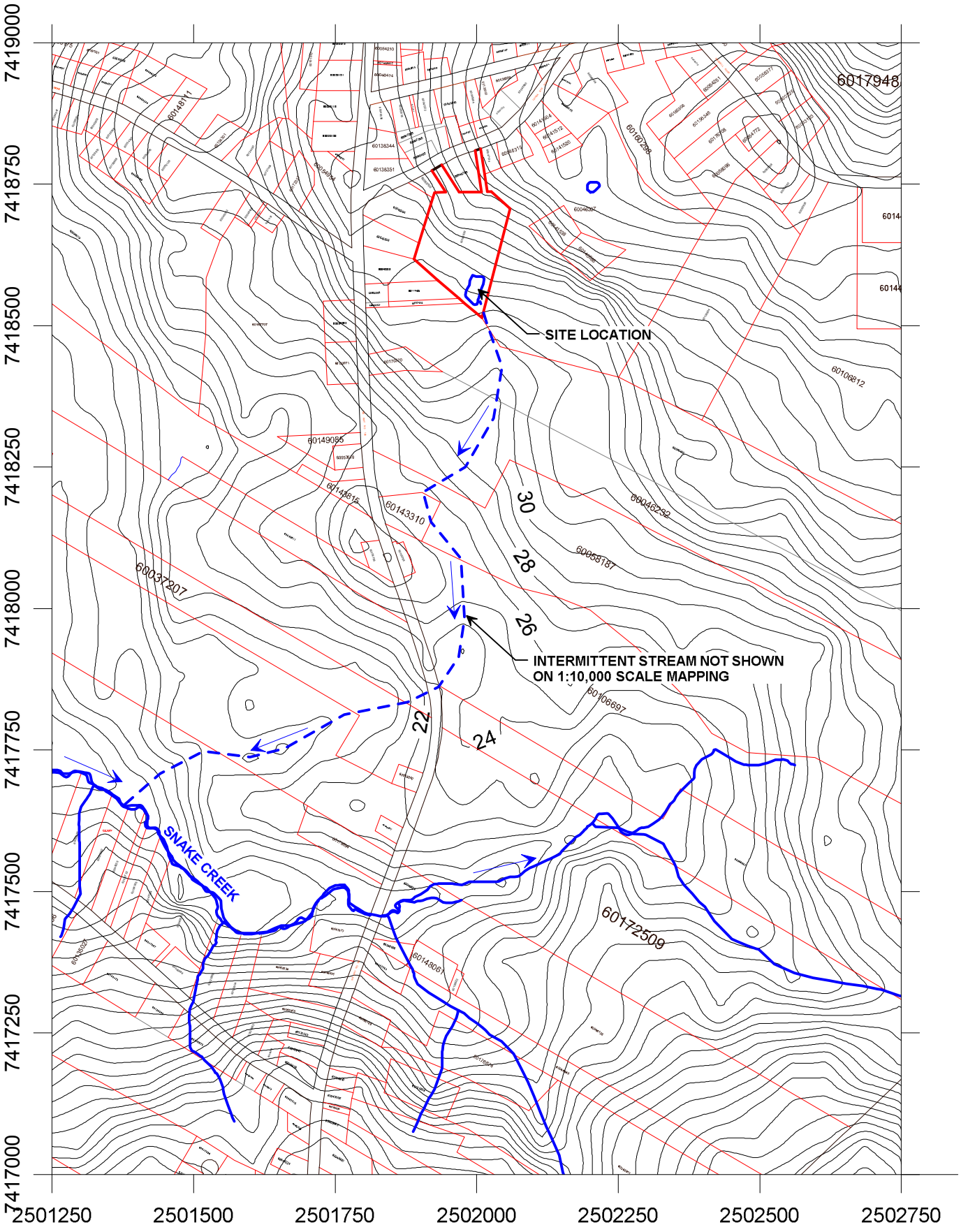
Site specific geology and hydrogeology: test pits were dug on the property to determine the type of soil and the percolation rate of the ground in the lagoon area. The soil was found suitable to infiltrate the effluent into the ground.

Protected areas:

- The site is not located within a protected wellfield or watershed area.
- Several environmentally significant areas are located within five kilometres of the property (see Section 3 of ACCDC report in Appendix E), but the closest one (Oromocto River Wetland Complex ESA) is more than two kilometres away.

Species at risk or of conservation concern: The full report from ACCDC (2013) including maps is provided in Appendix E. In summary:

- Flora: "A 5 km buffer around the study area contains 3 records of 2 vascular, no records of nonvascular flora." These records (Small White Aster and Canada Serviceberry) are located four and two kilometres away from the site respectively.



ENVIRONMENTAL IMPACT ASSESSMENT
GEARY ELEMENTARY SCHOOL
PROPOSED WASTEWATER TREATMENT PLANT
CONTOUR MAP

NATECH

Environmental Services Inc.
2492 Route 640, Hanwell, N.B. E3E 2C2
Ph.: (506) 455-1085 Fax: (506) 455-1088

DATE:	FILE:
2015/02/20	GES-15-01
SCALE: NB Coordinate System (m)	FIGURE: 3-1

- Fauna: “A 5 km buffer around the study area contains 33 records of 16 vertebrate, 5 records of 3 invertebrate fauna.” Most of them are birds, the species in the list that are threatened or of special concern are: Common Nighthawk, Barn Swallow, Bank Swallow, Bobolink, and Rusty Blackbird.

3.2 Cultural features

No tourism features or built resources are present in the vicinity of the property. The Town of Oromocto and The St. John River are located 11 km to the North of Geary. The Canadian Forces Base Gagetown property starts one kilometre to the east of the property (property line oriented North-South), and occupies a very large area.

3.3 Existing and historic land uses

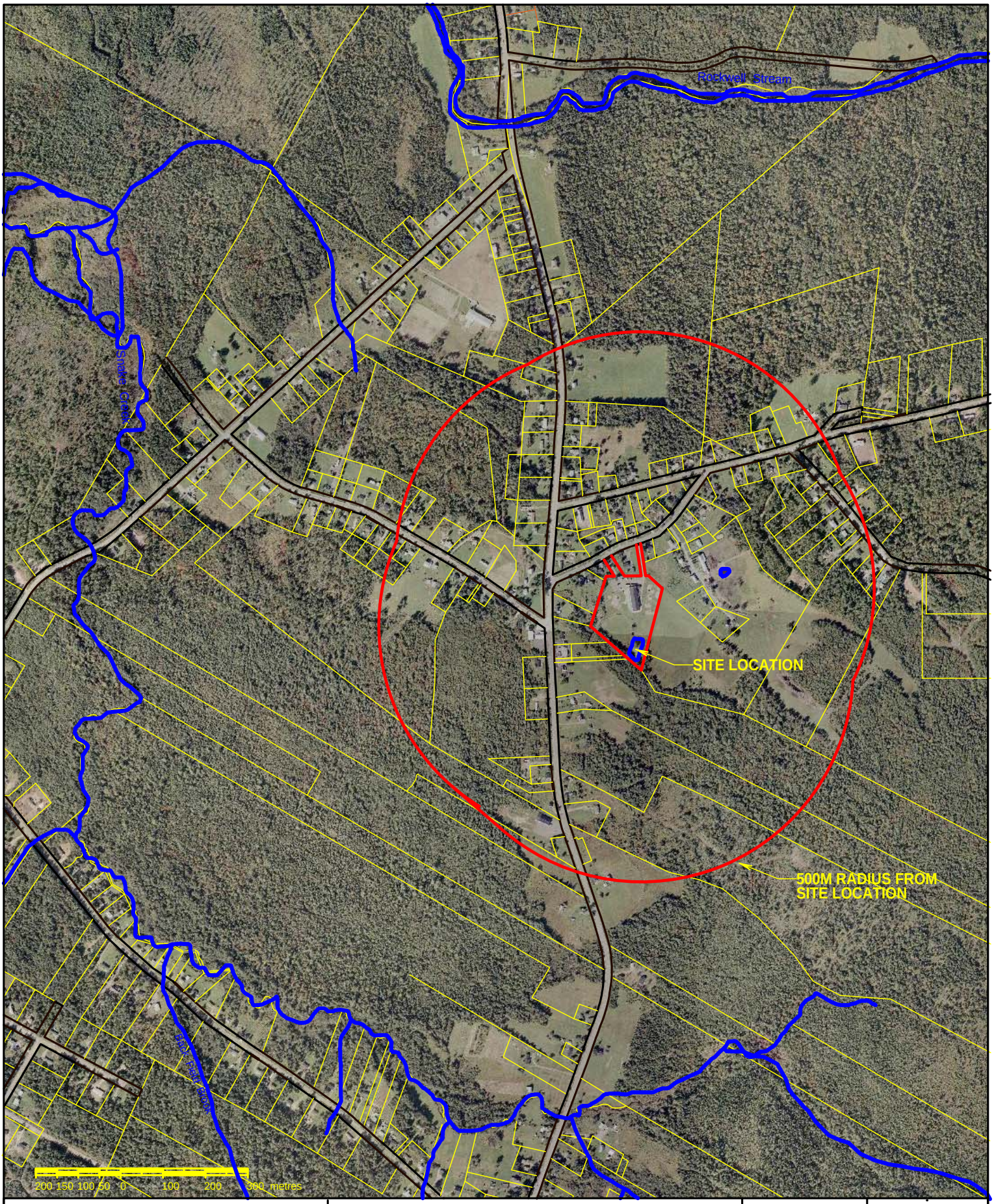
Historical land uses: based on available historical aerial photography (see Figures in Appendix D), most of the property was being farmed in 1945. The school and a small lagoon were built in 1955, and they are visible on the 1962 photo. On the 1977 photo the lagoon location has changed, similar to where it is today. The school was re-built in 2014, with a comparable layout, plus a new gymnasium (see attached article in Appendix H)

Potential contamination: No contamination records were found in the provincial database for the property (see letter in Appendix F). The Geary Elementary School underwent a major renovation and addition in 2014. At that time the oil fired boiler plant was removed and a new propane fired heating plant and storage tanks were installed on site. There is no longer a oil storage tank on site.

Neighbouring properties: the PIDs and owner listings of adjacent properties to the site are listed in Table 3.1. Figure 3-2 shows the adjacent properties.

Table 3.1. Adjacent landowners to Geary School

PID	OWNER 1	OWNER 2
60045788	[redacted]	
60046208	671263 N.B. Inc.	
60046307	[redacted]	[redacted]
60046356	[redacted]	[redacted]
60046364	[redacted]	[redacted]
60046455	[redacted]	[redacted]
60047164	[redacted]	[redacted]
60055100	[redacted]	
60117405	671263 N.B. Inc.	Suncor Énergie Inc.
60117413	671263 N.B. Inc.	Suncor Énergie Inc.



ENVIRONMENTAL IMPACT ASSESSMENT
GEARY ELEMENTARY SCHOOL
PROPOSED WASTEWATER TREATMENT PLANT
SNB PROPERTY MAP

NATECH
Environmental Services Inc.
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Date:	File:
15/02/24	GES-15-01
Scale:	Figure:
AS SHOWN	3-2

4 SUMMARY OF ENVIRONMENTAL IMPACTS

The following potential impacts were identified. Most of them are likely to occur during the construction phase:

- ❑ release of water while the lagoon is being drained,
- ❑ release of sediment laden site runoff,
- ❑ air/water/soil contamination
- ❑ noise, vibration.

5 SUMMARY OF PROPOSED MITIGATION

5.1 Water/Soil Contamination

Release of water while the lagoon is being drained: Flow control to limit the quantities.

Release of sediment laden site runoff: Standard erosion protection

Air/Water/Soil Contamination: Contaminants may be released into water and soil through spills and air emissions of fuels and lubricants from equipment during the construction phase. To minimize these impacts, fuelling and maintenance of equipment will be performed at appropriate locations (a minimum of 100 metres from watercourses). In addition, all equipment will be kept in good working condition to reduce emissions.

All spills, regardless of size will be reported immediately to the Construction Manager. The Construction Manager will report the spill to the New Brunswick Department of Environment. Remediation will be carried out to meet provincial and federal clean up requirements. Absorbent material will be kept on site during construction in the case of an equipment leak.

Noise, Vibration: The potential negative impact of increased noise and vibration during the construction phase of the proposed project are closely linked to the increase in vehicular traffic and heavy equipment use. To help mitigate these potential impacts, work will be conducted during regular hours of operations.

6 PUBLIC INVOLVEMENT

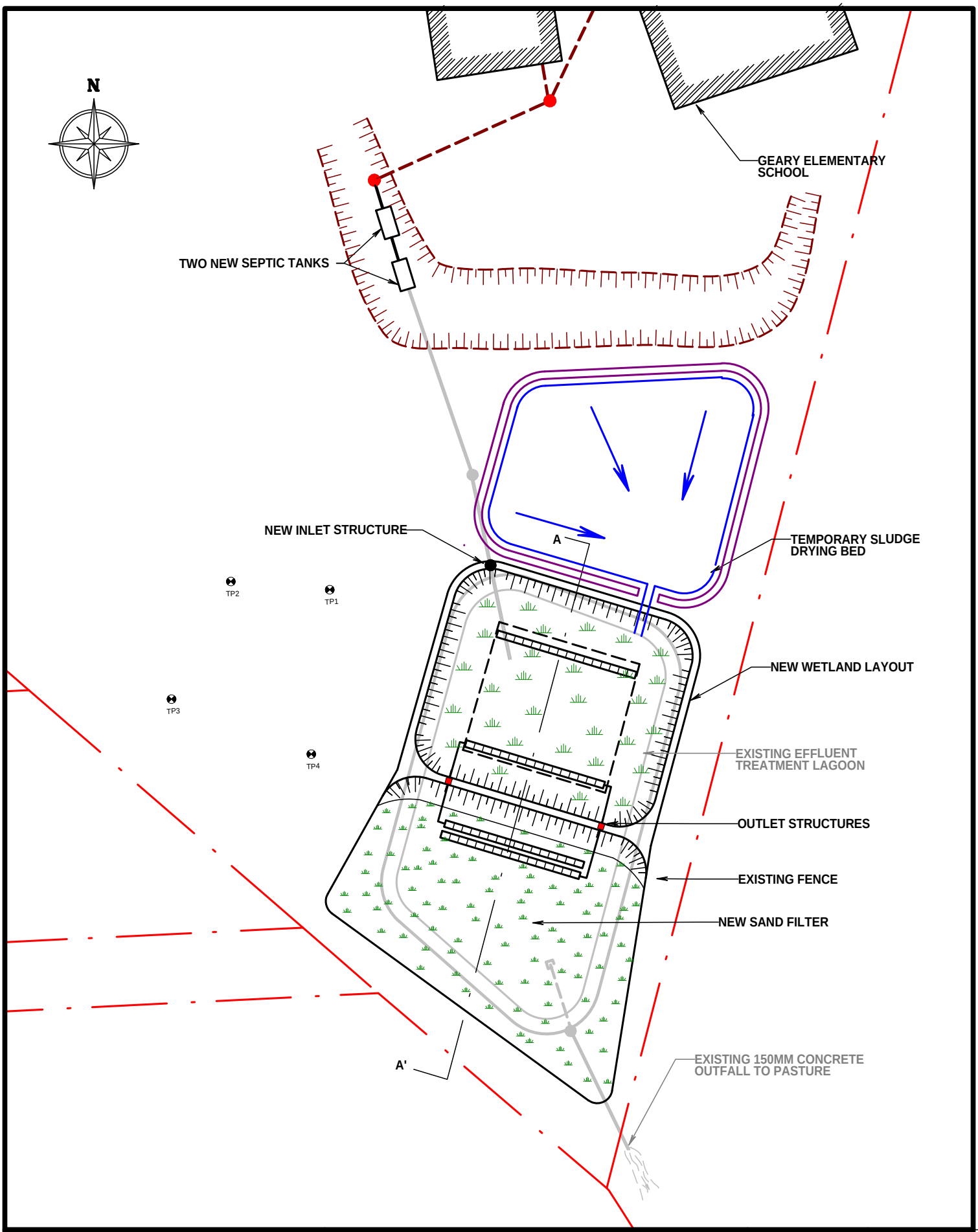
Based on the minimum public involvement standards for registered projects outlined in Appendix C of “A Guide to Environmental Impact Assessment in New Brunswick” (NBDELG, 2012), all neighbours within 500 m of the property boundaries and relevant local stakeholders (local watershed group, MLA, etc.) will be notified of the development by mail out. A project description will be provided including a site map, and information on where to find the EIA registration document. The mail out will occur in March of 2015. The comments received from the public will be provided at a later date. A draft of the information letter is attached in Appendix H.

