LOVESICK LAKE PLAN

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Chapter 1. Introduction

In 2017 the Lovesick Lake Association identified the need to create a lake plan for Lovesick Lake. As part of the planning process a survey of stakeholders was conducted in 2019 to determine what issues were important to the residents both seasonal and full-time. This document was created to establish the background of the lake, local community, physical features, natural heritage and to provide a framework addressing the issues identified in the survey.

1.1 The Purpose and Scope of the Lake Management Plan

The intent of the lake plan is to engage the Lovesick Lake community members to identify and protect the lake's special areas and features by improving the long-term sustainability of the lake and its watershed through community stewardship.

The Lake Plan will focus on the shoreline and areas immediately surrounding the lake, as well as the water and islands in the lake.

Targets include:
1. water quality
2. fish and wildlife
3. natural landscapes/visual environmental integrity/shoreline vegetation
4. recreational values

Best practice policies will be clarified in the Lake Plan, with an action plan to ensure ongoing implementation. Education and communication of these best practices are key goals of the Lake Plan. The Lake Plan is intended to be a living document that will continue to evolve over time as new issues and circumstances occur and new information becomes available.

Additionally, the Lake Plan documents the physical, natural, recreational features of the lake and surrounding lands as well as providing some historical background of the area.

1.2 Acknowledgements

Lovesick Lake is situated on the traditional territory of the Mississauga First Nation and forms part of Williams Treaty #20. Learn more at: https://williamstreatiesfirstnations.ca/

This lake plan was developed with the aid of the "Lake Planning Handbook For Community Groups" created by FOCA (Federation of Ontario Cottagers' Associations) and French Planning Services Inc.

A big acknowledgement also goes out the following organizations and individuals for their contributions to the plan:

KLSA (Kawartha Lake Stewards Association) for data provided regarding the water quality and Kevin Waters for historical background of the lake. (https://klsa.wordpress.com)

Association of Ston(e)y Lake Cottagers (https://www.aslcmembers.ca/)

(Parks Canada) Trent Severn Waterway National Historic Site (https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/)

The Land Between (https://www.thelandbetween.ca/)

Bruce Dyer - historic photograph contributions

Lauren Bridle – for her documentary film Lovesick (https://www.laurenbridle.com/)

Bill Napier – for providing additional data and review

The Lake Plan was prepared by Jeff Webb with support from Cathy Webb and the Lovesick Lake Association board of directors.

Cover Photo by Jeff Webb

Chapter 2. Lake Description

This section provides background information regarding the lake and surrounding watershed.

Old postcard courtesy of Bruce Dyer

2.1 General Location and Characteristics

Lovesick lake is located between Lower Buckhorn Lake and Ston(e)y Lake at kilometer 181 on the historic 387 Km Trent Severn Canal system between locks 28 and 30. Lovesick has nearly 50 islands of various sizes. The largest of which, Wolf, Millage and Grey Duck, separate Lovesick from Lower Buckhorn lake. Several of the other notable main islands include Ruba, Taylors, Richards, McCallum, Howell, Beaver, Porter, Cut, Marshall, Rose, Dynamite, Myers, and Feathers. A number of the smaller islands are part of the Islands in the Trent Waters First Nations territory. Lovesick has the highest density of islands of any of the lakes in the Trent system and is the fourth smallest next to Big Bald, Little Bald and Little Lakes.

It is divided between the townships of Trent Lakes to the north and Selwyn to the south with a tiny sliver by the Burleigh Falls dam being in North Kawartha. Fed by Lower Buckhorn, it has outflows to Stony Lake via Perry's Creek and Burleigh Falls. There are no significant streams contributing to the flow in the lake although there are a few springs and wetland areas which provide a minor influx.

General Characteristics:

Latitude 44.55 degrees

Longitude -78.24 degrees

Surface Area 257.2 ha (635 acres)

Shoreline Perimeter 15.4 km. (9.6 miles)

Island Perimeter 11.7 km (7.25 miles)

Mean Depth 3.3 metres (11′)

Greatest Depth 24 metres (82′)

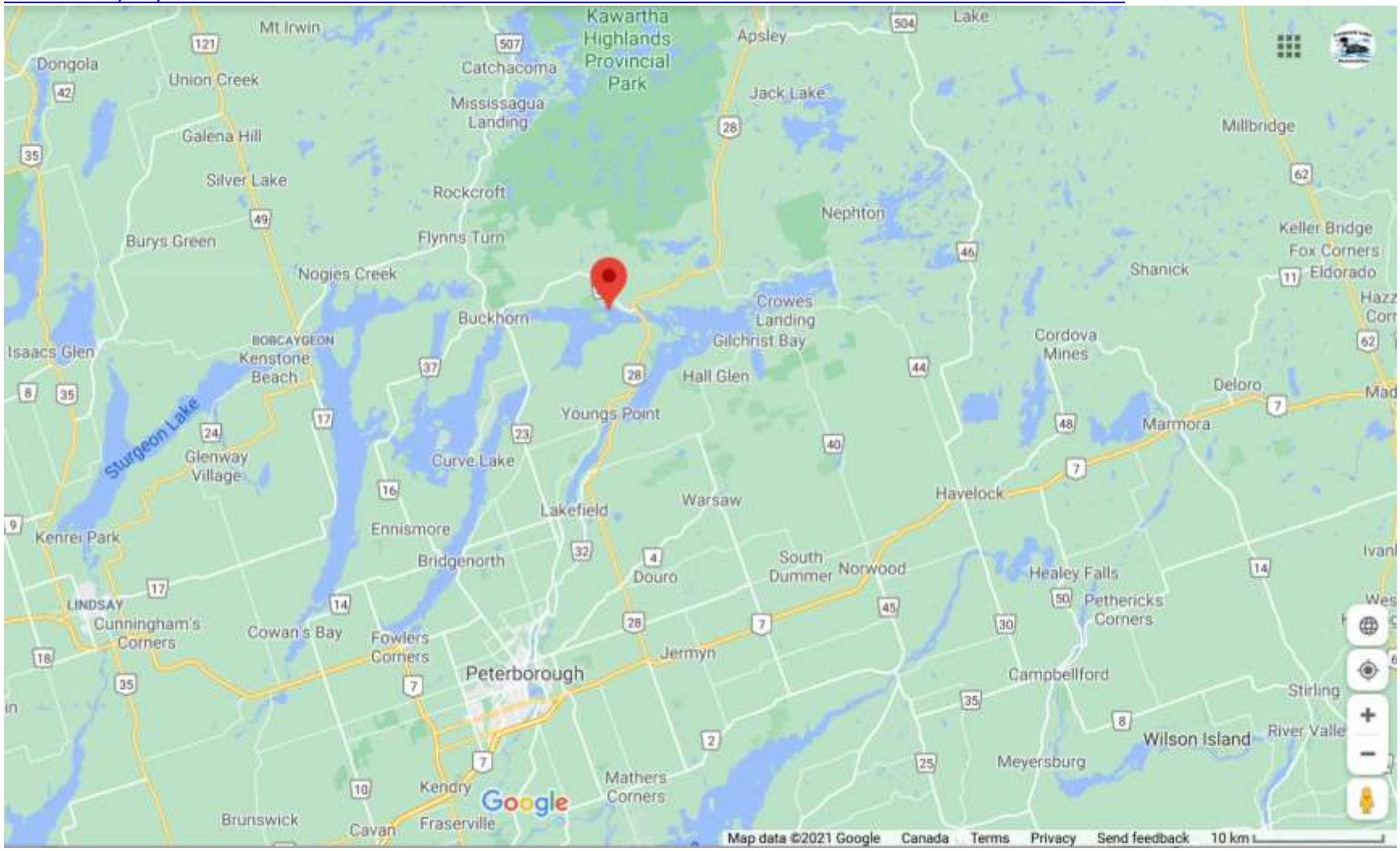
Elevation 241.5 m (792')

Note that above characteristics are approximate. There are some variations in these parameters cited in various documents.

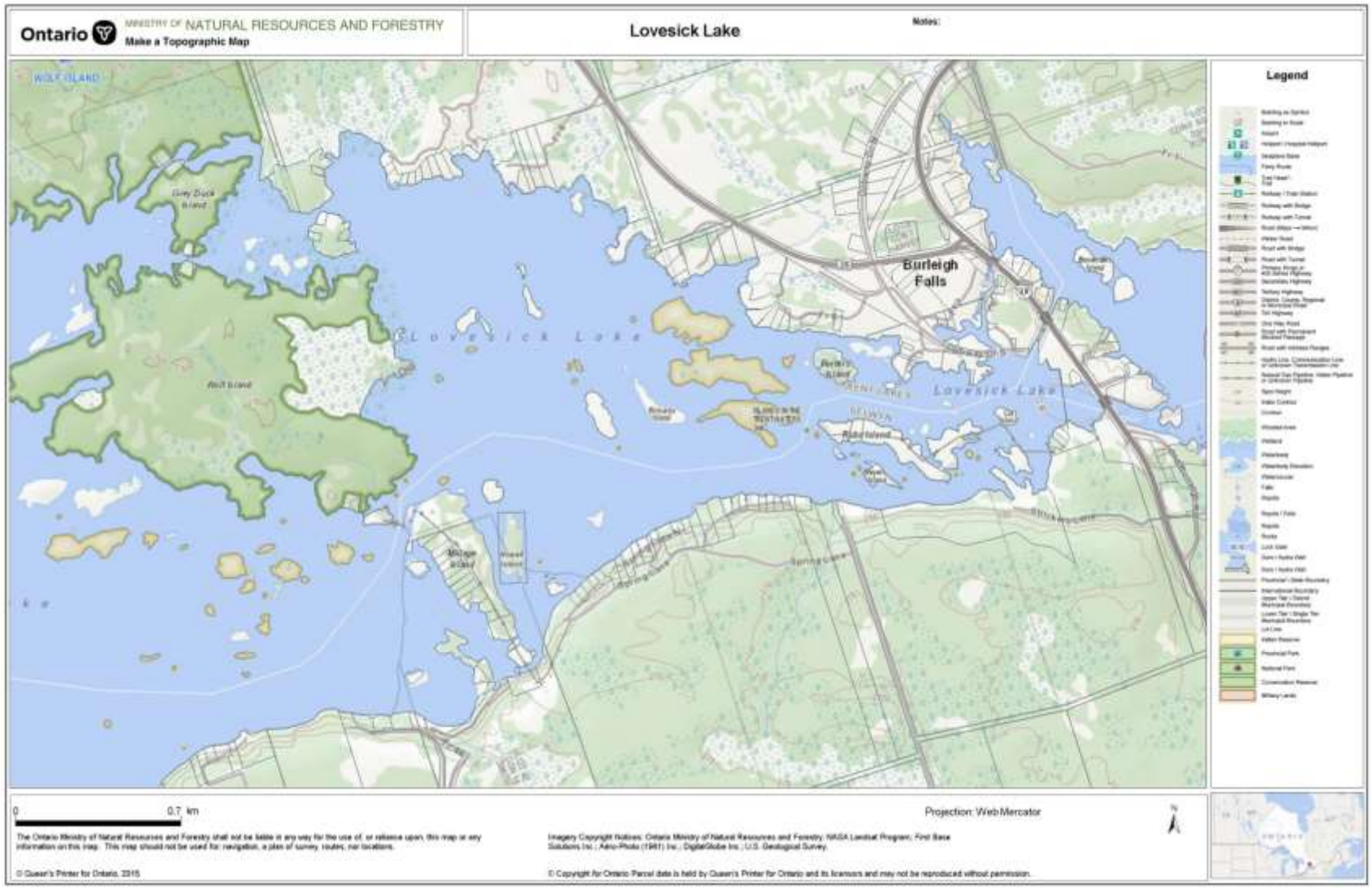
Access: The only public road access to the lake is the boat launch at Burleigh Falls. Water access can be made via locks 28 or 30 from the neighbouring lakes through the Trent Severn Waterway. Access may also be available from the limited number of commercial properties on the lake.

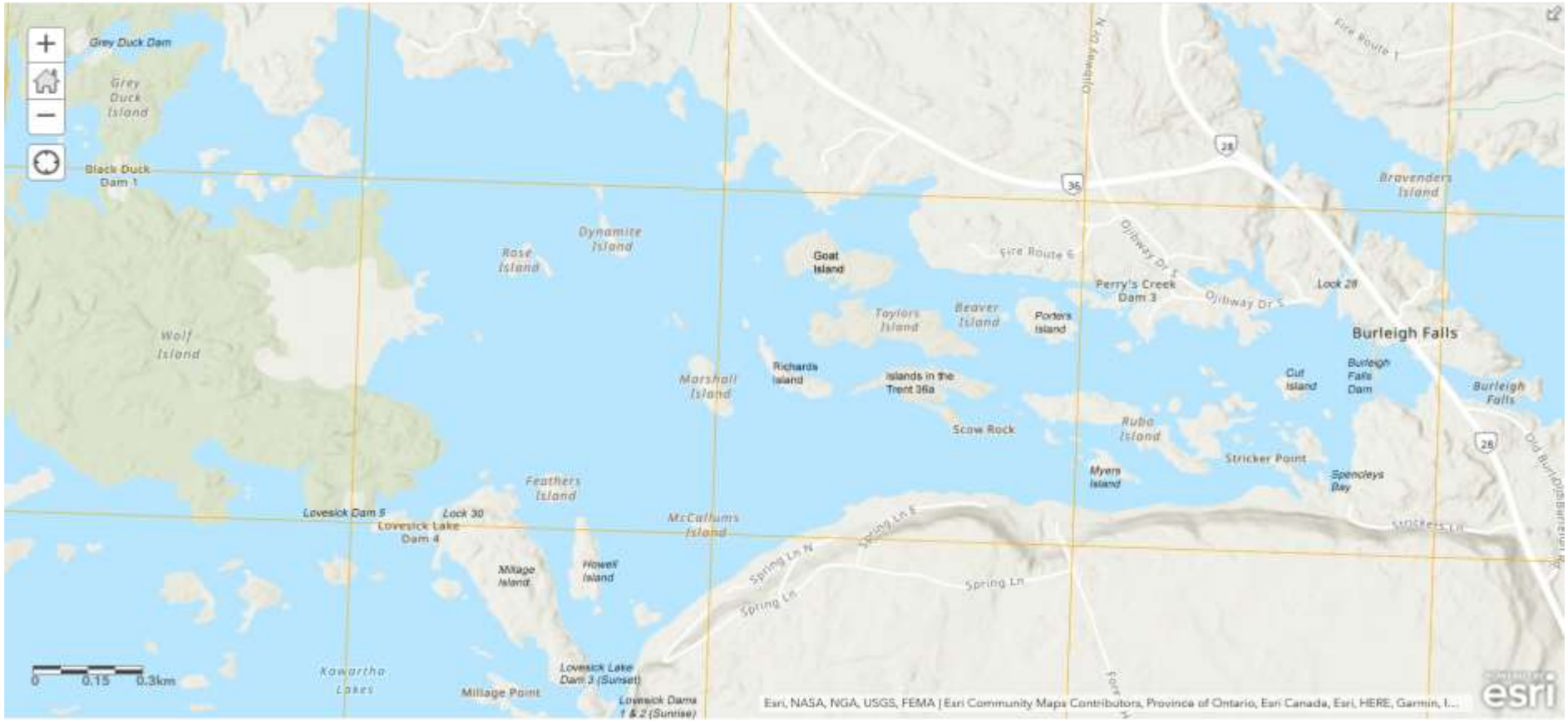
LOVESICK LAKE AREA MAP

SOURCE: https://www.google.com/maps/place/Lovesick+Lake/@44.4814503,-78.3197695,10z/data=!4m5!3m4!1s0x4cd4c7925e43e917:0xad795041ccda938c!8m2!3d44.5628133!4d-78.2381444

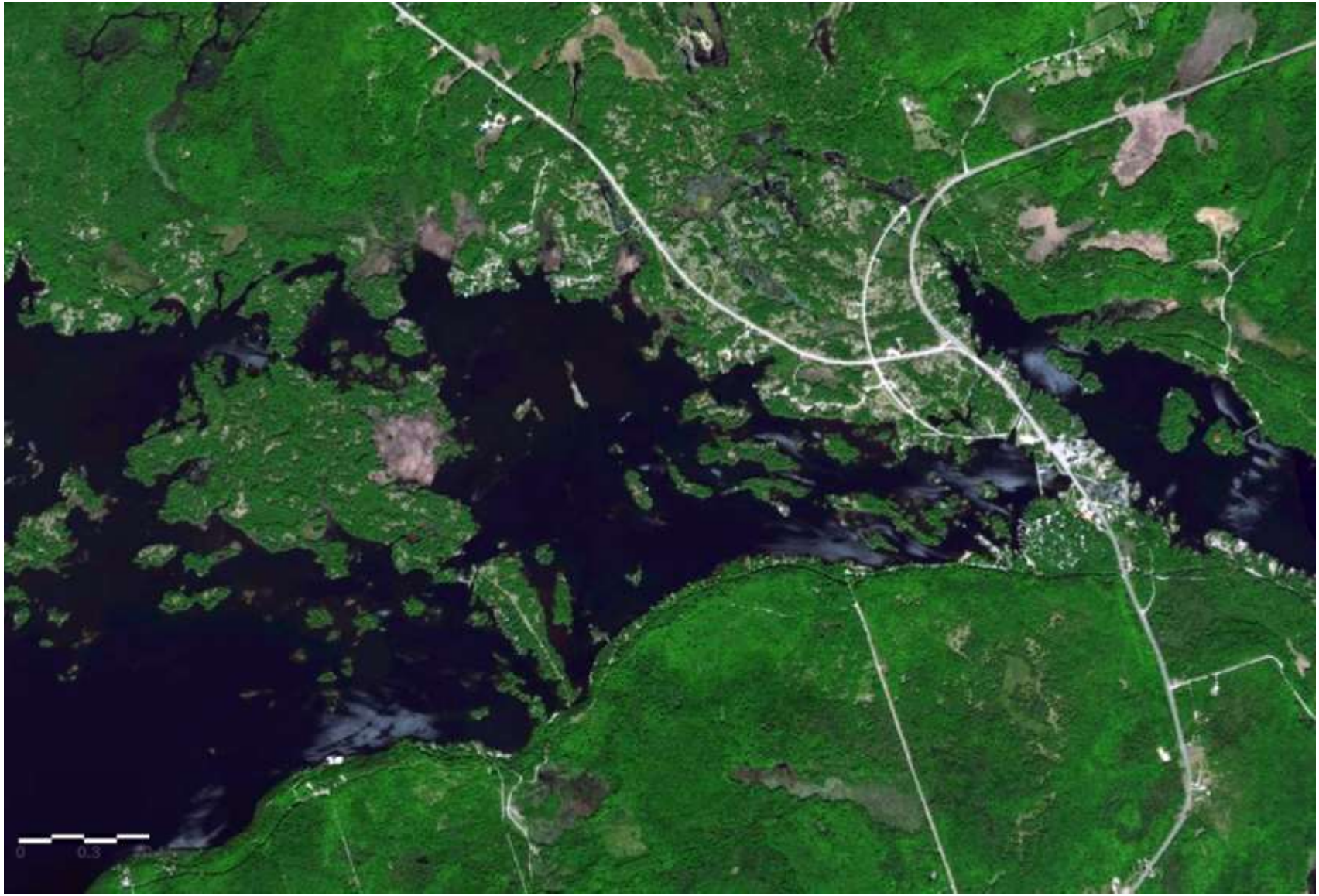


LOVESICK LAKE TOPOGRAPHIC MAP SOURCE:
https://www.gisapplication.lrc.gov.on.ca/matm/Index.html?site=Make_A_Topographic_Map&viewer=MATM&locale=en-US





Lovesick Lake map showing major islands (1 km grid)
Source: https://www.arcgis.com/home/webmap/viewer.html?panel=gallery&layers=6e59276d70a04cd5bcdb85c93e4edd07



LOVESICK LAKE SATELLITE IMAGERY 2018 Source:

https://www.arcgis.com/home/webmap/viewer.html?panel=gallery&layers=5216a770ef684d2fae8bcc13ee9c435

2.2 Historical background

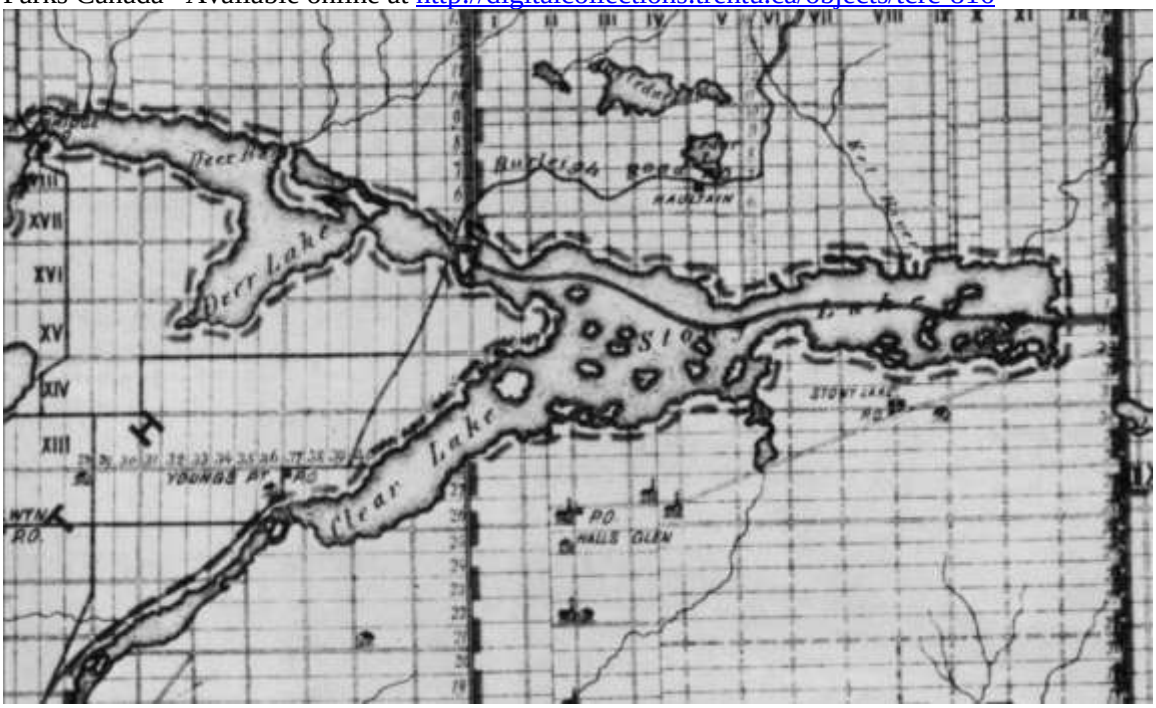
The Lovesick Lake that we know today didn't exist 150 years ago. Extensive beds of wild rice were found throughout the area and were seasonally harvested by the local First Nations inhabitants. It wasn't until the construction of the dams at Burleigh Falls (formerly known as Peninsula Falls) and the Lovesick Rapids, that the Lovesick Lake of today took shape. At the western basin, a lock and a total of 7 dams were created along the Wolf Island archipelago. In the eastern basin, a double flight lock was created along with the main dam at the falls and another at Perry's Creek. The wooden dams completed in 1886 were in need of constant maintenance and finally replaced by a concrete structure in 1912. The dams were built high to accommodate the original plan to raise the water level a further 0.7m to the level of Deer Bay and eliminate the need for Lock 30 at Lovesick Lake (the lowest in the system). Lock 30 was periodically renovated and mechanized in 1974. A further refurbishment was done in 2014.

Lock 28 at Burleigh Falls was originally a 2 stage flight lock, but was replaced with a single concrete lock in 1967. This officially removed "Lock 29" from the system. The various control dams on Perry's Creek were also upgraded with concrete dams which replaced the old timber dams. Parks Canada advises that the main Burleigh Falls dam is in need of significant repair. After an unsuccessful tender process for a rehabilitation project in the summer of 2019, a project for a full replacement of the dam was deemed the most cost efficient, and to have the best long-term outcome. The new dam's overall hydraulic capacity will be increased, and both public safety and operator access will be improved. The lifespan of the new dam is estimated to be more than 80 years. Some additional details of the project can be found at the end of section 8.2.

Old postcard of Burleigh Falls Dam circa 1908 courtesy of Bruce Dyer

There are some excellent accounts of the early history of the lake, the locks and the construction of the Trent Canal in the following references:

- Article: **The Central and Lower Kawarthas** by Kevin Walters appearing the KLSA Water quality report 2009 Available online at: https://klsa.files.wordpress.com/2018/10/klsa-2009-final.pdf
- **Respectable Ditch: A History of the Trent Severn Waterway,** 1833-1920
- **Twenty Seven Years in Canada West, or, the Experience of an Early Settler Vol** II by Samuel Strickland.
- **Up the Burleigh Road … beyond the boulders.** An illustrated history by Doug and Mary Lavery
- **Metis of Burleigh Falls – Final Report** prepared by Public History Inc. for the Ontario Ministry of Natural Resources Feb 2000 https://www.yumpu.com/en/document/view/12180177/metis-of-burleigh-falls-metis-nation-of-ontario
- **Burleigh Falls: A Land Use Study** By Emily Alkenbrack Completed for: Trent-Severn Waterway, Parks Canada Available online at http://digitalcollections.trentu.ca/objects/tcrc-816



HISTORIC MAP OF LOVESICK LAKE AREA

The naming of the lake has been in flux over the early years. Kevin Walters shed some light on this in his article for the KLSA referenced above:

A preliminary interpretation of that early native word Caughwawkuonykauk by the Curve Lake natives is 'lovesick', and this may be the source of the lake name, as well as providing evidence that the entire basin from Buckhorn to Burleigh was, and is, reasonably called Lovesick Lake. There is romance behind the name. An old story told to Samuel Strickland in 1852 relates to a handsome young Chippewa named Richard Fawn who fell desperately in love with a blue-eyed Irish maiden named Katherine. Despite his amorous appeals in the approved manner of Indian courtship, she had no interest in Fawn's attentions and married a young immigrant farmer instead. Richard

Fawn retired to an island on Lovesick Lake determined to die of his love, until his friends found him and persuaded him to come home.

There is a longer more vivid version of this tale can be found in the book entitled Cruising the Trent- Severn Waterway. 1964. Kenneth McNeill Wells. Pg 53-56.

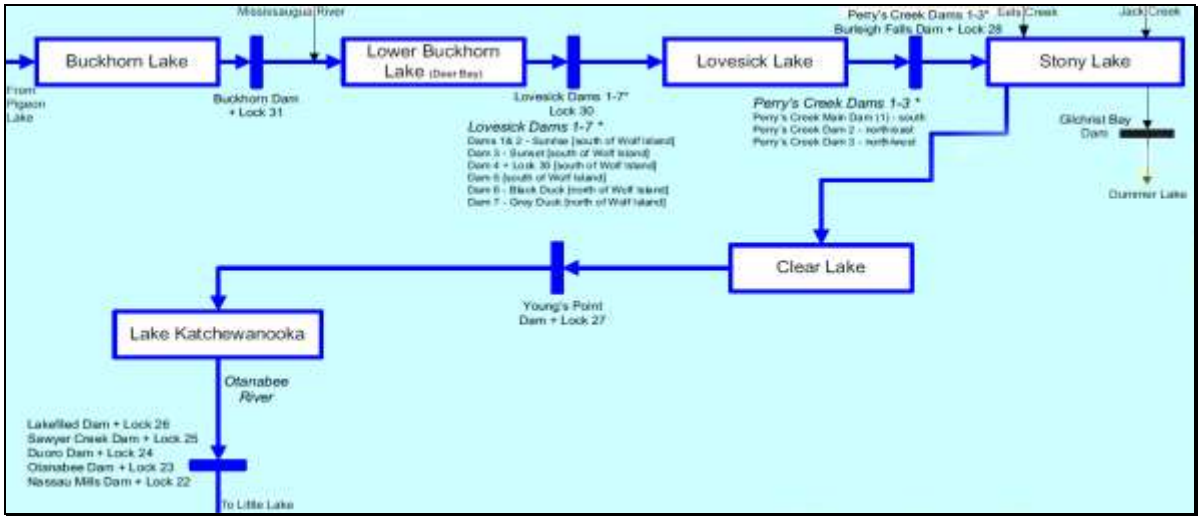
The following excerpt is from *LOVESICK* - A short documentary film investigating the changing environment and landscape of a small Canadian lake
By Lauren Bridle. https://digital.library.ryerson.ca/islandora/object/RULA%3A6183

Prior to the construction of the Trent-Severn Waterway, Lovesick Lake and the surrounding Kawartha Lakes region was characterized by an assortment of river systems. These rivers were known as a place of prosperous hunting and fishing utilized by Paleo-Indian communities dating back thousands of years. Artefacts found at ancient village sites have been carbon dated as far back as approximately 12,000 years ago. On Lovesick Lake, several archaeological sites have been found including a site containing fishing weirs that have been carbon-dated back 6,500 years. These weirs have been analyzed and concluded to have been made from wood belonging to extinct tree species. As well, pottery and arrowheads have been found in the lake on the northeast side close to Ruba Island.

2.3 Watershed

Lovesick Lake is part of the 12 530 km2 Trent River watershed (see map below). The Trent River Watershed contains three watersheds. Lovesick Lake is situated in the "Kawartha Lakes to the Otonabee River sub-watershed" (4,862 km2). This sub-watershed extends from Balsam Lake to Rice Lake. The flowchart below illustrates the Lovesick area watershed which lies between Lower Buckhorn and Ston(e)y lakes.