7 APPROVAL OF THE UNDERTAKING

Permits, licenses and other authorizations required for the undertaking include:

- ❏ An Approval to Construct from the NBDELG
- ❏ An Approval for the Installation of an On-Site Effluent Disposal System from the NB Department of Health

Appendix A – Drawings



ENVIRONMENTAL IMPACT ASSESSMENT
GEARY ELEMENTARY SCHOOL
NEW WETLAND
SITE LOCATION

NATECH Environmental Services Inc.
2492 Route 640, Hanwell, NB E3E 2C2
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Date:	Project No.:
15/02/23	GES-15-01
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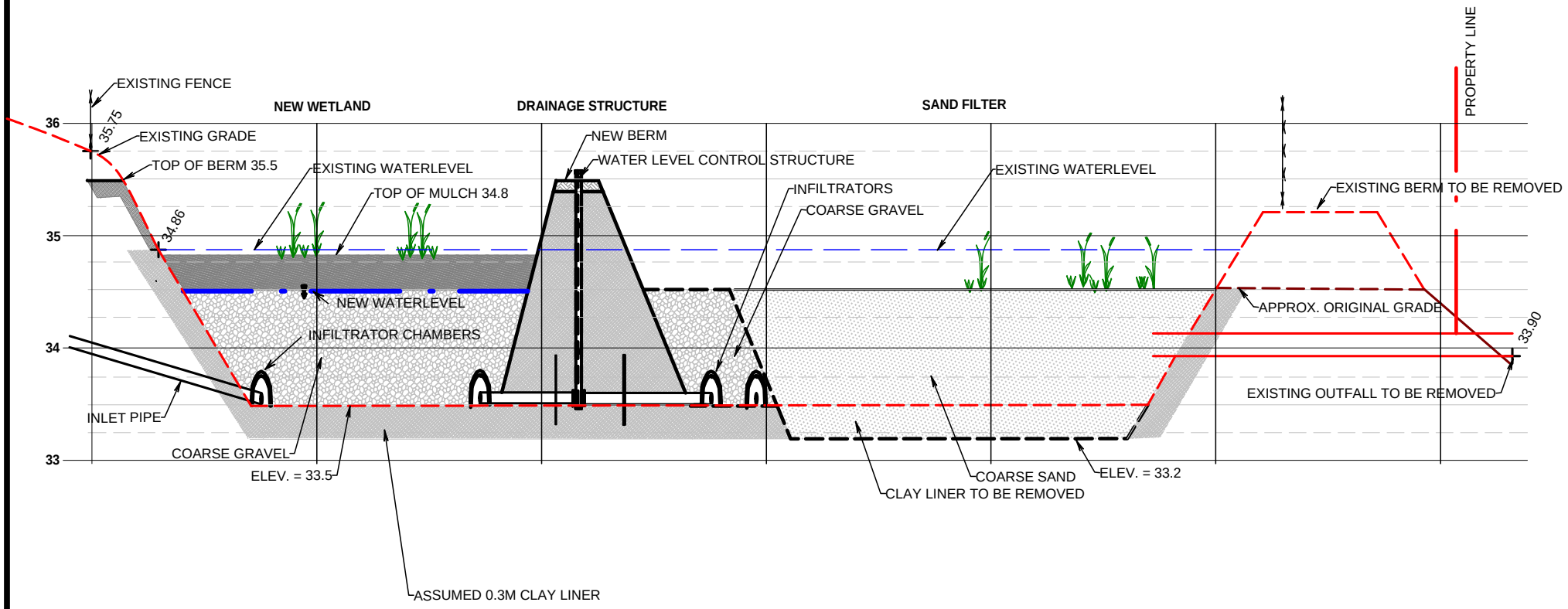

ENVIRONMENTAL IMPACT ASSESSMENT
GEARY ELEMENTARY SCHOOL
PROPOSED WASTEWATER TREATMENT PLANT
PROFILE

NATECH
Environmental Services Inc.
2492 Route 640, Hanwell, NB E3E 2C2
Ph: (506) 455-1080 Fax: (506) 455-1088

Date:	Date:	Project No.:	Nº du projet
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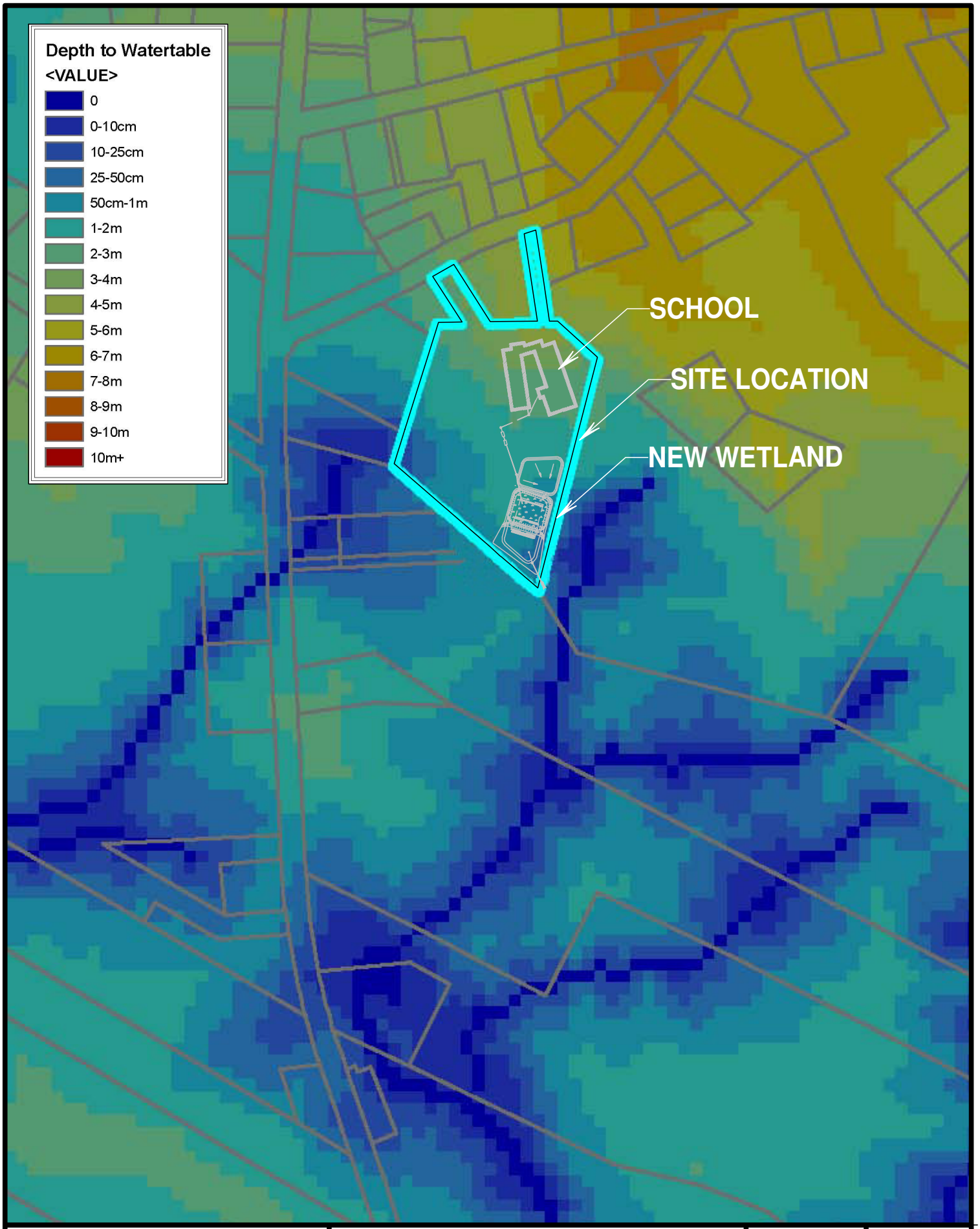
SCALE 5:1 V:H		APPENDIX A2	



ENVIRONMENTAL IMPACT ASSESSMENT
GEARY ELEMENTARY SCHOOL
PROPOSED WASTEWATER TREATMENT PLANT
DEPTH TO WATER TABLE MAP

NATECH Environmental Services Inc.
2492 Route 640, Hanwell, NB E3E 2C2
Ph: (506) 455-1080 Fax: (506) 455-1088

Date: 15/02/23
Project No.: GES-15-01
Scale: AS SHOWN
Sheet No.: APPENDIX A3

Appendix B – Zoning Map

Rivière Saint John River

Parish of / Paroisse de Fredericton
Parish of / Paroisse de Lincoln

Parish of / Paroisse de Maugerville
Parish of / Paroisse de Burton

Goan

Burton

Town of / Ville d'Oromocto

Lower Burton

Burpees Corner

Gilbert Island

Swan Creek

Babbitt

Parish of / Paroisse de Sheffield
Parish of / Paroisse de Canning

Rivière Saint John River

Oromocto

Rivière Oromocto River

Town of / Ville d'Oromocto

Haneytown

Waterville

Lac French Lake

French Lake

Geary

Woodside

Rivière Oromocto River

Parish of / Paroisse de Lincoln
Parish of / Paroisse de Gladstone

Parish of / Paroisse de Burton
Parish of / Paroisse de Blissville

5th Canadian Division Support Base /
Base de soutien de la 5e Division du Canada
GAGETOWN

Parish of / Paroisse de Burton
Parish of / Paroisse de Gagetown

Schedule A / Annexe A
Burton-Greater Geary Planning Area Zoning Map
Carte de zonage du secteur d'aménagement de Burton-Greater Geary

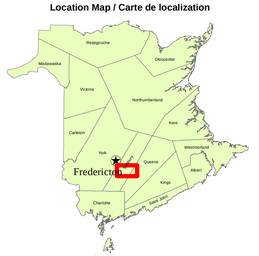
N

- Residential Zones - "R" Zones / Zones résidentielles - Zones «R»
- Rural Residential Zones - "RR" Zones / Zones résidentielle rurales - Zone «RR»
- Rural Zones - "RU" Zones / Zones rurales - Zones «RU»
- Mini Home Park Zones - "MHP" Zones / Zones de parc de mini-maisons - Zones «PMM»
- Commercial Recreational Zones - "CR" Zones / Zones récréative commerciales - Zones «RC»
- Commercial Zones - "C" Zones / Zones commerciales - Zones «C»
- Industrial Zones - "I" Zones / Zones industrielles - Zones «I»
- Greenbelt Zones - "GB" Zones / Zones Greenbelt - Zones «GB»

kilomètres 0 1 2 3 4 5 kilometres

Échelle 1:40,000 Scale

Location Map / Carte de localization



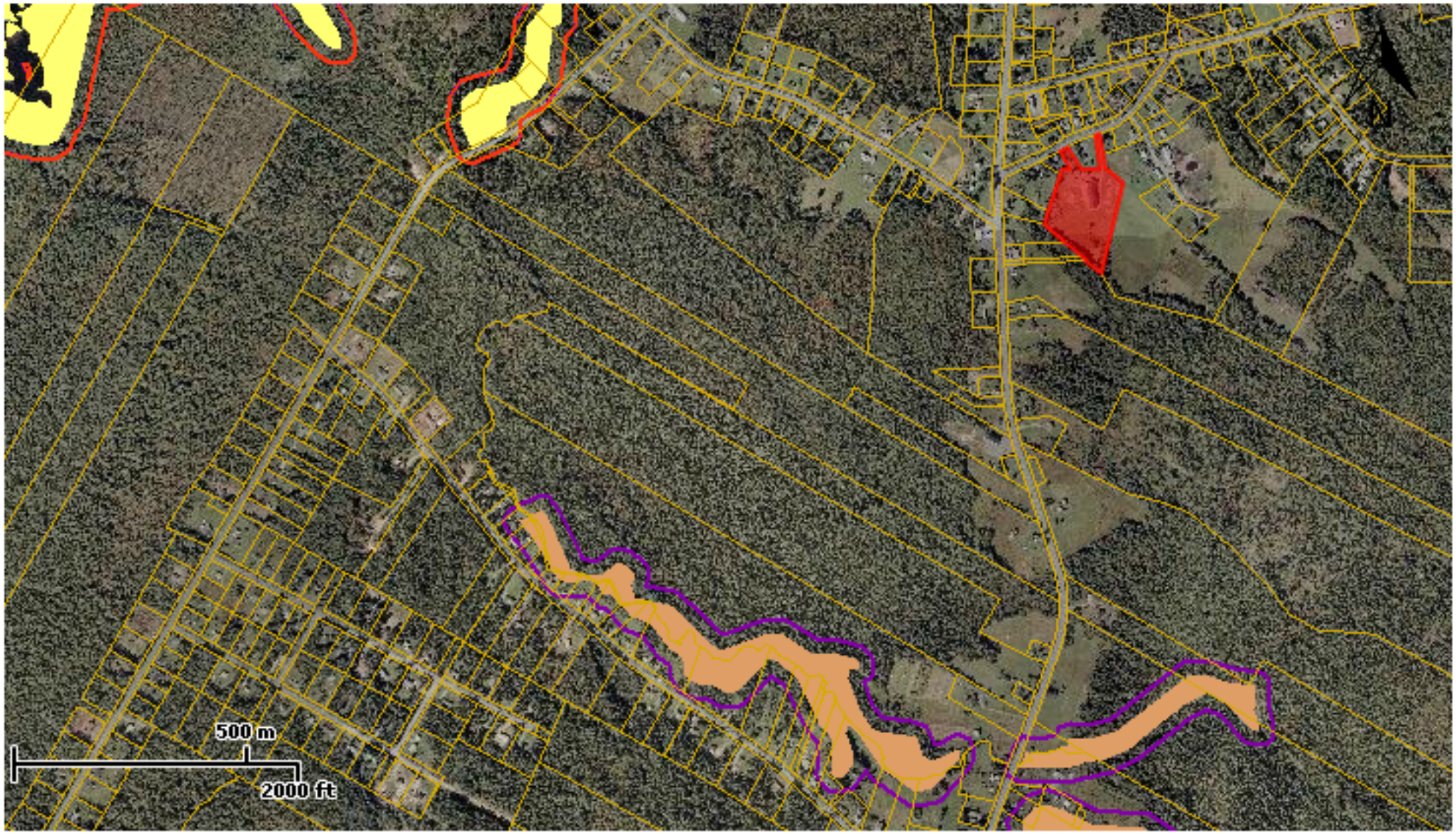
Prepared by Regional Service Commission 11
Preparée par la Commissions de services régionaux 11
Data Source / Source des données
Verified by / vérifié par Dallas Gillis
For the original map, please refer to the Office of the Registrar or planning commission.
Pour la version originale de la carte, veuillez vous adresser au Bureau d'enregistrement ou à la commission d'aménagement.
September 2013 Septembre

Appendix C – Wetland Maps

http://www.snb.ca/geonb

Geary School EIA

Description:Local Wetlands



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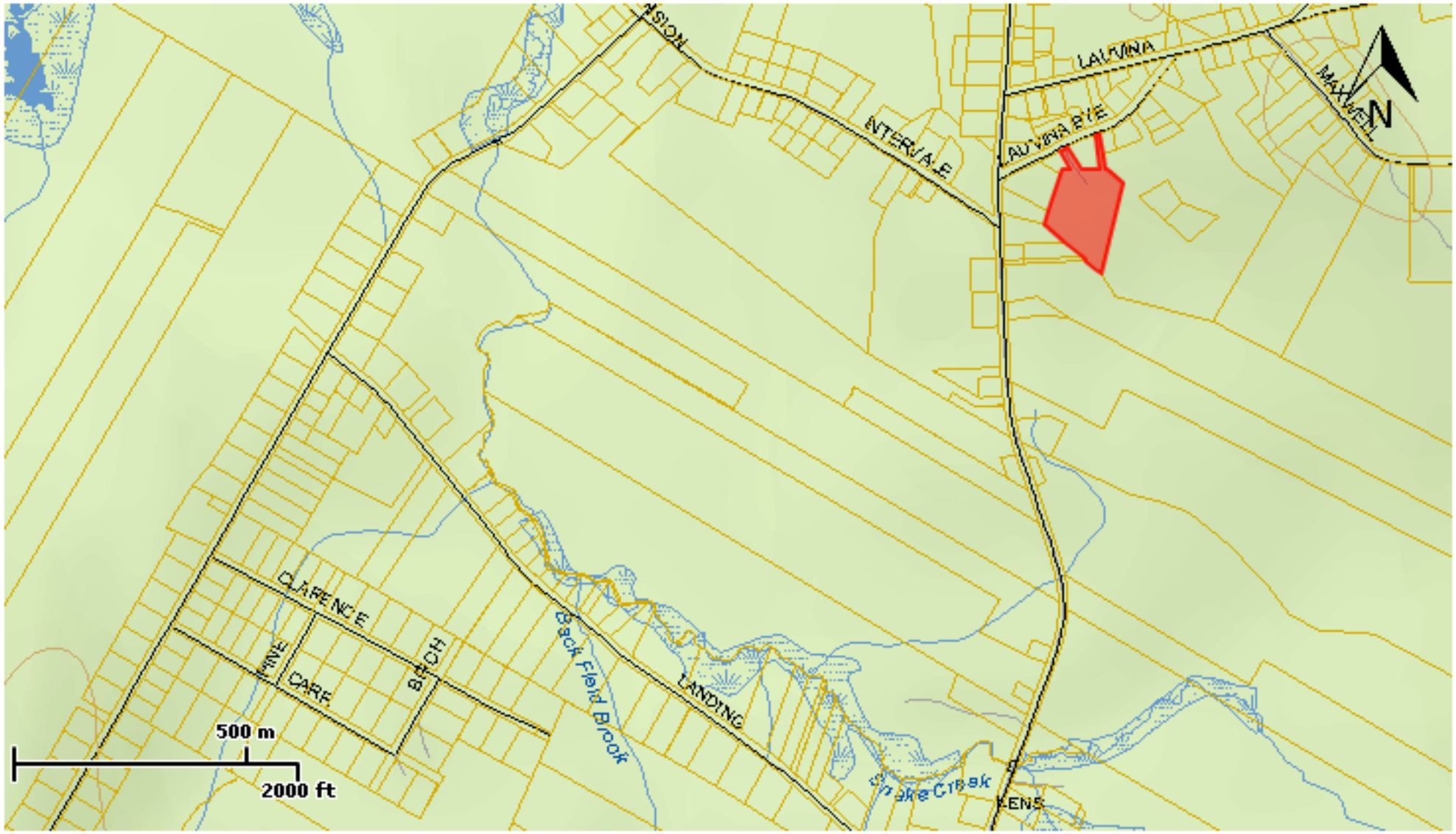
GeoNB

http://www.snb.ca/geonb

Geary School EIA

Description:Local Watercourses



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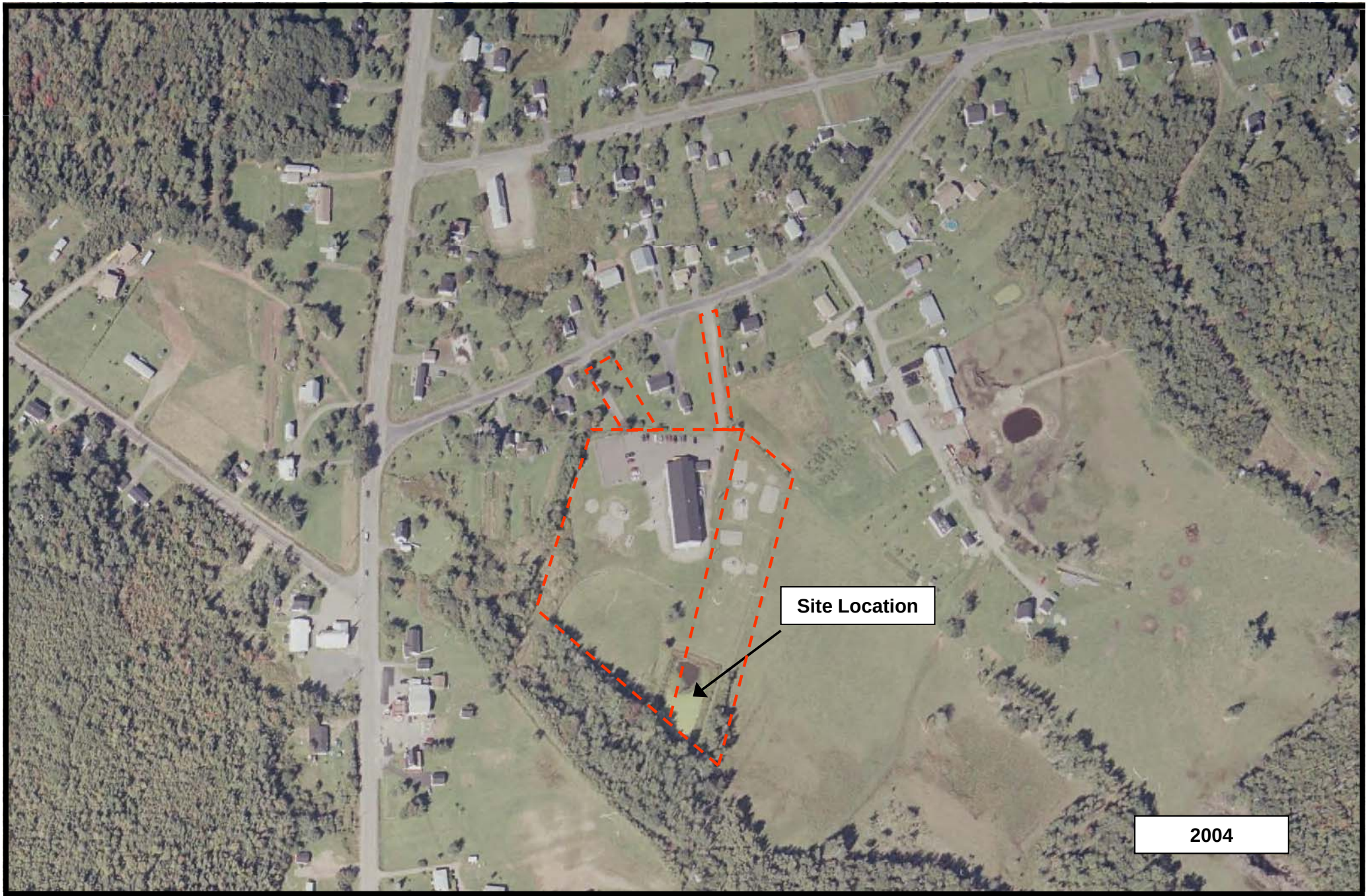
Appendix D – historical Aerial Photographs



Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

NATECH
Environmental Services Inc.
2492 Route 640, Hanwell, NB E3E 2C2
ph: (506) 455-1085, fax (506) 455-1088

DATE: 2015/02/19

FILE: GES-15-01

SCALE:

FIGURE: Appendix B1

Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

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SCALE:
FIGURE: Appendix B2

Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

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DATE: 2015/02/19

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SCALE:

FIGURE: Appendix B3

Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

Environmental Services Inc.
2492 Route 640, Hanwell, NB E3E 2C2
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DATE: 2015/02/19

FILE: GES-15-01

SCALE:

FIGURE: Appendix B4

Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

NATECH
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DATE: 2015/02/19

FILE: GES-15-01

SCALE:

FIGURE: Appendix B5

Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

Environmental Services Inc.
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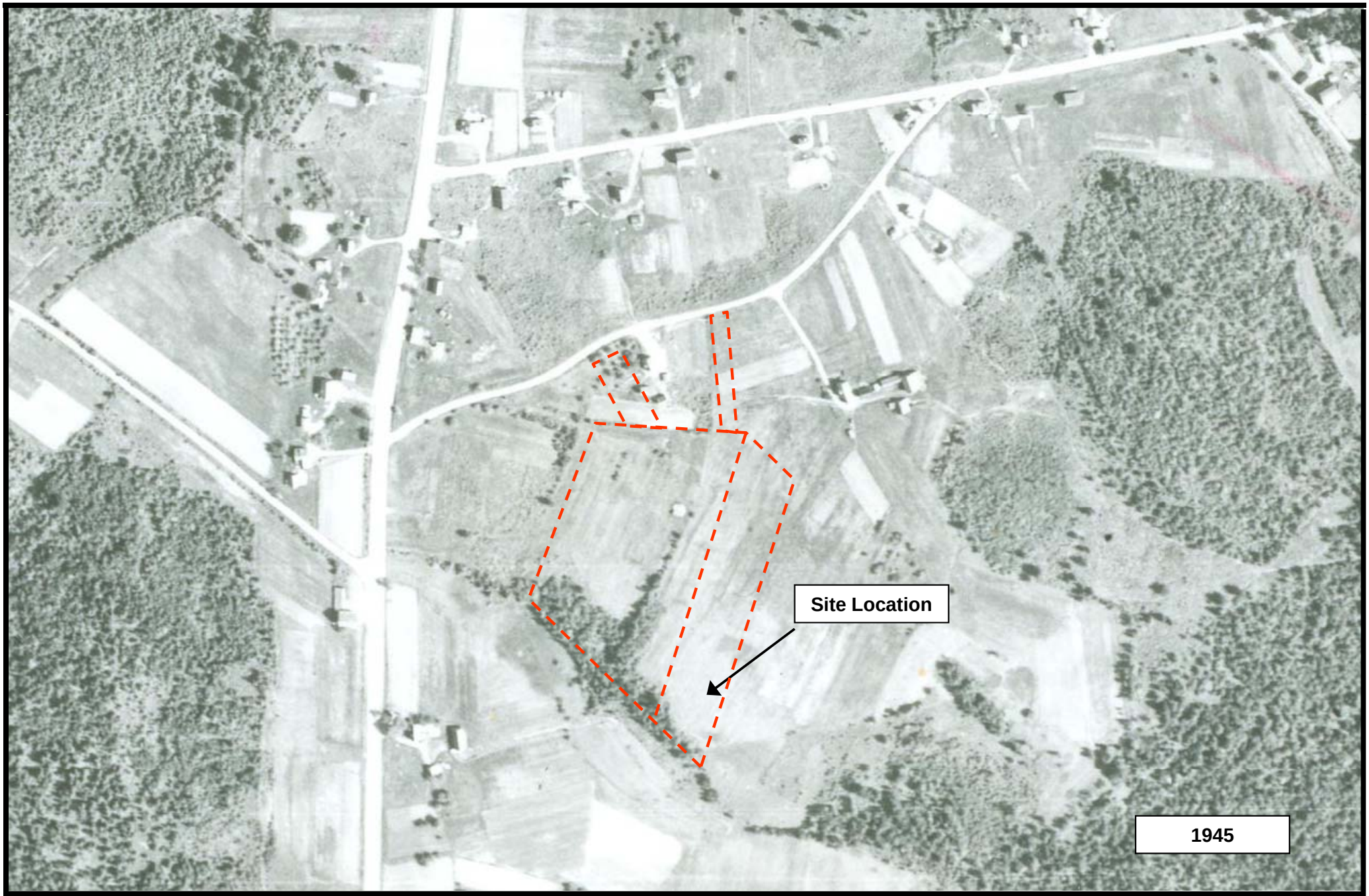
DATE: 2015/02/19

FILE: GES-15-01

SCALE:

FIGURE: Appendix B6



Environmental Impact Assessment
Geary Elementary School Property
Historical Aerial Photos

NATECH
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ph: (506) 455-1085, fax (506) 455-1088

DATE: 2015/02/19

FILE: GES-15-01

SCALE:

FIGURE: Appendix B7

Appendix E – ACCDC Report

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

DATA REPORT 5326: Geary, NB

Prepared 6 February 2015
by J. Churchill, Data Manager

CONTENTS OF REPORT

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
GearyNB_5326ob.xls	All Rare and legally protected *Flora and Fauna* within 5 km of your study area
GearyNB_5326ob100km.xls	A list of Rare and legally protected *Flora and Fauna* within 100 km of your study area
GearyNB_5326ma.xls	All *Managed Areas* in your study area
GearyNB_5326sa.xls	All *Significant Natural Areas* 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
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Plant Communities
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Data Management, GIS
James Churchill, Data Manager
Tel: (902) 679-6146
jlchurchill@mta.ca

Billing
Jean Breau
Tel: (506) 364-2659
jrbreau@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2657, 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
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Western: Donald Sam
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For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Rosemary Curley, PEI Dept. of Agriculture and Forestry: (902) 368-4807.

2.0 RARE AND ENDANGERED SPECIES

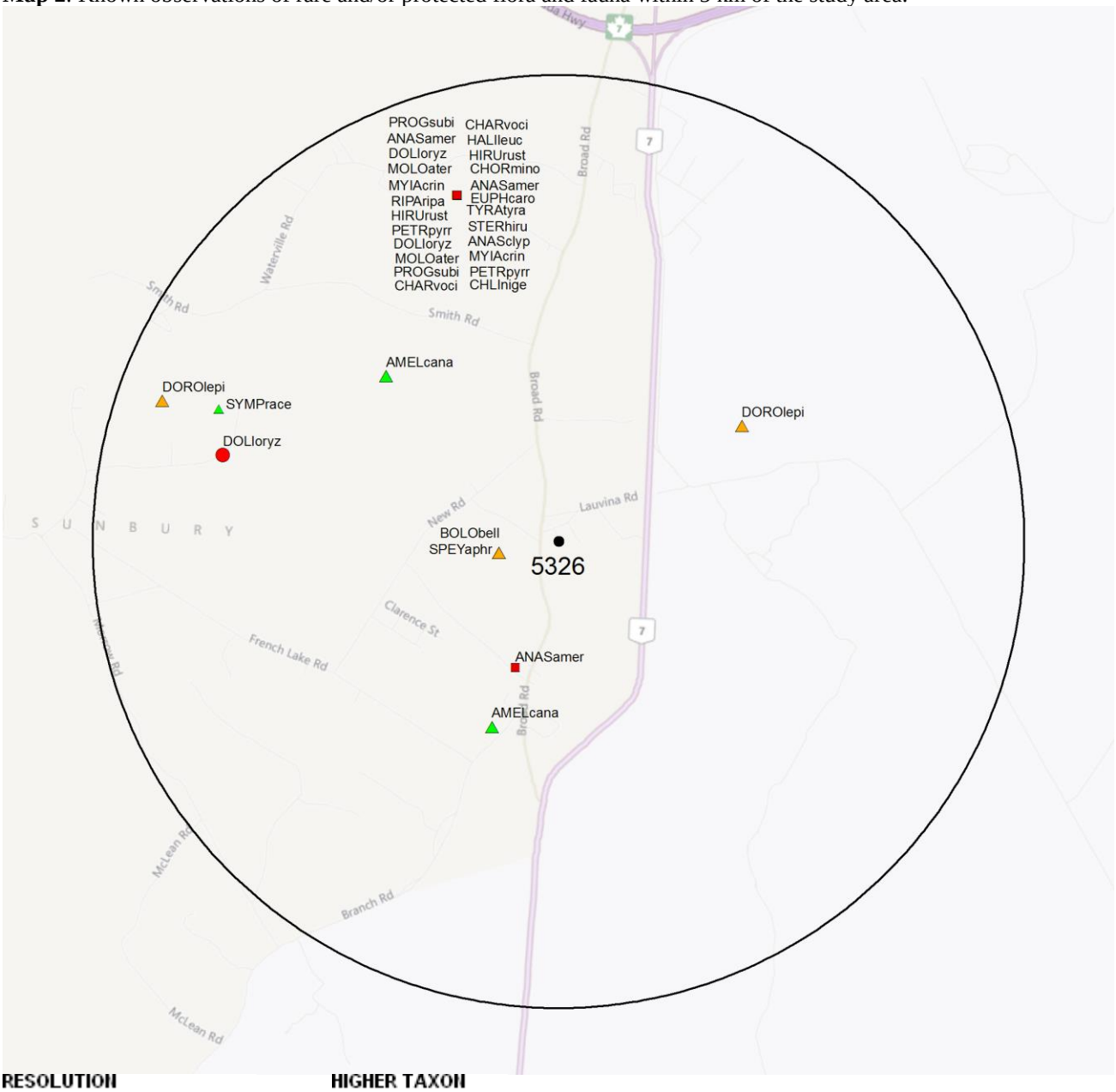
2.1 FLORA

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

2.2 FAUNA

A 5 km buffer around the study area contains 33 records of 16 vertebrate, 5 records of 3 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

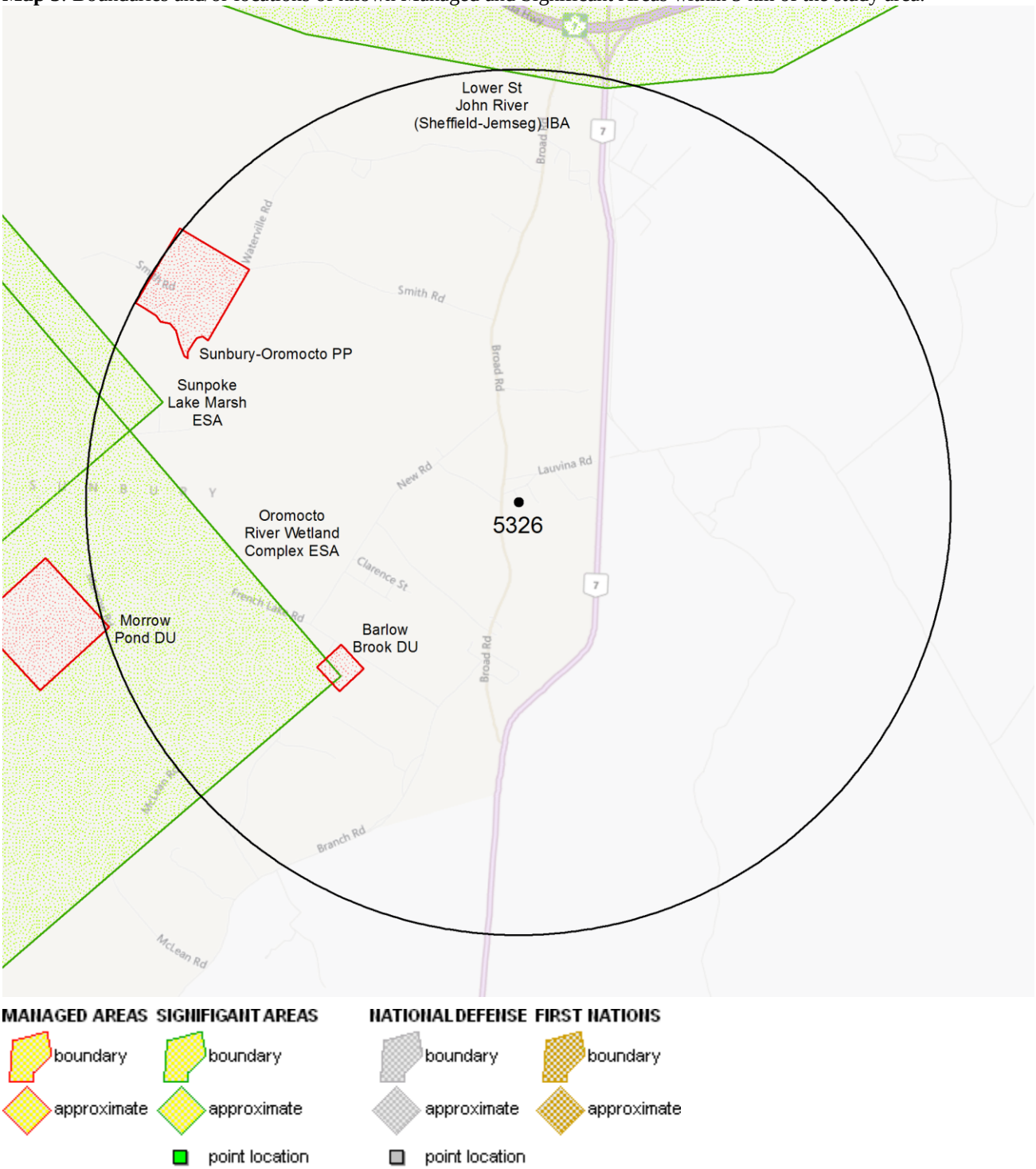
- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