Watershed Flowchart



Source: https://cewf.typepad.com/Trent_Watershed_Flow_Chart.pdf

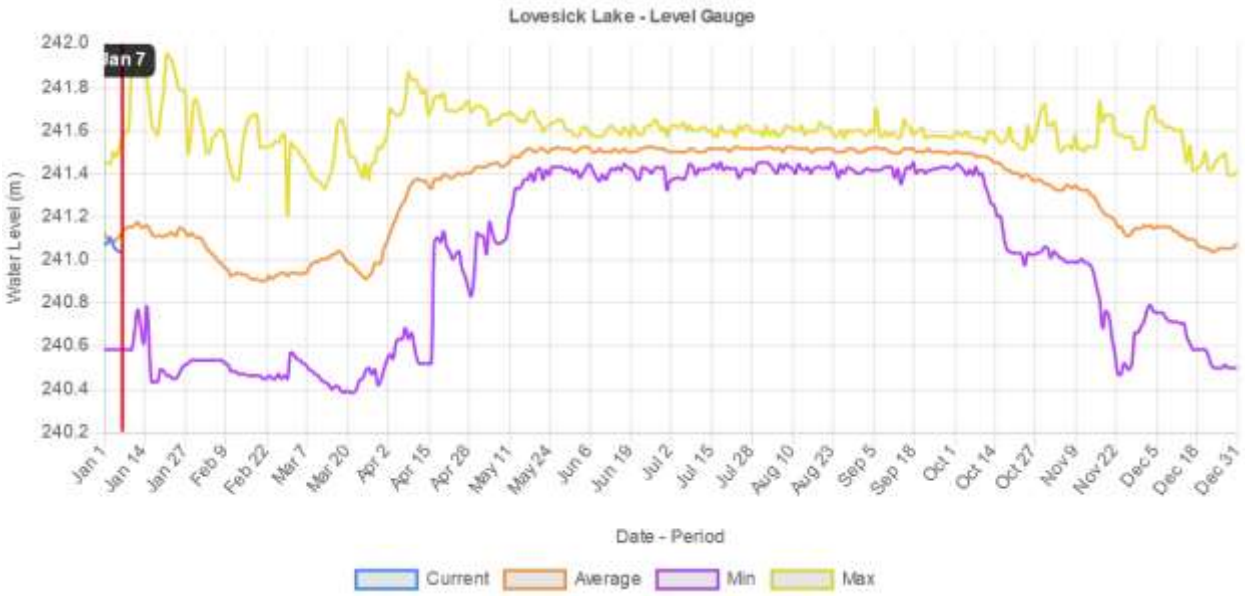
KAWARTHA LAKES AND SURROUNDING WATERSHEDS

Water Levels

The following graph from Parks Canada shows the average annual variations in the water level as well as the historic minimum and maximum values. During the boating season (May long weekend to Thanksgiving), the levels are fairly tightly regulated. The latest data can be found at:

https://www.pc.gc.ca/apps/waterlevels/donnees-data?Id=116&lang=en&siteId=100419

It is worth noting that at times when the water level is low, a significant current may be found in some of the narrower channels of the lake which is a reminder of its historical origin as a river.



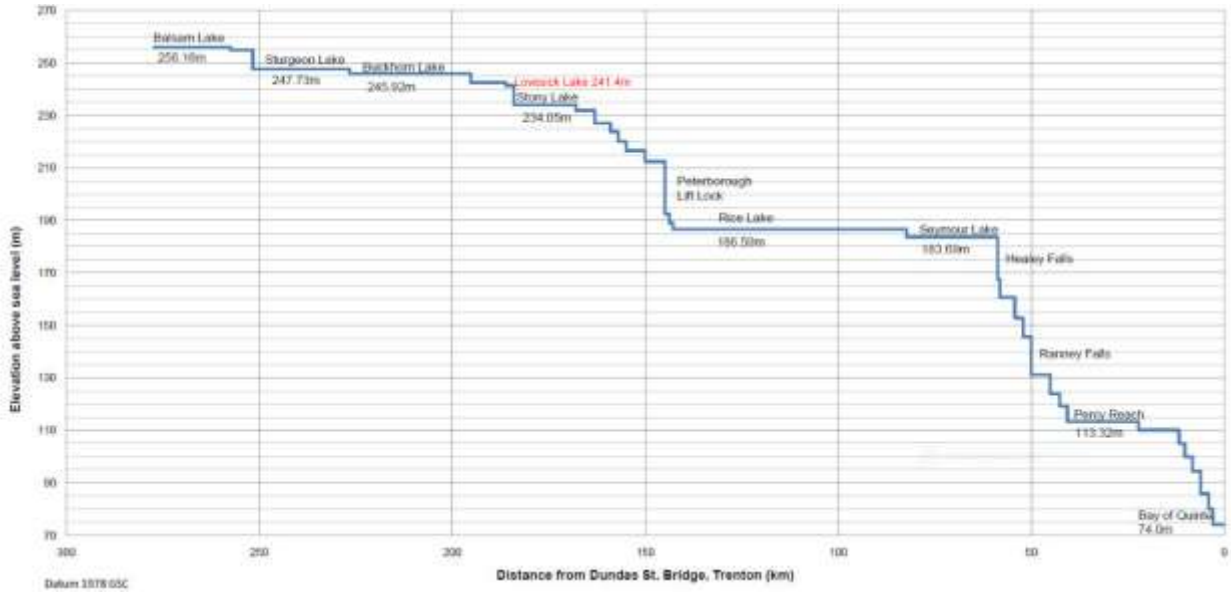
A detailed guide describing the water management practices on the TSW is available at:

https://cewf.typepad.com/TSW_WMS_Part_3.pdf

The main goals and objectives of water management on the TSW are shown in the table below:

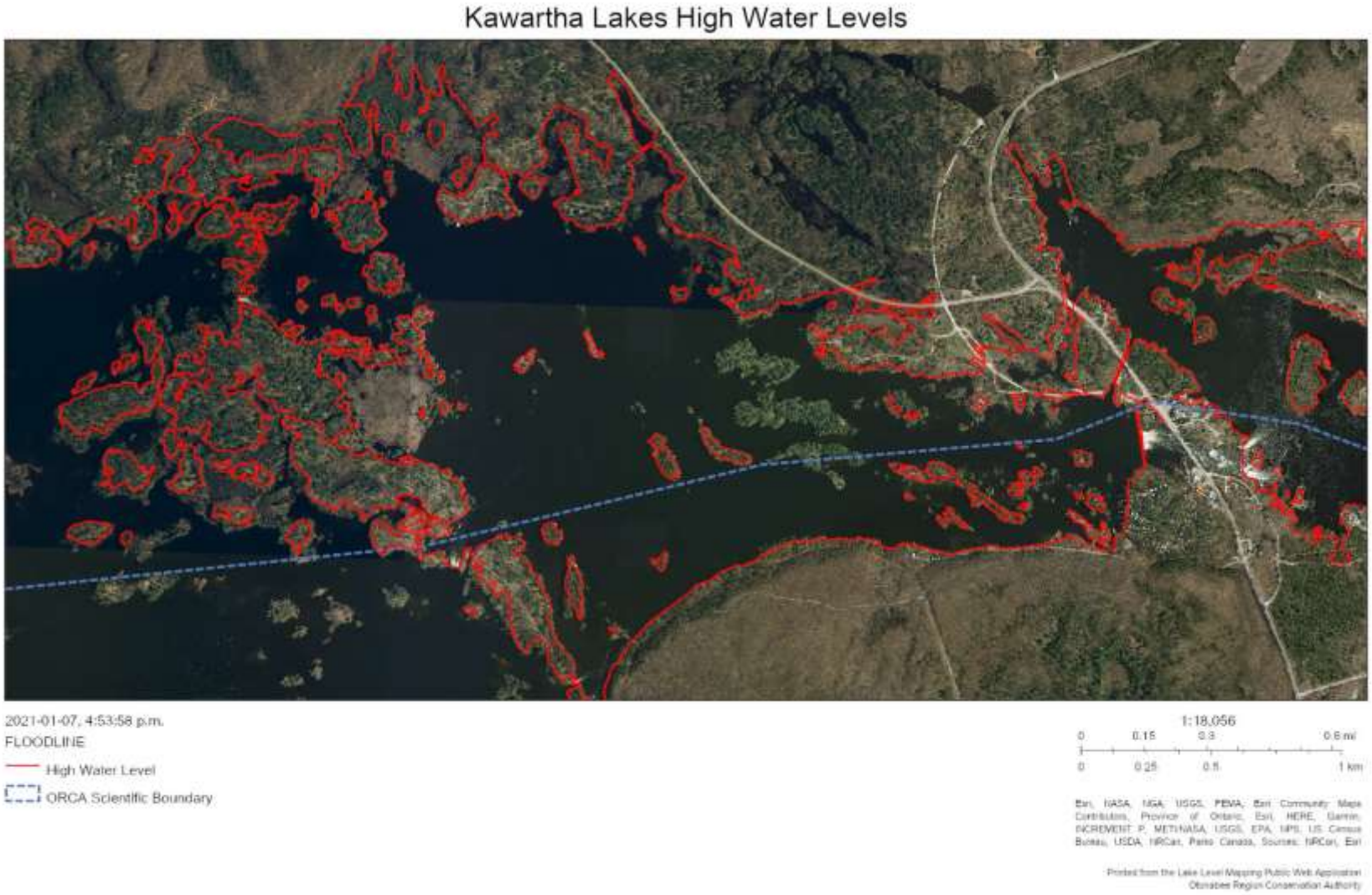
Water Management Goals	Objectives
Reducing threats to public safety and negative impacts to public and private infrastructure from over-bank flooding, ice damage, extreme water level fluctuations, and high volume flows	• Mitigate Flooding • Protect Infrastructure • Provide for Public Safety
Contributing to the health of Canadians through the availability of drinking water for residents, cities and towns throughout the watershed	• Manage for Water Supply (agricultural and municipal) • Manage for Water Quality (human health and aquatic life)
Providing safe boating and navigation along the marked navigation channels of the Trent Severn Waterway	• Provide Navigation
Protecting significant aquatic habitats and species	• Protect Natural Environment (wetlands, fish, wildlife, invasive species, species at risk)
Optimizing the enjoyment of the water throughout the watershed by shoreline residents and visitors	• Enhance Aesthetics • Optimize Recreation • Optimize Cultural Resources • Provide Public Access (physical access, access to information)
Allowing hydroelectric generation plants to operate at plant capacity and meet demand for renewable energy insofar as possible	• Optimize Water Power Generation

A profile of the minimum controlled water levels is shown below:

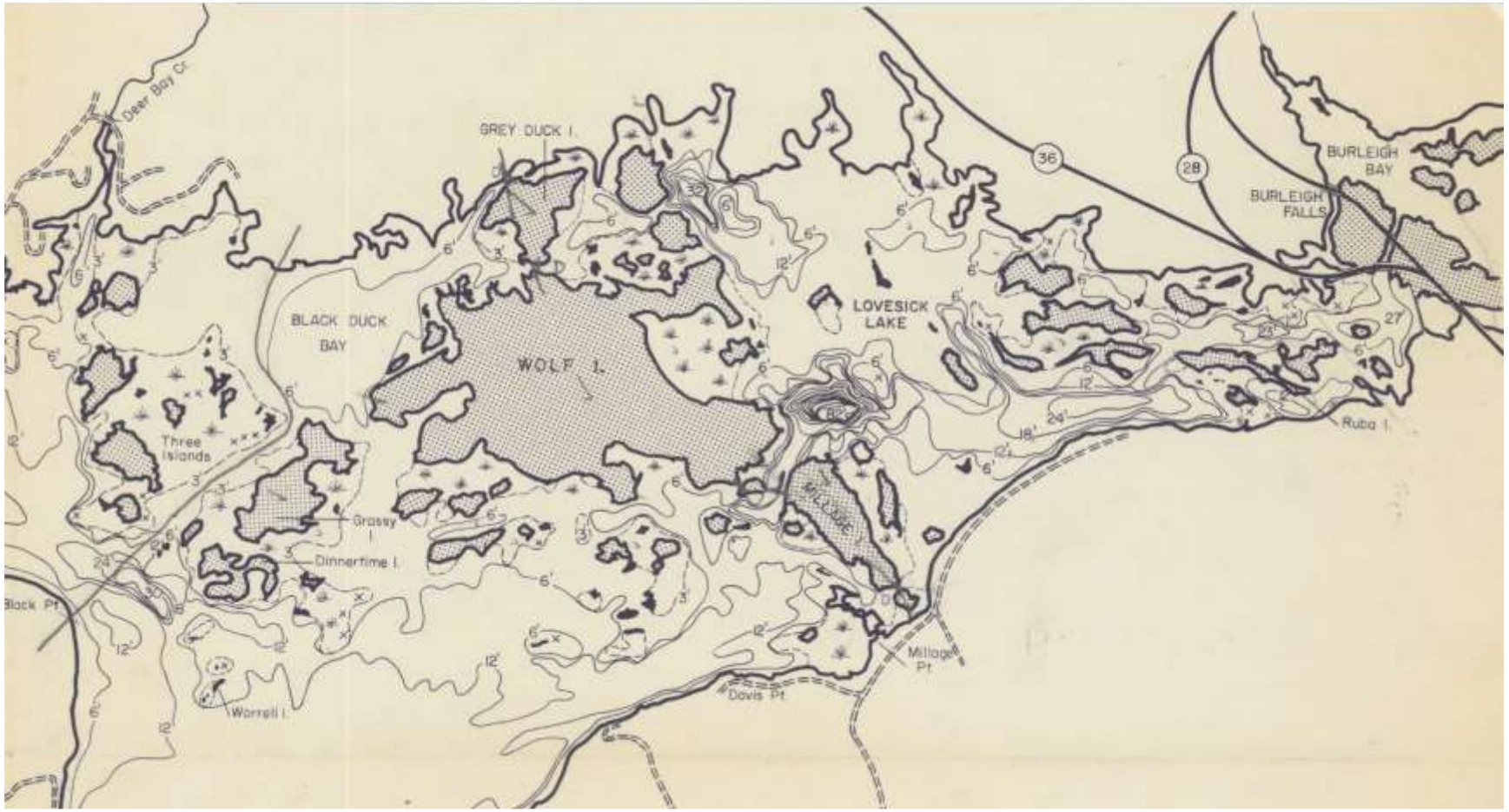


Floodplain and depths.

The map below outlines the lake's floodplain boundaries (in red). The contour map below illustrates the bathymetry of the lake. Note the deepest location is the 82' hole just downstream from lock 30 between Wolf and Millage islands.



Map of Lovesick Lake Floodplain area from Otonabee Region Conservation Authority. From URL below.
https://www.otonabeeconservation.com/programs/floodplain-mapping/kawartha-lakes/
https://camaps.maps.arcgis.com/apps/webappviewer/index.html?id=6d7760036cc14ca9b0850065ff44c392



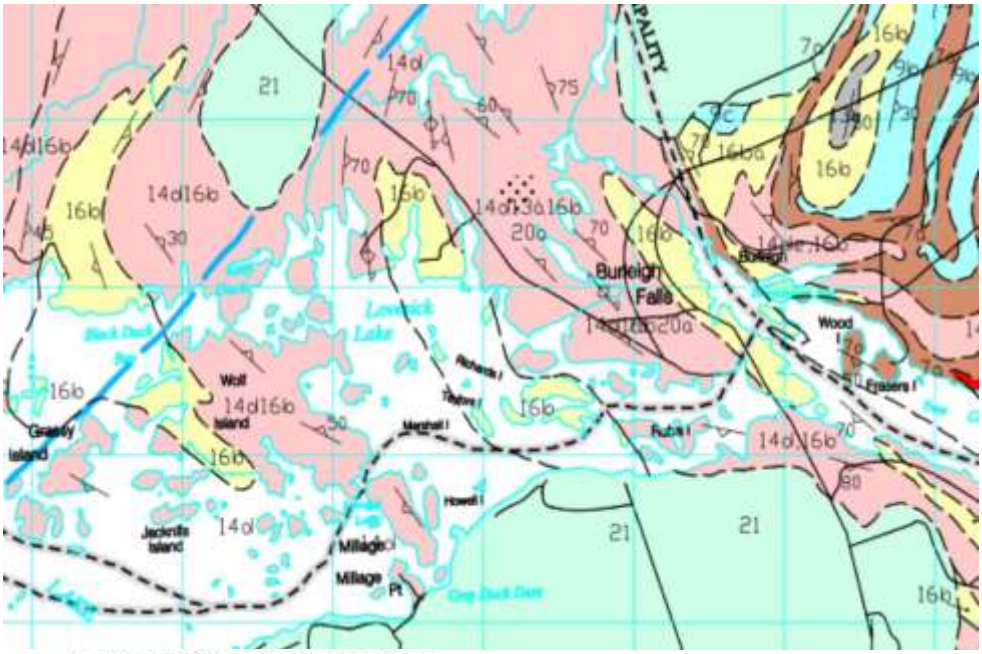
Lovesick Lake Contour Map from Ontario Ministry of Natural Resources Copyright 2015 Queens Printer for Ontario

Chapter 3. Physical Features

This section outlines some of the significant physical features of the lake including the geology, soils and forests surrounding the lake.

3.1 Geology

Lovesick lake lies in an area of unique geology two where landforms collide: The St. Lawrence Lowlands and the Canadian Shield. A geologic fault divides the north and south sides of the lake causing the predominate limestone on the south shore to give way to the pink granite shield rock of the north and forming the lake's numerous islands. The map below illustrates some details of the lake's geology.

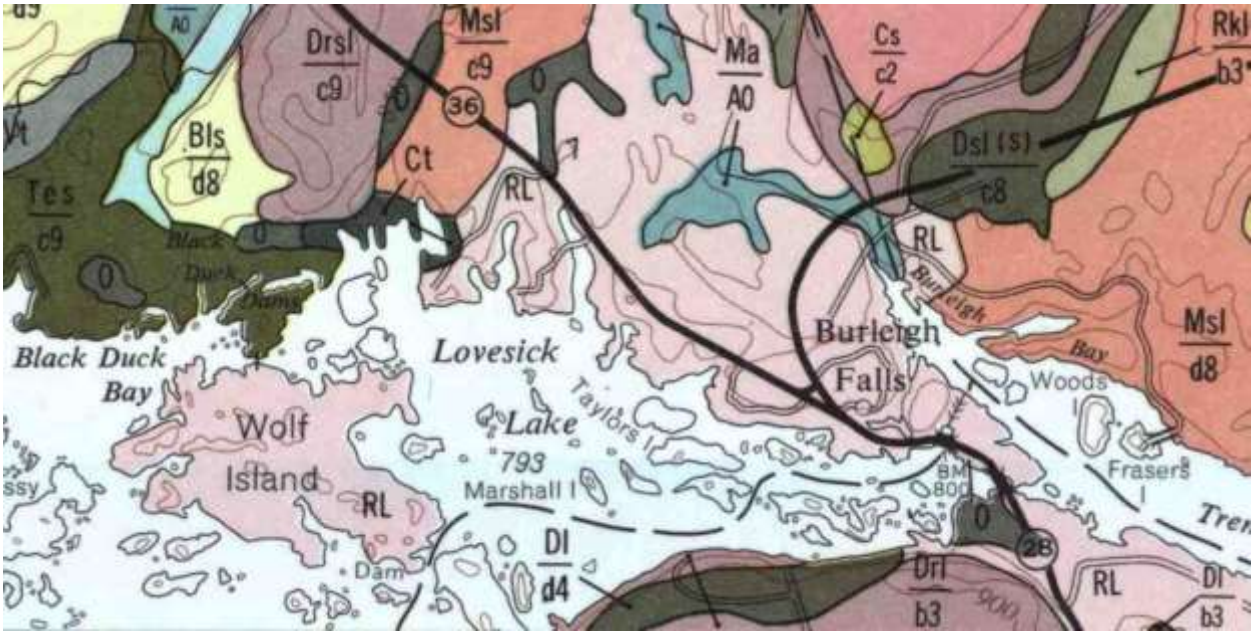


Geologic map Source: https://brocku.ca/library/wp-content/uploads/sites/51/MDG-P3404.pdf

3.2 Soils

As seen on the map below, the area surrounding Lovesick Lake contains a variety of different soil types, but is dominated by two major types split between north and south. The north side consists of a soil formation known as “Rockland” designated by RL on the map. Rockland is found throughout the Precambrian Shield landscape and consists of very shallow soils overlying granite bedrock and barren rock outcrops. The topography is irregular, moderately rolling to hilly. Soil depth usually is greatest in the lower slope positions, and organic soils often occur in depressions within the bedrock. In contrast, the south side of the lake is primarily a 30-80cm layer of stony till over a limestone bedrock known as “Douro Loam” and represented as Drl on the map.

Soil Map:



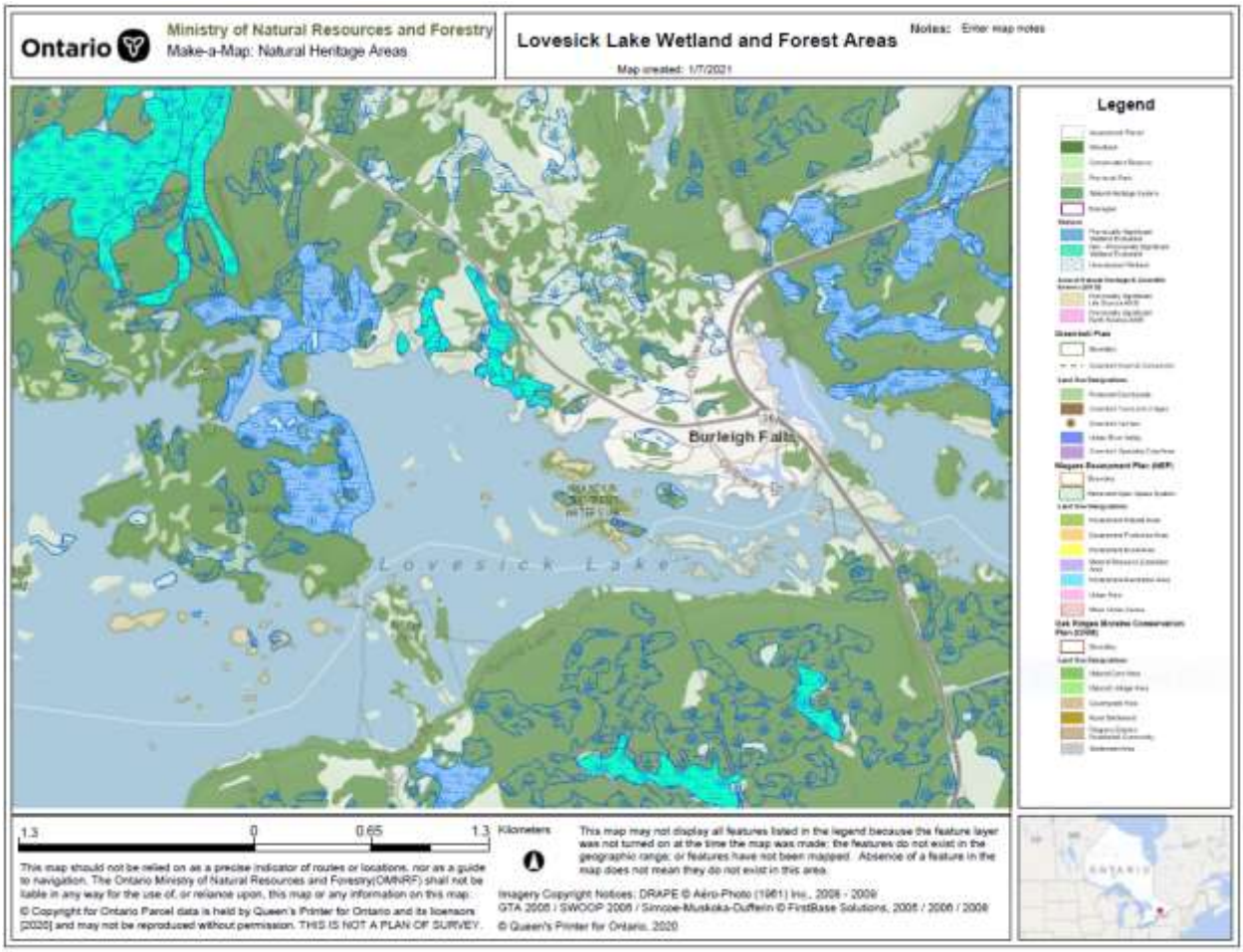
Map excerpt from Soils of Peterborough County – Soil Map – North side based on data provided by the Ontario Institute of Pedology

Found at https://sis.agr.gc.ca/cansis/publications/surveys/on/on45/on45_map_north.zip

3.3 Forest Areas and Wetlands

Calculated Land types from Shore to 200m Inland for Lovesick and neighbouring lakes.
Source: https://klsa.files.wordpress.com/2019/01/final_report.pdf

Lake Name	Upper Stony	Upper Buckhorn	Sturgeon	Pigeon	Lovesick	Lower Stony
Water	25.63%	7.46%	6.90%	4.99%	13.14%	11.93%
Freshwater marsh	0.00%	1.57%	6.75%	16.79%	0.00%	0.00%
Deciduous swamp	8.59%	8.87%	2.96%	3.63%	19.65%	8.15%
Conifer swamp	7.95%	2.06%	4.14%	2.04%	11.33%	4.84%
Dense deciduous	6.52%	12.29%	6.58%	14.55%	9.54%	10.93%
Dense coniferous	13.60%	6.90%	15.82%	9.38%	8.95%	23.09%
Mixed forest mainly deciduous	3.56%	1.70%	2.95%	4.79%	7.63%	5.34%
Mixed forest mainly coniferous	15.76%	5.96%	6.00%	3.61%	8.29%	15.87%
Sparse deciduous	13.39%	18.76%	1.36%	6.91%	16.28%	14.21%
Bedrock/sand/minetailings	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pasture and abandoned fields	2.02%	5.61%	11.92%	5.27%	0.52%	0.57%
Cropland	2.98%	28.81%	34.62%	28.04%	4.66%	5.06%
Alvar	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Detailed wetland mapping site:
https://geohub.lio.gov.on.ca/datasets/5216a770ef684d2fae8bcc13ee9c4357_15/geoservice?geometry=-78.278%2C44.554%2C-78.191%2C44.571

Common tree species around the lake include:

Hard Maple, Poplar, White Birch, Ash, Elm, Cedar, White Pine, Oak, Hemlock

A good reference for local tree identification can be found at:

https://www.ontario.ca/environment-and-energy/tree-atlas

https://www.ontario.ca/environment-and-energy/tree-atlas/ontario-southcentral//5E-11/5E-11

Chapter 4. Water Quality

4.1 Introduction

Generally, the water quality of Lovesick lake is high (i.e. good). Lovesick lake is warmer and contains higher total phosphorus levels than the other regional lakes. This is not unexpected since Lovesick Lake is small, with a low mean shallow depth and has a relatively small watershed. The bathymetric feature of the 82' hole provides a reservoir of water which modulates water quality (in a good way) for the lake. The biological productivity of Lovesick is high, which means there is a healthy ecosystem for fish and other species.

Since 2000 the Kawartha Lake Stewards Association (KLSA) has been involved in water sampling and testing in the Kawartha Lakes including Lovesick. In 2018, a detailed study was conducted for the KLSA by Fleming College School of Environmental and Natural Resource Sciences. Section 4 is largely comprised of a summary of the data this report. The full study can be referenced here: https://klsa.files.wordpress.com/2019/01/final_report.pdf
Some of the results from the study are summarized in the sections below.

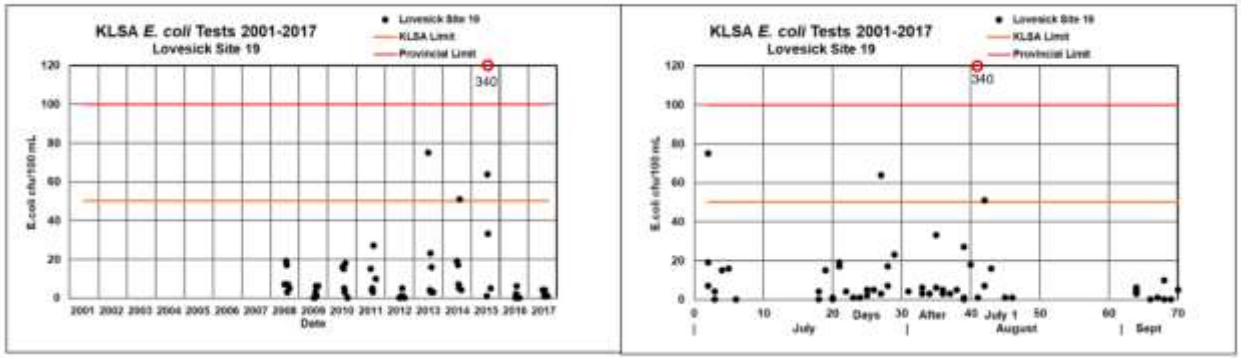
4.2 E. Coli

The presence of E.coli bacteria indicates fecal contamination from warm blooded animals such as birds or mammals, including humans. Sources of E. Coli include septic system discharge into the lake, discharge of boat holding tanks, and wildlife (especially waterfowl) and domestic animal excrement. Avoid feeding geese or ducks and don't dispose waterfowl excrement in the lake to avoid contributing to E.coli in the lake.

Although most strains of E.coli are harmless, some strains cause serious disease, such as in the Walkerton tragedy, or occasionally in ground beef "scares." The basic analysis done by KLSA cannot distinguish the difference between the harmless and the deadly, so we always treat E.coli as if we were dealing with a harmful strain.

The charts below show a summary of E.coli sampling results over the years 2008 to 2017 broken down by year and by month over the summer. The data indicates that generally E.coli levels in the lake are historically low and always below the provincial limit.