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

3.2 SIGNIFICANT AREAS
The GIS scan identified 3 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *sa*.xls)

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 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 (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Symphyotrichum racemosum*	Small White Aster				S2	3 Sensitive	1	3.9 ± 0.0
P	*Amelanchier canadensis*	Canada Serviceberry				S3	4 Secure	2	2.1 ± 1.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B	1 At Risk	1	3.9 ± 7.0
A	*Hirundo rustica*	Barn Swallow	Threatened		Threatened	S3B	3 Sensitive	2	3.9 ± 7.0
A	*Riparia riparia*	Bank Swallow	Threatened			S3B	3 Sensitive	1	3.9 ± 7.0
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Threatened	S3S4B	3 Sensitive	3	3.7 ± 0.0
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B	2 May Be At Risk	1	3.9 ± 7.0
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B	3 Sensitive	2	3.9 ± 7.0
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S3B	1 At Risk	2	3.9 ± 7.0
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	3 Sensitive	1	3.9 ± 7.0
A	*Progne subis*	Purple Martin				S1S2B	2 May Be At Risk	2	3.9 ± 7.0
A	*Anas clypeata*	Northern Shoveler				S2B	4 Secure	2	3.9 ± 7.0
A	*Anas americana*	American Wigeon				S3B	4 Secure	4	1.4 ± 7.0
A	*Charadrius vociferus*	Killdeer				S3B	3 Sensitive	3	3.9 ± 7.0
A	*Myiarchus crinitus*	Great Crested Flycatcher				S3B	3 Sensitive	3	3.9 ± 7.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B	2 May Be At Risk	2	3.9 ± 7.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	3 Sensitive	1	3.9 ± 7.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S3S4B	3 Sensitive	3	3.9 ± 7.0
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	4 Secure	1	0.6 ± 1.0
I	*Boloria bellona*	Meadow Fritillary				S3	4 Secure	2	0.6 ± 1.0
I	*Dorocordulia lepida*	Petite Emerald				S3	4 Secure	2	2.3 ± 1.0

4.3 LOCATION SENSITIVE SPECIES

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

New Brunswick

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within 5 km of Study Site?
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
Chrysemys picta picta	Eastern Painted Turtle			No

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
17	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
16	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
3	Speers, L. 2008. Butterflies of Canada database: New Brunswick 1897-1999. Agriculture & Agri-Food Canada, Biological Resources Program, Ottawa, 2048 recs.
2	Atlantic Canada Conservation Area Database (ARCAD)
2	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.
2	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
2	Tims, J. & Craig, N. 1995. Environmentally Significant Areas in New Brunswick (NBESA). NB Dept of Environment & Nature Trust of New Brunswick Inc.
1	Bird Studies Canada & Nature Canada. 2004-10. Important Bird Areas of Canada Database. Bird Studies Canada, Port Rowan ON, 62 objects.
1	EMR Place Names
1	Hinds, H.R. 1986. Notes on New Brunswick plant collections. Connell Memorial Herbarium, unpubl, 739 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 10741 records of 124 vertebrate and 1058 records of 64 invertebrate fauna; 6932 records of 364 vascular, 182 records of 81 nonvascular flora (attached: *ob100km.xls).

Rare and/or endangered taxa within the 100 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 (± 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)
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	59	23.7 ± 1.0
A	*Myotis septentrionalis*	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	17	25.9 ± 1.0
A	*Perimyotis subflavus*	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	1 At Risk	8	60.6 ± 0.0
A	*Eubalaena glacialis*	North Atlantic Right Whale	Endangered	Endangered	Endangered	S1		2	29.7 ± 0.0
A	*Dermochelys coriacea (Atlantic pop.)*	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	1 At Risk	3	67.8 ± 50.0
A	*Morone saxatilis*	Striped Bass	Endangered			S2	2 May Be At Risk	10	23.6 ± 0.0
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	2 May Be At Risk	48	16.3 ± 50.0
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S2B	1 At Risk	7	64.1 ± 0.0
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S3M	1 At Risk	18	64.1 ± 0.0
A	*Rangifer tarandus pop. 2*	Woodland Caribou (Atlantic-Gasp ├⌐sie pop.)	Endangered	Endangered	Extirpated	SX	0.1 Extirpated	4	56.0 ± 1.0
A	*Colinus virginianus*	Northern Bobwhite	Endangered	Endangered				4	37.7 ± 0.0
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened	Threatened	S1S2B	1 At Risk	20	26.2 ± 7.0
A	*Hylocichla mustelina*	Wood Thrush	Threatened		Threatened	S1S2B	2 May Be At Risk	198	15.9 ± 0.0
A	*Sturnella magna*	Eastern Meadowlark	Threatened		Threatened	S1S2B	2 May Be At Risk	48	13.0 ± 7.0
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S2B	1 At Risk	84	6.5 ± 7.0
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Threatened	S2S3B	1 At Risk	309	11.9 ± 0.0
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Special Concern	Threatened	S2S3B	1 At Risk	2	79.4 ± 7.0
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened		Threatened	S3	4 Secure	1	16.3 ± 1.0
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S3	1 At Risk	239	11.2 ± 0.0
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S3B	1 At Risk	310	3.9 ± 7.0
A	*Hirundo rustica*	Barn Swallow	Threatened		Threatened	S3B	3 Sensitive	649	3.9 ± 7.0
A	*Riparia riparia*	Bank Swallow	Threatened			S3B	3 Sensitive	242	3.9 ± 7.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3S4B	1 At Risk	407	10.6 ± 0.0
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Threatened	S3S4B	1 At Risk	858	6.5 ± 7.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Threatened	S3S4B	3 Sensitive	566	3.7 ± 0.0
A	*Anguilla rostrata*	American Eel	Threatened		Threatened	S5	4 Secure	41	24.1 ± 0.0
A	*Melanerpes erythrocephalus*	Red-headed Woodpecker	Threatened	Threatened		SNA	8 Accidental	1	80.2 ± 7.0
A	*Osmerus mordax pop. 2*	Lake Utopia Smelt large-bodied pop.	Threatened		Threatened			2	69.9 ± 10.0
A	*Coturnicops noveboracensis*	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B	2 May Be At Risk	3	22.8 ± 7.0
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Endangered	S1B	1 At Risk	127	19.0 ± 7.0
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1N	1 At Risk	116	74.0 ± 0.0
A	*Acipenser brevirostrum*	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	7	23.8 ± 0.0
A	*Balaenoptera physalus*	Fin Whale - Atlantic pop.	Special Concern	Special Concern	Special Concern	S2S3		2	71.3 ± 1.0
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	3 Sensitive	27	11.1 ± 1.0
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern	Special Concern	S3B	3 Sensitive	15	16.9 ± 0.0
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B	2 May Be At Risk	162	3.9 ± 7.0
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern			S3M	3 Sensitive	5	66.4 ± 0.0
A	*Phocoena phocoena (NW Atlantic pop.)*	Harbour Porpoise - Northwest Atlantic pop.	Special Concern	Threatened		S4		86	64.9 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Special Concern	S4B	4 Secure	462	10.7 ± 7.0
A	*Tryngites subruficollis*	Buff-breasted Sandpiper	Special Concern			SNA	8 Accidental	6	66.4 ± 0.0
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S1	1 At Risk	19	36.1 ± 0.0
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk	Special Concern		S1	3 Sensitive	2	35.4 ± 5.0
A	*Cistothorus platensis*	Sedge Wren	Not At Risk			S1B	5 Undetermined	3	23.1 ± 7.0
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1S2B	2 May Be At Risk	11	18.4 ± 0.0
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S1S2B	2 May Be At Risk	2	79.4 ± 0.0
A	*Buteo lineatus*	Red-shouldered Hawk	Not At Risk	Special Concern		S2B	2 May Be At Risk	49	10.7 ± 7.0
A	*Fulica americana*	American Coot	Not At Risk			S2B	3 Sensitive	4	24.8 ± 7.0
A	*Chlidonias niger*	Black Tern	Not At Risk			S2B	3 Sensitive	91	3.9 ± 7.0
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3		3	67.8 ± 1.0
A	*Desmognathus fuscus (QC/NB pop.)*	Northern Dusky Salamander - QC/NB pop.	Not At Risk			S3	3 Sensitive	91	25.9 ± 1.0
A	*Megaptera novaeangliae*	Humpback Whale (NW Atlantic pop.)	Not At Risk	Special Concern		S3		1	92.0 ± 5.0
A	*Haliaeetus leucocephalus*	Bald Eagle	Not At Risk		Endangered	S3B	1 At Risk	372	3.9 ± 7.0
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	3 Sensitive	98	3.9 ± 7.0
A	*Podiceps grisegena*	Red-necked Grebe	Not At Risk			S3M,S2N	3 Sensitive	1	83.4 ± 10.0
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4		1	67.8 ± 1.0
A	*Canis lupus*	Gray Wolf	Not At Risk		Extirpated	SX	0.1 Extirpated	4	41.0 ± 1.0
A	*Lepomis auritus*	Redbreast Sunfish	Data Deficient	Special Concern		S3?	4 Secure	27	5.8 ± 1.0
A	*Puma concolor pop. 1*	Cougar - Eastern pop.	Data Deficient		Endangered	SU,SH	5 Undetermined	67	13.3 ± 1.0
A	*Salvelinus alpinus*	Arctic Char				S1	3 Sensitive	3	91.4 ± 0.0
A	*Lasionycteris noctivagans*	Silver-haired Bat				S1?	5 Undetermined	4	59.7 ± 1.0
A	*Bartramia longicauda*	Upland Sandpiper				S1B	3 Sensitive	32	6.5 ± 7.0
A	*Phalaropus tricolor*	Wilson's Phalarope				S1B	3 Sensitive	38	12.1 ± 0.0
A	*Leucophaeus atricilla*	Laughing Gull				S1B	3 Sensitive	1	23.7 ± 1.0
A	*Sterna paradisaea*	Arctic Tern				S1B	2 May Be At Risk	2	77.8 ± 0.0
A	*Troglodytes aedon*	House Wren				S1B	5 Undetermined	29	26.4 ± 7.0
A	*Aythya marila*	Greater Scaup				S1B,S2N	4 Secure	23	16.1 ± 7.0
A	*Alca torda*	Razorbill				S1B,S3N	4 Secure	1	94.7 ± 0.0
A	*Rissa tridactyla*	Black-legged Kittiwake				S1B,S4N	4 Secure	10	23.7 ± 1.0
A	*Butorides virescens*	Green Heron				S1S2B	3 Sensitive	17	17.7 ± 7.0
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1S2B	3 Sensitive	7	56.5 ± 0.0
A	*Gallinula chloropus*	Common Moorhen				S1S2B	3 Sensitive	17	26.2 ± 7.0
A	*Fratercula arctica*	Atlantic Puffin				S1S2B	3 Sensitive	1	92.2 ± 0.0
A	*Empidonax traillii*	Willow Flycatcher				S1S2B	3 Sensitive	70	16.1 ± 7.0
A	*Progne subis*	Purple Martin				S1S2B	2 May Be At Risk	238	3.9 ± 7.0
A	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow				S1S2B	2 May Be At Risk	23	17.7 ± 7.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Prosopium cylindraceum*	Round Whitefish				S2	4 Secure	2	24.1 ± 0.0
A	*Salmo salar*	Atlantic Salmon				S2	2 May Be At Risk	43	23.6 ± 0.0
A	*Eptesicus fuscus*	Big Brown Bat				S2?	3 Sensitive	46	17.5 ± 1.0
A	*Lasiurus borealis*	Eastern Red Bat				S2?	5 Undetermined	9	16.6 ± 0.0
A	*Lasiurus cinereus*	Hoary Bat				S2?	5 Undetermined	9	17.6 ± 1.0
A	*Oceanodroma leucorhoa*	Leach's Storm-Petrel				S2B	3 Sensitive	4	23.7 ± 1.0
A	*Anas clypeata*	Northern Shoveler				S2B	4 Secure	40	3.9 ± 7.0
A	*Anas strepera*	Gadwall				S2B	4 Secure	30	21.6 ± 0.0
A	*Eremophila alpestris*	Horned Lark				S2B	2 May Be At Risk	22	18.2 ± 7.0
A	*Cistothorus palustris*	Marsh Wren				S2B	3 Sensitive	65	15.7 ± 0.0
A	*Toxostoma rufum*	Brown Thrasher				S2B	3 Sensitive	93	21.7 ± 7.0
A	*Pooecetes gramineus*	Vesper Sparrow				S2B	2 May Be At Risk	73	14.8 ± 0.0
A	*Tringa solitaria*	Solitary Sandpiper				S2B,S5M	4 Secure	76	12.1 ± 0.0
A	*Chroicocephalus ridibundus*	Black-headed Gull				S2M,S1N	3 Sensitive	2	23.7 ± 1.0
A	*Somateria spectabilis*	King Eider				S2N	4 Secure	1	89.3 ± 0.0
A	*Asio otus*	Long-eared Owl				S2S3	5 Undetermined	11	31.9 ± 7.0
A	*Tringa semipalmata*	Willet				S2S3B	3 Sensitive	17	12.1 ± 0.0
A	*Pinicola enucleator*	Pine Grosbeak				S2S3B,S4S5N	3 Sensitive	37	16.0 ± 7.0
A	*Branta bernicla*	Brant				S2S3M,S2S3N	4 Secure	15	73.8 ± 17.0
A	*Hyla versicolor*	Gray Treefrog				S3	4 Secure	100	22.8 ± 1.0
A	*Cepphus grylle*	Black Guillemot				S3	4 Secure	56	66.4 ± 7.0
A	*Loxia curvirostra*	Red Crossbill				S3	4 Secure	90	16.2 ± 7.0
A	*Coregonus clupeaformis*	Lake Whitefish				S3	4 Secure	16	28.2 ± 10.0
A	*Salvelinus namaycush*	Lake Trout				S3	3 Sensitive	5	48.5 ± 0.0
A	*Sorex maritimensis*	Maritime Shrew				S3	4 Secure	1	44.4 ± 1.0
A	*Synaptomys cooperi*	Southern Bog Lemming				S3	4 Secure	79	24.5 ± 1.0
A	*Picoides dorsalis*	American Three-toed Woodpecker				S3?	3 Sensitive	13	24.9 ± 1.0
A	*Anas acuta*	Northern Pintail				S3B	3 Sensitive	34	16.1 ± 7.0
A	*Anas americana*	American Wigeon				S3B	4 Secure	228	1.4 ± 7.0
A	*Cathartes aura*	Turkey Vulture				S3B	4 Secure	142	19.7 ± 7.0
A	*Rallus limicola*	Virginia Rail				S3B	3 Sensitive	93	7.4 ± 1.0
A	*Charadrius vociferus*	Killdeer				S3B	3 Sensitive	497	3.9 ± 7.0
A	*Larus delawarensis*	Ring-billed Gull				S3B	4 Secure	27	19.8 ± 0.0
A	*Myiarchus crinitus*	Great Crested Flycatcher				S3B	3 Sensitive	179	3.9 ± 7.0
A	*Mimus polyglottos*	Northern Mockingbird				S3B	3 Sensitive	105	17.7 ± 7.0
A	*Passerina cyanea*	Indigo Bunting				S3B	4 Secure	111	13.7 ± 7.0
A	*Molothrus ater*	Brown-headed Cowbird				S3B	2 May Be At Risk	203	3.9 ± 7.0
A	*Mergus serrator*	Red-breasted Merganser				S3B,S4S5N	4 Secure	56	16.1 ± 7.0
A	*Pluvialis dominica*	American Golden-Plover				S3M	3 Sensitive	31	64.1 ± 0.0
A	*Phalaropus fulicarius*	Red Phalarope				S3M	3 Sensitive	1	82.6 ± 0.0
A	*Melanitta nigra*	Black Scoter				S3M,S2S3N	3 Sensitive	50	70.8 ± 15.0
A	*Calidris maritima*	Purple Sandpiper				S3M,S3N	4 Secure	100	66.4 ± 0.0
A	*Bucephala albeola*	Bufflehead				S3N	3 Sensitive	112	45.0 ± 13.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3S4B	3 Sensitive	392	3.9 ± 7.0
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S3S4B	3 Sensitive	376	3.9 ± 7.0
A	*Piranga olivacea*	Scarlet Tanager				S3S4B	4 Secure	283	6.5 ± 7.0
A	*Coccothraustes vespertinus*	Evening Grosbeak				S3S4B,S4S5N	3 Sensitive	227	13.0 ± 7.0
A	*Podiceps auritus*	Horned Grebe			Special Concern	S4M,S4N	4 Secure	1	83.4 ± 10.0
A	*Morus bassanus*	Northern Gannet				SHB,S5M,S5N	4 Secure	1	91.7 ± 0.0
I	*Coenonympha nipisiquit*	Maritime Ringlet	Endangered	Endangered	Endangered	S1	1 At Risk	1	31.5 ± 1.0
I	*Gomphus ventricosus*	Skillet Clubtail	Endangered	Endangered	Endangered	S1	2 May Be At Risk	50	13.4 ± 0.0
I	*Cicindela marginipennis*	Cobblestone Tiger Beetle	Endangered	Endangered	Endangered	S1?	1 At Risk	17	32.6 ± 0.0
I	*Ophiogomphus howei*	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S1	2 May Be At Risk	8	52.6 ± 0.0
I	*Alasmidonta varicosa*	Brook Floater	Special Concern		Special Concern	S1S2	3 Sensitive	1	52.6 ± 0.0
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	3 Sensitive	103	11.7 ± 0.0
I	*Danaus plexippus*	Monarch	Special Concern	Special Concern	Special Concern	S3B	3 Sensitive	65	11.2 ± 0.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
I	*Lyogyrus granum*	Squat Duskysnail	Data Deficient			S2		33	46.2 ± 0.0
I	*Erynnis juvenalis*	Juvenal's Duskywing				S1	5 Undetermined	1	37.1 ± 1.0
I	*Lycaena dorcas claytoni*	Clayton's Copper				S1	2 May Be At Risk	4	89.7 ± 0.0
I	*Somatochlora septentrionalis*	Muskeg Emerald				S1	2 May Be At Risk	1	52.7 ± 1.0
I	*Celithemis martha*	Martha's Pennant				S1	5 Undetermined	1	57.0 ± 0.0
I	*Pachydiplax longipennis*	Blue Dasher				S1	5 Undetermined	2	17.8 ± 0.0
I	*Coccinella transversoguttata richardsoni*	Transverse Lady Beetle				S1S2	2 May Be At Risk	2	53.6 ± 0.0
I	*Boloria eunomia*	Bog Fritillary				S1S2	5 Undetermined	1	59.3 ± 0.0
I	*Ophiogomphus colubrinus*	Boreal Snaketail				S1S2	2 May Be At Risk	36	13.4 ± 0.0
I	*Satyrium calanus*	Banded Hairstreak				S2	3 Sensitive	12	20.0 ± 0.0
I	*Satyrium calanus falacer*	Banded Hairstreak				S2	4 Secure	4	22.8 ± 1.0
I	*Callophrys henrici*	Henry's Elfin				S2	4 Secure	12	24.3 ± 0.0
I	*Strymon melinus*	Grey Hairstreak				S2	4 Secure	3	16.2 ± 1.0
I	*Cupido comyntas*	Eastern Tailed Blue				S2	4 Secure	7	24.4 ± 0.0
I	*Gomphus vastus*	Cobra Clubtail				S2	3 Sensitive	58	11.0 ± 0.0
I	*Aeshna clepsydra*	Mottled Darner				S2	3 Sensitive	12	36.4 ± 0.0
I	*Somatochlora tenebrosa*	Clamp-Tipped Emerald				S2	5 Undetermined	5	22.6 ± 1.0
I	*Ladona exusta*	White Corporal				S2	5 Undetermined	8	63.0 ± 0.0
I	*Hetaerina americana*	American Rubyspot				S2	3 Sensitive	14	51.3 ± 0.0
I	*Coenagrion interrogatum*	Subarctic Bluet				S2	3 Sensitive	1	90.8 ± 0.0
I	*Enallagma vesperum*	Vesper Bluet				S2	5 Undetermined	6	82.6 ± 1.0
I	*Ischnura posita*	Fragile Forktail				S2	2 May Be At Risk	5	22.7 ± 0.0
I	*Arigomphus furcifer*	Lilypad Clubtail				S2	5 Undetermined	6	15.1 ± 0.0
I	*Alasmidonta undulata*	Triangle Floater				S2	3 Sensitive	53	13.3 ± 0.0
I	*Anatis labiculata*	Fifteen-spotted Lady Beetle				S2S3	3 Sensitive	1	54.0 ± 0.0
I	*Chrysops indus*	a Tabanid Fly				S2S3	3 Sensitive	2	92.4 ± 0.0
I	*Gomphus abbreviatus*	Spine-crowned Clubtail				S2S3	4 Secure	46	13.5 ± 0.0
I	*Lestes vigilax*	Swamp Spreadwing				S2S3	3 Sensitive	35	17.8 ± 0.0
I	*Hesperia sassacus*	Indian Skipper				S3	4 Secure	5	21.2 ± 2.0
I	*Euphyes bimacula*	Two-spotted Skipper				S3	4 Secure	10	32.0 ± 1.0
I	*Lycaena hyllus*	Bronze Copper				S3	3 Sensitive	4	27.8 ± 0.0
I	*Lycaena dospassosi*	Salt Marsh Copper				S3	4 Secure	1	64.9 ± 1.0
I	*Satyrium acadica*	Acadian Hairstreak				S3	4 Secure	22	28.9 ± 0.0
I	*Callophrys polios*	Hoary Elfin				S3	4 Secure	3	25.4 ± 0.0
I	*Plebejus idas*	Northern Blue				S3	4 Secure	6	63.9 ± 0.0
I	*Plebejus idas empetri*	Crowberry Blue				S3	4 Secure	8	64.8 ± 1.0
I	*Plebejus saepiolus*	Greenish Blue				S3	4 Secure	3	18.0 ± 1.0
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	4 Secure	18	0.6 ± 1.0
I	*Boloria bellona*	Meadow Fritillary				S3	4 Secure	35	0.6 ± 1.0
I	*Chlosyne nycteis*	Silvery Checkerspot				S3	4 Secure	5	24.7 ± 1.0
I	*Polygonia satyrus*	Satyr Comma				S3	4 Secure	15	16.9 ± 10.0
I	*Polygonia gracilis*	Hoary Comma				S3	4 Secure	3	25.9 ± 1.0
I	*Nymphalis l-album*	Compton Tortoiseshell				S3	4 Secure	14	24.7 ± 1.0
I	*Oeneis jutta*	Jutta Arctic				S3	4 Secure	21	16.2 ± 1.0
I	*Gomphaeschna furcillata*	Harlequin Darner				S3	5 Undetermined	11	22.6 ± 1.0
I	*Dorocordulia lepida*	Petite Emerald				S3	4 Secure	29	2.3 ± 1.0
I	*Somatochlora cingulata*	Lake Emerald				S3	4 Secure	10	35.9 ± 0.0
I	*Somatochlora forcipata*	Forcipate Emerald				S3	4 Secure	19	25.3 ± 1.0
I	*Williamsonia fletcheri*	Ebony Boghaunter				S3	4 Secure	20	20.2 ± 0.0
I	*Lestes eurinus*	Amber-Winged Spreadwing				S3	4 Secure	9	42.4 ± 1.0
I	*Enallagma geminatum*	Skimming Bluet				S3	5 Undetermined	13	23.6 ± 0.0
I	*Enallagma signatum*	Orange Bluet				S3	4 Secure	12	22.4 ± 0.0
I	*Stylurus scudderi*	Zebra Clubtail				S3	4 Secure	72	11.0 ± 0.0
I	*Leptodea ochracea*	Tidewater Mucket				S3	4 Secure	67	10.9 ± 0.0
I	*Pantala hymenaea*	Spot-Winged Glider				S3B	4 Secure	4	69.9 ± 1.0
I	*Satyrium liparops*	Striped Hairstreak				S3S4	4 Secure	2	20.0 ± 0.0
I	*Satyrium liparops strigosum*	Striped Hairstreak				S3S4	4 Secure	1	26.4 ± 10.0