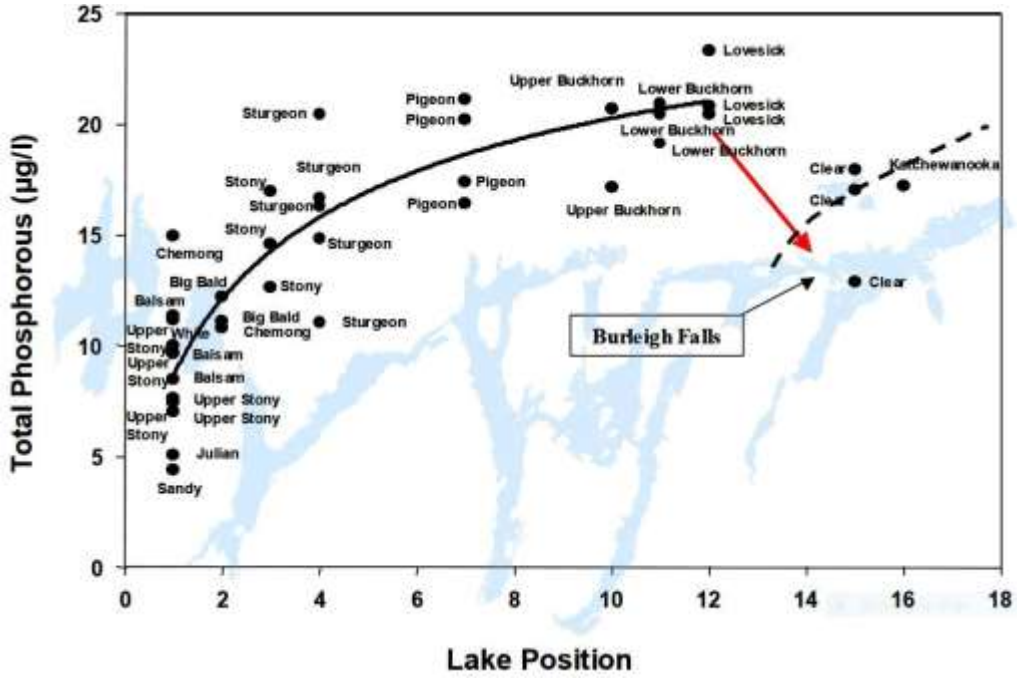
Lovesick Lake



Source: https://klsa.files.wordpress.com/2018/04/ecoli-report-2017-charts-of-site-vs-ecoli-results.pdf

4.3 Phosphorus

Historically Lovesick Lake has had a very high total phosphorus (TP) concentration due to accumulation from the many watersheds further upstream from the lake. The graph below shows a significant drop in TP levels after Lovesick lake due to the inflow of lower TP sources into Stony Lake which have a diluting effect. The high TP levels make Lovesick vulnerable to algal blooms. Increased nutrient loading can cause negative impacts on watersheds by speeding up the eutrophication process. Many nutrients contribute to this process including carbon, hydrogen, oxygen, nitrogen, phosphorus and sulphur. But the most detrimental nutrient is considered to be phosphorus. Phosphorus concentrations should not exceed 20 parts per billion (ppb). Levels above these amounts can result in foul smelling algae blooms and deterioration of recreational and aesthetic values. Research shows that a shift towards a turbid, algae dominated lake system is extremely difficult to remediate. There are two sources of phosphorus in the environment: natural and human-induced. Natural sources are found in a variety of forms from dead plants and animals to geologic make up of the area. Human-induced sources include fertilizer, septic systems, runoff (lawns and storm water), and agriculture.



Phosphorus and the Kawartha Lakes (Land use, Lake Morphology and Phosphorus Loading) by Michael White

Lovesick is unique in that there is a marked divide in geology between the northern and southern shores. Its southern is underlain by limestone based bedrock. Groundwater flowing through this bedrock may introduce natural sources of nutrients into the system. The northern half of Lovesick Lake lies in the Precambrian region, dominated by granite rock meaning nutrient loading from natural sources is reduced. The granite also limits the potential for agricultural use in the area. Therefore, it is conceivable to conclude that the greatest threat of localized nutrient loading comes from human-induced sources, including faulty septic systems and shoreline runoff. The dominant source of phosphorus is likely due to sources in the lakes upstream from Lovesick.

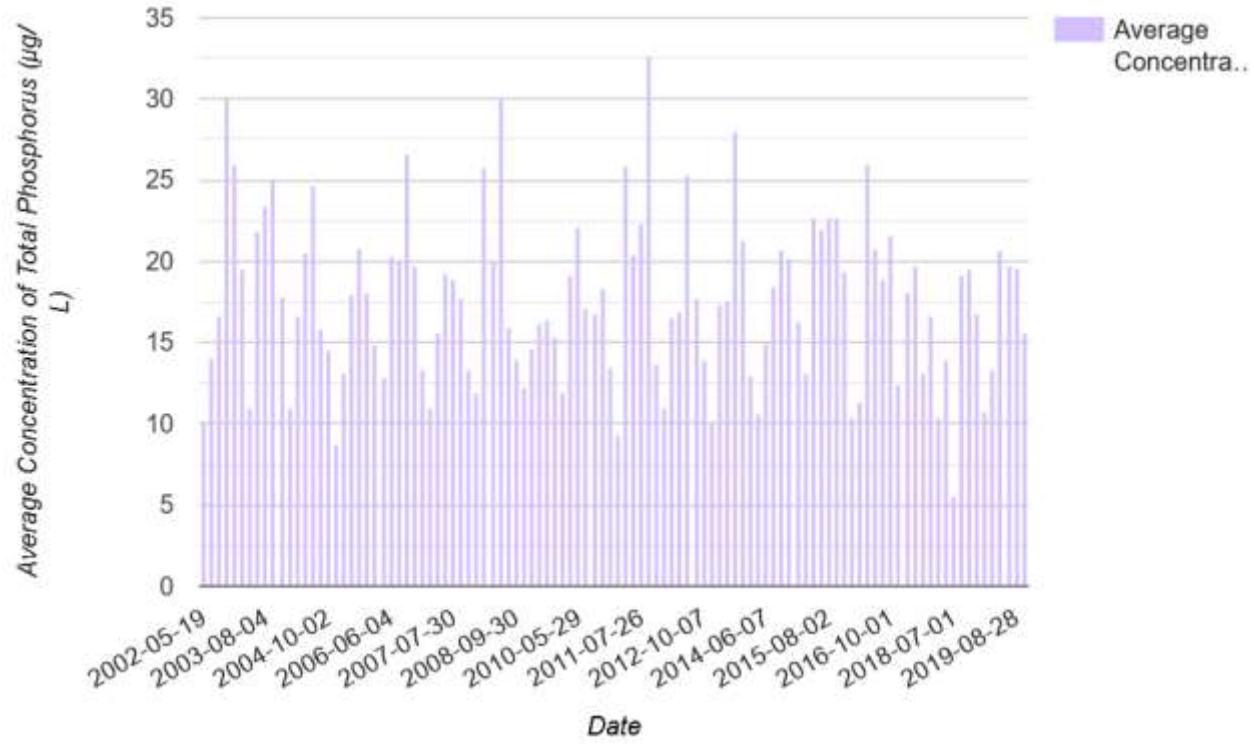
In the KLSA study, TP sampling was done at two sites LS1 and LS2 (see map below). LS1 measurements at both the surface of the lake and lake bottom are 26 µg/L. For LS2, the TP measured at the Lake Surface is 12 µg/L, while the TP measured at the lake bottom is 11 µg/L. Based on past data, the average TP value for Lovesick Lake from the 2001-2005, 2007, 2013-2016 KLSA reports is approximately 17 µg/L during late September, early October. All of these values are within the meso-eutrophic range or mesotrophic (refer to table below), as expected for this lake. The lower values for LS2 may be a result of the surrounding land use and phosphorus inputs into the lake, as LS1 values were slightly higher. Further research would have to be conducted to analyze water inflow into Lovesick Lake.

Location of sampling sites LS1 and LS2

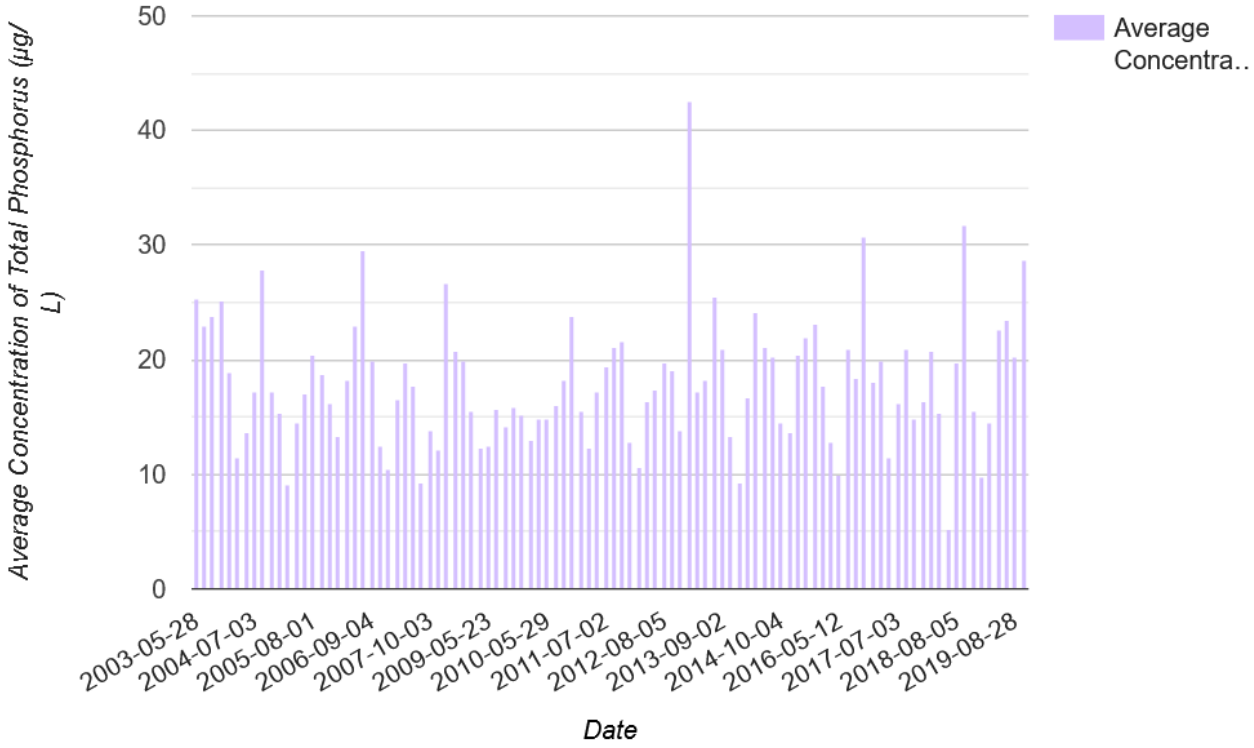
Canadian Trigger Ranges Trophic Status	Total phosphorus (µg·L-1)
Ultra-oligotrophic	< 4
Oligotrophic	4 - 10
Mesotrophic	10-20
Meso-eutrophic	20-35
Eutrophic	35-100
Hyper-eutrophic	>100

(Canadian Water Quality Guidelines for the Protection of Aquatic Life, 2004).

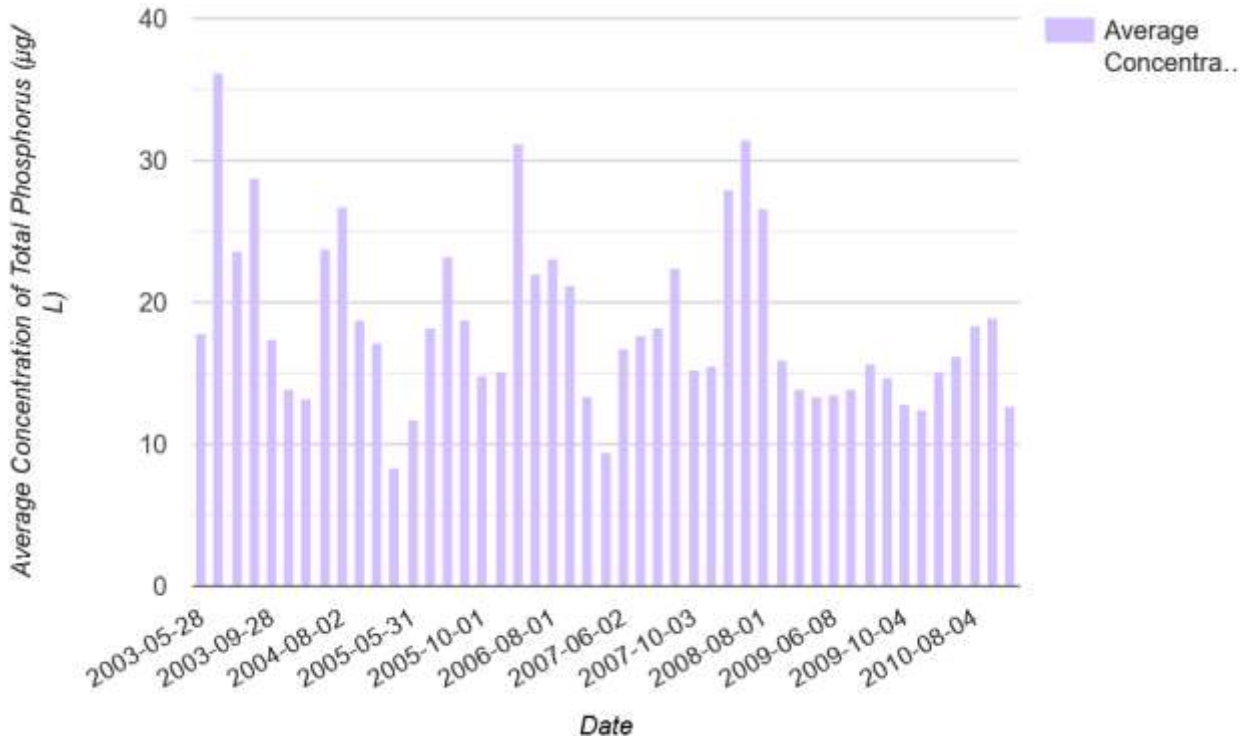
In conjunction with the KLSA and the MOE's Lake Partner Program, volunteers from the Lovesick Lake Association have been conducting water sampling for TP since 2003. A summary of the data is presented in the charts below.



Total Phosphorus readings 80 foot hole – north end



Total Phosphorus readings – McCallum Island

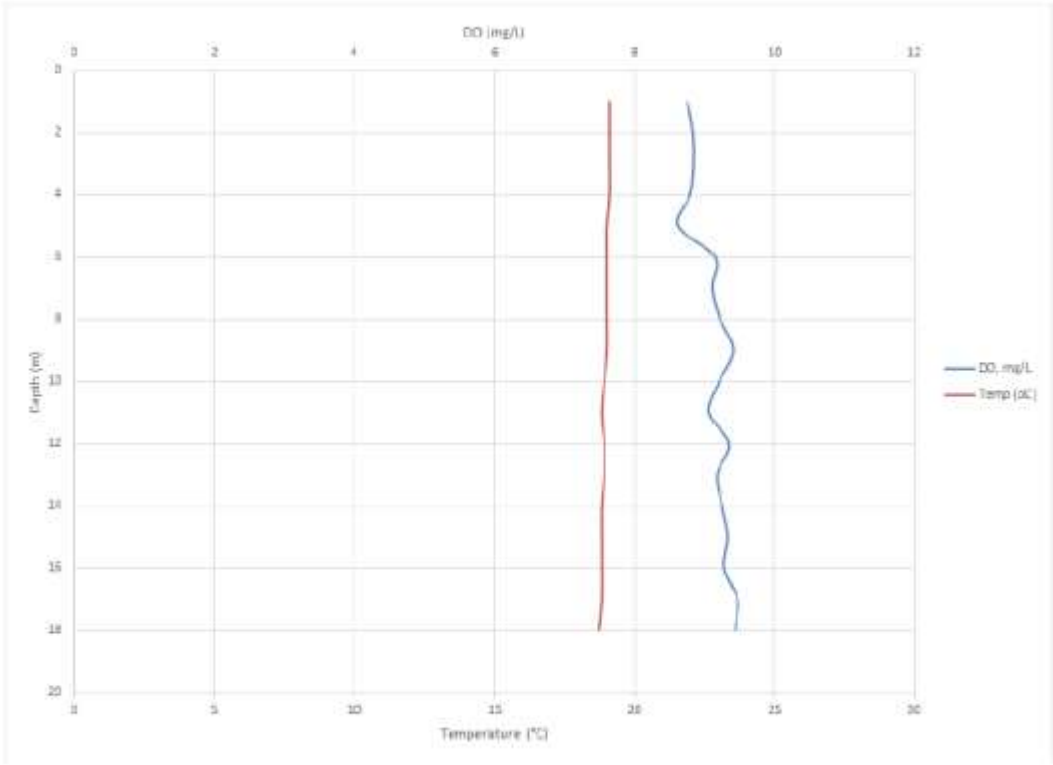


Total Phosphorus readings – Spenceley's Bay (not currently being sampled)

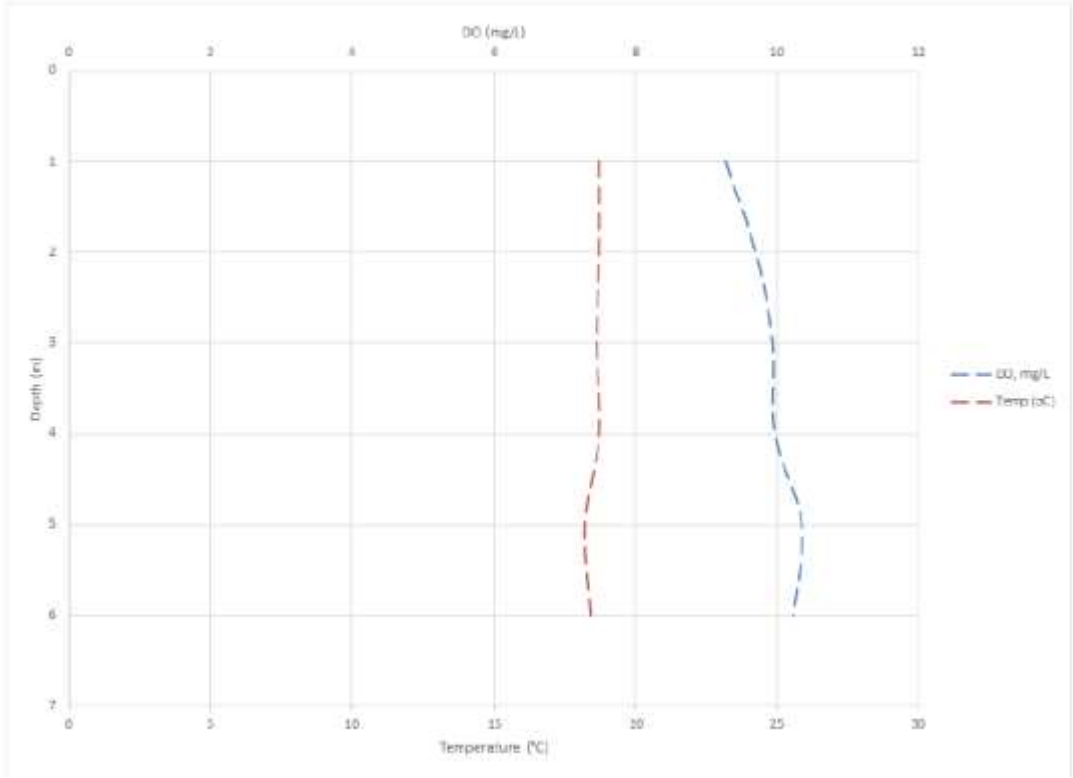
The most recent published data for all Ontario lakes can be found here: https://www.ontario.ca/environment-and-energy/map-lake-partner

4.4 Dissolved Oxygen and Temperature

From the 2018 KLSA study, Lovesick lake had a healthy dissolved oxygen profile. Both sites, (LS1 and LS2), fell within the acceptable dissolved oxygen levels for the early and adult life stages of aquatic life. The dissolved oxygen levels for LS1 ranged from 8.75mg/L at 1m depth to 9.44mg/L at 18m with a nearly linear increasing trend. The DO% saturation ranged from 94% to 101%. LS2 was a shallow site with the deepest measurement taken at 6m. The dissolved oxygen profile starting at 1m depth to 6m depth ranged from 9.27mg/L to 10.23mg/L. The DO saturation at this site was 102.2% to 109.4%. Lovesick lake's dissolved oxygen profile shows signs of "healthy" water quality and is expected to support aquatic life in all stages of their life cycle. Lovesick lake is considered to mix very well and the oxygenation profile found within the data represents this.

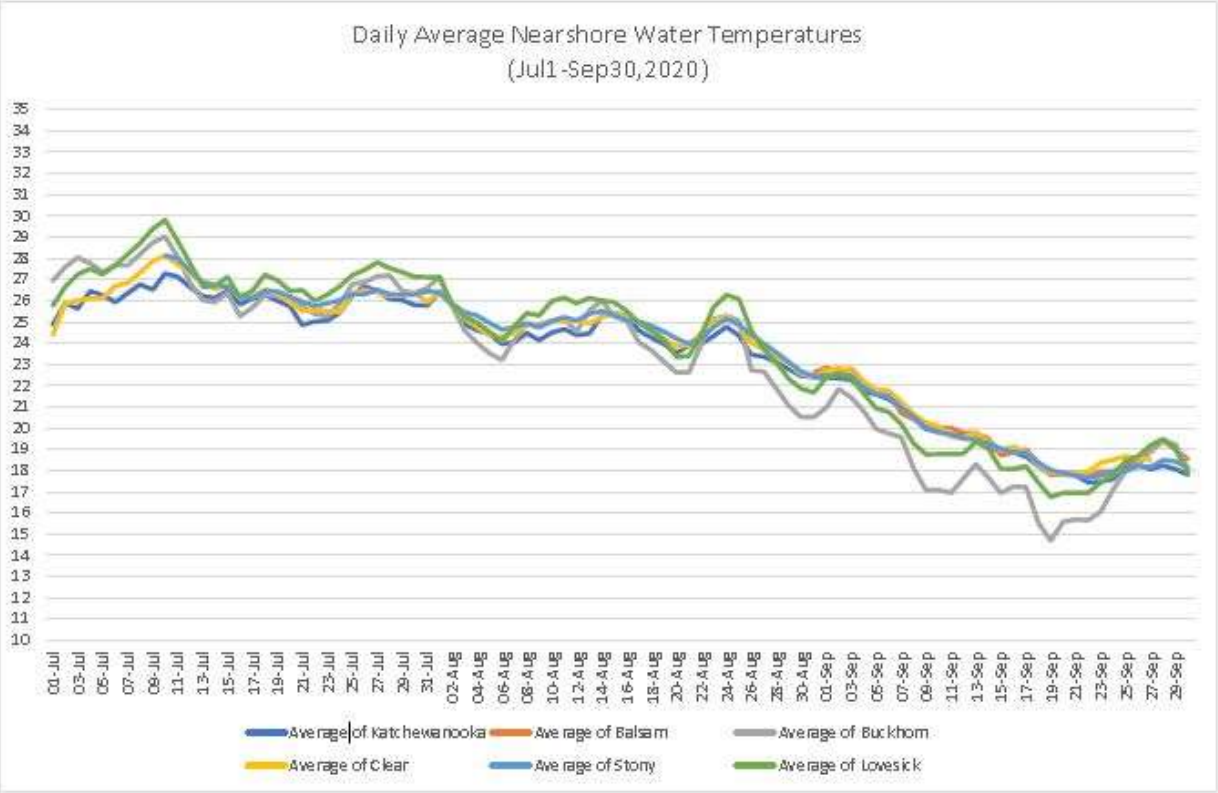


LS1 Temperature and Dissolved Oxygen readings



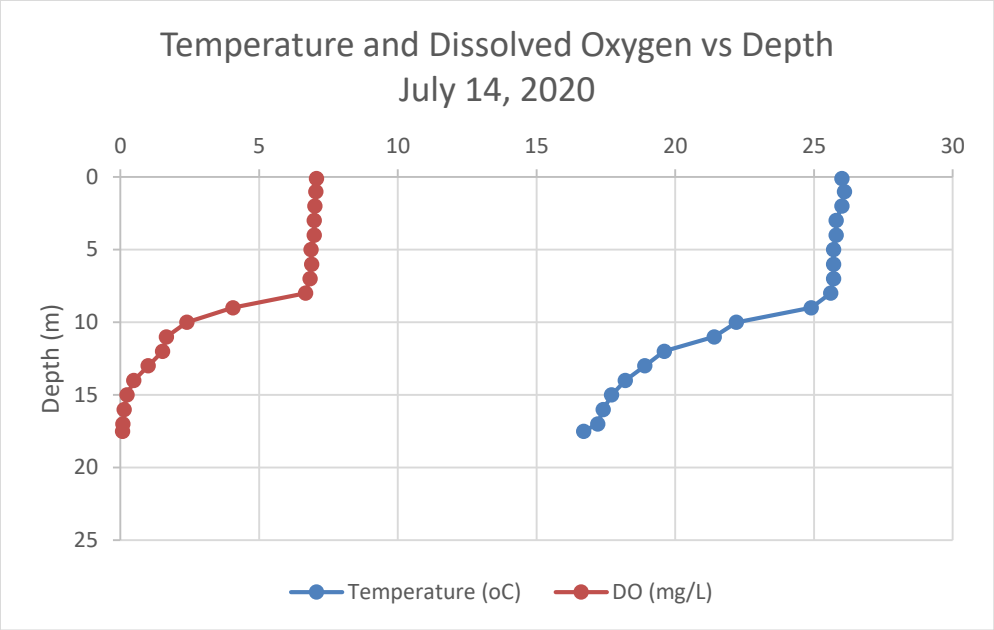
LS2 Temperature and Dissolved Oxygen readings

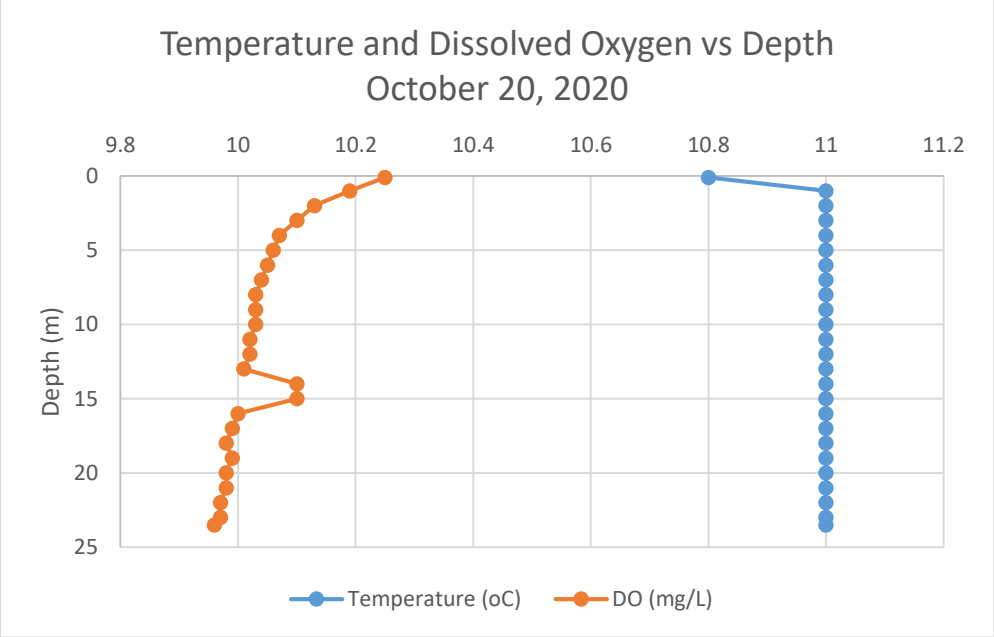
The following figure shows continuous water temperature measurements[1] (taken every hour) during July to September 2020 for six lakes within the Kawartha region. The Lovesick lake measuring station is located at a property along Fire Route 7. Lovesick is the warmest lake throughout most of the period.



Some additional data of temperature and dissolved oxygen vs. depth taken at the 80' hole in 2020 from July and October. The July data shows stratification occurring while the October data indicates very thorough mixing with both parameters remaining quite constant with depth.

[1] Courtesy Brett Tregunno KLSA



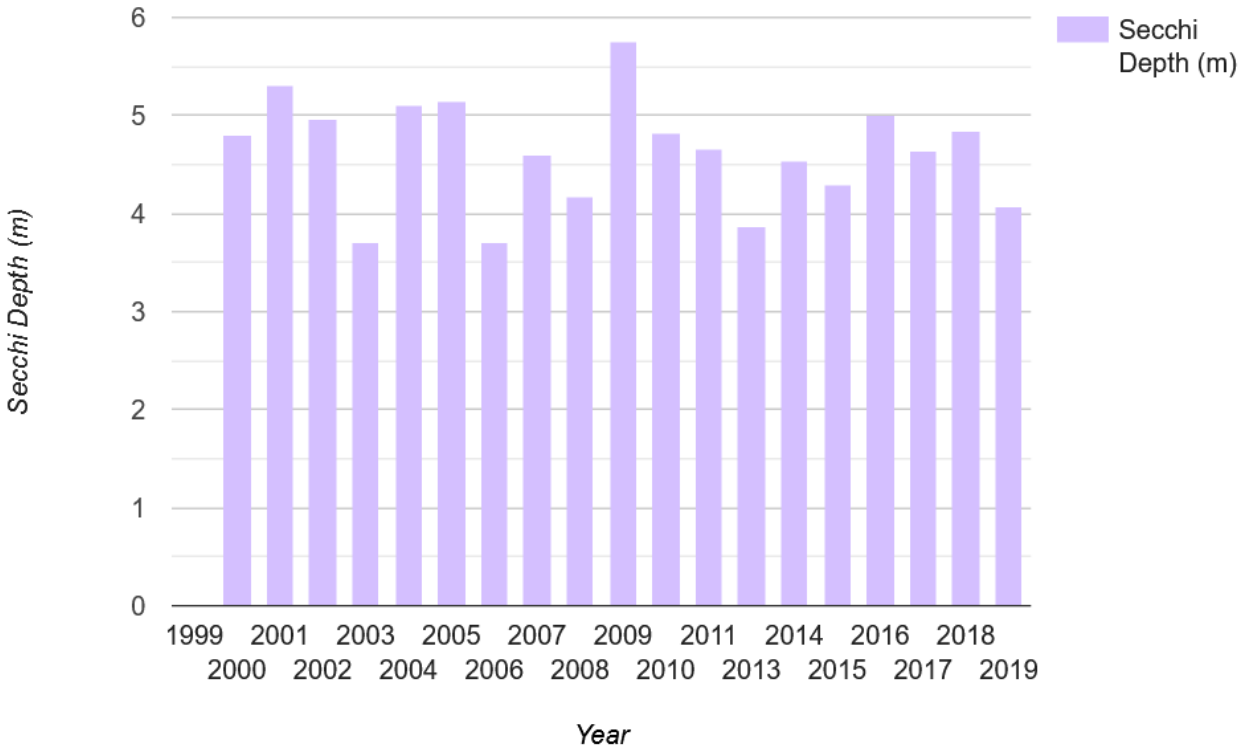


4.5 Water Clarity

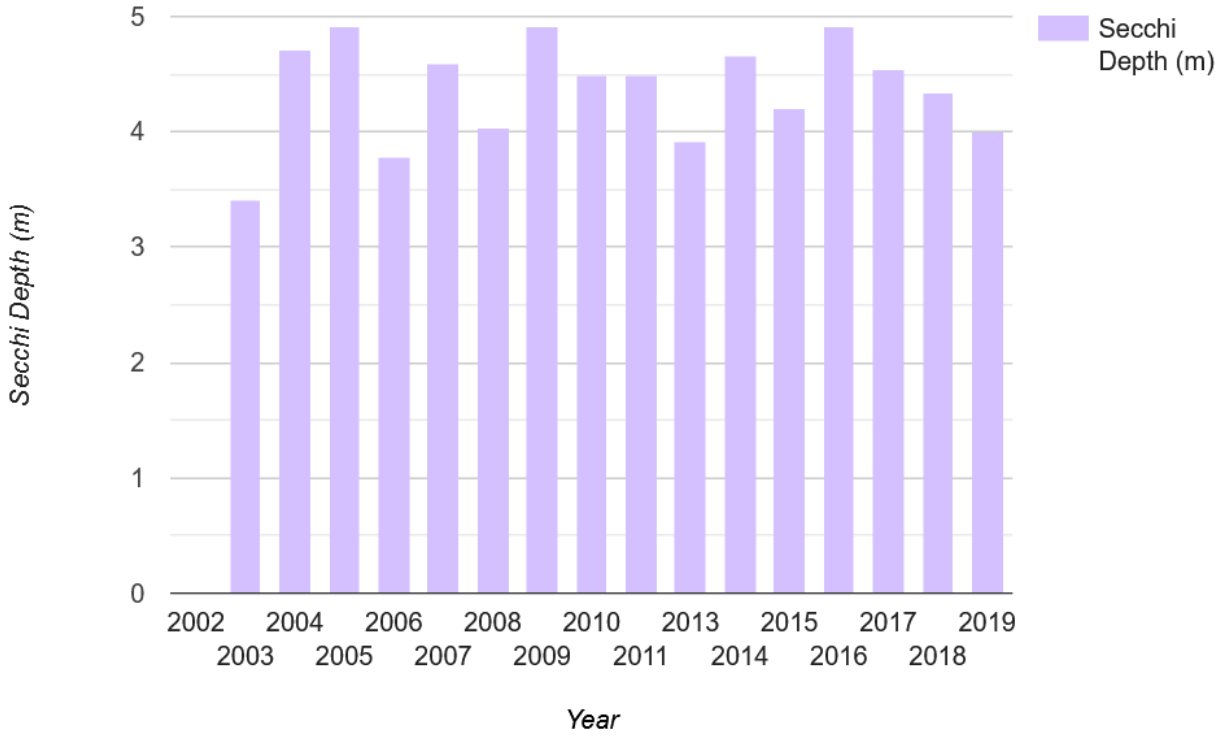
Water Clarity

Water Clarity is measured by lowering a secchi disk into the water to measure how deep a person can see into the water. The larger the secchi depth, the clearer the water is. Water clarity may be affected by three different factors - algae, sediment disturbances, and/or water colour. The 2004 KLSA report quotes a study that found property values began to decrease as Secchi measurements fell below 4 metres. Over the years of sampling the secchi disk readings on Lovesick have typically ranged between 4 and 5 meters at the two sampling sites: 80 foot

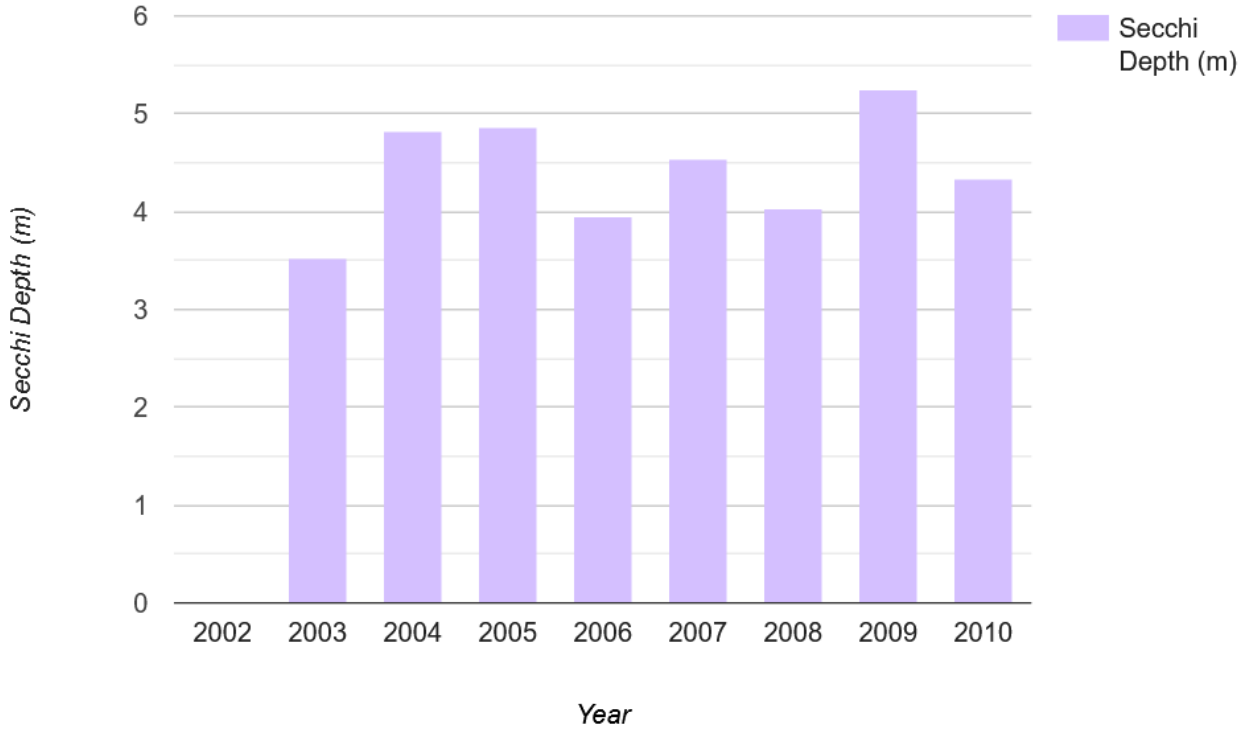
hole and McCallums Island. See charts below for a summary of the data. Some data is also included from a third site on Spenceleys bay which is currently no longer being sampled.



Water Clarity readings 80’ Hole



Water Clarity Readings McCallum Island



Water Clarity readings Spenceley's Bay (no longer currently being sampled)

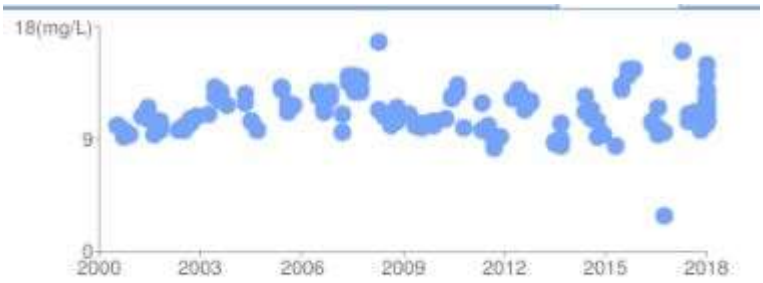
4.6 Water Chemistry

Since 1966 the MOE has carried out a water sampling program. One of the sampling stations (#17002101702) is located outlet of Lovesick lake at Lock 28[2]. Over the past few decades the frequency and sampling parameter list has changed. However, the data collected provide the general trend of water quality for the Lake.

Shown below are some summary graphs prepared on the government website showing chloride, Total Phosphorus, Suspended Solids and Nitrate.

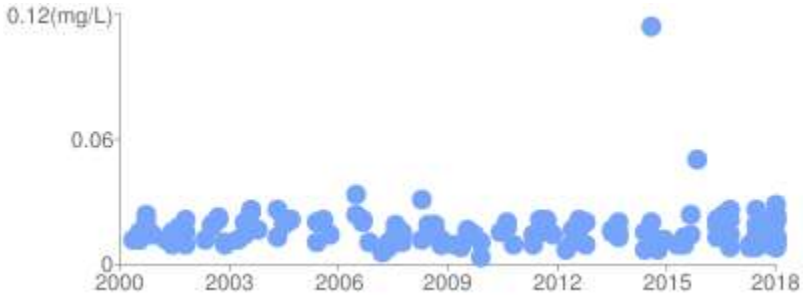
[2] A description of the sampling locations and date set can be found at: https://www.ontario.ca/environment-and-energy/map-provincial-stream-water-quality-monitoring-network

Chloride concentrations, have remained relatively constant with a recent slight upward trend.



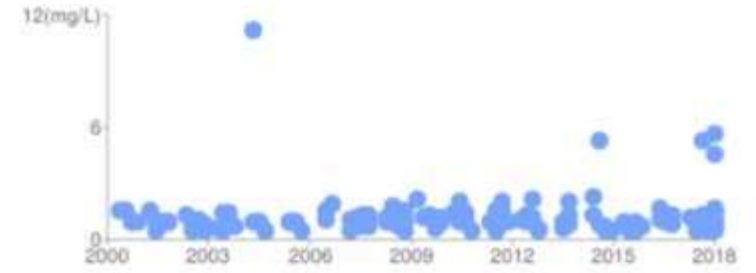
Chloride Concentrations (mg/L) for **LOVESICK LAKE OUTLET**

Total Phosphorus concentrations have remained fairly constant



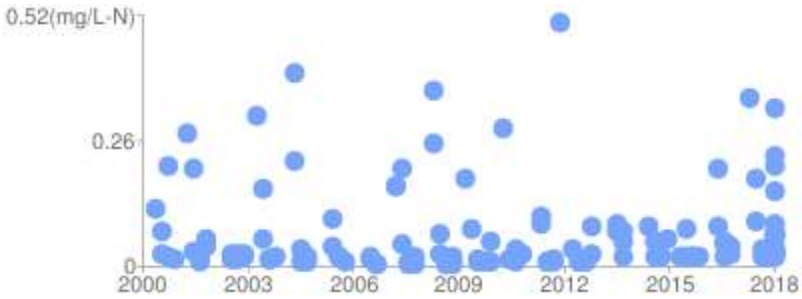
Total Phosphorus Concentrations (mg/L) for **LOVESICK LAKE OUTLET**

The suspended solids concentrations have also remained constant. Elevated suspended solids concentrations can affect downstream fish habitat.



Suspended Solids Concentrations (mg/L) for **LOVESICK LAKE OUTLET**

Nitrate is formed naturally when nitrogen combines with oxygen or ozone. Nitrogen is essential for all living things, but high levels of nitrate is harmful to health.



Total Nitrates Concentrations (mg/L-N) for LOVESICK LAKE OUTLET

The most recent water chemistry sampling reported for Lovesick Lake occurred in 2019 (the latest reporting year at the time of publication of this report).
Water samples were collected on eight occasions (April 17, May 13, June 17, July16, August 13 September 18, October 15, and November 26)
During the 2019 sampling campaign, the following results were reported.

Parameter	Low Measurement	High Measurement
Temperature °C	1.4	25.6
Ph	7.67	8.32
Dissolved O_2 (mg/l)	8.16	14.04
Conductivity (Note 1)	186	223
Alkalinity (mg/l)	71.1	83.5
Ammonium tot (mg/l)	0.022	0.119
Nitrite (mg/l)	.001	0.007
Ammonium (mg/l)	0.022	.068
Nitrates (mg/l)	.025	0.207
Chloride (mg/l)	10.4	12.9
TP (ug/l)	10.13	29.1
Suspended Solids (mg/l)	0.5	5.6
PPO4 (mg/l)	.0014	0.054
Nitrogen total (mg/l)	0.36	0.53

Notes:

1. Conductivity values are expressed in either micro MHOS/cm (when a field measurement) or as µSiemens/cm (when measured in the lab). These units are equivalent.
2. On Oct 15 the field measurement for conductivity was 1959 uMHOS/cm. this reading may be anomalous.

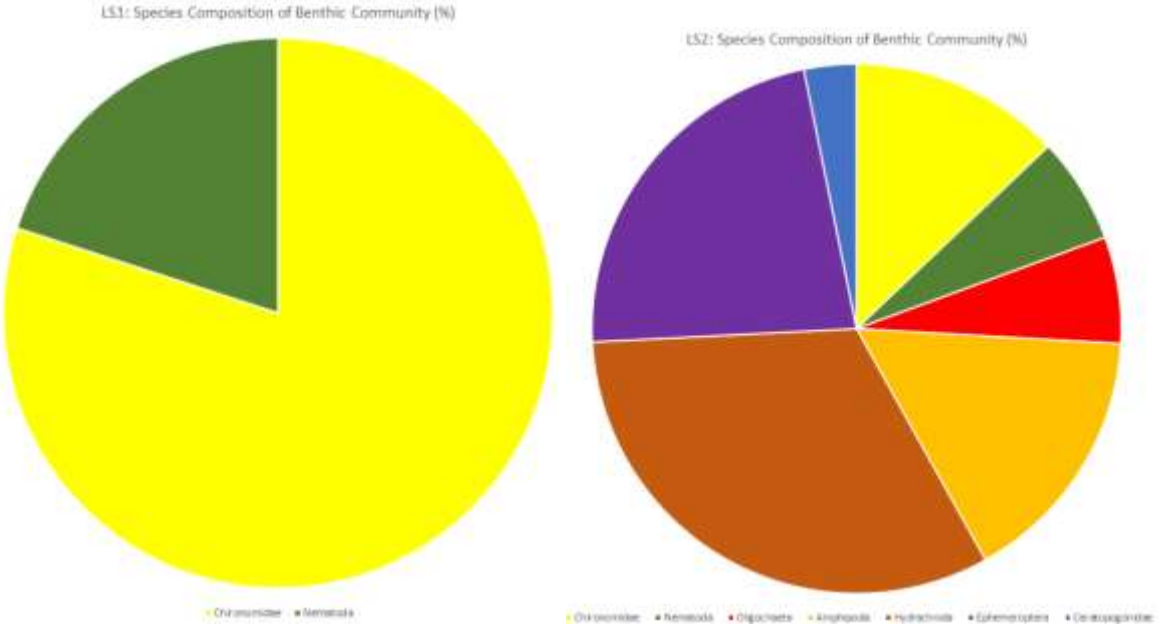
4.7 Benthic Community

The benthic community refers to the community of macroinvertebrates (small organisms without backbones visible to the naked eye) found in the lake. Combined with the phosphorus levels, the organisms found in the benthic study provide an indication of the health or trophic status of the lake.

Benthic (**meaning** "bottom-dwelling") **macroinvertebrates** are small aquatic animals and the aquatic larval stages of insects. They include dragonfly and stonefly larvae, snails, worms, and beetles. Macroinvertebrates are a diverse group which include worms, hydra, snails, spiders, mites, crustaceans, spring tails and insects.

Aquatic macroinvertebrates are fascinating creatures and play a very important role in maintaining a healthy ecosystem, as they are consumers of algae and other organic matter, thus help to remove nutrients. Macroinvertebrates also provide a great food source for animals higher up the food chain such as predator invertebrates, fish, frogs and birds. Macroinvertebrates that inhabit the mud, such as worms aerate the sediments which help prevent the water from becoming turbid.

The following pie charts show the distribution of benthic organisms found at the two sampling sites (LS1 and LS2).
The distribution of this sample was 80% Midges (Chironomidae), and 20% Roundworms (Nematoda). 31 macroinvertebrates were collected at LS2. The population distribution here was 12.9% Midges (Chironomidae), 6.5% Roundworms (Nematoda), 6.5% Aquatic Earthworms (Oligochaeta), 16% Scuds (Amphipoda), 32.3% Mites (Hydrachnida), 22.6% Mayflies (Ephemeroptera), and 3.2% No-see-ums (Ceratopogonidae)



4.8 Water Pollution

In the event you observe a situation involving water pollution from spills or discharge of gasoline, oil, or other chemicals, there is a reporting hotline available 24/7:

Toll-free: 1-866-MOETIPS (6638477)

The Buckhorn fire department also has HAZMAT equipment and can be contacted at 705-738-3800. If the situation is severe, contact 911.

For other forms of pollution i.e. garbage and solid waste from illegal dumping, refer to the By-laws information in section 8.2 for contact information.

Polystyrene (PS) Foam Contamination

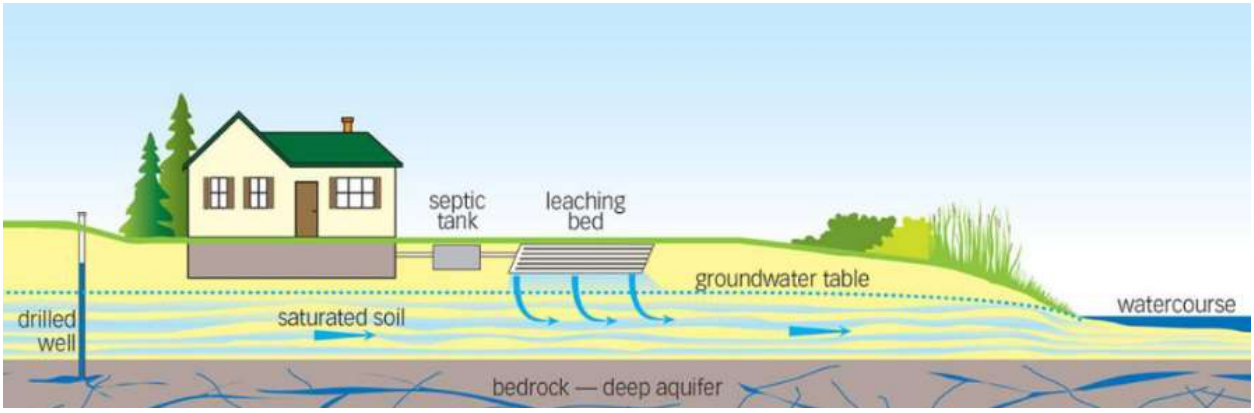
One form of pollution frequently observed on the lake is bits of PS foam from dock floats or swim rafts, but also from beverage cups, food containers or building insulation. When unencapsulated PS foam docks and floats come into contact with their surroundings – sun, wind, waves, ice, and burrowing animals – the foam can break apart and be released into the environment. Small foam pieces are microplastics (plastic <5mm), which are persistent in the environment and pose a risk to fish and wildlife by ingestion and exposure to chemicals.
A Private Member's Bill 228 (" Keeping Polystyrene Out of Ontario's Lakes and Rivers Act") to ban the future use of unencapsulated PS foam in docks was introduced in 2020 and has passed second reading. What can you do? If you see PS foam while out on the lake, do your best to collect it for proper disposal. Also, look under your dock or swim raft to check for unencapsulated foam. If found, make a plan to change it out. There are many alternatives that won't create fragmented litter pollution. To read more, please visit: bit.ly/DocksPSFoam and bit.ly/PSFoamGBF

4.9 Waste Water

The discussion of cottage wastewater systems (septic tanks, outhouses, holding tanks etc.) is a topic which many cottagers would like to avoid, yet properly functioning systems are key to maintaining safe drinking water and a healthy lake. Failing wastewater systems can be a source of E. coli as well as phosphorus and other nutrients contributing to excessive weed growth and the formation of algal blooms. Illegal discharge of wastewater from boats is also contributing factor.

In Ontario, the Building Code contains five classes of systems:
- Class 1 — all forms of privies: outhouses, composting toilets, chemical toilets, incinerating toilets, re-circulating toilets and self-contained portable toilets
- Class 2 — greywater system
- Class 3 — cesspool
- Class 4 — leaching bed systems (classic septic tanks)
- Class 5 — holding tank

The majority of modern rural dwellings have a Class 4 septic system, but other types of systems exist around the lake such as outhouses, holding tanks, and composting toilets.



TYPICAL CLASS 4 SEPTIC SYSTEM

Septic systems are the responsibility of the landowner. It is up to you to keep your system working properly to protect your environment, your health and your investment. When properly designed, constructed and maintained, a septic system should provide long-term, effective treatment of your household wastewater. The natural life of a septic system ranges between 25 to 40 years. If you take good care of your system, you will save yourself the time, money and worries involved in replacing a failed system. Failed systems can be hazardous to your health, the environment and your pocketbook. It can degrade water supplies and reduce your property value.

To understand waste water systems there are some excellent on-line guides from FOCA and government sites.

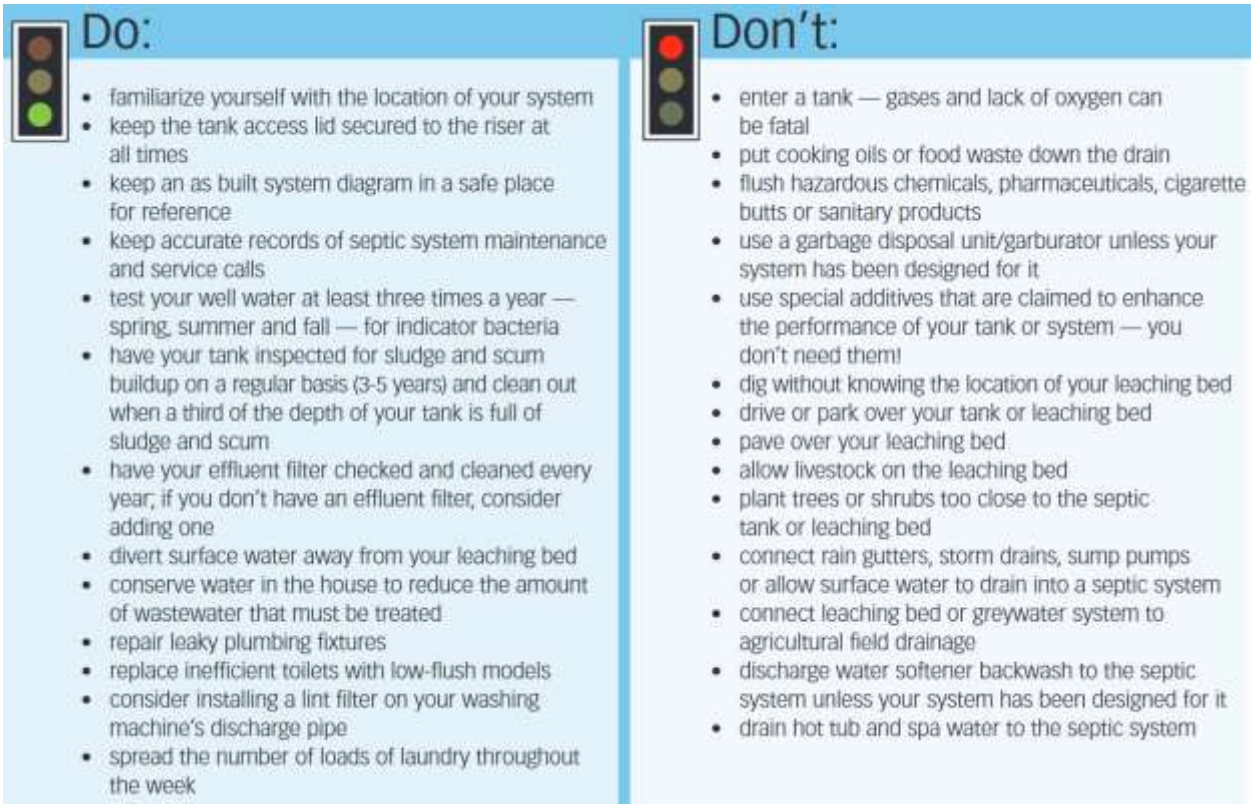
“Septic Re-inspection Programs in Ontario A Guide for Lake Associations”

https://foca.on.ca/wp-content/uploads/2014/02/FOCA-Septic-Reinspection-Project-Report-FULL-DOCUMENT-2019-1.pdf

“Septic Smart - Understanding Your Home’s Septic System”

https://www.rvca.ca/media/k2/attachments/Septic_Smart_English.pdf

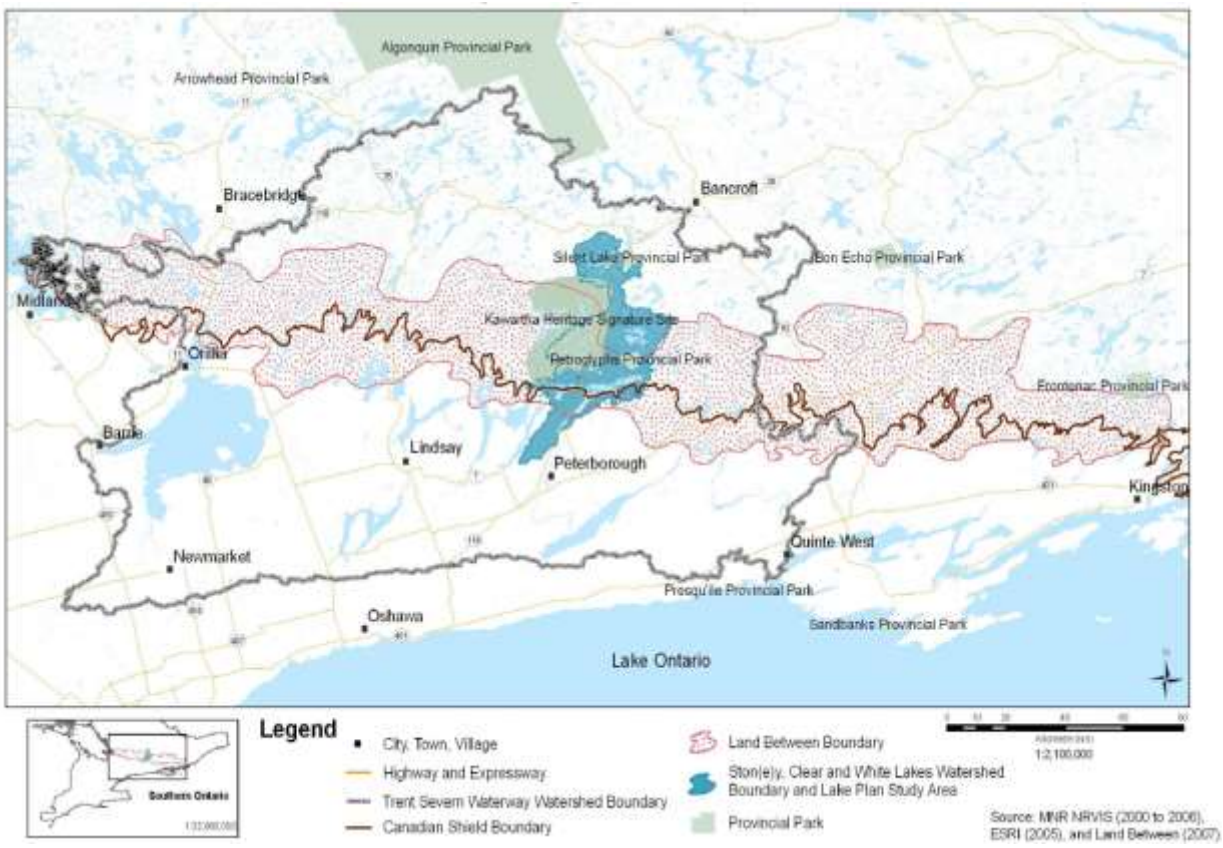
Below is an excellent list of “Do’s and Don’ts” from the guide:



Recently a new wastewater issue has surfaced involving microplastics. While most people would never dream of flushing plastics down the drain, many of us unwittingly do this every time we wash our clothes and other household items. During the wash cycle, items made from synthetic materials such as polyester, fleece or nylon, shed very tiny bits of plastic less than 5 mm in size (microfibres) that are then discharged into our septic systems along with the rest of our wastewater and, eventually, make their way through the septic system and into the environment. A recent study by researchers at the University of Illinois has found that microfibres are making their way through the groundwater and into well water. Enter Bill 279: Environmental Protection Amendment Act (Microplastics Filters for Washing Machines). An Ontario Private Member's Bill was tabled in April 2021 to prohibit the future sale of washing machines without microplastics filters. In the mean time, there are external filters available which can be attached to your washing machine to trap microfibres.

Chapter 5. Natural Heritage

Lovesick Lake is located in an area known as “The Land Between," a transitional zone between two distinct ecological units: The Canadian Shield and the St. Lawrence Lowlands (See map below). It is characterized by low relief exposed granite to the north side and “stepping stones” of limestone plain along the south side. Small and connected lakes and wetlands between these dry open ridges and patches of cool shaded forest are the patterns of this unique natural system. This overlap in area is significant on a provincial scale as it provides a unique concentration and diversity of natural heritage features that occur within both of these distinct land-form types. For further information please visit: https://www.thelandbetween.ca/



5.1 Fish Species

The following major fish species present according to the OMNR are listed in the table below. Note that Lovesick Lake is part of **Fisheries Management Zone 17** in the fishing regulations.
See https://www.ontario.ca/page/fishing for more information. The Fisheries Management Plan for FMZ-17 can be viewed online at: https://docs.ontario.ca/documents/2644/264321.pdf
A fish sanctuary exists 100m downstream from all the Lovesick dams from Jan. 1 – Fri after 2nd Sat. in May and Nov. 16 – Dec. 31 to protect spawning walleye. A fish sanctuary also exists on Perry's Creek and Burleigh Falls from the dam to Stony Lake with the same dates. Historic records indicate that prior to construction of the Trent Severn Waterway, Atlantic Salmon, American eel and some trout species were present in the area.