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N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S3	5 Undetermined	13	35.0 ± 0.0
N	*Anomodon minor*	Blunt-leaved Anomodon Moss				S1	2 May Be At Risk	1	94.1 ± 1.0
N	*Anomodon viticulosus*	a Moss				S1	2 May Be At Risk	6	58.2 ± 0.0
N	*Bryum muehlenbeckii*	Muehlenbeck's Bryum Moss				S1	2 May Be At Risk	1	54.0 ± 1.0
N	*Bryum salinum*	a Moss				S1	2 May Be At Risk	1	72.5 ± 1.0
N	*Calliergon trifarium*	Three-ranked Moss				S1	2 May Be At Risk	1	60.2 ± 0.0
N	*Tortula obtusifolia*	a Moss				S1	2 May Be At Risk	1	87.2 ± 0.0
N	*Dichelyma falcatum*	a Moss				S1	2 May Be At Risk	2	27.5 ± 10.0
N	*Dicranum bonjeanii*	Bonjean's Broom Moss				S1	2 May Be At Risk	1	24.4 ± 1.0
N	*Ditrichum pallidum*	Pale Cow-hair Moss				S1	2 May Be At Risk	2	44.4 ± 1.0
N	*Entodon brevisetus*	a Moss				S1	2 May Be At Risk	2	78.4 ± 10.0
N	*Eurhynchium hians*	Light Beaked Moss				S1	2 May Be At Risk	2	25.9 ± 1.0
N	*Fissidens taxifolius*	Yew-leaved Pocket Moss				S1	2 May Be At Risk	4	90.7 ± 0.0
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1	2 May Be At Risk	2	78.4 ± 10.0
N	*Meesia triquetra*	Three-ranked Cold Moss				S1	2 May Be At Risk	2	41.1 ± 100.0
N	*Plagiothecium latebricola*	Alder Silk Moss				S1	2 May Be At Risk	1	68.4 ± 0.0
N	*Rhytidium rugosum*	Wrinkle-leaved Moss				S1	2 May Be At Risk	1	85.0 ± 0.0
N	*Seligeria brevifolia*	a Moss				S1	3 Sensitive	1	99.0 ± 1.0
N	*Sphagnum macrophyllum*	Sphagnum				S1	2 May Be At Risk	2	39.4 ± 0.0
N	*Sphagnum subfulvum*	a Peatmoss				S1	2 May Be At Risk	4	70.8 ± 1.0
N	*Splachnum pennsylvanicum*	Southern Dung Moss				S1	2 May Be At Risk	3	28.1 ± 1.0
N	*Timmia norvegica*	a moss				S1	2 May Be At Risk	1	71.3 ± 0.0
N	*Tomentypnum falcifolium*	Sickle-leaved Golden Moss				S1	2 May Be At Risk	1	70.8 ± 1.0
N	*Syntrichia ruralis*	a Moss				S1	2 May Be At Risk	1	79.2 ± 0.0
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1	2 May Be At Risk	2	25.7 ± 1.0
N	*Hamatocaulis vernicosus*	a Moss				S1	2 May Be At Risk	1	73.0 ± 100.0
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S1?	5 Undetermined	3	44.4 ± 1.0
N	*Anomobryum filiforme*	a moss				S1?	5 Undetermined	2	25.9 ± 1.0
N	*Platylomella lescurii*	a Moss				S1?	5 Undetermined	1	71.9 ± 1.0
N	*Andreaea rothii*	a Moss				S1S2	3 Sensitive	1	75.9 ± 0.0
N	*Brachythecium digastrum*	a Moss				S1S2	3 Sensitive	2	25.9 ± 1.0
N	*Bryum pallescens*	Pale Bryum Moss				S1S2	5 Undetermined	2	31.5 ± 1.0
N	*Campylium radicale*	Long-stalked Fine Wet Moss				S1S2	5 Undetermined	1	25.9 ± 1.0
N	*Dicranum spurium*	Spurred Broom Moss				S1S2	3 Sensitive	2	69.6 ± 1.0
N	*Didymodon ferrugineus*	a moss				S1S2	3 Sensitive	3	59.3 ± 1.0
N	*Anomodon tristis*	a Moss				S1S2	2 May Be At Risk	1	44.8 ± 1.0
N	*Hygrohypnum bestii*	Best's Brook Moss				S1S2	3 Sensitive	4	90.1 ± 0.0
N	*Hygrohypnum montanum*	a Moss				S1S2	3 Sensitive	1	96.4 ± 1.0
N	*Schistostega pennata*	Luminous Moss				S1S2	3 Sensitive	3	25.9 ± 1.0
N	*Seligeria campylopoda*	a Moss				S1S2	3 Sensitive	2	73.0 ± 100.0
N	*Seligeria diversifolia*	a Moss				S1S2	3 Sensitive	2	31.7 ± 0.0
N	*Sphagnum angermanicum*	a Peatmoss				S1S2	3 Sensitive	3	44.2 ± 1.0
N	*Tortula mucronifolia*	Mucronate Screw Moss				S1S2	3 Sensitive	1	64.2 ± 0.0
N	*Plagiomnium rostratum*	Long-beaked Leafy Moss				S1S2	3 Sensitive	2	71.6 ± 0.0
N	*Calypogeia neesiana*	Nees' Pouchwort				S1S3	6 Not Assessed	1	58.2 ± 1.0
N	*Cephaloziella elachista*	Spurred Threadwort				S1S3	6 Not Assessed	1	60.6 ± 5.0
N	*Jungermannia obovata*	Egg Flapwort				S1S3	6 Not Assessed	1	54.0 ± 0.0
N	*Porella pinnata*	Pinnate Scalewort				S1S3	6 Not Assessed	2	55.1 ± 1.0
N	*Reboulia hemisphaerica*	Purple-margined Liverwort				S1S3	6 Not Assessed	1	87.4 ± 1.0
N	*Campylium polygamum*	a Moss				S2	3 Sensitive	1	75.3 ± 1.0
N	*Cirriphyllum piliferum*	Hair-pointed Moss				S2	3 Sensitive	5	78.4 ± 10.0
N	*Dicranella palustris*	Drooping-Leaved Fork Moss				S2	3 Sensitive	2	41.1 ± 100.0
N	*Fissidens bushii*	Bush's Pocket Moss				S2	3 Sensitive	1	98.6 ± 1.0
N	*Hypnum pratense*	Meadow Plait Moss				S2	3 Sensitive	1	60.8 ± 0.0
N	*Physcomitrium immersum*	a Moss				S2	3 Sensitive	6	25.9 ± 1.0
N	*Physcomitrium pyriforme*	Pear-shaped Urn Moss				S2	3 Sensitive	5	13.1 ± 0.0
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2	3 Sensitive	3	59.5 ± 0.0