To report illegal harvesting of fish or wildlife, please call the Ministry of Natural Resources and Forestry TIPS line at 1-877-TIPS-MNR (847-7667)

Consumption guidelines for eating fish can be found at the link below. The advisory tables provide fish consumption advice based on the level of contaminants found in fish according to their location, species and length.

https://www.ontario.ca/environment-and-energy/sport-fish-consumption-advisory?id=44337813

Species	**Notes**
Black Crappie	
Bluegill	
Brown Bullhead	
Burbot	
Common Carp	
Largemouth Bass	
Muskellunge	
Pumpkinseed	
Rock Bass	
Smallmouth Bass	
Walleye	
White Sucker	
Yellow Bullhead	
Yellow Perch	

Some additional non-sports species reported by the OMNR include the following:

Golden Shiner (*Notemigonus crysoleucas*), Blackchin Shiner (*Notropis heterodon*), Spottail Shiner (*Notropis hudsonius*), Trout-Perches (*Percopsis omiscomaycus*), and Logperch (*Percina caprodes*)

In 2008, the Ministry of Natural Resources released a document summarizing fishery information for some of the TSW lakes including Lovesick Lake. The table shown below compares Lovesick Lake with Little Bald Lake (selected because they are similar in size).

The report calculates the fishery productivity for 35 lakes. Lovesick lake calculated productivity (based on TDS mean depth etc.) is slightly greater that half the lakes (19/35).

The longer growing season, greater productivity will cause increased growth rates.

The theoretical Maximum Sustainable Yield (MSY) for walleye productivity (that is - the kg of walleye that is expected to be found in the lake for each area hectare of lake surface) was calculated by the Researchers. Of the lakes listed in the report, ten have a greater sustainable yield when compared to Lovesick.

	Area (Ha)	TDS (mg/l)	Mean Depth (m)	Max Depth (m)	Secchi (m)	GDD >5°C	MEI (kg/ha)	Walleye MSY **(Kg/ha)
Lovesick	257.2	110	2.5	7.6	2.6	1909	7.7	1.9
Little Bald	187	128	1.8	25	1.2	1863	8.2	2.8

GDD = Growing Degree Days, MEI = Morphoedaphic Index (TDS/mean depth)

** Walleye MSY based on Thermal Optical Habitat Area (TOHA) – Lester et al. (2004)

Walleye MSY = 1.702*(GDD/1000)^1.86*tds^0.42*(toha^0.93)/area

The Kawartha Lakes were stocked with walleye, Largemouth Bass and Muskellunge by the Ontario government from the early 1920s to the late 1980s.

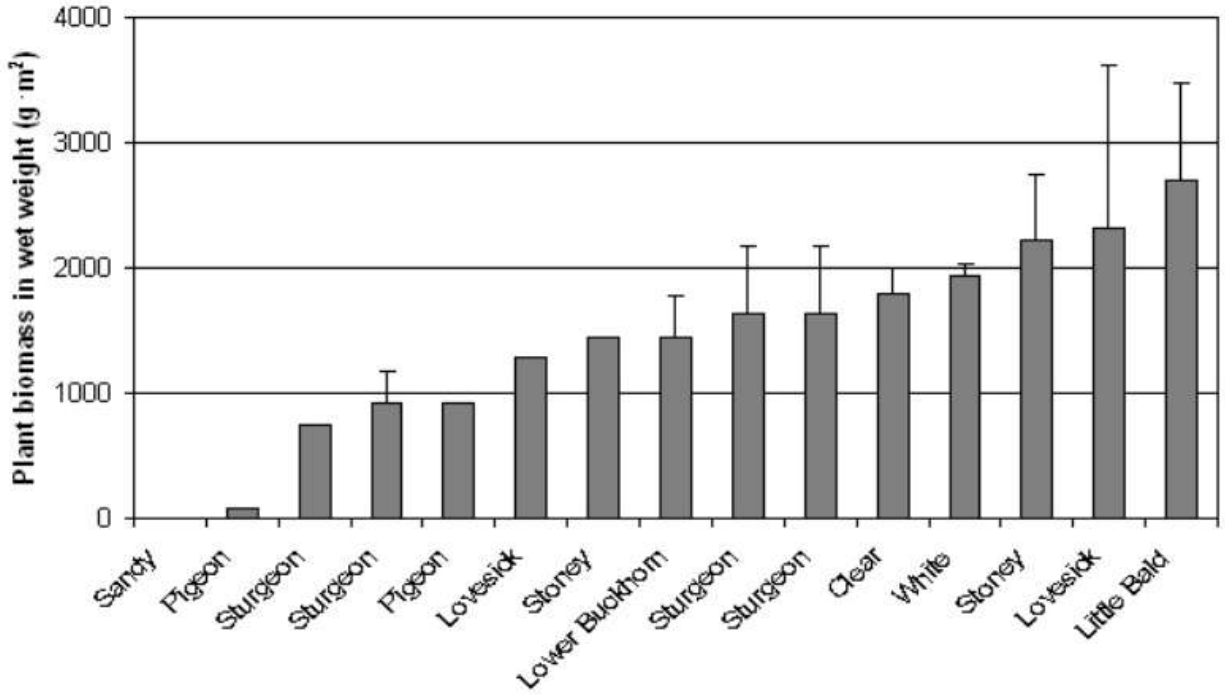
Lovesick lake was stocked with walleye in 1946 with approximately 400 000 fry. In 1968, 468 juveniles and adult Largemouth Bass were placed in the lake. The most frequent species stocked was Muskellunge. Tens of thousands of fry and fingerlings were placed in Lovesick lake for most years from 1946 until 1989.

5.2 Aquatic Plants

Common aquatic plant species found in the lake are listed in the table below. Of particular concern are some of the invasive species such as Eurasian Milfoil. Refer to section 5.9 on invasive species for more information. Some plant-like organisms (Starry Stonewort for example) are not true plants, but are actually forms of macroalgae. The Kawartha Lake Stewards Association has produced an excellent guide on aquatic plants including identification and removal strategies. See link below:

https://klsa.files.wordpress.com/2021/06/aquatic-plant-guide_klsa.pdf

As found the above reference, in 2008 the KLSA conducted a study across 20 sites in the Kawartha lakes to compare aquatic plant management strategies. It found that the unmanaged sites on Little Bald and Lovesick had the greatest biomass (plant mass for a given area) of aquatic plants compared to other sites.



The table below shows some common varieties of aquatic plants found on Lovesick.

SPECIES	NOTES	TYPE
Star Duckweed		Free Floating
Common Bladderwort	Carnivorous	Free Floating
Coontail	No roots	Free Floating
Milfoil	Several varieties	Submersed
Tapegrass	Also known as water celery	Submersed
Pondweed	Several varieties	Submersed
Muskgrass	Actually a macroalgae	Submersed
Canadian waterweed	Bright green colour	Submersed
Fragrant Water Lily	Fragrant white flower	Floating Leaf Plant
Yellow Pond Lily	Yellow flower	Floating Leaf Plant

Aquatic Vegetation Removal

For up-to-date information on the Trent-Severn Waterway Aquatic Vegetation Removal Application process, please visit http://www.pc.gc.ca/en/docs/r/poli/page01

Disposing

- Residents of Selwyn Township can take aquatic weeds/wild rice to the Landfill located at 1480 8th Line (County Road 18), Selwyn.
- Please keep aquatic weeds/wild rice separate from other leaf and yard waste.
- There is No Charge to bring this material to the Landfill.

Weed Harvesting

- Weed harvesting can take place from July until the end of August. Parks Canada/TSW issues permits annually to mechanical weed harvesters. These harvesters are large machines which cut the weeds, and permit mandates that the harvester is required to remove the cut weeds from the water.
- If you are hiring a company to remove weeds with a mechanical harvester, ensure that they have a permit from Parks Canada/TSW and make sure you ask about their process. Also ensure that they remove the weeds from the water, for if they do not, they are operating illegally and creating further problems for you and your neighbours.
- If you witness a harvester or anyone leaving cut weeds in the water, please note the details of the incident (date, time, location, description of the harvester etc...). Take a picture too!
- Send the information to Parks Canada/TSW (see section 6.5 for contact info)
- Parks Canada/TSW is very concerned about illegal mechanical weed harvesting and appreciates any information that may assist them to address illegal operations taking place on our lakes.

5.3 Algae and Algal Blooms

Algae form the base of most lake food webs and are valuable and critical components of a healthy aquatic environment. Algae are always present in lakes and rivers. When conditions are favourable, certain populations of algae can increase to levels that result in poor water quality and an algal bloom or scum may form.
The Kawartha Lake Stewards Association has produced an excellent guide on algae in the Kawartha Lakes. https://klsa.files.wordpress.com/2021/06/algae-book-web.pdf

Algae are extremely diverse in their size, cellular structure and biology, making them a difficult group to describe. They range in size from single cells that are scarcely visible under a common microscope (microalgae) to large multicellular forms such as kelp (macroalgae). Algae are often confused with plants, as they both contain green pigments and use sunlight to obtain energy. The primary difference is that plants are made up of cells that differentiate into specialized tissues such as roots, stems and leaves, whereas algae lack these structures. Large groupings (colonies) of algal cells may result in forms that appear plant-like, but on a microscopic level, we can see that these shapes are due to the same type of cells being stacked in different ways.

A “bloom” is the excessive growth of one or more species of algae. Blooms are most likely to occur in shallow lakes or bays that have moderate to high levels of TP (Total Phosphorus) and nitrogen such as Lovesick. Blooms may:

- affect the appearance of water
- result in unpleasant tastes or odours
- reduce water clarity
- cause issues for boaters by obscuring underwater hazards
- colour the lake a vivid green, brown, yellow or red
- deplete oxygen levels (can affect fish and other organisms)
- produce toxins that are dangerous to humans and animals.

While all of the above issues may be unpleasant, it is the last one that makes it of the upmost importance to mitigate blooms. Fortunately, the majority of algal blooms are non-toxic.

When do algal blooms occur?
Blooms can occur in late spring after a heavy runoff or during mid to late summer when the following combination of factors occur to promote formation: calm weather; strong sunlight; high air and surface water temperatures; relatively shallow water; sufficiently high levels of nutrients or sediments in the water. In Ontario, blooms have typically finished by the end of September, but more recently the warming conditions have seen blooms reported well into October.

Identification

There are 3 main types of algae that may potentially bloom in the area: Filamentous Green Algae, Chrysophytes, Cyanobacteria (Blue-Green Algae * sometimes TOXIC*)

Filamentous Green Algae

Description: are unicellular or multicellular and may form filaments that range from several millimetres to a metre in length. They can be found free-floating in shallow water on the bottom near shore or attached to submerged objects like rocks. They are typically green in colour, but can vary in shade depending on age and nutrient content. Some species form colonies that appear as cottony clumps, while others form thready, silky, slippery masses that are slimy to the touch. Blooms: usually occur in the spring after heavy runoff or in the summer following hot spells and may appear as clumps or dense mats that float on or just beneath the surface of the water. Blooms can be a nuisance as they may produce a grassy or unpleasant odour and/or impede recreational activities.

Chrysophytes

Description: most are unicellular with a few species forming colonies. They are generally found in low-nutrient lakes and some can move vertically though the water column. Blooms: usually occur in spring or early summer. Colonial species may form a bloom below the thermocline in stratified lakes and the water may appear cloudy or coloured. Other species may form a yellowish-green bloom in the upper layers of the lake that is highly visible. Blooms may produce taste-and-odour compounds often described as fishy, musty, or earthy.

Cyanobacteria (Blue-Green Algae)

Description: are actually bacteria, but have features in common with algae. Most are unicellular and often blue-green in colour. Some species can control their buoyancy to move vertically through the water column and position themselves for optimal light and temperature**. Some species have the ability to produce toxins**, making humans and animals sick if exposed to high concentrations. Although there are relatively few reports of human illness from blue-green algae, these toxins can induce symptoms such as fever, diarrhea, abdominal pain, nausea and vomiting. More common reactions include itchy, irritated eyes or skin caused by external contact with cyanobacteria during water activities such as swimming, boating or water skiing.

Blooms: most commonly occur in late summer and early fall in areas where the water is shallow, slow moving and warm, but may also be present in deeper, cooler water. Blooms typically look like pea soup or spilt paint with a bluish or greenish colour. Fresh blooms often smell like freshly mowed grass, while older blooms may smell like rotting garbage. Gloeotrichia, which appears as "fuzzballs" about 2 mm in diameter floating in the water column, may resemble tapioca on the lake surface when blooming.

Refer to the following link for more information on Blue-Green Algae
https://www.peterboroughpublichealth.ca/wp-content/uploads/2012/05/Fact-Sheet-Information-About-Blue-Green-Algae-English-High-Resolution-Version.pdf

Mistaken Identities

Pollen

Commonly observed on Lovesick in the spring and early summer, pollen can collect on the surface of the water in a greenish-yellow hue, looking somewhat similar to blue-green algae. It usually appears dust-like and floats mainly on the surface, but can also form clumps. Over time, the pollen will become water logged and sink from sight.

Duckweed

Also seen in the back bays of Lovesick are several small floating plants, such as duckweed, that can make slow moving water appear bright green. Duckweed is a small (2-5 cm long), disc-like plant with short hair-like roots on the underside. It can form a thick, green blanket on the water surface, looking similar to an algal bloom.

Prevention and Mitigation

Algal blooms are directly related to the phosphorus concentrations in the lake. The more phosphorus input into lakes means more algal growth.

The best way to maintain healthy levels of algae in a lake is to avoid contributing phosphorus to the water. The techniques to mitigate algal blooms are identical to the practices for avoiding excessive aquatic weed growth. This means using phosphorus-free fertilizers and cleaning products, avoiding in particular the use of tri-sodium phosphate (TSP), removing organic wastes such as dog and goose excrement from your lawn, and maintaining your septic system appropriately. If you are a shoreline property owner, allow plants to grow on your property, especially along the shoreline. Erosion can be a significant source of nutrients and should be minimized. A naturalized shoreline helps trap sediments and dissolved nutrients. These nutrients are then used by land plants instead of being washed into the water. This “buffer zone” is also low-maintenance, stabilizes your shoreline, deters geese, provides habitat for birds, butterflies and other wildlife, and can be quite attractive.

Unfortunately the mitigation methods that are frequently employed to control nuisance aquatic weeds such as harvesting, mats, and chemicals are not generally very successful in the control of algae blooms

in lakes. Emphasis should be put on the prevention methods noted above. The blooms will ultimately die off as the favourable conditions for their formation change. Two of the factors which help in the mitigation of algal bloom formation are airation and mixing. Fortunately because Lovesick is a flow-through lake, there is a good amount of mixing which occurs and provides a good distribution of dissolved oxygen (refer to section 4.4)

Reporting Algal Blooms

CALL: The Ministry of the Environment's (MOE) Spills Action Centre 1-800-268-6060
Depending on the type of bloom suspected, MOECC staff may collect samples for analysis in the lab. If a cyanobacterial bloom is confirmed, MOECC will notify the local Health Unit, who may issue an official water-use warning and will recommend the most appropriate action to take.

If you suspect a blue-green algae bloom is occurring, avoid contact with the water. Do not drink from it, cook with it, shower in it, eat fish from the area or swim in it, and keep your pets away. Boiling water can release more toxins into the water, and you cannot make the water safe to drink or cook with either by boiling or treating the water with a disinfectant like chlorine (bleach). Use alternate water sources until further notice.

5.4 Reptiles and Amphibians

The following reptiles and amphibians are known to inhabit Lovesick area.

Sightings C = Common, O = occasional, R = Rare

Amphipians:

Common Name	Sightings	Notes
Green frog	C	
Leopard frog	C	
Bullfrog	C	
wood frog	C	
grey tree frog	C	
spring peeper	C	
Striped chorus frog	R	
American toad	C	
Pickerel frog	O	
Blue-spotted salamander	O	
Redback salamander	C	
Eastern newt	O	

Reptiles:

Common Name	Sightings	Notes
Midland Painted Turtle	C	Special Concern *NEWLY ADDED*
Common Snapping Turtle	C	Special Concern
Eastern Musk Turtle	C	Special Concern
Northern Map Turtle	O	Special Concern (More common in Stoney lake)
Blandings Turtle	R	Threatened
Common Garter snake	C	
Northern Water snake	O	
Redbelly snake	C	
Smooth green snake	O	
Ring-necked snake	O	
Eastern hog-nosed snake	R	Threatened
5 lined skink	O	Endangered

5.5 Birds

Lovesick lake and surrounding lands present an excellent habitat for many species of birds including both waterfowl and terrestrial species. Many species are migratory or appear only in transit while others remain year round. The checklist below from the ebird.org database lists species that have been recorded in the area. https://ebird.org/printableList?regionCode=L1541141&yr=all&m=

The eastern whip-poor-will (threatened species) rarely seen, but often heard on summer evenings around the lake. For more info see: https://www.ontario.ca/page/eastern-whip-poor-will-recovery-strategy

eBird Field Checklist

Burleigh Falls
Peterborough, Ontario, CA
ebird.org/hotspot/L1541141

Waterfowl

Brant
Canada Goose
Wood Duck
Mallard
American Black Duck
Bufflehead
Common Goldeneye
Hooded Merganser
Common Merganser
Red-breasted Merganser
Common/Red-breasted Merganser

Grouse, Quail, and Allies

Ruffed Grouse
Wild Turkey

Pigeons and Doves

Rock Pigeon
Mourning Dove

Hummingbirds

Ruby-throated Hummingbird

Gulls, Terns, and Skimmers

Ring-billed Gull
Herring Gull

Loons

Common Loon

Cormorants and Anhingas

Double-crested Cormorant

Herons, Ibis, and Allies

Great Blue Heron

Vultures, Hawks, and Allies

Turkey Vulture
Osprey
Sharp-shinned Hawk
Cooper's Hawk
Northern Goshawk
Bald Eagle
Red-shouldered Hawk
Broad-winged Hawk

Owls

Barred Owl

Kingfishers

Belted Kingfisher

Woodpeckers

Yellow-bellied Sapsucker
Downy Woodpecker
Hairy Woodpecker
Pileated Woodpecker
Northern Flicker

Falcons and Caracaras

Merlin

Tyrant Flycatchers: Pewees, Kingbirds, and Allies

Olive-sided Flycatcher
Eastern Wood-Pewee
Alder Flycatcher
Least Flycatcher
Eastern Phoebe
Great Crested Flycatcher
Eastern Kingbird

Vireos

Warbling Vireo
Red-eyed Vireo

Jays, Magpies, Crows, and Ravens

Blue Jay
American Crow
Common Raven
crow/raven sp.

Tits, Chickadees, and Titmice

Black-capped Chickadee

Martins and Swallows

Purple Martin
Tree Swallow
Bank Swallow
Barn Swallow

Kinglets

Golden-crowned Kinglet
Ruby-crowned Kinglet

Nuthatches

Red-breasted Nuthatch
White-breasted Nuthatch
nuthatch sp.

Treecreepers

Brown Creeper

Wrens

House Wren
Winter Wren

Starlings and Mynas

European Starling

Catbirds, Mockingbirds, and Thrashers

Gray Catbird

Thrushes

Eastern Bluebird
Hermit Thrush
Wood Thrush
American Robin

Waxwings

Bohemian Waxwing
Cedar Waxwing

Old World Sparrows

House Sparrow

Finches, Euphonias, and Allies

Evening Grosbeak
Pine Grosbeak
Purple Finch
House/Purple Finch
Common Redpoll
White-winged Crossbill
Pine Siskin
American Goldfinch

New World Sparrows

Chipping Sparrow
American Tree Sparrow
Dark-eyed Junco
White-throated Sparrow
Vesper Sparrow
Song Sparrow
Swamp Sparrow

Blackbirds

Red-winged Blackbird
Brown-headed Cowbird
Rusty Blackbird
Common Grackle

Wood-Warblers

Ovenbird
Northern Water thrush
Black-and-white Warbler
Nashville Warbler
Common Yellowthroat
American Redstart
Blackburnian Warbler
Yellow Warbler
Chestnut-sided Warbler
Pine Warbler
Yellow-rumped Warbler
Black-throated Green Warbler
Canada Warbler

Cardinals, Grosbeaks, and Allies

Scarlet Tanager
Northern Cardinal
Rose-breasted Grosbeak
Indigo Bunting

5.6 Mammals

A list of mammals known to be present around the lake is shown in the table below. Source: LLA cottagers and other residents in the watershed. Sightings C = Common, O = occasional, R = Rare

Common Name	Sightings	Notes / Latin Name
Bats	C	Northern, long-eared, eastern pipistrelle, little brown
Beaver	C	Castor canadensis
Bobcat	C	Lynx rufus
Black bear	C	Ursus americanus
Chipmunk (eastern)	C	*Tamias striatus*
Coyote	C	*Canis latrans*
Deer (white-tailed)	C	Odocoileus virginianus
Fisher	R	Martes pennanti
Fox (red)	C	Vulpes vulpes
Hare (snowshoe)	O	*Lepus americanus*
Lynx	C	Lynx canadensis
Marten (American)	O	*Martes americana*
Mink	C	Mustela vison
Mole	O	(hairy-tailed, star-nosed)
Moose	C	*Alces alces*
Mouse	C	(white-footed, deer-)
Muskrat	C	Ondatra zibethicus
Otter (northern river)	C	Lontra canadensis
Porcupine	C	Erethizon dorsatum
Rabbit (eastern cottontail)	C	*Sylvilagus floridanus*
Raccoon	C	*Procyon lotor*
Shrew	O	(northern short-tailed, masked, American water)
Skunk	C	*Mephitis mephitis*
Squirrel	C	(eastern grey, red, northern flying)
Vole	O	(Meadow, pine)
Weasel (long-tailed)	O	*Mustela frenata*
Wolf (grey)	O	*Canis lupus*
Woodchuck (groundhog)	C	*Marmota monax*

5.7 Bear Encounters

While Black Bears are referenced in the mammal section above, they present unique issues for cottagers which warrant additional discussion below.

Who to contact

Not every bear sighting is an emergency situation. Here is who to call if you encounter a bear.

Emergency situations

Call 911 or your local police if a bear poses an immediate threat to personal safety and exhibits threatening or aggressive behavior, such as:

- enters a school yard when school is in session
- stalks people and lingers at the site
- enters or tries to enter a residence
- wanders into a public gathering
- kills livestock/pets and lingers at the site

Police will respond first to an emergency situation, but may request assistance from the Ministry of Natural Resources and Forestry during daylight hours.

Non-Emergency Encounters

If you encounter a black bear do not run, make yourself look as large as possible and slowly back away while speaking in a firm and loud voice.

Call the toll-free Bear Wise reporting line at 1-866-514-2327 if a bear:

- roams around or checks garbage cans
- breaks into a shed where garbage or food is stored
- is in a tree
- pulls down a bird feeder or knocks over a barbecue

This line operates 24 hours a day, seven days a week, from April 1 to November 30.

Preventing Black Bear Encounters

Take the following steps to minimize the chance of attracting black bears:

1. Be smart with your garbage - Use animal proof-waste containers and only put it out on the morning of collection.

2. If you must leave before garbage day, or if you do not have curbside pick-up, take your garbage with you when you go or to an approved disposal site.

3. Store garbage in a bear-resistant container, secure shed or garage. Do not store garbage in plywood boxes, old freezers or vehicles.

4. Keep garbage smells down. Keep meat scraps in the freezer until garbage day.

5. Black bears are attracted to foods like seed, suet and nectar. Put bird feeders away for the summer and offer natural alternatives for the birds like flowers, nesting boxes and birdbaths.

6. Clean outdoor grills after use, including the grease trap.

7. If you rent your cottage, tell your tenants the importance of being Bear Wise.

More information available at: https://www.ontario.ca/page/prevent-bear-encounters-bear-wise

Another excellent online resource for living responsibly with Black Bears can be found at:

https://bearwise.org/

5.8 Species at Risk

A key resource to further explore species at risk in Ontario can be found online at:

https://www.ontario.ca/page/species-risk-ontario

There are 5 classifications for species at risk in Ontario:

Extinct (Ext) - a native species that no longer lives anywhere in the world.

Extirpated (Exp) - a native species that no longer exists in the wild in Ontario, but still exist elsewhere.

Endangered (End) - a native species facing extinction or extirpation.

Threatened (Thr) - a native species at risk of becoming endangered if steps are not takes to address factors threatening it.

Special Concern (Sc) - a native species that is sensitive to human activities or natural events which may cause it to become endangered or threatened.

The following table lists some of the species at risk known to inhabit the Lovesick area

SPECIES	STATUS	NOTES
Bald Eagle	Special Concern	
Eastern Whip-poor-will	Threatened	
Barn Owl	Endangered	
Evening Grosbeak	Special Concern	
Wood Thrush	Threatened	
Common Nighthawk	Special Concern	
Midland Painted Turtle	Special Concern	Just designated May 2021
Blandings Turtle	Threatened	
Musk Turtle	Special Concern	
Northern Map Turtle	Special Concern	
Snapping Turtle	Special Concern	
Eastern Hognosed Snake	Threatened	
5 Lined Skink	Special Concern	
Monarch Butterfly	Special Concern	
Butternut tree	Endangered	
American Ginseng	Endangered	
Little Brown Bat	Endangered	

People are encouraged to report sightings of species at risk. Your observations help support biodiversity conservation efforts. The Natural Heritage Information Centre (NHIC) reviews and may add the information you share into the official provincial record. Some agencies and researchers use this information to plan, protect and study Ontario's natural heritage.

Your observations are critical to the understanding of species biodiversity and conservation in Ontario. There are many options available to submit observations, but please use only one method to prevent duplication of information. If possible, take photographs of the plants or animals you are reporting on and submit them along with your observations.

- use iNaturalist - join the (NHIC) Rare species of Ontario project
- use eBird, or download their mobile apps
- use https://report.adoptapond.ca/ for turtles and frogs

- use the Ontario Butterfly Atlas or eButterfly
- email the Natural Heritage Information Centre (https://www.ontario.ca/page/get-natural-heritage-information)
- write the Natural Heritage Information Centre
  Ontario Ministry of Natural Resources and Forestry
  300 Water St., 2nd Floor North Tower
  Peterborough, ON K9J 3C7

  See section 7.1 for some additional reporting options.

5.9 Invasive Species

An invasive species is one that is non-native to the ecosystem and whose introduction causes or is likely to cause, economic, or environmental harm or harm to human health. An extensive discussion of invasive species is beyond the scope of this lake plan, but there are several species noted below which are present in the area having an impact on the lake's ecosystem that are worthy of further discussion. Many of these species can have significant impacts on the native fauna and flora as well as the aesthetic and recreational values of the lake. While total eradication of some of these species is likely impossible, controlling their spread and limiting the ingress of new invaders is one of key issues of the lake plan.

Ontario's Invasive Species Act:

The Ontario Invasive Species Act (ISA) came into force on November 3rd, 2016. The goal of the Invasive Species Act is to support the prevention, early detection, response to and eradication of invasive species in Ontario. Preventing invasive species from arriving and becoming established in Ontario is critical in the fight against this growing threat. https://www.ontario.ca/laws/statute/15i22
https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/06/ISA-summary-OIPC-March-9th.pdf

The interested reader is referred to an excellent resource regarding invasive species in Ontario.

Guide for Aquatic Plants: http://www.invadingspecies.com/downloads/aquatic-plants/

The website **E**arly **D**etection and **D**istribution **Map**ping **S**ystem is the key resource for identification and reporting of invasive species. Up to date maps of the distribution of nearly 200 invasive species in Ontario are also available.

https://www.eddmaps.org/

Additional online resources may be found at:

https://www.inaturalist.org/projects/invasive-species-in-ontario

FOCA publication: ***A Shoreline Owner's Guide to Invasive Species***

https://foca.on.ca/wp-content/uploads/2017/06/FOCA_InvasiveSpecies_REV_FINAL.pdf

The table below lists some of the key invasive species present around Lovesick lake that are either already here or are on our doorstep in nearby lakes.

SPECIES	NOTES	
Zebra Mussel	Wide distribution in TSW	
Round Goby	Seen in Chemong and Sandy lakes	
Starry Stonewort	Recently found in Lower Buckhorn and Stoney lakes	
Eurasian Milfoil	Present in Lovesick and neighbouring lakes	
Purple Loosestrife	Present in Lovesick and neighbouring lakes	
Water Soldier	Found in Lower Trent system – Lake Seymour	
Rusty Crayfish	Seen in Buckhorn and Stoney lakes	
Emerald Ash Borer	Now common across S. Ontario	
Yellow Iris	Present around Lovesick lake	
European Common Reed	Present in Lovesick area	
European Frog-bit	Present in Upper Stoney lake	
Spiny Water Flea	Present in Lovesick and neighbouring lakes	
Chinese Mystery Snail	Present in Stoney lake	

A description of some key invasive species is presented below.

Zebra and Quagga mussels

Zebra mussel.

Quagga mussel.

Source http://www.invadingspecies.com/downloads/invasive-invertebrates/#

Impacts of Zebra and Quagga Mussels

- Zebra and quagga mussels filter water to the point where food sources such as plankton are removed, altering food webs. This also causes clearer water, allowing sunlight to penetrate deeper, increasing growth of aquatic vegetation.
- Large colonies affect spawning areas, potentially impacting the survival of fish eggs.
- Affect recreational activities by cutting swimmers' feet as a result of their sharp shell
- Clog water intakes, fouls boat hulls and props.

In Lake Simcoe, the Zebra mussel has been displaced by a new invasive species; the Quagga Mussel. With zebra and quagga mussels increasing the clarity of the lake, Lake Simcoe has changed from a nutrient-rich lake (primarily dominated by algae) to a plant-dominated lake. The removal of algae by these mussels means the excess nutrients that were once taken up by the algae are now fueling the increased aquatic plant growth in the lake. In addition, large quantities of nutrient-rich waste from zebra mussels is deposited on the lake bottom each day. These "biodeposits" form a nutrient-rich substrate, which combined with increased water clarity, is an ideal environment for aquatic plants. Since 1984, the population size of aquatic plants has tripled. Another affect of mussels is that they remove significant amounts of phytoplankton from the water column which decreases food availability for other animals, including important sport fish.

Recent studies in the Great Lakes (https://www.pnas.org/content/118/6/e2008223118) have shown that the mussels have become the dominant factor in controlling the phosphorus concentration in the lakes. The overall effect of mussels on phosphorus availability is tied to their population dynamics—whether their populations are growing or shrinking. Increasing populations reduce water column phosphorus by continually incorporating it into new biomass. In shrinking populations, dead and dying mussels release stored phosphorus and act as a source of nutrients to the water column. While this may not be the case on Lovesick, it is interesting to note the impact the invasive species can have on the ecosystem.

Eurasian Water Milfoil

Impacts of Eurasian Water-Milfoil

• The plant reduces biodiversity by competing aggressively with native plants.

• Reduced oxygen levels in the water caused by decomposing plants can kill fish.

• Thick mats of Eurasian water-milfoil can hinder recreational activities such as swimming, boating and fishing.

• Dense stands can create stagnant water, which is ideal habitat for mosquitoes.

Source: http://www.invadingspecies.com/invaders/aquatic-plants/

Emerald Ash Borer

Source https://inspection.canada.ca/DAM/DAM-plants-vegetaux/STAGING/images-images/pestrava_agrpla_photos_image7_1337276495153_eng.jpg

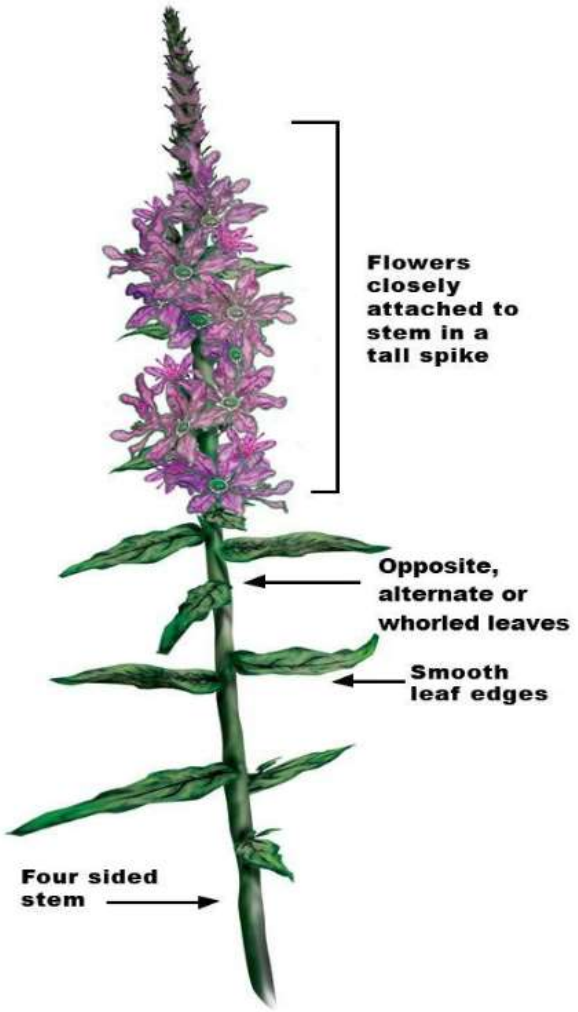
Invasive Phragmites (European Common Reed)

Impacts of Invasive Phragmites:

- crowds out native vegetation, thus resulting in decreased plant biodiversity;
- generally provides poor habitat and food supplies for wildlife, including several Species at Risk;
- grows very quickly thereby causing lower water levels as water is transpired faster than it would be with native vegetation;
- increases fire hazards as stands are composed of a high percentage of dead stalks; and
- can affect agriculture, cause road safety hazard and impact recreational activities such as swimming, boating and angling.

Source https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/2016-Phragmites-Webinar_-Feb-3-2016_ALWL.pdf

Purple Loosestrife



Starry Stonewort

Starry Stonewort is plant-like macroalgae and is probably the biggest current invasive species threat to the lake. It may already be here, but has not yet been positively identified.

Identifying Characteristics

- The branchlets and stem are very thin (like heavy fishing line) and have a crisp texture.
- Whorls of long, narrow branchlets in groups of 4 to 6 coming off of main shoots.
- Orange reproductive structures (male) occur at branchlet nodes.
- The branches are anchored to the sediment by a clear filament which produce small, white, star shaped bulbils.
- **The small, white, star-shaped bulbils are the distinguishing feature that gives it the name starry stonewort.**

Starry Stonewort, courtesy A. Kirkwood

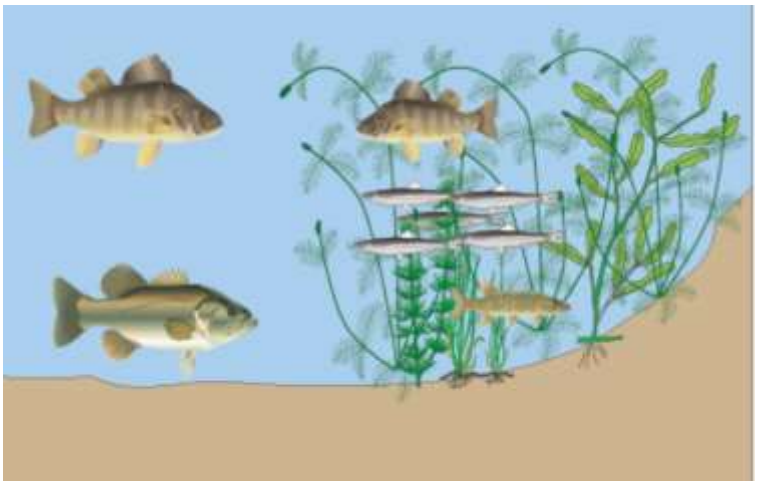
Source https://foca.on.ca/wp-content/uploads/2015/02/Starry-Stonewort-Primer-Stoney-Lake.pdf

Additional resource: https://starrystonewort.org/

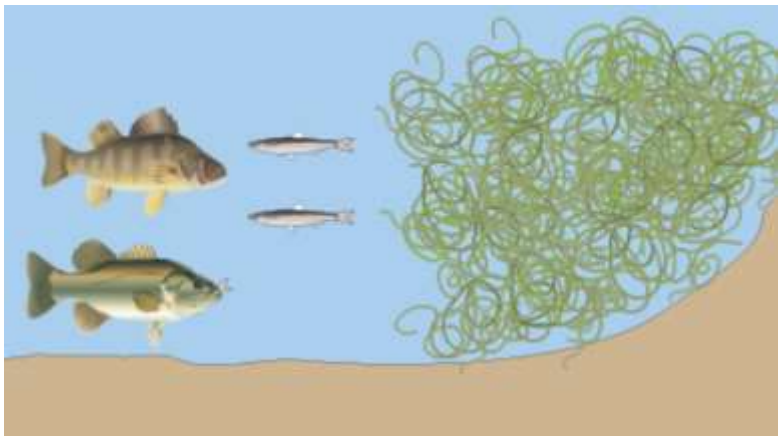
Starry Stonewort can be difficult to distinguish from some similar macrophytes. An excellent identification training video has been produced by starrystonewort.org for the KLSA and is available at: https://youtu.be/tDD8aHx0fbE

In Lake Simcoe, in less than 10 years Starry Stonewort has become the dominant aquatic biomass and has displaced the invasive Eurasian Milfoil as the dominant organism. Refer to the following report: https://starrystonewort.org/wp-content/uploads/sites/17/2021/03/Brian-Ginn-Impacts-of-an-Invasion-of-SSW-0121.pdf

Starry stonewort can outcompete other aquatic plants, harming habitat for fish and wildlife by reducing cover and food sources. Its dense mats can also negatively impact boating, swimming, and other recreational activities.



Before Starry Stonewort. A shallow water plant community, dominated by Eurasian watermilfoil (another invasive plant), still retains species diversity and a "forest-like" structure with habitat and shelter for smaller fish.



After Starry Stonewort. When starry stonewort takes hold, it causes a loss of aquatic plant diversity, shallow water habitat and fish shelter. It forms a "wall" pushing smaller fish offshore towards predators.

Water Soldier

Impacts of Water Soldier

- Forms dense mats of floating vegetation.

• Crowds out native vegetation resulting in decreased plant biodiversity.

• Has the potential to alter surrounding water chemistry, which may harm phytoplankton and other aquatic organisms.

• Dense floating mats of water soldier can hinder recreational activities, such as boating, angling and swimming.

• Sharp serrated leaf edges can cut swimmers and individuals who handle water soldier plants. Caution should be taken whenever handling the plant.

Water soldier invading the Trent Severn Waterway. Photo: F. MacDonald, MNRF.

Gypsy Moth

The invasive Gypsy Moth, now known as the LDD or Spongy Moth from the taxonomic Lymantria dispar dispar (LDD), has seen a peak in infestation levels in 2021. The caterpillars can be cause severe defoliation in infested areas. They prefer oak trees, but may also attack birch, willow, maple and even white pine and balsam fir.

Characteristics:

First detected in Ontario in 1969, became wide spread in 1981

Overwinters in the egg stage often on the bark of trees.

In spring, eggs hatch and larvae ascend the trees to feed on the new foliage.

Initially, feeding occurs during the day, but as the caterpillars mature feeding occurs mainly at night — often this can delay the detection of infestations.

Mature larvae are 50 mm long, dark coloured, hairy, with a double row of five pairs blue spots, followed by a double row of six pairs red spots, down the back.

Feeding is completed in July.

Male moths are light brown and slender-bodied, while females are white and heavy-bodied and don't fly.

For more information, see:

http://www.invadingspecies.com/invaders/forest/ldd-moth/

https://www.ontario.ca/page/gypsy-moth

Some of the plants in your garden such as Periwinkle, Lily of the Valley and English Ivy are considered invasive. The Ontario Invasive Plant Council has produced a guide entitled "Grow Me Instead (Southern Ontario)" and is available online at:

https://www.ontarioinvasiveplants.ca/wp-content/uploads/2020/04/Southern-Grow-Me-Instead-1.pdf

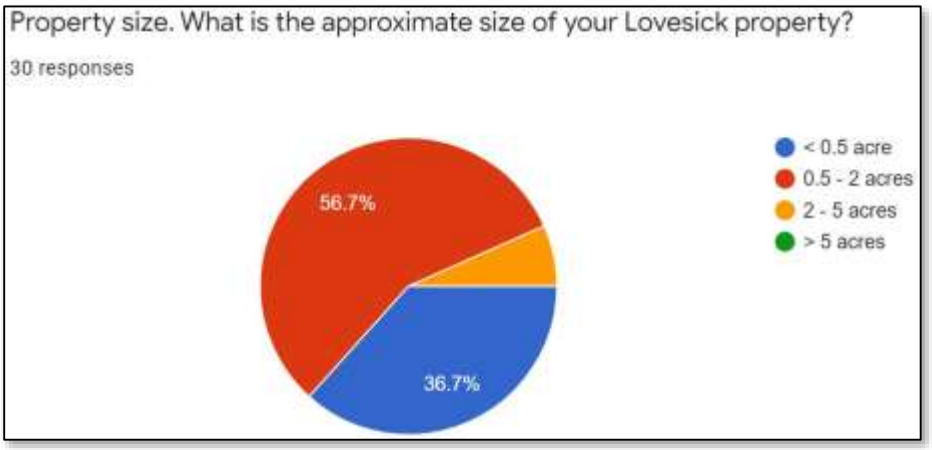
Chapter 6. Social Context

6.1 Land Use

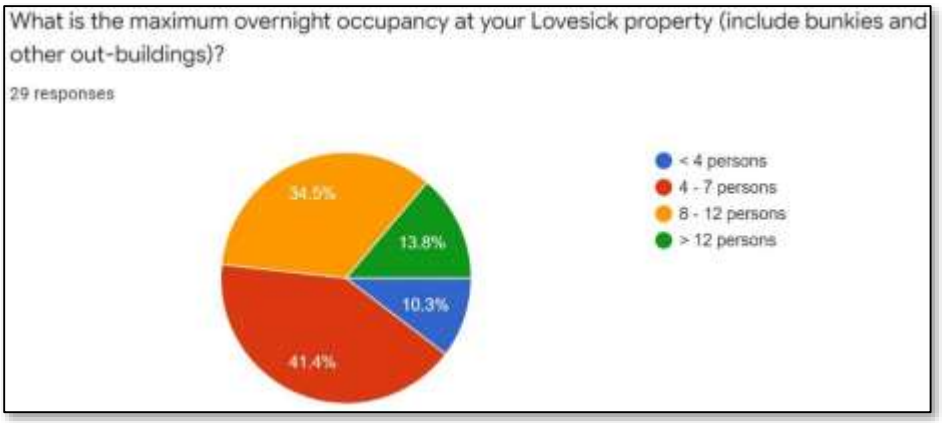
Historically the area surrounding Lovesick was used by the First Nations for fishing, hunting and harvesting. Several publications describe the historical use of the land around the area – Refer to reference list in section 2.2 Historical Background.

The majority of the land surrounding Lovesick Lake is considered "Residential" (privately owned), the major exceptions being Wolf Island Provincial Park (Ontario Government), TSW lands (Federal) and many of the smaller islands which are First Nations Territory (designated FN on the map belong to Islands in the Trent Waters 36A). There are a few lots with a Recreational Commercial designation for several cottage resorts the largest of which is the trailer park along the south east shore. There are very few remaining vacant lots available for development.

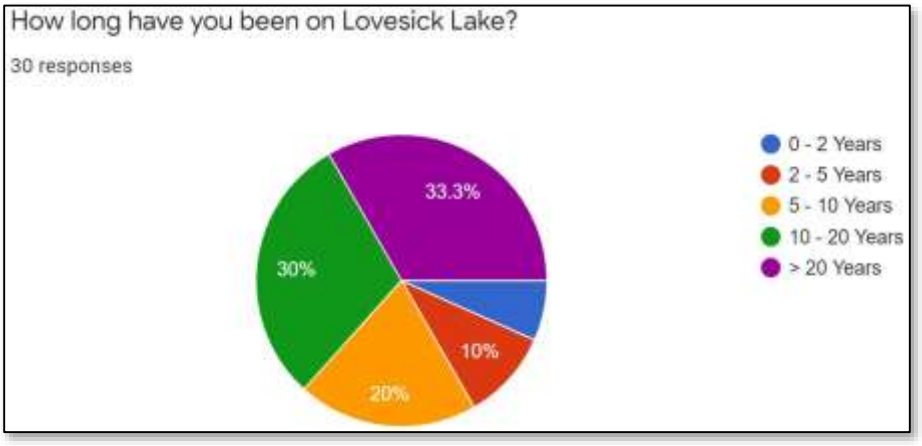
There are roughly 110 cottage lots around the shore of the lake and the various islands. According to the responses from the lake plan survey, the lots tend to be fairly small (under two acres).



Cottage capacity.



According to the survey results, people love our lake. Over 60% of respondents have been on the lake for 10 or more years.



A few of the cottages are situated on leased crown land. Several cottages and camps are located on First Nations Territory.

There are a limited number of commercial properties around the lake including:

Forest Hill Lodge

Ardagh's Resort

Burleigh Falls Inn

Rockside Cabins (formerly Marrick's Landing) currently closed

Lovesick Lake Park (includes Stricker's Burleigh Beach Resort)

The Lovesick Lake Park currently includes 150 trailer sites, 20 camp sites and 2 cottages. There is a proposal to expand the park with up to 294 additional trailer sites, but this has not yet been approved by the township. More information is available here: https://www.selwyntownship.ca/en/township-hall/resources/Building__Planning/Current-Planning-Applications/PlanningJustification.pdf

For reference, the Trent Lakes official plan may be found at:

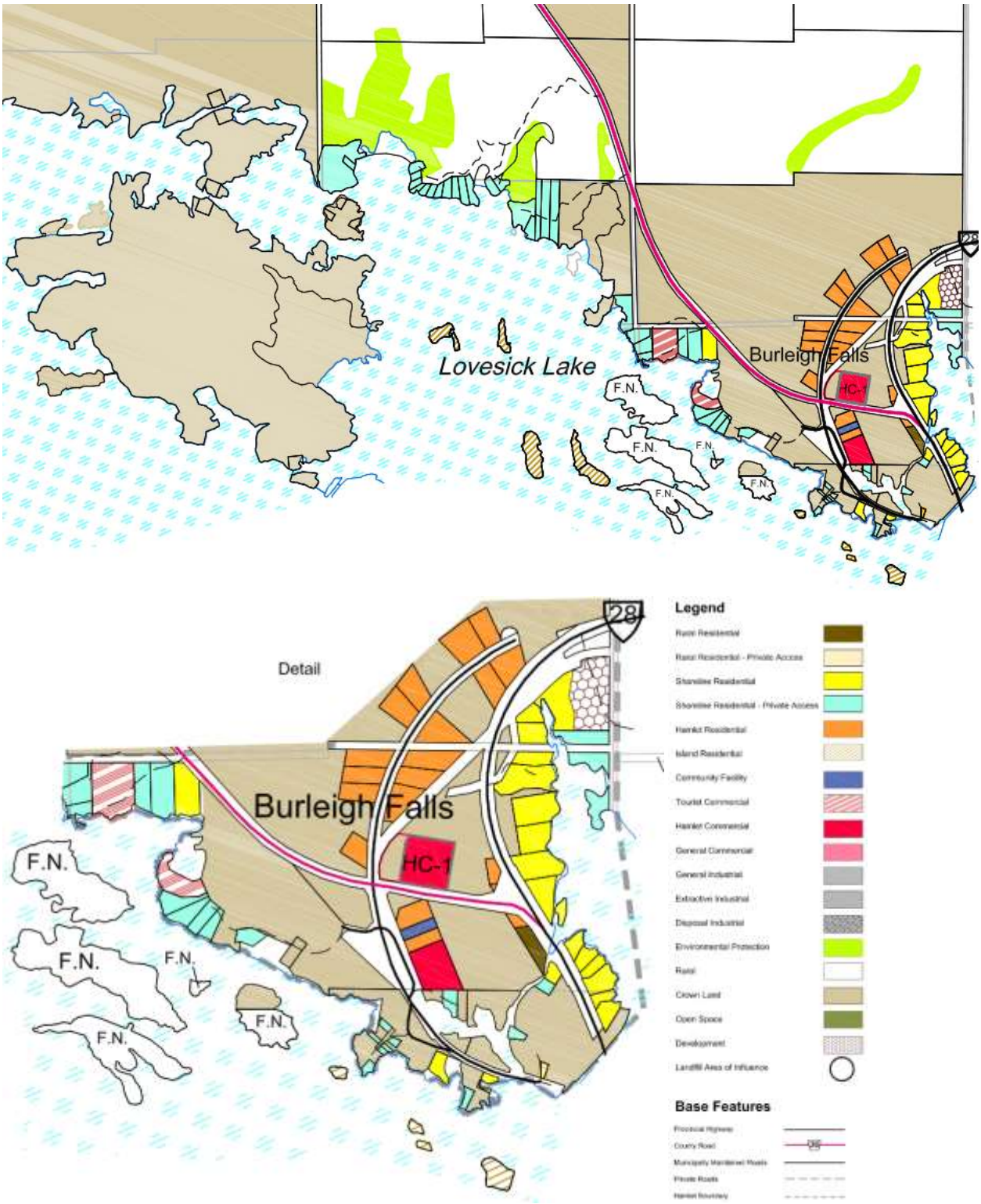
https://www.ptbocounty.ca/en/growing/resources/New-Official-Plan/Revised-Draft-County-OP-as-Amended-by-Council-June2022.pdf

Selwyn land use official plan map:

https://www.ptbocounty.ca/en/resourcesGeneral/Documents/planning-SEL-Schedule-A1.pdf

Historic Postcard from Forest Hill Lodge Courtesy Bruce Dyer

Historic Postcard of Burleigh Falls Inn Courtesy Bruce DyerLand Use Map – Trent Lakes (Harvey)



Source: http://www.trentlakes.ca/wp-content/uploads/2014/08/Trent-Lakes-ZB-Consolidated-Map-8.pdf

Selwyn (Smith) land use map

LR = Lakeshore Residential, RU = Rural, RC = Recreational Commercial, EP = Environmental Protection

CF = Community Facility

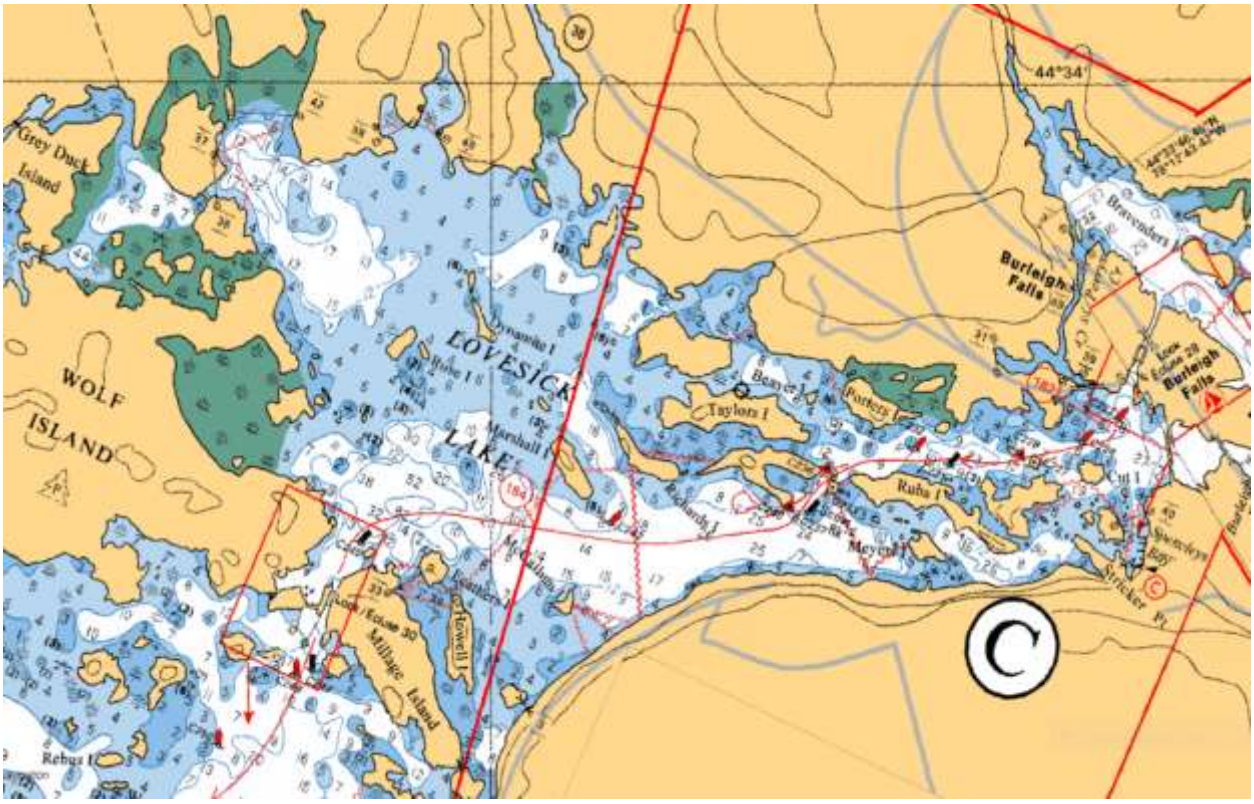
Source: https://www.ptbocounty.ca/en/resourcesGeneral/Documents/planning-SEL-Schedule-A1.pdf

6.2 Recreational Boating

The Trent Severn Waterway maintains the main navigation route through the lake between locks 28 and 30 which is marked by red and green buoys to define the channel. See map below.

Outside of the main navigation channel, many hazards exist (shoals, rock outcrops, stumps) and boaters are advised to use extreme caution when travelling through areas which they are not familiar with. Hazards outside the main navigation channel are not marked by the TSW. A few of the more prominent rocks and shoals have been unofficially marked by local residents, but these markers are not formally maintained and may shift or disappear over time.

The locks at Lovesick and Burleigh are some of the busiest on the TSW. Unfortunately, recent statistics of the lock usage were unavailable, but included below are some figures from 1990 comparing the relative monthly usage of our area locks.



MAP SHOWING THE TSW BUOYS AND MAIN NAVIGATION CHANNEL

Source: http://fishing-app.gpsnauticalcharts.com/i-boating-fishing-web-app/fishing-marine-charts-navigation.html?title=LOVESICK+boating+app#13.99/44.5585/-78.2236

	Youngs Point	Burleigh Falls	Lovesick	Buckhorn
May[1]	47	165	198	239
June	977	1188	1281	1437
July	3764	4340	4638	4637
August	2948	3736	3906	3978
September	874	1104	1204	1223
October	100	186	178	221
Season	8710	10,708	11,405	11,735

Lock Statistics comparing monthly totals for locks 27, 28, 30 and 31 during 1990

	Youngs Point	Burleigh Falls	Lovesick	Buckhorn
May	9.4	11.8	14.1	17.1
June	32.6	39.6	42.7	47.9
July	121.4	140.0	149.6	149.6
August	95.1	120.5	126.0	128.3
September	29.1	36.8	40.1	40.8
October	10.0	18.6	17.8	22.1
Season	63.6	73.3	78.1	80.4
Peak Season Means				
-weekdays (July 3-Aug. 10)	116.6	133.1	141.2	137.1
-weekends (June 30-Sept. 3)	130.5	163.6	174.7	182.9

Lock Statistics comparing daily means for locks 27, 28, 30 and 31 during 1990

Recreational Boating Issues:

Personal Water Craft (PWC) and Wake Boats – The operation of these vessels is often one of the greatest boating concerns of shoreline residents. The main concern with PWCs and wake boats appears to be the uncaring attitude of a limited number of operators, which causes them all to be branded as irresponsible. Operators are encouraged to utilize the middle of the larger bays around the lake so shorelines, moored boats and docks are not damaged.

Speed – There are several sections of the lake with marked speed limits of 10 km/hr. Additionally, boaters must also adhere to this speed when they are within 30m (100 feet) of shore. With Lovesick being a small lake, this situation applies in many areas.

The environmental impacts of inappropriate boat speeds and wakes can be large and can have long term or permanent negative effects on wildlife and vegetation. Erosion of the shoreline can not only have negative visual impacts, but boats venturing into shallow waters can increase turbidity and damage weed beds which results in the loss of fish habitat. Disturbance of nesting waterfowl is also a problem, which can result in unsuccessful brooding efforts and abandonment of nests and/or nesting sites particularly in the case of loons. In most cases, speeders are long gone by the time the police can reach the scene. The public can assist by using community based policing. It is important if filing a complaint that boat registration numbers and descriptions of the drivers of the offending vessel be recorded. Eyewitnesses would have to be willing to testify in court, and video recordings are extremely useful as evidence.

Pollution – There is an increasing amount of information on the use of old two-stroke vs. newer four-stroke and high efficiency two-stroke engines. Environment Canada's Environmental Technology Centre tests show that older traditional two stroke outboards produce 12 times as much benzene, toluene, ethylbenzene and xylenes, and five times as much oil and grease as four-stroke outboards. These emissions produce smog. Residents are encouraged to retire their older two-stroke outboards.

Noise – Although fairly rare on the lake, there have been instances of boats creating excessive noise.

All pleasure craft operating on Lovesick Lake are required to have a muffler that is in good working order. Offshore type boats are allowed to operate off muffler under the current regulation only if they are more than 5 nautical miles from shore which is not applicable on Lovesick. Antique boats built before 1960 are exempt from the muffler regulation.

For those lakeside residents that are impacted by this and want to make their concerns known, the following is the process to use:

Register Your Complaint:
The best course of action is to obtain a detailed description of the vessel and where and when it is occurring; who, what, when, where, photo, name, colours, hull numbers etc. The more information the better.
Call the OPP Call Centre at 1-888-310-1122. All calls are reviewed by the OPP's analytics process to prioritize resources. The important point is to let the OPP Call Centre know about it. It will be up to the OPP to judge the deployment of resources but without a record of anyone calling about this issue, it is difficult for the OPP to do anything about it.
If the offensive noise continues to bother you - call again.
More information on boat noise can be found at: https://safequiet.ca
The Transport Canada pleasure craft regulations can be found here:

https://tc.canada.ca/sites/default/files/migrated/tp_511e.pdf

6.3 Recreation Opportunities

Apart from the traditional water-based recreational activities (fishing, swimming, canoeing, kayaking, snorkeling, water skiing, windsurfing, sailing etc), we are fortunate to have several nearby parks for activities such as hiking, birdwatching, camping, picnicking and more.

Wolf Island Provincial Park.

Water access only from Lovesick or Lower Buckhorn Lakes. This non-operating provincial park provides opportunities for swimming, fishing, canoeing, kayaking, camping, picnicking, and hiking. No facilities are provided. Hunting not permitted. This area is considered to have historical significance to the Kawartha Nishnawbe First Nation. Please treat the area with respect and pack out any garbage. The park falls under the jurisdiction of Emily Provincial park and the MNRF is supposed to clean any trash after the July and August long weekends. The island has seen increased use in recent years many of which are attributed to rental houseboats and other local watercraft rentals.

https://www.ontarioparks.com/park/wolfisland

https://www.ontario.ca/page/wolf-island-provincial-park-management-statement

Kawartha Highlands Signature Site Provincial Park.

Lying just north of Lovesick Lake, Kawartha Highlands Signature Site is the largest park in southern Ontario after Algonquin Provincial Park. It is a special place with opportunities to experience the outdoors ranging from backcountry canoeing and camping to a short hike. Several access points area available. Consult the website for more information. Fees apply for day use and camping. Site specific backcountry campsite reservations are required.
https://www.ontarioparks.com/park/kawarthahighlands

Burleigh Falls.