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N	*Sphagnum centrale*	Central Peat Moss				S2	3 Sensitive	1	87.2 ± 0.0
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S2	3 Sensitive	7	60.6 ± 1.0
N	*Taxiphyllum deplanatum*	Imbricate Yew-leaved Moss				S2	3 Sensitive	1	98.2 ± 0.0
N	*Tayloria serrata*	Serrate Trumpet Moss				S2	3 Sensitive	2	81.9 ± 1.0
N	*Thamnobryum alleghaniense*	a Moss				S2	3 Sensitive	3	71.5 ± 0.0
N	*Calliergonella cuspidata*	Common Large Wetland Moss				S2S3	3 Sensitive	5	59.5 ± 0.0
N	*Ephemerum serratum*	a Moss				S2S3	3 Sensitive	2	79.2 ± 0.0
N	*Sphaerophorus globosus*	Northern Coral Lichen				S2S3	3 Sensitive	1	49.8 ± 0.0
N	*Cephaloziella divaricata*	Common Threadwort				S2S4	6 Not Assessed	2	62.6 ± 10.0
N	*Riccia fluitans*	Floating Crystalwort				S2S4	6 Not Assessed	4	22.0 ± 0.0
N	*Pleuridium subulatum*	a Moss				S3	3 Sensitive	3	24.2 ± 1.0
N	*Sphagnum torreyanum*	a Peatmoss				S3	4 Secure	4	67.1 ± 0.0
N	*Trichostomum tenuirostre*	Acid-Soil Moss				S3	4 Secure	1	98.2 ± 0.0
N	*Sphagnum lescurii*	a Peatmoss				S3?	5 Undetermined	3	58.1 ± 0.0
N	*Dicranella schreberiana*	Schreber's Forklet Moss				S3S4	4 Secure	1	25.9 ± 1.0
N	*Fissidens bryoides*	Lesser Pocket Moss				S3S4	4 Secure	1	98.2 ± 0.0
N	*Tortula truncata*	a Moss				S3S4	4 Secure	4	39.7 ± 1.0
N	*Limprichtia revolvens*	a Moss				S3S4	4 Secure	2	94.0 ± 0.0
N	*Grimmia anodon*	Toothless Grimmia Moss				SH	5 Undetermined	2	63.4 ± 10.0
N	*Leucodon brachypus*	a Moss				SH	2 May Be At Risk	2	55.9 ± 10.0
N	*Orthotrichum gymnostomum*	a Moss				SH	2 May Be At Risk	1	57.5 ± 10.0
N	*Thelia hirtella*	a Moss				SH	2 May Be At Risk	1	41.1 ± 100.0
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				SH	2 May Be At Risk	3	72.9 ± 10.0
N	*Platismatia norvegica*	Oldgrowth Rag Lichen				SH	5 Undetermined	1	49.5 ± 0.0
P	*Juglans cinerea*	Butternut	Endangered	Endangered	Endangered	S1	1 At Risk	123	9.1 ± 1.0
P	*Polemonium vanbruntiae*	Van Brunt's Jacob's-ladder	Threatened	Threatened	Threatened	S1	1 At Risk	70	68.8 ± 1.0
P	*Symphyotrichum anticostense*	Anticosti Aster	Threatened	Threatened	Endangered	S1S3	1 At Risk	7	36.6 ± 0.0
P	*Symphyotrichum praealtum*	Willow-leaved Aster	Threatened	Threatened		SNA	7 Exotic	1	86.2 ± 1.0
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	1 At Risk	22	24.9 ± 0.0
P	*Pterospora andromedea*	Woodland Pinedrops			Endangered	S1	1 At Risk	24	32.4 ± 0.0
P	*Cryptotaenia canadensis*	Canada Honewort				S1	2 May Be At Risk	5	74.5 ± 1.0
P	*Sanicula trifoliata*	Large-Fruited Sanicle				S1	2 May Be At Risk	6	55.6 ± 5.0
P	*Antennaria parlinii*	a Pussytoes				S1	2 May Be At Risk	7	35.9 ± 1.0
P	*Antennaria howellii ssp. petaloidea*	Pussy-Toes				S1	2 May Be At Risk	2	52.9 ± 1.0
P	*Bidens discoidea*	Swamp Beggarticks				S1	2 May Be At Risk	3	20.2 ± 0.0
P	*Pseudognaphalium obtusifolium*	Eastern Cudweed				S1	2 May Be At Risk	2	48.5 ± 0.0
P	*Helianthus decapetalus*	Ten-rayed Sunflower				S1	2 May Be At Risk	20	34.8 ± 0.0
P	*Hieracium kalmii*	Kalm's Hawkweed				S1	2 May Be At Risk	4	24.7 ± 6.0
P	*Hieracium kalmii var. kalmii*	Kalm's Hawkweed				S1	2 May Be At Risk	4	25.0 ± 1.0
P	*Hieracium paniculatum*	Panicled Hawkweed				S1	2 May Be At Risk	4	29.5 ± 0.0
P	*Hieracium robinsonii*	Robinson's Hawkweed				S1	3 Sensitive	1	92.6 ± 0.0
P	*Solidago simplex var. monticola*	Sticky Goldenrod				S1	2 May Be At Risk	1	35.0 ± 0.0
P	*Symphyotrichum laeve*	Smooth Aster				S1	5 Undetermined	5	80.3 ± 1.0
P	*Cardamine parviflora var. arenicola*	Small-flowered Bittercress				S1	2 May Be At Risk	5	44.6 ± 0.0
P	*Draba arabisans*	Rock Whitlow-Grass				S1	2 May Be At Risk	3	54.2 ± 0.0
P	*Draba breweri var. cana*	Brewer's Whitlow-grass				S1	2 May Be At Risk	10	32.8 ± 0.0
P	*Draba glabella*	Rock Whitlow-Grass				S1	2 May Be At Risk	7	24.1 ± 1.0
P	*Minuartia groenlandica*	Greenland Stitchwort				S1	2 May Be At Risk	1	48.9 ± 0.0
P	*Chenopodium capitatum*	Strawberry-blite				S1	2 May Be At Risk	5	24.2 ± 6.0
P	*Chenopodium simplex*	Maple-leaved Goosefoot				S1	2 May Be At Risk	8	25.3 ± 1.0
P	*Callitriche terrestris*	Terrestrial Water-Starwort				S1	5 Undetermined	1	90.9 ± 0.0
P	*Triadenum virginicum*	Virginia St John's-wort				S1	2 May Be At Risk	7	47.2 ± 0.0
P	*Viburnum acerifolium*	Maple-leaved Viburnum				S1	2 May Be At Risk	10	98.8 ± 0.0
P	*Cuscuta pentagona*	Five-angled Dodder				S1	2 May Be At Risk	3	34.8 ± 10.0
P	*Drosera anglica*	English Sundew				S1	2 May Be At Risk	1	88.6 ± 0.0
P	*Drosera linearis*	Slender-Leaved Sundew				S1	2 May Be At Risk	1	88.6 ± 0.0
P	*Corema conradii*	Broom Crowberry				S1	2 May Be At Risk	1	65.3 ± 10.0