A small strip of land on the south side of Burleigh Falls provides access to the falls for swimming, picnicking, kayaking, and fishing (note sanctuary dates). There is a small parking area off the Old Burleigh Rd. Note that there are no washroom facilities provided.

Petroglyphs Provincial Park

A short drive north-east from Lovesick Lake on Northey's Bay road is Petroglyphs Provincial Park. Day use only, fees apply. The park is open seasonally from May to Oct (check website for operating times). In addition to a fabulous visitor center, the park hosts several great hiking trails. Highlights of the park include:

- Largest known concentration of Indigenous rock carvings (petroglyphs) in Canada, depicting turtles, snakes, birds, humans and more; this sacred site is known as "The Teaching Rocks"
- Visit the Learning Place Visitor Centre to discover the traditions of the Ojibway (Nishnaabe) people through the teachings of the medicine wheel
- Visit bright blue/green McGinnis Lake – one of only a handful of meromictic (layers of water that don't intermix) lakes in Canada
- Great opportunities for wildlife viewing

https://www.ontarioparks.com/park/petroglyphs

Nearby Public Beaches

There are no public beaches directly on Lovesick Lake, however there are several located nearby. Cottagers also enjoy swimming and tubing at Burleigh Falls or the Mississauga river on a hot summer's day.

Quarry Bay Beach
1986 Northey's Bay Road

Quarry Bay Beach is maintained by North Kawartha Township and is a swim-only beach. It should also be noted that Quarry Bay Beach is located between privately-owned, waterfront properties. Respect must be shown for these neighbours, and trespassing on these properties is strictly prohibited.

Selwyn Beach Conservation Area

2251 Birch Island Rd, Selwyn

Selwyn Beach Conservation Area is located on the northeast shore of Chemong Lake and is best known for its excellent swimming provided by a gently sloping sandy beach. The conservation area also offers a boat launch and docking facility, a large picnic shelter, group camping area and hiking trails.

Sandy Lake Beach

1221 Lakehurst Road (County Road 37)

Known appropriately as Sandy Beach, the name is less a description of the shoreline and refers more to the carpet of soft sand that extends out into the lake from the water's edge, making this beach very attractive to those with tender soles. The beach itself is a thin strip popular with locals, and is usually teeming with activity on a hot summer's day. There are no lifeguards, but parking and portable toilets are on hand.

Hiking Trails

Kawartha Land Trust – Stony Lake Trails

A short distance north-east of Lovesick Lake there is a series of hiking trails under the jurisdiction of the Kawartha Land Trust. The 10 kilometer trail network boasts scenic views of Stony Lake, with benches and resting areas available throughout. The trails are suitable for those with moderate and intermediate hiking experience, and there will be many opportunities to observe the abundant and diverse wildlife in this area. There are three access points with limited spots for free parking. Follow the link below for a map of the trails. https://kawarthalandtrust.org/?post_type=property&p=557

High Falls Trail

Eels Creek to High Falls is a 5.0 kilometer lightly trafficked out and back trail located near North Kawartha, Ontario that features a lake and is rated as moderate. The trail offers a number of activity options and is best used from April until November. Dogs are also allowed on this trail, on-leash and owners must clean up after their pets. There is a small parking lot located on the north side of Northey's Bay Road adjacent to the Eels creek bridge.

https://www.alltrails.com/trail/canada/ontario/eels-creek-to-high-falls

Mississauga River trail

The Mississauga River section of Kawartha Highlands Provincial park has a fairly short, but beautiful hiking trail starting at the parking lot on County Rd 36 north of Buckhorn. Note that the park is now charging a day use fee between May 1 – Oct 31 via a pay and display machine.

https://www.ontarioparks.com/park/kawarthahighlands

https://www.alltrails.com/explore/trail/canada/ontario/mississauga-river-loop--2

Petroglyphs Park trails

A few kilometers northeast of Lovesick, Petroglyphs Provincial park has several hiking trails ranging in length from 1.6 to 7 km. The park is open mid-May to Thanksgiving. Entrance fee required.

https://www.alltrails.com/trail/canada/ontario/petroglyphs-provincial-park-trails

https://www.ontarioparks.com/park/petroglyphs/activities

Trent-Severn Waterway National Historic Site

The locks operate from mid-May to the Thanksgiving long weekend. Check website for operating hours. Both Locks 28 and 30 offer picnicking and overnight camping (fees apply)

A unique feature at Lock 30 is the historic 109 ft canoe slide that allows the passage of canoes and kayaks from Lovesick to Lower Buckhorn Lake along a series of rollers. It was revitalized in 2011 by local volunteers. A donation box is present at the slide and users are encouraged to contribute a donation to assist with the maintenance of the slide as there is no public funding. Watch out for poison ivy in the area.

https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/info/infonet

Lock 30 Facebook group: https://www.facebook.com/FLL30/

Log replacement lock 30 Spring 2014


Canoe Slide at Lock 30

https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/visit/posteeclusage-lockstation/ecluse-lock-30-lovesick

https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/visit/posteeclusage-lockstation/ecluse-lock-28-burleighfalls

A good article on paddling Lovesick can be found at:

https://kawarthasnorthumberland.ca/paddle-the-trent-severn-waterway-lovesick-lake/?doing_wp_cron=1618234764.0879390239715576171875

Winter Recreation

Due to the currents present in the lake, the ice (where it does form) is considered unsafe. Winter activities on the lake including snowmobiling, ATV travel, skiing, and ice fishing should be avoided. In some areas, the calmer back bays may provide sufficient ice to support a skating rink, but users should be cautious.

Many of the nearby hiking trails are open year round and may be used for skiing, snowshoeing and walking as conditions permit.

The nearby Kawartha Nordic Ski club offers 46 kilometers of both classic and skate trails, as well as 9 km of snowshoe trails on 350 acres of land just north of Haultain. https://kawarthanordic.ca/

Nearby, the OFSC offers access to a network of snowmobile trails. Visit www.district2ofsc.ca

6.4 Lake capacity

All lakes have a maximum "capacity" - the threshold above which the lake experience begins to deteriorate. The Lovesick shoreline is virtually maxed out as far as land available for new shoreline development. The municipalities currently have no official definition of lake carrying capacity and defer this matter to the Ministry of the Environment. The MOE does not seem to have any metrics with respect to number of cottages per hectare of lake surface. They have produced a Lakeshore Capacity Assessment Handbook and capacity model.
https://www.ontario.ca/document/lakeshore-capacity-assessment-handbook-protecting-water-quality-inland-lakes/basics-assessing-lakeshore-capacity-model

The handbook is primarily focused around the measurement of total phosphorus concentration in Canadian shield lakes and its effect on dissolved oxygen and eutrophication of the lake and the impact on fish such as lake trout. Increased TP levels leads to the proliferation of algae and aquatic plants which decrease water clarity. The algae ultimately die, sink to the bottom and deplete the dissolved oxygen as they decay.

The MOE capacity assessment model does not apply to lakes with mean depths less than 5 meters and as such is not directly applicable to Lovesick.

FOCA has also produced a factsheet on Lake Capacity
https://foca.on.ca/wp-content/uploads/2014/07/Lakeshore-Capacity-Assessment_factsheet_1.pdf

The concept of lake capacity is currently being re-evaluated, moving away from the notion that a universal model can be applied to calculate the number of dwellings that can exist without detriment to the lake. Each lake and watershed is different from the next, and therefore each has a number of variables or "exceptions" to consider. More recent models consider the incorporation of a variety of social, natural, and physical factors along with the views of all lake stakeholders.
Another suggested approach to deal with over-capacity and limit density is to increase the minimum lot frontage requirements as has been done in some municipalities. Since there are very few vacant lots left for development around the lake, this approach is not likely to have much effect. The biggest single impact on lake capacity is seen to be the proposed expansion of the trailer park. While not directly on the lake, there would no doubt be a significant increase in the number of people using the lake if the expansion is completed.
Another minor factor on lake capacity is the increasing trend for seasonal residents to convert their cottages into year-round residences.

Another key stakeholder in the lake capacity question is the TSW. A study produced by Geomatics International commissioned by the TSW entitled "Water Recreation and Shoreline Land Use Study Lower Buckhorn, Lovesick, Clear and Stony Lakes Trent Severn Waterway – Final Report Volume 1, October, 1991" offers some significant statistics and recommendations for Lovesick lake. The study takes a different approach to lake capacity using boating capacity as the chief metric rather than the Total Phosphorous approach making it more relevant for Lovesick lake.

Due to the general shallowness of the lake and the many rocks and shoals, the study concludes that only 44% of the lake is considered suitable for boating which further reduces its capacity. The table below taken from the study shows a comparison between Lovesick and neighbouring lakes.

Lakes	Available Surface Area	Proportion (%) of Total Area
Lower Buckhorn	829.7	65.3
Lovesick	128.0	44.1
Clear	890.6	79.5
Stony	1708.8	61.3

Comparison of useable surface area for boating in the study area lakes

As part of the study, a field survey was undertaken during peak boating season in the first week of July 1990 to monitor the number and types of watercraft on the study lakes. To determine the lake capacity, surface area requirements were established for the various watercraft types ranging from 2 to 4 ha. Using these requirements, the total area required to support the number of boats using the lake was determined (see chart below). For the study period on Lovesick, the required surface area was calculated to be 84.25 ha, which amounts to 65.8% of the total available boatable area. The recommended maximum use capacity any lake should sustain is 60% of the surface area available for boating (*Michalski et al* 1990). Using this model, it was shown that Lovesick was the only lake of the four study lakes that is over capacity at peak times. Since the completion of the survey in 1990, there has been an increase in the number of cottages and likely a corresponding increase in the amount of boat traffic which would further erode the lake's capacity.

	Clear	Stony	Lower Buckhorn	Lovesick
Skiffs	.	21.5	1.6	2.5
Runabouts	170	535.6	216.8	72
Cruisers	.	52	34.4	.
Houseboats	.	1	.	1
Pontoon Boats	.	7.2	1.65	0.75
Jet Ski Boats	.	.	.	.
Other Boats	.	.	.	.
Sailboats	8.7	35.8	6.2	0.5
Rental Boats (incl. jet skis)	49.8	109.5	46.2	7.5
Total (ha)	228.5	762.6	306.85	84.25
Available Boatable Surface Area (ha)	890.6	1708.8	829.7	128.0
Surface area required as % of available area	25.6	44.6	37.0	65.8

Surface area boating capacity of lakes in the study area

Among the recommendations in the report, the following ones are particularly relevant to Lovesick:

Recommendation 23: Further development on Lovesick Lake should be discouraged unless it can be shown that such development will not significantly increase the existing boat use on the lake.

Recommendation 24: There should be no development permitted within 100m of narrow channels. Development between 100m and 500m of narrow channels should be constrained to low density development with minimum frontages of 30m. Approval of applications within 500m of narrow channels should be subject to an on-site examination to ensure there will be no unacceptable conflicts with existing boating patterns.

Recommendation 25: Development applications within 0.5 km of the following busy key areas be "yellow-flagged" and evaluated with respect to their impact on the key area. – Ruba Island.

Recommendation 42: Any new applications for campgrounds or trailer parks will be required to submit a report to the satisfaction of the TSW indicating that the number of new or additional boating berths proposed and the cumulative effect of this new development on the boating capacity for the lake.

6.5 In-Water and Shoreline Works

As part of the Trent Severn Waterway, Parks Canada has jurisdiction over all shoreline and in-water works including docks, boathouses, boat lifts, launch ramps, marine railways, beaches, shoreline stabilization, dredging, buoys, water ski courses, waterlines, heat pump loops, and bubblers.
Refer to the link below regarding Policies for In-water and Shoreline Works and Related Activities.
https://www.pc.gc.ca/en/docs/r/poli/page01

A few notes from the above document:

- Construction of in-water and shoreline works and related activities may only proceed once a permit is issued, and the work must conform to the conditions as stated in the approved permit/letter. Parks Canada may inspect the work to ensure compliance.
- No more than 25% or 15 m (50 ft), whichever is less, of any one residential property owner's shoreline may be developed with in-water or shoreline structures, exclusive of shoreline erosion protection/retention works.
- To protect warm water fish spawning activity, no in-water work will be permitted during spawning activity between March 15th or March 31st depending on the water body, and June 30th inclusive in any year.
- In-water and shoreline works must be located a minimum of 4.5 m (15 ft.) away from the side lot line as projected into the water from the shoreline. In unusual circumstances a variance may be granted provided the proponent also seeks to obtain the written comments from adjacent property owners.
- Treated wood that meets provincial and federal guidelines will be allowed provided the wood is pre-treated and dry. Creosote preservative and wood treated with creosote will not be approved. Treated wood will not be allowed where it has contact with the water.

Depending upon the type of work you are under taking, a permit may be required from Parks Canada. They are responsible for any dock permitting, in-water installation, zoning and regulations - building and structures. Dock permits must be obtained through Parks Canada.
Note that the townships do not issue dock permits on the TSW.

Questions, comments and applications can be submitted via email to:
pc.on-tsw-vnts.permits-permis.pc@canada.ca
or by mail at the address below.
Please ensure the size of attachments is less than 5 MB per email.

Ontario Waterways - Parks Canada
Government of Canada
P.O. Box 567, 2155 Ashburnham Drive
Peterborough, Ontario, K9J 6Z6

Contact the Trent Severn – Ontario Waterways headquarters by phone at:
705-750-4900 or 1-888-773-8888

6.6 Fire Safety

The townships of Trent Lakes and Selwyn require permits for open air burning. One significant difference between the regulations in the townships is that Selwyn allows burning between sunrise and sunset (campfires allowed until midnight) whereas Trent Lakes restricts burning to night-time (6 PM to 8 AM) from April 1 to October 31.

Selwyn township permit application:

https://www.selwyntownship.ca/en/township-hall/resources/Fire_Department/Burn-Permit.pdf

Trent Lakes township fire by-law and permit application:

No person shall start an open air fire between 8:00 a.m. and 6:00 p.m. from April 1 to October 31 of any given year pursuant to Ministry of Natural Resources regulations. All open air fires must be extinguished before 8:00 a.m.

http://www.trentlakes.ca/burn-permit/

Safe Burning Tips

1. Burn at a safe time, never on dry or windy days.
2. Keep your burning job small enough that you keep it under control at all times.
3. Never leave the fire until it is dead out.

Always ensure there is no fire ban in place before starting a campfire.

Fire Safety manual

https://foca.on.ca/wp-content/uploads/2013/06/Home-Owners-FireSmart-Manual-MNR-publication.pdf

Ensure that your home / cottage has working smoke and CO detectors as required by law.

6.7 Community Crime Prevention

As per the Lovesick Lake survey of 2019, the instances of cottage break-ins seem to be minimal around Lovesick. Currently Lovesick lake does not have a formal “Cottage Watch” program. FOCA has produced a guide with tips on cottage crime prevention.

FOCA’s Cottage Watch publication:

http://www.tlcasd.ca/pdfs/Cottage%20Watch%20Manual%202010.pdf

6.8 Climate Change

No doubt climate change is having an influence on our lake in various ways. These include, but are not limited to:

- More extreme weather events
- More frequent flooding events
- Northern range of some flora and fauna extending their range into our area
- Southern range of some species no longer extending to the Kawartha area
- Less safe ice conditions

While a full discussion of the climate change effects is beyond the scope of the lake plan, the interested reader is directed to a more in-depth discussion in the KLSA article "Climate Change and the Kawarthas Context, Issues and Response" (see link below)

climate-change-and-the-kawarthas-march-2020.pdf (wordpress.com)

Beginning in the summer of 2021, the KLSA is beginning a program: Nearshore Water Temperature Monitoring program with the goal to track water temperatures along shorelines in the summer to provide baseline data for climate change tracking. Data will be presented in their annual water quality report.

Another useful resource may be found in the following FOCA publication "Managing Your Waterfront Property in a Changing Climate"
https://foca.on.ca/wp-content/uploads/2016/06/FOCA_ClimateChange_ManagingYourShoreline_FINAL_2016.pdf

More climate change information from the Peterborough county health department:
https://www.peterboroughpublichealth.ca/your-health/environmental-hazards/climate-change/
From the Lake Association's standpoint, many of the action items in the plan relating to good environmental stewardship such as shoreline naturalization will assist in combatting some of the effects brought on by climate change such as flooding events. Natural landscapes help store carbon and minimize erosion. Consider making "green" choices when you can such as buying an electric / hybrid vehicle, alternative energy choices (wind, solar power) and phasing out the use of equipment with older 2 stroke motors.
Unfortunately, even newer marine engines are not that great for the environment. In a recent article (see https://georgianbayforever.org/flipbook/summer2021/8/), David Sweetnam writes: "A fuel efficient, latest-generation, 5HP 4-stroke engine produces 38 times the emissions of a passenger vehicle. A small cruiser sized boat with twin screws produces about 140,000 g/hr CO2 at 3,500 RPM—14 hours of operation produces the same emissions as 100% of the entire annual emissions from a small passenger vehicle. Older 2-stroke engines are even worse when it comes to fuel efficiency and emissions. Further, these emissions are directly discharged into our waters in lieu of emissions catalyst technologies. The study makes a compelling and distasteful point: The effect of two-stroke engines on the odour threshold concentrations of water was found to be severe; e.g. a 15 kW (20HP eq) two-stroke engine that operates for 1 h makes 11,000 m3 of water undrinkable." While there are an increasing number of zero emissions electric options on the way, they are not yet widely available. Pick up a paddle or put up a sail when you can!

Chapter 7. Stewardship Activities

A number of stewardship activities have been identified that may prove beneficial for the health of the lake.

7.1 Citizen / Community Science Activities

Water testing.

In conjunction with Ontario's Lake Partner Program and the KLSA, volunteers collect water samples throughout the summer to monitor levels of Phosphorus, E.coli and water clarity. This is important information both for the safety and aesthetic value of our lake water. The Lovesick Lake Association coordinates the water sampling volunteers and pays for the testing fees. The KLSA publishes the results of many sites around the Kawartha lakes in an annual water quality report. The full Ontario dataset may be viewed on-line at: https://www.ontario.ca/environment-and-energy/map-lake-partner

Wildlife Stewardship.

The Land Between is sponsoring a number of citizen science programs.

For more information please visit: https://www.thelandbetween.ca/citizen-sciencevolunteering/

Wildlife reporting:

A number of opportunities exist to report observations of various species to contribute to science and conservation efforts. The decline of certain species (frogs for example) are indicators to the scientists regarding the health of the ecosystem. Observations of Species at Risk (see section 5.8) can have a critical influence on development of wetlands or as part of the Environmental Assessment reports required for development in environmentally sensitive areas.

Bird Sightings

https://ebird.org

Our goal is to gather this information in the form of checklists of birds, archive it, and freely share it to power new data-driven approaches to science, conservation and education. At the same time, we develop tools that make birding more rewarding. From being able to manage lists, photos and audio recordings, to seeing real-time maps of species distribution, to alerts that let you know when species have been seen, we strive to provide the most current and useful information to the birding community.

Some additional bird observation sites include:

https://feederwatch.org/

http://www.hummingbirdscanada.ca/provinces/ontario

https://www.birdcount.org/

NestWatch is a nationwide nest-monitoring program designed to track status and trends in the reproductive biology of birds. There is also info here on nest and egg identification as well as birdhouse construction.

https://nestwatch.org/

Frog Watch and Turtle Tally

https://report.adoptapond.ca/

The Ontario Turtle Tally and Frog Watch Ontario are part of the Toronto Zoo's Adopt-A-Pond Wetland Conservation Program. It works to design and deliver impactful conservation-focused research, restoration, and outreach that highlights the importance of saving Canada's sensitive wetland species and their habitats.

Reptile Reporting

https://www.inaturalist.org/projects/herps-of-ontario

This project is part of the larger iNaturalist initiative and can be used to report sightings of snakes, frogs and lizards.

Butterfly Monitoring

https://www.e-butterfly.org

Our goal is to gather this incredible individual experience in the form of checklists, archive it, and freely share it to power new data-driven approaches to science, conservation and education. At the same time, we develop tools that make butterfly watching more rewarding. From being able to manage lists and photos, to seeing real-time maps of butterfly distribution, or the ability to discuss your sightings with others; we strive to provide the most current and useful information to the community.

Mission Monarch

https://www.mission-monarch.org/the-research-project/

Mission Monarch is a citizen science program aimed at gathering data on monarch butterflies and milkweed distribution and abundance. This knowledge will allow researchers to identify the monarch's breeding hotspots and implement efficient conservation actions. Participants find milkweed, look for monarch caterpillars and share their observations with scientists on the Mission Monarch website.

Plant Watch

https://www.naturewatch.ca/plantwatch/

The PlantWatch program enables citizen scientists to get involved by recording flowering times for selected plant species and reporting these dates to researchers, who work to identify ecological changes that may be affecting our environment. When you submit your data it is added to Web map showing bloom dates across Canada.

Bat Watch

https://batwatch.ca/

We are asking for the participation of citizens to help monitor bats. In 2006, a Eurasian fungus that causes white-nose syndrome (WNS) in bats was introduced into North America. This disease has killed millions of hibernating bats and it is causing the most drastic decline of a group of mammals that has ever been observed. In light of the threats facing bats, it is critically important to monitor bat populations. A healthy bat population will help keep mosquitoes and other pesky bugs down.

Clam Counter

Freshwater Mussels Public Campaign: Complementing Toronto Zoo's freshwater mussel field research, the "I am Important! I am Protected!" public campaign raises public (and scientific) awareness for these highly endangered invertebrates. Commonly referred to as clams, native freshwater mussels play a little known but vital role in the aquatic ecosystem. As part of Toronto Zoo's Great Lakes Program, this campaign offers educational in-class outreach focused on freshwater mussel biology and ecology, outdoor posters for waterfront property owners, public presentations, and static-cling decals for the fridge and windows. Since the launch of the Clam Counter app for freshwater mussel identification and reporting in spring 2017 (developed in partnership with Fisheries and Oceans Canada), the app has been installed over 200 times and approximately 40 reports were submitted during the first field season the app was in use.

Links to Clam Counter app for various platforms can be found at: https://scistarter.org/clam-counter

iNaturalist - Nature At Your Fingertips

iNaturalist is probably the largest citizen science based project and is a joint initiative of the California Academy of Sciences and the National Geographic Society. A search of Ontario based projects (link below) yields over 1000 provincial projects covering a wide array of species including moths, snails, mosses, beetles, birds, and mammals. Find a project with a mission that interests you. Record your encounters with other organisms and maintain life lists, all in the cloud.

Every observation can contribute to biodiversity science, from the rarest butterfly to the most common backyard weed. We share your findings with scientific data repositories like the Global Biodiversity Information Facility to help scientists find and use your data. All you have to do is observe and report.

https://www.inaturalist.org/projects/search?page=5&q=ontario&utf8=%E2%9C%93

7.2 Combatting and Reporting Invasive Species

In the battle against invasive species, public awareness and prevention are the first stage in combatting the problem. Once the introduction of an invasive species has occurred, eradication of small localized populations may be possible. This is where reporting is key in order to contain populations and minimize distribution which may still be done at a reasonable cost. Once there is a rapid increase in distribution and abundance, eradication becomes unlikely. The battle then shifts to a phase of resource protection and long term management often coming at a very high cost.

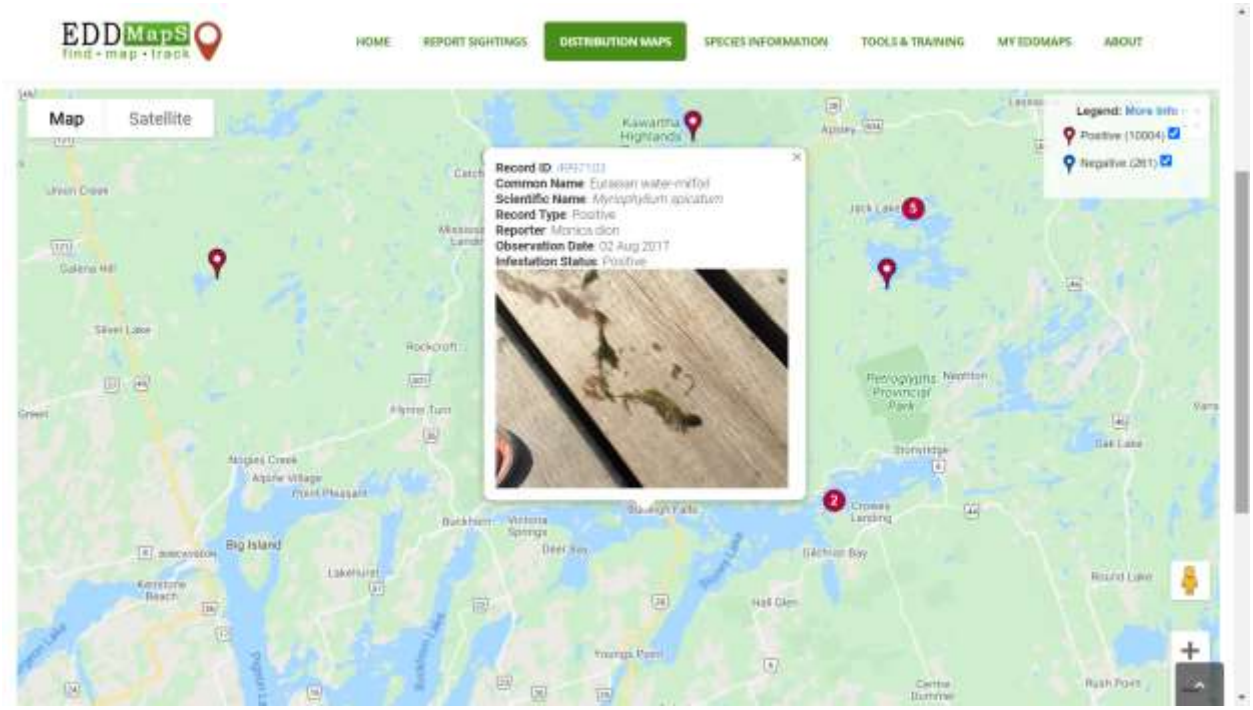
Stakeholders are encouraged to report sightings of invasive species at:

https://www.eddmaps.org/

Now you can submit invasive species observations directly with your smartphone from the field. These reports are uploaded to EDDMapS and e-mailed directly to verifiers for review. Note that there is an Ontario specific version of the website and smartphone App, but it is being phased out and merged with the main EDDMapS data. If you have an existing login for Ontario, it will still work on the centralized version which provides a more intuitive interface.

The image below shows the reporting process on the smartphone App.

Below is an example of how your observation will appear on the EDDMapS distribution map.



If you are not comfortable submitting online observations, there is an Invading Species Hotline available at: 1-800-563-7711 Monday to Friday 9am to 5pm.

The following table lists some species which are not yet found in Lovesick Lake, but are present in nearby areas and are of particular concern.

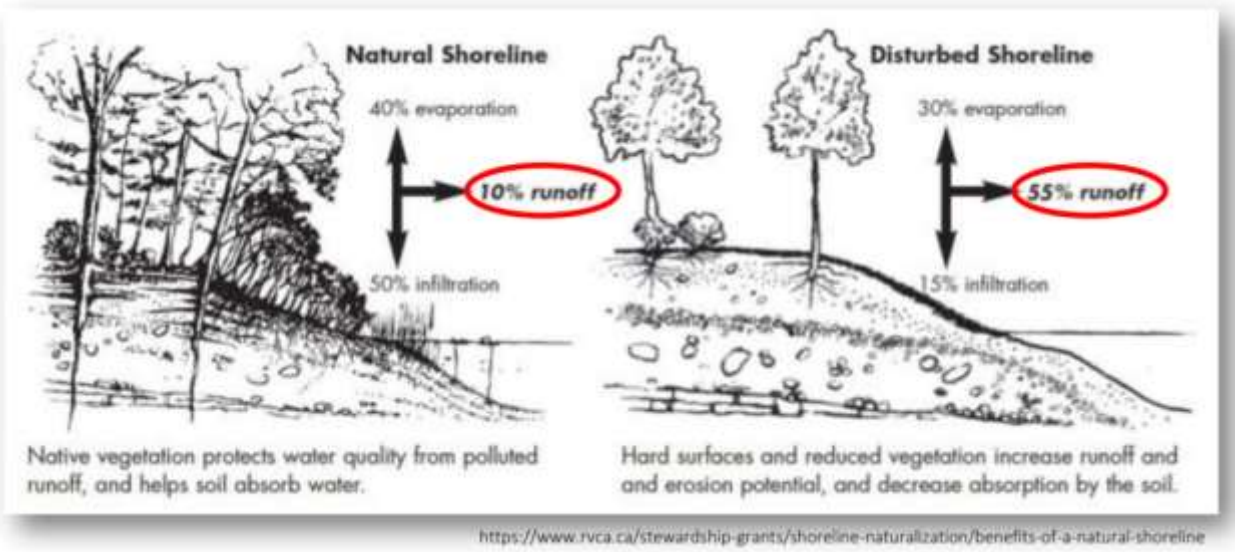
SPECIES	NOTES	
Starry Stonewort	Monitoring program underway in July 2021 via KLSA. Confirmed in Stoney L. and Buckhorn L.	
Water Soldier	Confirmed in Seymour Lake	
Round Goby	Confirmed in Chemong Lake and Trent River	
Asian Carp (Grass Carp)	Confirmed in Lake Ontario	
European common reed (Phragmites)	Reported on Hwy 28 beside Stoney lake	
Rusty Crayfish	Confirmed in Stoney and Lower Buckhorn	

A special focus has been directed towards Starry Stonewort on Lovesick. Volunteers have been recruited to search for Starry Stonewort on the lake. We hope not to find it; however, it may just be a matter of time because it is already in Buckhorn and Stoney Lakes.

https://foca.on.ca/wp-content/uploads/2015/02/Starry-Stonewort-Primer-Stoney-Lake.pdf

7.3 Shoreline Naturalization

Shoreline naturalization has many benefits which all help to improve overall water quality of the lake including: minimizing erosion, filtering pollution and sediments, slowing runoff, discouraging nuisance geese, reducing water temperature and helping to minimize aquatic weed growth and algal blooms. Additionally, a naturalized shoreline helps to attract wildlife and improve habitat. Residents are encouraged to increase their percentage of naturalized shoreline with a minimum target of 75%.



Currently there is a project underway at three sites on Lovesick Lake in conjunction with the KLSA and the "Natural Edge" initiative sponsored by Wetland Canada's shoreline naturalization program. https://naturaledge.watersheds.ca/

The Otonabee Region Conservation Authority has an annual program to offer native tree and shrub seedlings for sale at minimal cost.
https://www.otonabeeconservation.com/product-category/tree-seedlings/
https://www.thelandbetween.ca/design-your-own-shoreline-garden/

Other recommendations include:

- Removal or softening of concrete or armour-stone breakwalls (see below)
- Make use of environmentally friendly docks (cantilever, floating or pipe docks); avoid crib docks and solid concrete foundations.
- Minimize use of pressure treated lumber and creosote lumber (railway ties). Use cedar or composite products as alternatives.
- Avoid creation of artificial beaches
- Avoid pesticide and fertilizer use
- Eliminate lawns or create a buffer zone of natural vegetation between the lawn and the lakeshore

Softening a Breakwall

If your shoreline has been hardened with a breakwall that is in good condition, there are various things that you can do to soften it and reduce its effects on erosion.

• Restore or plant a strip of deep-rooted vegetation along the top of the retaining wall; this will help filter runoff before it enters the water and reduce the risk of erosion by holding the soil together.

• Plant overhanging native shrubs to help provide shade and keep water cool. You can also drill planting holes into the wall and plant cuttings or container plants. With approval, there are several things you can do with a break wall below the high water mark:

• Anchor a log or two against a retaining wall to provide wildlife habitat and help break the force of waves and undercurrents. This will help reduce the scouring action of waves breaking against the wall.

• Add rock riprap to the base of a retaining wall at a forty-five degree angle to help break the force of waves and improve habitat for fish and wildlife. Gradually sediment may start to deposit among rocks, and aquatic plants may grow.

• Create shore ladders, or steps, of riprap from the base of the wall to the top. These will help provide wildlife, such as amphibians, access from the water to the land.

Note that depending upon the type of work you are under taking, a permit may be required from Parks Canada (see section 6.5).

Resources for shoreline naturalization:
http://loveyourlake.ca/natural-shoreline/
KLSA article:
https://klsa.wordpress.com/about/what-can-you-do/sustainable-shore/
FOCA publication:
https://foca.on.ca/wp-content/uploads/2016/03/FOCA_Shoreline_Guide_FINAL_ed_2019.pdf
Additional resources:
https://www.rvca.ca/images/shoreline-stewardship/How_to_Naturalize_your_Shoreline.pdf
https://www.rvca.ca/media/k2/attachments/SolutionsforShorelineErosion_PDF_EN1.pdf
https://www.gamiing.org/ewExternalFiles/ShorelineNaturalization.pdf

An online publication to assist in choosing the right tree for your property is available at:
https://www.greenup.on.ca/wp-content/uploads/2013/04/Chosing-the-Right-Tree.pdf

7.4 Wildlife Habitat Creation

Several opportunities exist for the creation of aids which can assist our local wildlife in nesting or habitat improvement. Some of these such as bird houses, may be well known, but others may be less familiar to the reader. An extensive discussion is beyond the scope of the plan, but references are provided for the interested reader to follow.

Create a turtle nest protector.

Turtle nests experience a very high level of predation from mammals such as skunks and racoons. Typically, turtles make their nests in May and June. If you observe a nesting turtle, try to verify that the turtle has deposited her eggs. Do not dig up the nest, but if the turtle has spent a significant amount of time at the site and recovered the hole, then there are likely eggs present. Very often, turtles will make several attempts at digging a hole before finding a suitable spot. The unsuitable holes they leave are abandoned and not covered over. If a successful nest if confirmed, consider adding a nest protector as per the links below. This should be done as soon after nesting as possible since nests are often raided in the first night. If the observed nesting turtle is a species other than the Painted or Snapping turtle (for example a Blandings turtle), contact the Ontario Turtle Conservation Center. For the more endangered species they may relocate the nest to a more secure location. The Center has special permits to do so. hatchlings typically emerge from the nest in late summer, but depending upon conditions, they may overwinter in the nest until the following spring.

TURTLE NEST PROTECTOR

Refer to the links below for the creation of a nest protector:

https://ontarioturtle.ca/get-involved/turtle-nests-and-nest-protection/

https://www.facebook.com/groups/Ontario.Reptile.and.Amphibian.Atlas/permalink/10156215189680751

Nest protectors may also be purchased from the Ontario Turtle Conservation Center.

Due to the very thin soil and large amounts of exposed rock, there are limited sites available for turtles to construct nests close to the water, particularly on the north side of the lake. Turtles will often gravitate towards the roadside in search of suitable nesting substrate. Unfortunately, this leaves the female turtles vulnerable to vehicular trauma. Note that if you do observe an injured turtle please contact the Ontario Turtle Conservation Center at: **705-741-5000** and arrangements can be made for transport of the turtle to the Conservation Center. Follow the instructions they give for safely handling the injured turtle.

Creation of suitable nesting areas closer to the water may help reduce turtle road mortality. Suggested artificial turtle nest substrates include: Gravel (similar to the roadside shoulder), sandy loam, woodchips, disturbed soil (sometimes turtles will utilize flower beds). Darker colour substrates are preferred since they absorb more warmth from the sun.

Often turtles are attracted to the warmth of compost similar to the woodchip type substrate in the picture to the left.

If a nesting turtle is observed, consider using a nest protector as described above.

Reference the following link for more details:

https://www.torontozoo.com/adoptapond/turtlenests.asp?opx=2

Bat boxes:

Bats are the primary predators of night flying insects (especially mosquitoes!). Yet the most abundant species of mammal in Canada is losing habitat. Additionally, a fungus known as white nose syndrome has recently decimated the bat population in many areas (see link below). It is preferable to leave bats in their traditional roosts, but by offering alternative housing in a bat box, we can provide a location for them to inhabit instead of a cottage. Refer to the links below for more information on building and locating bat boxes.

https://www.torontozoo.com/adoptapond/UrbanOutback/part38.html

https://cwf-fcf.org/en/explore/bats/

White Nose Syndrome factsheet:

http://www.hobbitstee.com/whitenosebats.pdf

General info on Ontario bats:

https://docs.ontario.ca/documents/2790/guide-bats.pdf

Bird nesting aids:

Many of our native birds are in decline and have some specialized requirements for nesting aids. Refer to the links below for creation of nesting aids for a selection of our local birds.

Nestwatch is a great source of info on creating species-specific nesting structures.

https://nestwatch.org/learn/all-about-birdhouses/

Loon nesting platform

https://www.birdscanada.org/download/CLLSloonplatform.pdf

Osprey platforms

https://cvc.ca/wp-content/uploads/2011/09/ospry.pdf

see also: https://docs.ontario.ca/documents/2802/guide-osprey.pdf

Wood duck boxes

https://www.ducks.ca/assets/2016/01/duckbox.pdf

Swallow nesting boxes

https://naturecanada.ca/wp-content/uploads/2019/01/Tree-Swallow-Final-BMP.pdf

Blue bird houses

https://oebs.ca/new/wp-content/uploads/2021/01/construction-notes2.pdf

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Bee Houses

Our native pollinators are at risk. Threats include habitat loss, neonicotinoid pesticide use and disease.

See the links below for more information on creating nesting and overwintering habitat for bees.

https://xerces.org/sites/default/files/publications/18-014.pdf

https://www.pollinationguelph.ca/making-homes-for-pollinators

Milkweed planting – for Monarch butterflies

Every year this delicate, little butterfly undergoes a miraculous journey, where it migrates, primarily, from central Mexico to all across North America. It takes the average monarch about two months to complete the trek to its breeding grounds. Weighing in at less than a gram it will travel nearly 5,000 kilometers to reach its furthermost destinations in Canada. A truly amazing feat of nature that sometimes goes overlooked based upon its remarkable beauty. After making a journey northward the monarch is in search of one thing: Milkweed. This is the only plant that

monarch caterpillars can feed upon. Without milkweed in the area the long trip up north could be futile. The female Monarch will lay eggs on the underside of the milkweed plant's leaves. Once the eggs hatch, the young caterpillars will eat away at the leaves of the milkweed for (1-2) weeks. After this they go into the metamorphosis stage where the plump caterpillars will make a chrysalis and emerge the gorgeous orange/black winged monarch butterfly. But in order for this process to be completed, there ***must*** be milkweed host plants. The monarch is known as a specialist species. This means that it will only target milkweed plants for its offspring. An abundance of milkweed is vitally important for efforts to increase and sustain a healthy population of this magnificent butterfly. You can help by planting milkweed to assist these creatures.

https://ofnc.ca/fletcher-wildlife-garden/growing-common-milkweed-from-seed-easy-steps-for-beginners

https://notsohollowfarm.ca/got-milkweed/

Another project for creating habitat for butterflies and other native pollinators is the Butterflyway Project. Please see: https://davidsuzuki.org/take-action/act-locally/butterflyway/

Snake hibernaculum.

A snake hibernaculum is an underground chamber where snakes can safely spend the winter protected from the cold. A hibernaculum can be a built structure, such as an old well or building foundation, or it can be naturally occurring, such as an animal burrow, rotten tree stump, or fissure in the bedrock. http://www.longpointlandtrust.ca/pdf/Snakehi.pdf

Other wildlife habitat – brush piles etc. fallen logs

Consider leaving dead standing trees, fallen logs, brush piles in place so they can become habitat for many creatures.

Fallen logs are essential habitat for small mammals, such as moles, certain woodpeckers, toads, and many insect species. As the log rots, the trunk becomes damp and spongy encouraging the growth of fungi (such as mushrooms) and mosses. Reptiles and amphibians will lay their eggs in the moist wood. A decaying log is also great habitat for beetles and ants that burrow under the bark or lay eggs.

Large trees with hollow cavities are a vital source of food, shelter, and safety. In Ontario, more than 50 species of birds and mammals (including pileated woodpeckers and barred owls) depend on cavity trees for nesting, rearing young, roosting, feeding, storing food, escaping predators and hibernating. By retaining cavity trees on your property, you provide important habitat for wildlife.

Brush piles can be constructed with the cut materials from trail clearing or woodlot management (pruning). Pile the brush, approximately waist-high, on a stump, log, boulder, or along fencerows. These provide habitat for snowshoe hare, cottontail rabbits and others. For added benefit, train climbing vines, such as Virginia creeper onto the brush pile.

https://www.nwf.org/Garden-for-Wildlife/Cover/Trees-and-Snags

https://www.ontario.ca/page/creating-wildlife-habitat

Fish spawning improvement

Fish spawning bed improvements may include shoreline erosion control and creation of underwater structures. Generally, this work should be done in consultation with a biologist. Funding may also be available for fish habitat improvements from various sources such as the Ontario Federation of Anglers and Hunters or local conservation authorities.

Refer to the Ontario government publication:

https://cvc.ca/wp-content/uploads/2011/02/fsh_hab.pdf

Winter Deer Feeder

Deer feeders are commercially available, but may also be easily homebuilt. Refer to the Ontario Government publication:

https://www.ofah.org/wp-content/uploads/2015/04/MNR-Guidelines-deer_winterFeeding.pdf

Chapter 8. Action Plan and Additional Concerns

This chapter lays out the key action items of the Lake Plan along with discussion of some additional issues and concerns that were raised during the stakeholder survey at the beginning of the lake planning process.

8.1 Action Items

The following recommendations/action items have been developed through consultation with residents, the lake association, and best practices outlined by FOCA, KLSA and other government publications. The recommendations serve as a basis for long term implementation of the Lake Plan by stewardship/action committees.
This list below is a detailed list of recommendations found throughout the Lovesick Lake Plan.

• **Action 1**- **Water Quality.** Continue to monitor water quality through the Kawartha Lake Stewards Association and Ministry of the Environment Programs. Community-led monitoring of lake health is a key recommendation in our Lake Management Plan. Encourage usage of phosphate free soaps and cleaners and discourage activities that are detrimental to the water quality such as the use of fertilizers and pesticides.

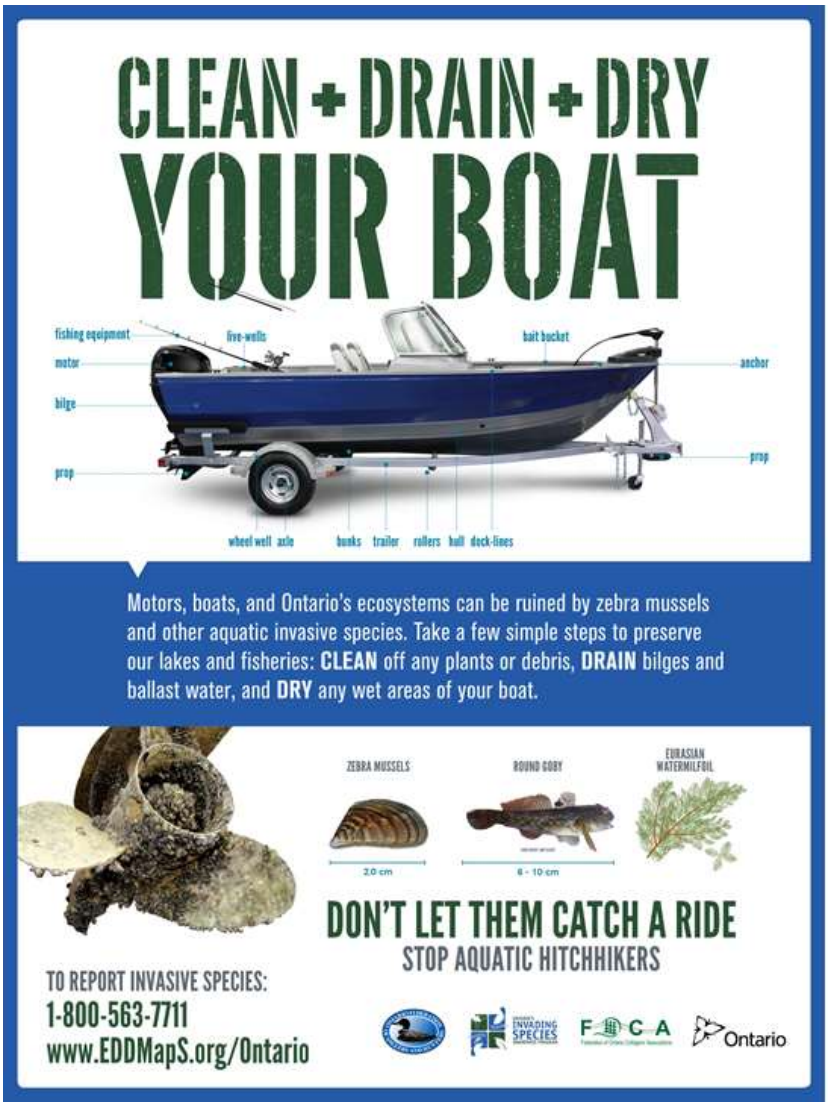
• **Action 2** – **Work together with the Trent Severn Waterway (Parks Canada)-** to provide stakeholder input regarding dam repairs and to learn about TSW practices in relation to control of water levels. Status of the Burleigh Falls Dam replacement can be found at: https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/visit/infrastructure/comte-peterborough-county/burleigh-falls
As of July 23, 2021, Parks Canada advises that the Burleigh Falls Dam replacement project has been deferred until further notice. While the dam is in poor condition and is in need of replacement, recent engineering inspections have concluded that the dam does not pose any imminent risk to public safety.
Additional information about this project can be found at the end of section 8.2

• **Action 3** – **Work together with the Ontario Parks to address issues at Wolf Island Provincial Park** – garbage cleanup, irresponsible behaviour, unattended campsites.

• **Action 4** – **Eliminate Illegal Camping.** Liaise with local watercraft rental agencies to ensure their clients are aware of areas on the lake where camping and fires are prohibited. Install signage on Rose Island.

• **Action 5 - Invasive species – Education and signage.** Encourage reporting of invasive species. It has been recognized that movement of watercraft overland to different bodies of water is a known pathway contributing to the spread of aquatic invasive species. To date, Ontario has relied on educational activities to reduce the spread of invasive species through this pathway. The ministry is considering establishing mandatory “Clean+Drain+Dry” regulations that require removing plants and aquatic organisms from trailers and boats and draining water from bilges and live wells to reduce the risk of spreading invasive species. FOCA has created some signage (see sample below) that may be erected at boat launch. Additional signage to remind

anglers not to dump their leftover bait bucket contents (water and minnows) into the lake when they are finished fishing may also be required.



• **Action 6** - **Trailer Park Expansion monitoring.** Monitor the proposed trailer park expansion and work with municipal and regulatory authorities to ensure that this project does not have any significant negative effects on the lake and environs with respect to water quality, lake capacity, species at risk, and traffic (vehicular and watercraft).

• **Action 7** – **Develop a closer working relationship with Municipal Councils and staff –** develop more of a partnership to enhance two-way communication and potentially develop a 'memorandum of understanding' - provide input to the local municipalities regarding new development around the lake to ensure it is in-character (density, scale, and particularly lake capacity) with its surroundings.

Action 8 – **Develop and implement stewardship activities which educate and promote boating safety** – safety, speed and noise issues have been expressed by stakeholders- Consider the promotion of a Boater's Code as developed by SafeQuiet.ca (shown below).

• **Action 9** – **Promote stewardship activities to support fish and wildlife conservation.** Refer to section 7. These include nesting aids, habitat improvements, species reporting. Consider signage to promote the proper disposal of used fishing line which may otherwise entangle wildlife and also discourage the use of lead-based sinkers and ammunition which can be consumed by waterfowl. Promote use of barbless hooks. Identify wildlife crossings and implement appropriate signage i.e. deer crossing, turtle crossing etc.

• **Action 10** – **Improve communications and strengthen the Lovesick Lake Association –** increase membership and community involvement, use the association newsletter, AGM meeting, workshops, and social events to educate and promote stewardship, and build a sense of community. Expand the LLA's web presence utilizing social media or creating a web page.

• **Action 11** – **Promote stewardship activities to encourage shoreline naturalization.** Promote the preservation of natural shorelines (see section 7.3) Encourage the restoration of degraded shorelines. Consider a minimum target of 75% for the naturalized portion of shoreline. Note that according to the lake plan survey, over 70% of respondents meet or exceed this threshold.

8.2 Additional Issues and Concerns

Short term cottage rental issues.

In recent years, some issues have arisen from short term cottage rentals particularly with noise and irresponsible behaviour.
Currently there do not appear to be any specific regulations governing short term cottage rentals in Selwyn and Trent Lakes; however, Selwyn has formed a Short-term Accommodation Stakeholder Consultation Group to assist in the consideration of appropriate short-term accommodation policies and/or licensing programs which recognize both the value of these operations in the Township and the need to address the concerns being expressed in the community. See the By-Law Enforcement section below for information on reporting noise and other by-law infractions to the appropriate township.

One of the largest rental firms, **Airbnb**, has produced an information page:
https://www.airbnb.ca/help/article/656/my-neighbour-is-an-airbnb-host-what-do-i-need-to-know

FOCA also has an information page on cottage rentals:
https://foca.on.ca/responsible-cottage-rental/

By-Law Enforcement and Reporting of Infractions:
For information regarding township specific by-laws regarding noise, garbage, firework discharge etc. please refer to the following guides:

Trent Lakes:
https://www.trentlakes.ca/en/build/resources/Documents/By-law-Enforcement-Guide-2020.docx
Reporting infractions:
Business Hours (Monday – Friday 8:30 am to 4:00 pm) Phone: **705-738-3800 x233**
Weekend, holidays or after 4:30 p.m. Monday to Friday, call the Municipal office at **705-738-3800 (or Toll Free: 1-800-347-4009), then enter 311** to be connected to the after-hours service.
Email: development@trentlakes.ca
https://www.trentlakes.ca/en/live/resources/Documents/Fillable-Complaint-Form-2020.pdf

Selywn:
https://www.selwyntownship.ca/en/township-hall/bylawsandpolicies.aspx#Municipal-By-laws

Reporting infractions:
Business Hours (Monday to Friday from 8:30 AM to 4:30 PM)
Phone: (705) 292-9507 or Toll Free: (877) 213-7419
After Hours, Leave a message or send an email or submit a Complaint Form
email complaints@selwyntownship.ca
https://www.selwyntownship.ca/en/township-hall/resources/Building__Planning/Complaint-Form.pdf

Lighting and Light Pollution

Light pollution has become an increasing issue over the last decade. More areas are looking at dark sky preserves to maintain the aesthetics of the night sky.
When placing lights on your property, remember that they may also be shining on your neighbours' properties and on the surface of the water. Light bounces off the water, which can severely limit the night vision of boaters and confuse night time wildlife. Light pollution occurs when excessive amounts of light and undirected light are present or when light levels exceed requirements. You can reduce undirected lighting by placing lights closer to their intended location. For instance, pathways can be easily lit by solar lights that are placed in the ground instead of floodlights from above.

Five Easy Steps to Responsible Lighting
1. Determine what lighting is needed to illuminate targeted areas. Determine if you need light for safety, as a marker (such as low-voltage garden path lights) or for aesthetic reasons.
2. Use the right amount of light. More is not usually better. Too much light reduces visibility by creating glare and forming dark shadows. It also wastes energy. By creating smooth transitions from light to dark areas, one's eyes can adjust more easily.
3. Avoid letting the light shine sideways or upwards. Use full cut-off, shielded fixtures and aim light to the area where you need it.
4. Use infrared and motion detectors that turn lights on and off as needed. This improves security and reduces electricity consumption. Use timers to control when lights come on.
5. Use efficient lamps: Remember, shielded fixtures with good reflectors waste little light, so you can use lower wattage bulbs.

Septic System Inspections
There will always be some residents in favour of re-inspection programs, and other residents opposed. Maintenance of septic systems can be a very contentious issue between neighbours. Some reports (Lakeshore Septic System Inspections: "A Considered and Cautious Approach" by Kevin Walters, B.A.Sc, P. Eng.) question the efficacy of mandatory inspection programs. Education is key to a successful municipal re-inspection program. Voluntary programs are unlikely to reach the systems most in need of re-inspection! Residents may fear the cost of needed repair will be overwhelming.
Trent Lakes has implemented a mandatory inspection program every 5 years at a cost of $325 (tax incl) to the landowner. At this point, the program has not been rolled out in Selwyn. More info at:
https://www.peterboroughpublichealth.ca/your-health/environmental-hazards/septic-systems/

Anecdotal statistics from industry partners, from various Ontario re-inspection results from over 370 systems yielded the following results:
32% had no deficiencies of note or impediments to function or performance
27% had minor deficiencies; functional, but repairs/upgrades required to ensure performance
41% had major deficiencies in significant/extreme ways that impeded function and performance
Note that among the systems with major deficiencies, only 14% of them were under 20 years old.

Burleigh Falls Dam Replacement – Additional Information

Correspondence from Parks Canada
Burleigh Falls Dam Replacement
Phase One Work to Begin January 2021
Trent-Severn Waterway National Historic Site
January, 2021 –After many years of planning, Parks Canada will move forward with the first phase of replacing the Burleigh Falls Dam at Lock 28, in Peterborough County, in January 2021. The Burleigh Falls Dam was constructed in 1912, and engineering assessments over the last few years have demonstrated that the dam is in need of significant rehabilitation. After an unsuccessful tender process for a rehabilitation project in the summer of 2019, a project for a full replacement of the dam was deemed the most cost efficient, and to have the best long-term outcome. The new dam's overall hydraulic capacity will be increased, and both public safety and operator access will be improved. The lifespan of the new dam is estimated to be more than 80 years.

Environmental Analysis: Parks Canada is conducting ongoing assessment and environmental analysis, including fish surveys, to ensure the most appropriate way forward for both the design of the new dam and the implementation of its construction. As a result, the project has been split into two phases.

Phase 1: Will entail necessary stabilization efforts on the existing dam, which are limited in scope. In order to allow this work to proceed, a Basic Impact Assessment has been completed. This work will commence in January 2021.

Phase 2: Will entail the construction of the new dam immediately downstream of the existing dam. Once additional investigations are complete, the draft Detailed Impact Analysis (DIA), which examines and seeks to eliminate the project's adverse impacts on the natural and cultural heritage, will be updated and shared publicly. Public comments will be included in the DIA, and assessed for inclusion in recommendations to the contractor.

What to Expect The project will begin in Phase 1 with modifications to the current dam, allowing it to pass the current capacity of water during construction. This includes the filling of voids under the piers of the existing dam. Construction of a new dam, new gravity wall, and new wing walls will follow in a Phase 2, concluding in the late summer of 2024.

Pedestrian access across the dam will be closed during construction.

Impact to parking at Lock 28 will be minimized during navigation season.

There will be no impact on navigation, and the boat launch will remain open during navigation season.

Visitors to the lock station and local businesses can expect noise and traffic typically associated with large construction projects. Impact to access for upstream and downstream angling areas is not expected.

Parks Canada is leading important infrastructure work to ensure safe, high-quality experiences for visitors by improving heritage, visitor, waterway, and highway assets located within national historic sites, national parks, and national marine conservation areas, including along the Trent-Severn Waterway National Historic Site.

For More Information: For questions or concerns about this project, please contact us at:
pc.trentsevern.pc@canada.ca and include "Burleigh Falls Dam" in the subject heading.
See: https://iaac-aeic.gc.ca/050/evaluations/proj/80528

Chapter 9. Internet Resources

TABLE OF WEB RESOURCES

#	URL	Comments
1	https://foca.on.ca/	Federation of Ontario Cottagers' Associations
2	https://klsa.wordpress.com/	Kawartha Lake Stewards Association
3	https://www.pc.gc.ca/en/lhn-nhs/on/trentsevern/info/infonet	Trent-Severn Waterway National Historic Site
4	https://www.environmentcouncil.ca/	Environment Council for Clear, Ston(e)y and White Lakes
5	https://www.otonabeeconservation.com/	Otonabee Region Conservation Authority
6	https://ptbocounty.geocortex.com/Html5Viewer/Index.html?viewer=PeterboroughPublic	Public GIS maps Peterborough
7	https://ontarioturtle.ca/	Ontario Turtle Conservation Center
8	https://www.thelandbetween.ca/	The Land Between conservation organization
9	https://kawarthalandtrust.org/	Kawartha Land Trust conservation organization
10	https://ecottagefilms.com/lake/lovesick-lake/	Video of Lovesick shoreline
11	https://www.laurenbridle.com/lovesick-the-film	Lauren Bridle's documentary film
12	https://www.ontario.ca/page/species-risk-ontario	Species at risk
13	https://www.eddmaps.org	Invasive Species Reporting
14	https://iaac-aeic.gc.ca/050/evaluations/proj/80528	Burleigh Falls Dam replacement
15	https://www.ontario.ca/page/prevent-bear-encounters-bear-wise	Bear info
16	https://www.ontario.ca/page/forest-management-guides	Has links to many wildlife guides
17	https://williamstreatiesfirstnations.ca/	Williams treaty info
18		
19		
20		

Chapter 10. Glossary of Terms and Acronyms

Algae: simple, one-celled or colonial plant-like organisms that grow in water, contain chlorophyll and do not differentiate into specialized cells and tissues like roots and leaves.
Algal blooms: sudden proliferations of algae.
Anoxic conditions: low concentrations of oxygen.
Bathymetry: the study of underwater depth of ocean floors or lake floors.
Benthos / benthic invertebrates: insects, worms, crustaceans and other organisms without a backbone that live in, on, or near the bottom of water bodies.
Buffer (Riparian) Zone: a strip of vegetation, including native vegetation, located between developed land and a lake, stream, or wetland. A buffer zone protects the water quality, adds beauty, enhances fish spawning, provides a habitat for wildlife and is considered to be a Best Management Practice. The MNR and MOE recommend a minimum 30-metre vegetated buffer in Precambrian Shield areas.
Dissolved oxygen: the amount of free oxygen dissolved in the water. It is used by aquatic organisms to "breathe".
***E.coli* bacteria**: bacteria that live in the intestines of warm-blooded animals such as birds, beavers and humans. While most are harmless, a few strains of *E.coli* cause severe gastrointestinal illness. Drinking water and recreational water can be tested for the presence of these bacteria.
Ecosystem: a community of organisms and the environment in which they live.
Erosion: the process by which rocks and soil are worn away and moved from one place to another.
Eutrophication: the aging of a body of water as it increases in dissolved nutrients like phosphorus and declines in oxygen. This is often a natural process that can be accelerated by shoreline development and other human activities.
Exotic species: plants or animals that are not native to an area.
FOCA: Federation of Ontario Cottagers' Associations
Invasive species: non-native plants or animals that compete with (and overtake) native species.
KLSA: Kawartha Lake Stewards Association.
Littoral zone: the area of a water body bounded by the shoreline and the limit of submerged aquatic plant growth.
LLA: Lovesick Lake Association
Macrophyte: an aquatic plant visible to the human eye that grows in or near water and is either emergent, submergent, or floating.
(O)**MNR**(F): (Ontario) Ministry of Natural Resources (and Forestry)
MOE: Ministry of the Environment, Conservation and Parks
ORCA: Otonabee Region Conservation Association
Phosphorus: a widely occurring chemical element that stimulates the growth of terrestrial and aquatic plants as well as algae. Naturally occurring phosphorus comes from decaying vegetation on the bottom of lakes and streams. Human sources include waste water runoff and allowing waterbody contact with certain soaps and detergents.
Sediment: particles, derived from rocks, soils and organic materials that are suspended in, or deposited at the bottom of, a body of water.
Turbidity: Cloudiness of the water.
TSW: Trent Severn Waterway.
Watershed: an area of land from which water drains to a given point. It is synonymous with drainage area, basin, and catchment.

Chapter 11. Revision History

Revision	Date	Notes
Draft 01	June 01/21	1st draft for limited release and comments
Draft 02	June 29/21	Revised with comments from LLA, added sect. 4.6, 6.5, glossary
Initial Release	July 02/22	Updated expired links