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P	*Vaccinium boreale*	Northern Blueberry				S1	2 May Be At Risk	1	57.5 ± 0.0
P	*Vaccinium corymbosum*	Highbush Blueberry				S1	3 Sensitive	9	75.5 ± 5.0
P	*Desmodium glutinosum*	Large Tick-Trefoil				S1	2 May Be At Risk	3	87.9 ± 0.0
P	*Lespedeza capitata*	Round-headed Bush-clover				S1	2 May Be At Risk	5	32.0 ± 0.0
P	*Gentiana rubricaulis*	Purple-stemmed Gentian				S1	2 May Be At Risk	14	53.3 ± 0.0
P	*Lomatogonium rotatum*	Marsh Felwort				S1	2 May Be At Risk	2	94.5 ± 0.0
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S1	2 May Be At Risk	1	61.1 ± 0.0
P	*Pycnanthemum virginianum*	Virginia Mountain Mint				S1	2 May Be At Risk	4	44.9 ± 0.0
P	*Decodon verticillatus*	Swamp Loosestrife				S1	2 May Be At Risk	3	68.6 ± 0.0
P	*Polygala verticillata var. verticillata*	Whorled Milkwort				S1	5 Undetermined	2	97.8 ± 0.0
P	*Lysimachia hybrida*	Lowland Yellow Loosestrife				S1	2 May Be At Risk	15	88.2 ± 0.0
P	*Lysimachia quadrifolia*	Whorled Yellow Loosestrife				S1	2 May Be At Risk	14	41.8 ± 0.0
P	*Ranunculus sceleratus*	Cursed Buttercup				S1	2 May Be At Risk	6	24.5 ± 0.0
P	*Crataegus jonesiae*	Jones' Hawthorn				S1	2 May Be At Risk	6	23.2 ± 1.0
P	*Potentilla canadensis*	Canada Cinquefoil				S1	5 Undetermined	1	63.7 ± 0.0
P	*Rosa acicularis ssp. sayi*	Prickly Rose				S1	2 May Be At Risk	34	87.8 ± 0.0
P	*Waldsteinia fragarioides*	Barren Strawberry				S1	2 May Be At Risk	27	83.3 ± 0.0
P	*Galium brevipes*	Limestone Swamp Bedstraw				S1	2 May Be At Risk	3	49.5 ± 5.0
P	*Saxifraga paniculata ssp. neogaea*	White Mountain Saxifrage				S1	2 May Be At Risk	12	54.2 ± 10.0
P	*Agalinis paupercula var. borealis*	Small-flowered Agalinis				S1	2 May Be At Risk	7	24.6 ± 0.0
P	*Agalinis tenuifolia*	Slender Agalinis				S1	2 May Be At Risk	6	19.6 ± 0.0
P	*Gratiola aurea*	Golden Hedge-Hyssop				S1	3 Sensitive	2	53.5 ± 0.0
P	*Pedicularis canadensis*	Canada Lousewort				S1	2 May Be At Risk	20	32.4 ± 0.0
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S1	2 May Be At Risk	10	28.6 ± 0.0
P	*Alisma subcordatum*	Southern Water Plantain				S1	5 Undetermined	8	21.4 ± 0.0
P	*Carex atlantica ssp. atlantica*	Atlantic Sedge				S1	2 May Be At Risk	1	99.5 ± 0.0
P	*Carex backii*	Rocky Mountain Sedge				S1	2 May Be At Risk	6	32.4 ± 1.0
P	*Carex cephaloidea*	Thin-leaved Sedge				S1	2 May Be At Risk	11	45.9 ± 0.0
P	*Carex merritt-fernaldii*	Merritt Fernald's Sedge				S1	2 May Be At Risk	2	86.0 ± 0.0
P	*Carex saxatilis*	Russet Sedge				S1	2 May Be At Risk	13	53.0 ± 0.0
P	*Carex sterilis*	Sterile Sedge				S1	2 May Be At Risk	2	38.8 ± 0.0
P	*Carex grisea*	Inflated Narrow-leaved Sedge				S1	2 May Be At Risk	11	30.8 ± 1.0
P	*Cyperus diandrus*	Low Flatsedge				S1	2 May Be At Risk	7	19.6 ± 1.0
P	*Cyperus lupulinus*	Hop Flatsedge				S1	2 May Be At Risk	2	28.5 ± 0.0
P	*Cyperus lupulinus ssp. macilentus*	Hop Flatsedge				S1	2 May Be At Risk	16	25.7 ± 1.0
P	*Eleocharis olivacea*	Yellow Spikerush				S1	2 May Be At Risk	3	87.4 ± 1.0
P	*Rhynchospora capillacea*	Slender Beakrush				S1	2 May Be At Risk	3	35.9 ± 0.0
P	*Scirpus pendulus*	Hanging Bulrush				S1	2 May Be At Risk	5	95.2 ± 0.0
P	*Sisyrinchium angustifolium*	Narrow-leaved Blue-eyed-grass				S1	2 May Be At Risk	3	68.1 ± 1.0
P	*Juncus greenei*	Greene's Rush				S1	2 May Be At Risk	1	73.5 ± 0.0
P	*Juncus subtilis*	Creeping Rush				S1	2 May Be At Risk	1	29.7 ± 5.0
P	*Allium canadense*	Canada Garlic				S1	2 May Be At Risk	11	35.0 ± 0.0
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S1	2 May Be At Risk	2	25.7 ± 0.0
P	*Malaxis brachypoda*	White Adder's-Mouth				S1	2 May Be At Risk	11	59.1 ± 0.0
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S1	2 May Be At Risk	13	9.5 ± 10.0
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S1	2 May Be At Risk	4	25.6 ± 1.0
P	*Spiranthes casei*	Case's Ladies'-Tresses				S1	2 May Be At Risk	6	32.4 ± 0.0
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S1	2 May Be At Risk	2	57.8 ± 5.0
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1	2 May Be At Risk	22	22.5 ± 0.0
P	*Danthonia compressa*	Flattened Oat Grass				S1	2 May Be At Risk	3	64.7 ± 0.0
P	*Dichanthelium dichotomum*	Forked Panic Grass				S1	2 May Be At Risk	19	48.8 ± 1.0
P	*Dichanthelium xanthophysum*	Slender Panic Grass				S1	2 May Be At Risk	6	93.0 ± 0.0
P	*Elymus wiegandii*	Wiegand's Wild Rye				S1	2 May Be At Risk	1	65.2 ± 0.0
P	*Elymus hystrix var. bigeloviana*	Spreading Wild Rye				S1	2 May Be At Risk	20	83.0 ± 0.0
P	*Glyceria obtusa*	Atlantic Manna Grass				S1	2 May Be At Risk	6	47.7 ± 0.0
P	*Sporobolus compositus*	Rough Dropseed				S1	2 May Be At Risk	17	34.7 ± 0.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Potamogeton friesii*	Fries' Pondweed				S1	2 May Be At Risk	6	25.8 ± 5.0
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	2 May Be At Risk	4	15.0 ± 0.0
P	*Potamogeton strictifolius*	Straight-leaved Pondweed				S1	2 May Be At Risk	2	52.9 ± 0.0
P	*Xyris difformis*	Bog Yellow-eyed-grass				S1	5 Undetermined	3	47.2 ± 0.0
P	*Asplenium ruta-muraria var. cryptolepis*	Wallrue Spleenwort				S1	2 May Be At Risk	3	54.2 ± 0.0
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S1	2 May Be At Risk	1	84.9 ± 1.0
P	*Botrychium oneidense*	Blunt-lobed Moonwort				S1	2 May Be At Risk	8	9.2 ± 0.0
P	*Botrychium rugulosum*	Rugulose Moonwort				S1	2 May Be At Risk	5	60.7 ± 1.0
P	*Schizaea pusilla*	Little Curlygrass Fern				S1	2 May Be At Risk	20	66.0 ± 0.0
P	*Hieracium kalmii var. fasciculatum*	Kalm's Hawkweed				S1?	5 Undetermined	4	23.4 ± 1.0
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S1?	2 May Be At Risk	2	52.9 ± 0.0
P	*Drosera rotundifolia var. comosa*	Round-leaved Sundew				S1?	5 Undetermined	2	90.2 ± 1.0
P	*Wolffia columbiana*	Columbian Watermeal				S1?	2 May Be At Risk	5	10.7 ± 0.0
P	*Humulus lupulus var. lupuloides*	Common Hop				S1S2	3 Sensitive	5	21.6 ± 0.0
P	*Rumex aquaticus var. fenestratus*	Western Dock				S1S2	2 May Be At Risk	1	20.6 ± 1.0
P	*Saxifraga virginiensis*	Early Saxifrage				S1S2	2 May Be At Risk	14	32.3 ± 0.0
P	*Viola canadensis*	Canada Violet				S1S2	2 May Be At Risk	13	98.2 ± 0.0
P	*Potamogeton bicupulatus*	Snailseed Pondweed				S1S2	2 May Be At Risk	5	38.7 ± 0.0
P	*Selaginella rupestris*	Rock Spikemoss				S1S2	2 May Be At Risk	14	36.0 ± 1.0
P	*Thelypteris simulata*	Bog Fern				S1S2	2 May Be At Risk	7	21.2 ± 0.0
P	*Listera australis*	Southern Twayblade			Endangered	S2	1 At Risk	15	31.2 ± 0.0
P	*Sanicula odorata*	Clustered Sanicle				S2	2 May Be At Risk	9	41.2 ± 0.0
P	*Pseudognaphalium macounii*	Macoun's Cudweed				S2	3 Sensitive	10	14.7 ± 1.0
P	*Solidago altissima*	Tall Goldenrod				S2	4 Secure	6	11.3 ± 1.0
P	*Solidago simplex var. racemosa*	Sticky Goldenrod				S2	2 May Be At Risk	14	34.5 ± 1.0
P	*Solidago simplex ssp. randii*	Sticky Goldenrod				S2	2 May Be At Risk	2	34.0 ± 0.0
P	*Solidago simplex*	Sticky Goldenrod				S2	2 May Be At Risk	2	34.1 ± 0.0
P	*Ionactis linariifolius*	Stiff Aster				S2	3 Sensitive	15	30.2 ± 0.0
P	*Symphyotrichum racemosum*	Small White Aster				S2	3 Sensitive	9	3.9 ± 0.0
P	*Impatiens pallida*	Pale Jewelweed				S2	2 May Be At Risk	3	96.4 ± 0.0
P	*Alnus serrulata*	Smooth Alder				S2	3 Sensitive	57	26.1 ± 0.0
P	*Arabis drummondii*	Drummond's Rockcress				S2	3 Sensitive	14	32.8 ± 0.0
P	*Cardamine concatenata*	Cut-leaved Toothwort				S2	2 May Be At Risk	11	38.5 ± 1.0
P	*Sagina nodosa*	Knotted Pearlwort				S2	3 Sensitive	3	71.1 ± 1.0
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S2	3 Sensitive	1	71.4 ± 0.0
P	*Stellaria longifolia*	Long-leaved Starwort				S2	3 Sensitive	9	8.9 ± 10.0
P	*Atriplex franktonii*	Frankton's Saltbush				S2	4 Secure	3	86.2 ± 1.0
P	*Chenopodium rubrum*	Red Pigweed				S2	3 Sensitive	4	55.1 ± 1.0
P	*Callitriche hermaphroditica*	Northern Water-starwort				S2	4 Secure	6	28.2 ± 0.0
P	*Hypericum dissimulatum*	Disguised St John's-wort				S2	3 Sensitive	3	6.8 ± 0.0
P	*Lonicera oblongifolia*	Swamp Fly Honeysuckle				S2	3 Sensitive	20	59.6 ± 6.0
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S2	3 Sensitive	18	36.1 ± 1.0
P	*Viburnum lentago*	Nannyberry				S2	4 Secure	101	50.9 ± 0.0
P	*Viburnum recognitum*	Northern Arrow-Wood				S2	4 Secure	168	66.2 ± 0.0
P	*Astragalus eucosmus*	Elegant Milk-vetch				S2	2 May Be At Risk	11	35.7 ± 1.0
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S2	3 Sensitive	11	35.0 ± 0.0
P	*Quercus macrocarpa*	Bur Oak				S2	2 May Be At Risk	38	22.7 ± 0.0
P	*Gentiana linearis*	Narrow-Leaved Gentian				S2	3 Sensitive	11	25.5 ± 5.0
P	*Myriophyllum humile*	Low Water Milfoil				S2	3 Sensitive	10	6.8 ± 1.0
P	*Hedeoma pulegioides*	American False Pennyroyal				S2	4 Secure	15	41.2 ± 0.0
P	*Nuphar lutea ssp. rubrodisca*	Red-disked Yellow Pond-lily				S2	3 Sensitive	9	6.7 ± 10.0
P	*Orobanche uniflora*	One-Flowered Broomrape				S2	3 Sensitive	13	24.4 ± 1.0
P	*Polygala paucifolia*	Fringed Milkwort				S2	3 Sensitive	16	9.0 ± 1.0
P	*Polygala sanguinea*	Blood Milkwort				S2	3 Sensitive	18	5.1 ± 0.0
P	*Polygala senega*	Seneca Snakeroot				S2	3 Sensitive	7	45.7 ± 1.0
P	*Polygonum amphibium var. emersum*	Water Smartweed				S2	3 Sensitive	11	22.5 ± 1.0
P	*Polygonum careyi*	Carey's Smartweed				S2	3 Sensitive	15	15.9 ± 1.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Podostemum ceratophyllum*	Horn-leaved Riverweed				S2	3 Sensitive	45	16.0 ± 0.0
P	*Anemone multifida*	Cut-leaved Anemone				S2	3 Sensitive	2	36.8 ± 0.0
P	*Hepatica nobilis var. obtusa*	Round-lobed Hepatica				S2	3 Sensitive	46	28.1 ± 1.0
P	*Ranunculus flabellaris*	Yellow Water Buttercup				S2	4 Secure	20	9.6 ± 1.0
P	*Ranunculus longirostris*	Eastern White Water-Crowfoot				S2	5 Undetermined	5	27.1 ± 1.0
P	*Crataegus scabrida*	Rough Hawthorn				S2	3 Sensitive	8	39.7 ± 1.0
P	*Crataegus succulenta*	Fleshy Hawthorn				S2	3 Sensitive	1	25.9 ± 5.0
P	*Cephalanthus occidentalis*	Common Buttonbush				S2	3 Sensitive	66	21.8 ± 0.0
P	*Salix candida*	Sage Willow				S2	3 Sensitive	2	43.9 ± 1.0
P	*Castilleja septentrionalis*	Northeastern Paintbrush				S2	3 Sensitive	6	92.6 ± 0.0
P	*Euphrasia randii*	Rand's Eyebright				S2	2 May Be At Risk	5	71.5 ± 0.0
P	*Scrophularia lanceolata*	Lance-leaved Figwort				S2	3 Sensitive	8	29.2 ± 100.0
P	*Dirca palustris*	Eastern Leatherwood				S2	2 May Be At Risk	8	32.5 ± 0.0
P	*Phryma leptostachya*	American Lopseed				S2	3 Sensitive	11	37.9 ± 1.0
P	*Verbena urticifolia*	White Vervain				S2	2 May Be At Risk	15	32.7 ± 1.0
P	*Viola novae-angliae*	New England Violet				S2	3 Sensitive	7	44.3 ± 0.0
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S2	3 Sensitive	52	50.9 ± 2.0
P	*Carex granularis*	Limestone Meadow Sedge				S2	3 Sensitive	7	23.4 ± 0.0
P	*Carex gynocrates*	Northern Bog Sedge				S2	3 Sensitive	6	74.4 ± 0.0
P	*Carex hirtifolia*	Pubescent Sedge				S2	3 Sensitive	30	36.8 ± 0.0
P	*Carex livida var. radicaulis*	Livid Sedge				S2	3 Sensitive	1	65.2 ± 2.0
P	*Carex salina*	Saltmarsh Sedge				S2	3 Sensitive	2	64.6 ± 1.0
P	*Carex sprengelii*	Longbeak Sedge				S2	3 Sensitive	25	32.7 ± 0.0
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S2	2 May Be At Risk	2	54.9 ± 0.0
P	*Carex albicans var. emmonsii*	White-tinged Sedge				S2	3 Sensitive	4	32.8 ± 0.0
P	*Carex vacillans*	Estuarine Sedge				S2	3 Sensitive	3	80.5 ± 1.0
P	*Cyperus squarrosus*	Awned Flatsedge				S2	3 Sensitive	25	20.4 ± 10.0
P	*Eriophorum gracile*	Slender Cottongrass				S2	2 May Be At Risk	2	22.9 ± 0.0
P	*Elodea nuttallii*	Nuttall's Waterweed				S2	3 Sensitive	9	15.0 ± 0.0
P	*Juncus vaseyi*	Vasey Rush				S2	3 Sensitive	8	92.0 ± 0.0
P	*Lemna trisulca*	Star Duckweed				S2	4 Secure	18	30.7 ± 0.0
P	*Allium tricoccum*	Wild Leek				S2	2 May Be At Risk	19	60.1 ± 0.0
P	*Najas gracillima*	Thread-Like Naiad				S2	3 Sensitive	11	21.7 ± 0.0
P	*Calypso bulbosa var. americana*	Calypso				S2	2 May Be At Risk	17	25.5 ± 1.0
P	*Coeloglossum viride var. virescens*	Long-bracted Frog Orchid				S2	2 May Be At Risk	7	18.4 ± 5.0
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	2 May Be At Risk	8	23.3 ± 1.0
P	*Galearis spectabilis*	Showy Orchis				S2	2 May Be At Risk	25	83.5 ± 1.0
P	*Goodyera oblongifolia*	Menzies' Rattlesnake-plantain				S2	3 Sensitive	1	66.0 ± 0.0
P	*Spiranthes cernua*	Nodding Ladies'-Tresses				S2	3 Sensitive	12	15.8 ± 1.0
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	3 Sensitive	22	12.9 ± 50.0
P	*Agrostis mertensii*	Northern Bent Grass				S2	2 May Be At Risk	1	92.8 ± 0.0
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2	3 Sensitive	13	27.8 ± 0.0
P	*Elymus canadensis*	Canada Wild Rye				S2	2 May Be At Risk	16	11.4 ± 1.0
P	*Leersia virginica*	White Cut Grass				S2	2 May Be At Risk	41	7.4 ± 10.0
P	*Piptatherum canadense*	Canada Rice Grass				S2	3 Sensitive	5	10.8 ± 0.0
P	*Puccinellia phryganodes*	Creeping Alkali Grass				S2	3 Sensitive	9	75.1 ± 0.0
P	*Schizachyrium scoparium*	Little Bluestem				S2	3 Sensitive	40	6.0 ± 0.0
P	*Zizania aquatica var. aquatica*	Indian Wild Rice				S2	5 Undetermined	6	25.9 ± 5.0
P	*Piptatherum pungens*	Slender Rice Grass				S2	2 May Be At Risk	5	92.8 ± 0.0
P	*Stuckenia filiformis ssp. alpina*	Thread-leaved Pondweed				S2	3 Sensitive	6	59.3 ± 0.0
P	*Potamogeton richardsonii*	Richardson's Pondweed				S2	3 Sensitive	16	17.7 ± 2.0
P	*Potamogeton vaseyi*	Vasey's Pondweed				S2	3 Sensitive	10	47.0 ± 0.0
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S2	3 Sensitive	12	39.1 ± 0.0
P	*Woodwardia virginica*	Virginia Chain Fern				S2	3 Sensitive	19	25.2 ± 0.0
P	*Woodsia alpina*	Alpine Cliff Fern				S2	3 Sensitive	6	54.3 ± 0.0
P	*Selaginella selaginoides*	Low Spikemoss				S2	3 Sensitive	4	59.5 ± 6.0
P	*Toxicodendron radicans*	Poison Ivy				S2?	3 Sensitive	13	10.8 ± 1.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2?	3 Sensitive	7	41.1 ± 5.0
P	*Symphyotrichum novi-belgii var. crenifolium*	New York Aster				S2?	5 Undetermined	4	25.0 ± 1.0
P	*Proserpinaca palustris var. crebra*	Marsh Mermaidweed				S2?	3 Sensitive	21	52.5 ± 0.0
P	*Epilobium coloratum*	Purple-veined Willowherb				S2?	3 Sensitive	9	25.0 ± 1.0
P	*Rubus pensilvanicus*	Pennsylvania Blackberry				S2?	4 Secure	13	15.6 ± 3.0
P	*Rubus recurvicaulis*	Arching Dewberry				S2?	4 Secure	5	23.9 ± 1.0
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2?	4 Secure	6	19.2 ± 1.0
P	*Salix myricoides*	Bayberry Willow				S2?	3 Sensitive	14	34.7 ± 0.0
P	*Platanthera huronensis*	Fragrant Green Orchid				S2?	5 Undetermined	3	56.9 ± 0.0
P	*Eragrostis pectinacea*	Tufted Love Grass				S2?	4 Secure	15	11.1 ± 1.0
P	*Ceratophyllum echinatum*	Prickly Hornwort				S2S3	3 Sensitive	15	6.3 ± 0.0
P	*Elatine americana*	American Waterwort				S2S3	3 Sensitive	8	21.6 ± 0.0
P	*Bartonia paniculata*	Branched Bartonia				S2S3	3 Sensitive	4	70.5 ± 0.0
P	*Bartonia paniculata ssp. iodandra*	Branched Bartonia				S2S3	3 Sensitive	31	40.4 ± 0.0
P	*Geranium robertianum*	Herb Robert				S2S3	4 Secure	21	51.2 ± 1.0
P	*Myriophyllum quitense*	Andean Water Milfoil				S2S3	4 Secure	71	42.3 ± 0.0
P	*Rumex pallidus*	Seabeach Dock				S2S3	3 Sensitive	5	28.8 ± 1.0
P	*Galium labradoricum*	Labrador Bedstraw				S2S3	3 Sensitive	5	34.2 ± 0.0
P	*Valeriana uliginosa*	Swamp Valerian				S2S3	3 Sensitive	2	76.6 ± 0.0
P	*Carex adusta*	Lesser Brown Sedge				S2S3	4 Secure	6	16.9 ± 10.0
P	*Carex plantaginea*	Plantain-Leaved Sedge				S2S3	3 Sensitive	8	36.7 ± 1.0
P	*Juncus brachycephalus*	Small-Head Rush				S2S3	3 Sensitive	5	83.9 ± 0.0
P	*Corallorhiza maculata var. occidentalis*	Spotted Coralroot				S2S3	3 Sensitive	8	25.5 ± 1.0
P	*Corallorhiza maculata var. maculata*	Spotted Coralroot				S2S3	3 Sensitive	2	23.2 ± 1.0
P	*Listera auriculata*	Auricled Twayblade				S2S3	3 Sensitive	9	32.2 ± 0.0
P	*Potamogeton praelongus*	White-stemmed Pondweed				S2S3	4 Secure	18	53.6 ± 0.0
P	*Isoetes acadiensis*	Acadian Quillwort				S2S3	3 Sensitive	10	29.7 ± 1.0
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	3 Sensitive	8	19.9 ± 1.0
P	*Panax trifolius*	Dwarf Ginseng				S3	3 Sensitive	16	26.6 ± 5.0
P	*Arnica lanceolata*	Lance-leaved Arnica				S3	4 Secure	19	52.4 ± 0.0
P	*Artemisia campestris*	Field Wormwood				S3	4 Secure	5	28.6 ± 0.0
P	*Artemisia campestris ssp. caudata*	Field Wormwood				S3	4 Secure	78	25.8 ± 0.0
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	4 Secure	7	28.3 ± 0.0
P	*Prenanthes racemosa*	Glaucous Rattlesnakeroot				S3	4 Secure	59	25.2 ± 100.0
P	*Tanacetum bipinnatum ssp. huronense*	Lake Huron Tansy				S3	4 Secure	24	30.1 ± 0.0
P	*Symphyotrichum boreale*	Boreal Aster				S3	3 Sensitive	20	37.4 ± 10.0
P	*Betula pumila*	Bog Birch				S3	4 Secure	20	6.0 ± 10.0
P	*Arabis glabra*	Tower Mustard				S3	5 Undetermined	7	87.3 ± 0.0
P	*Arabis hirsuta var. pycnocarpa*	Western Hairy Rockcress				S3	4 Secure	15	32.7 ± 0.0
P	*Cardamine maxima*	Large Toothwort				S3	4 Secure	43	25.6 ± 0.0
P	*Subularia aquatica var. americana*	Water Awlwort				S3	4 Secure	18	42.8 ± 1.0
P	*Lobelia cardinalis*	Cardinal Flower				S3	4 Secure	378	15.9 ± 0.0
P	*Stellaria humifusa*	Saltmarsh Starwort				S3	4 Secure	6	66.1 ± 0.0
P	*Hudsonia tomentosa*	Woolly Beach-heath				S3	4 Secure	3	51.0 ± 0.0
P	*Cornus amomum ssp. obliqua*	Pale Dogwood				S3	3 Sensitive	229	26.1 ± 0.0
P	*Crassula aquatica*	Water Pygmyweed				S3	4 Secure	3	22.6 ± 1.0
P	*Rhodiola rosea*	Roseroot				S3	4 Secure	30	52.0 ± 5.0
P	*Penthorum sedoides*	Ditch Stonecrop				S3	4 Secure	56	10.2 ± 1.0
P	*Elatine minima*	Small Waterwort				S3	4 Secure	55	27.9 ± 0.0
P	*Astragalus alpinus var. brunetianus*	Alpine Milk-Vetch				S3	4 Secure	7	34.1 ± 0.0
P	*Hedysarum alpinum*	Alpine Sweet-vetch				S3	4 Secure	2	60.0 ± 0.0
P	*Gentianella amarella ssp. acuta*	Northern Gentian				S3	4 Secure	9	62.9 ± 0.0
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	4 Secure	11	27.8 ± 5.0
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S3	4 Secure	22	26.2 ± 0.0
P	*Myriophyllum heterophyllum*	Variable-leaved Water Milfoil				S3	4 Secure	49	19.7 ± 0.0
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S3	4 Secure	19	17.2 ± 10.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3	4 Secure	29	26.1 ± 0.0
P	*Stachys tenuifolia*	Smooth Hedge-Nettle				S3	3 Sensitive	12	20.3 ± 1.0
P	*Utricularia radiata*	Little Floating Bladderwort				S3	4 Secure	51	38.7 ± 0.0
P	*Nuphar lutea ssp. pumila*	Small Yellow Pond-lily				S3	4 Secure	17	17.5 ± 0.0
P	*Epilobium hornemannii*	Hornemann's Willowherb				S3	4 Secure	4	66.7 ± 0.0
P	*Epilobium strictum*	Downy Willowherb				S3	4 Secure	17	39.4 ± 1.0
P	*Polygonum arifolium*	Halberd-leaved Tearthumb				S3	4 Secure	20	22.6 ± 0.0
P	*Polygonum punctatum*	Dotted Smartweed				S3	4 Secure	2	22.4 ± 0.0
P	*Polygonum punctatum var. confertiflorum*	Dotted Smartweed				S3	4 Secure	10	17.7 ± 2.0
P	*Polygonum scandens*	Climbing False Buckwheat				S3	4 Secure	34	11.0 ± 1.0
P	*Rumex maritimus*	Sea-Side Dock				S3	4 Secure	1	95.5 ± 1.0
P	*Littorella uniflora*	American Shoreweed				S3	4 Secure	29	22.4 ± 0.0
P	*Primula mistassinica*	Mistassini Primrose				S3	4 Secure	19	23.4 ± 0.0
P	*Pyrola minor*	Lesser Pyrola				S3	4 Secure	3	72.8 ± 0.0
P	*Clematis occidentalis*	Purple Clematis				S3	4 Secure	28	27.5 ± 0.0
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	4 Secure	12	17.8 ± 1.0
P	*Thalictrum venulosum*	Northern Meadow-rue				S3	4 Secure	81	10.9 ± 1.0
P	*Agrimonia gryposepala*	Hooked Agrimony				S3	4 Secure	38	20.8 ± 0.0
P	*Amelanchier canadensis*	Canada Serviceberry				S3	4 Secure	17	2.1 ± 1.0
P	*Rosa palustris*	Swamp Rose				S3	4 Secure	44	24.2 ± 1.0
P	*Rubus chamaemorus*	Cloudberry				S3	4 Secure	46	58.4 ± 0.0
P	*Rubus occidentalis*	Black Raspberry				S3	4 Secure	32	30.8 ± 0.0
P	*Salix interior*	Sandbar Willow				S3	4 Secure	30	9.1 ± 1.0
P	*Salix nigra*	Black Willow				S3	3 Sensitive	123	17.7 ± 2.0
P	*Salix pedicellaris*	Bog Willow				S3	4 Secure	49	5.6 ± 1.0
P	*Comandra umbellata*	Bastard's Toadflax				S3	4 Secure	1	36.7 ± 10.0
P	*Geocaulon lividum*	Northern Comandra				S3	4 Secure	9	66.1 ± 0.0
P	*Parnassia glauca*	Fen Grass-of-Parnassus				S3	4 Secure	7	37.6 ± 10.0
P	*Limosella australis*	Southern Mudwort				S3	4 Secure	1	90.3 ± 5.0
P	*Veronica serpyllifolia ssp. humifusa*	Thyme-Leaved Speedwell				S3	4 Secure	6	24.2 ± 100.0
P	*Boehmeria cylindrica*	Small-spike False-nettle				S3	3 Sensitive	140	20.3 ± 1.0
P	*Pilea pumila*	Dwarf Clearweed				S3	4 Secure	31	17.8 ± 1.0
P	*Viola adunca*	Hooked Violet				S3	4 Secure	14	41.1 ± 1.0
P	*Viola nephrophylla*	Northern Bog Violet				S3	4 Secure	13	35.3 ± 0.0
P	*Carex arcta*	Northern Clustered Sedge				S3	4 Secure	40	9.4 ± 0.0
P	*Carex atratiformis*	Scabrous Black Sedge				S3	4 Secure	4	65.2 ± 0.0
P	*Carex capillaris*	Hairlike Sedge				S3	4 Secure	4	59.6 ± 0.0
P	*Carex chordorrhiza*	Creeping Sedge				S3	4 Secure	24	6.8 ± 0.0
P	*Carex conoidea*	Field Sedge				S3	4 Secure	25	30.1 ± 0.0
P	*Carex exilis*	Coastal Sedge				S3	4 Secure	84	32.8 ± 0.0
P	*Carex garberi*	Garber's Sedge				S3	3 Sensitive	14	24.2 ± 1.0
P	*Carex haydenii*	Hayden's Sedge				S3	4 Secure	30	6.4 ± 1.0
P	*Carex lupulina*	Hop Sedge				S3	4 Secure	104	6.7 ± 1.0
P	*Carex michauxiana*	Michaux's Sedge				S3	4 Secure	60	39.2 ± 0.0
P	*Carex ormostachya*	Necklace Spike Sedge				S3	4 Secure	10	26.5 ± 1.0
P	*Carex rosea*	Rosy Sedge				S3	4 Secure	34	32.5 ± 0.0
P	*Carex tenera*	Tender Sedge				S3	4 Secure	47	15.7 ± 0.0
P	*Carex tuckermanii*	Tuckerman's Sedge				S3	4 Secure	57	9.9 ± 1.0
P	*Carex vaginata*	Sheathed Sedge				S3	3 Sensitive	10	64.1 ± 0.0
P	*Carex wiegandii*	Wiegand's Sedge				S3	4 Secure	38	17.3 ± 0.0
P	*Carex recta*	Estuary Sedge				S3	4 Secure	6	26.1 ± 0.0
P	*Cyperus dentatus*	Toothed Flatsedge				S3	4 Secure	128	7.1 ± 1.0
P	*Cyperus esculentus*	Perennial Yellow Nutsedge				S3	4 Secure	42	11.3 ± 5.0
P	*Eleocharis intermedia*	Matted Spikerush				S3	4 Secure	4	35.0 ± 0.0
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S3	4 Secure	5	34.0 ± 0.0
P	*Eriophorum chamissonis*	Russet Cotton-Grass				S3	4 Secure	5	19.5 ± 2.0

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Rhynchospora capitellata*	Small-headed Beakrush				S3	4 Secure	39	15.9 ± 0.0
P	*Rhynchospora fusca*	Brown Beakrush				S3	4 Secure	39	32.4 ± 0.0
P	*Trichophorum clintonii*	Clinton's Clubrush				S3	4 Secure	68	57.5 ± 0.0
P	*Schoenoplectus fluviatilis*	River Bulrush				S3	3 Sensitive	44	11.7 ± 0.0
P	*Schoenoplectus torreyi*	Torrey's Bulrush				S3	4 Secure	33	13.9 ± 0.0
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3	4 Secure	12	66.5 ± 1.0
P	*Triantha glutinosa*	Sticky False-Asphodel				S3	4 Secure	57	35.1 ± 0.0
P	*Cypripedium reginae*	Showy Lady's-Slipper				S3	3 Sensitive	20	59.3 ± 10.0
P	*Liparis loeselii*	Loesel's Twayblade				S3	4 Secure	20	17.0 ± 0.0
P	*Platanthera blephariglottis*	White Fringed Orchid				S3	4 Secure	23	21.1 ± 0.0
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	3 Sensitive	33	15.9 ± 1.0
P	*Bromus latiglumis*	Broad-Glumed Brome				S3	3 Sensitive	5	19.6 ± 0.0
P	*Calamagrostis pickeringii*	Pickering's Reed Grass				S3	4 Secure	104	40.4 ± 0.0
P	*Dichanthelium depauperatum*	Starved Panic Grass				S3	4 Secure	16	19.4 ± 0.0
P	*Muhlenbergia richardsonis*	Mat Muhly				S3	4 Secure	13	34.8 ± 0.0
P	*Heteranthera dubia*	Water Stargrass				S3	4 Secure	55	15.0 ± 0.0
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	4 Secure	14	32.8 ± 1.0
P	*Xyris montana*	Northern Yellow-Eyed-Grass				S3	4 Secure	30	38.1 ± 0.0
P	*Zannichellia palustris*	Horned Pondweed				S3	4 Secure	5	52.9 ± 0.0
P	*Adiantum pedatum*	Northern Maidenhair Fern				S3	4 Secure	31	39.3 ± 5.0
P	*Cryptogramma stelleri*	Steller's Rockbrake				S3	4 Secure	2	64.9 ± 1.0
P	*Asplenium trichomanes-ramosum*	Green Spleenwort				S3	4 Secure	15	42.9 ± 0.0
P	*Dryopteris fragrans var. remotiuscula*	Fragrant Wood Fern				S3	4 Secure	21	40.3 ± 0.0
P	*Dryopteris goldiana*	Goldie's Woodfern				S3	3 Sensitive	25	37.4 ± 5.0
P	*Woodsia glabella*	Smooth Cliff Fern				S3	4 Secure	1	79.2 ± 1.0
P	*Equisetum palustre*	Marsh Horsetail				S3	4 Secure	8	14.4 ± 10.0
P	*Isoetes tuckermanii*	Tuckerman's Quillwort				S3	4 Secure	21	32.6 ± 0.0
P	*Lycopodium sabinifolium*	Ground-Fir				S3	4 Secure	12	27.8 ± 10.0
P	*Huperzia appalachiana*	Appalachian Fir-Clubmoss				S3	3 Sensitive	7	62.1 ± 1.0
P	*Botrychium dissectum*	Cut-leaved Moonwort				S3	4 Secure	38	9.2 ± 0.0
P	*Botrychium lanceolatum var. angustisegmentum*	Lance-Leaf Grape-Fern				S3	3 Sensitive	15	21.1 ± 0.0
P	*Botrychium simplex*	Least Moonwort				S3	4 Secure	10	29.0 ± 0.0
P	*Polypodium appalachianum*	Appalachian Polypody				S3	4 Secure	22	23.2 ± 10.0
P	*Utricularia resupinata*	Inverted Bladderwort				S3?	4 Secure	16	32.8 ± 0.0
P	*Crataegus submollis*	Quebec Hawthorn				S3?	3 Sensitive	20	25.8 ± 1.0
P	*Lobelia kalmii*	Brook Lobelia				S3S4	4 Secure	31	25.6 ± 1.0
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	4 Secure	4	24.5 ± 0.0
P	*Utricularia gibba*	Humped Bladderwort				S3S4	4 Secure	40	24.9 ± 0.0
P	*Potentilla arguta*	Tall Cinquefoil				S3S4	4 Secure	40	25.6 ± 1.0
P	*Cladium mariscoides*	Smooth Twigrush				S3S4	4 Secure	46	32.4 ± 0.0
P	*Spirodela polyrrhiza*	Great Duckweed				S3S4	4 Secure	39	15.0 ± 0.0
P	*Corallorhiza maculata*	Spotted Coralroot				S3S4	3 Sensitive	11	25.4 ± 1.0
P	*Distichlis spicata*	Salt Grass				S3S4	4 Secure	3	80.4 ± 1.0
P	*Potamogeton oakesianus*	Oakes' Pondweed				S3S4	4 Secure	40	21.1 ± 0.0
P	*Stuckenia pectinata*	Sago Pondweed				S3S4	4 Secure	62	19.3 ± 0.0
P	*Montia fontana*	Water Blinks				SH	2 May Be At Risk	1	91.1 ± 1.0
P	*Solidago caesia*	Blue-stemmed Goldenrod				SX	0.1 Extirpated	2	64.9 ± 1.0
P	*Oligoneuron album*	Upland White Goldenrod				SX	0.1 Extirpated	3	95.3 ± 1.0
P	*Celastrus scandens*	Climbing Bittersweet				SX	0.1 Extirpated	4	36.7 ± 1.0

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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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Appendix F – Contamination Records Check

New Nouveau Brunswick
CANADA

February 10, 2015
File No.: 100-05-R5

NATECH Environmental Services
2492 Route 640
Hanwell, NB E3E 2C2
Attention: Teresa Cleghorn

Client Ref #: Geary Elementary School

RE: **PID#:** **60183639**

In response to your request for property-based environmental information regarding the above noted properties, please be advised that a search of related departmental electronic databases has been conducted *with the information provided*, and the following information was found.

There is no record of Ministerial Orders or Remediation Orders related to this PID number.

Petroleum storage tank information related to **PID # 60183639** is attached. These tanks have been registered with the Department, under the Petroleum Product Storage and Handling Regulation.

We have no records in our database of any remedial activity or contamination for this PID number.

This PID number is not registered with the Department as a PCB Storage site.

We have no records of landfill sites or former dumpsites located near this PID number.

The absence of departmental records in this search does not necessarily indicate that the sites have not been subject to environmental incidents. The information is accurate in that it provides a factual reflection of what is contained in departmental databases. The files themselves may or may not be complete.

As an example, in the case of underground petroleum storage tanks, the files accurately reflect all those that were registered with the program; there may be underground storage tanks that were not registered and of which the Department has no knowledge.

Likewise, there may be incidents of spills of which the Department was not informed or which pre-date Departmental records. "Remediation Site Management System" was established in the early 2000's and does not contain a complete history of past spills or remediation efforts. Furthermore, if the properties have been recently altered, the PID#'s provided may not correspond with those contained in departmental files and thus on the databases.

Any persons intending to purchase or occupy the property should make their own independent determination of the environmental condition of the property and the extent of responsibility and liability, if any, that may arise from taking ownership or occupancy.

Remediation Section - Environmental Management Division

Enclosure : 1

/ss

SIRS Search Result

Petroleum Storage (PID 60183639)

PID #: 60183639 Site #: 310 Address: GEARY ELEMENTARY SCHOOL
16 LAVINA BYE ROAD
GEARY

Tank Information

Current Status	Removed
Date Out of Service	1989-03-22
Installation Date	1956
Tank Size	4540 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	2003-08-11
Installation Date	1989
Tank Size	9020 L
Location	Under Ground
Constructed Of	Secondary Containment FRP
Substance Stored	Furnace Oil

Current Status	Active
Date Out of Service	
Installation Date	2003
Tank Size	2272 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Furnace Oil

Appendix G – Project Notification Letter for neighbouring property owners

NATECH Environmental Services Inc.
2492 Hanwell Rd, Hanwell, NB, E3E 2C2, Canada ph.: (506) 455-1085, fax: (506) 455-1088

February 23, 2015

Re: Public Involvement in Environmental Impact Assessment

Dear property owner:

As you may know, the Geary School is going to upgrade its wastewater treatment system. This development is currently undergoing a routine provincial Environmental Impact Assessment (EIA) as outlined in Section 5 (1) and Schedule "A" of the Environmental Impact Assessment Regulation. As part of the EIA, the developer is required to inform neighbours and local interest groups within 500 m of the property about the development. This consultation and the EIA registration are being handled by NATECH Environmental Services Inc.

The purpose of the proposed undertaking is to improve the wastewater treatment system of the school. The proposed project involves: a) removing the existing lagoon which currently discharges effluent directly into the environment, and b) build instead an engineered sub-surface wetland (without visible standing water) and a sand filter. The treated effluent will be infiltrated into the ground underneath the sand filter, on the school property. The construction is planned for July and August of 2015.

A copy of the EIA Registration document is available for public review at the Department of Environment and Local Government, Sustainable Development, Planning and Impact Evaluation Branch, 3rd floor, 20 McGloin Street, Fredericton, NB. If you have any concerns or questions about the project, we would ask you to contact Vincent Balland with NATECH Environmental Services Inc. 506-455-1085, vincent.b@natechenv.com), or NBDELG 506-444-5382, before March 31, 2015.

Thank you for your interest and cooperation.

Best Regards,

V. Balland

Vincent Balland, P.Eng., Project Engineer

VB/js
/Documents 2015/ DTI Geary EIA/Public Consultation

Appendix H – Photographs

School buildings

Existing lagoon

Environmental Impact Assessment **Geary School WWTP Upgrade** **Photographs taken on October 30, 2014**	NATECH **Environmental Services Inc.** **2492 Route 640, Hanwell, NB, E3E 2C2** **ph: (506) 455 1085, fax (506) 455 1088**	DATE: 2015/02/18 SCALE: -	FILE: GS-15-01 FIGURE: Appendix G

Appendix I – Newspaper Article of Thursday, August 28, 2014

Geary school construction continues

GILLIAN CHRISTIE
THIS WEEK

From the outside, the new Geary Elementary Community School looks like it's nearing completion.

In December of 2012, it was announced that the school would undergo a major renovation, including the addition of a gymnasium, with a total of $4.3 million earmarked for the project.

The 180 students were moved to Gesner Street Elementary School and Summerhill Street Elementary School in Oromocto for the 2013-14 school year as well as the first half of the 2014-15 school year.

Within the first few weeks of the renovation, it was discovered the structure of the 1955 building was not sound and it would better to replace it rather than repair it. The cost of the new school is estimated at $8 million.

It is anticipated that the students will begin the second half of the upcoming school year in their brand new facility.

For Geary Home and School Committee chair Wallace Carr, a longtime volunteer at the school and a member of the original renovation consultation committee, knows first hand how important and exciting the first day in the new school, and especially the new gymnasium, will be.

"This means the world (to Geary)," Carr said while visiting the site last week. "Just having the gymnasium will mean the world to the community."

The new building is set up for community access after school hours with a separate entrance leading into that space with no access to the classroom areas.

"I'm looking forward to actually getting some things organized for the kids after school, in the evenings and stuff like that," Carr said. "And the adults too; we need exercise too."

Now, with a regulation-size gym, all sports will be available at the new school. Until now, there has been no sports facility within the community. Aside from what was used as a gym/cafeteria space within the old school and the Geary Lions Club, there isn't a space available to play volleyball, badminton, basketball or ball hockey.

"It's a regulation-size gym, so there's no reason why people shouldn't be using it," Carr said.

Geary Home and School chair Wallace Carr is happy to see such progress being made on the construction of the new Geary Elementary Community School which is slated to open in January. PHOTO: GILLIAN CHRISTIE/THIS WEEK

He said he wasn't surprised when he learned the old school structure could not be salvaged. Having been built almost 60 years ago, with no major maintenance or renovation having occurred here since the 1960s, it's no wonder it was no longer sound.

With the advancement of today's building materials and how the new school is being constructed, Carr said he knows the community will get a lot of use and enjoyment out of it for decades – generations – to come.

"I thought they would renovate it," Carr said. "But when your foundations don't have the rebar in them that they should have to carry the load then, I mean, you might as well start over. This is actually better. Everything is going to be at ground level now, so it's going to be accessible. Now the whole school is going to be accessible."

Carr has been visiting the construction site on a regular basis throughout the last year. He's enjoyed watching the new school take shape right before his eyes, envisioning the many future events and activities that will be held.

"My daughter was here in 1992 and even before then it was something the community needed," Carr said. "We've just never had the facilities. It's time the community had something. Everybody else something in their rural community."

The new classroom section of the school has basically the same layout as the previous school did.

"It's the same size as the other one," Carr said. "There's additional rooms because stairways have been taken out now and added on the end."

The main entrance will face the road and along with the gym, a few new classrooms for early childhood education and a new administrative area have been added on that side of the school.

"We've built it for the future," Carr said.

It is anticipated that construction on the new facility will wrap up sometime in October and the Department of Education will come in to test all of the systems before turning the keys over to the district.