

Otter Lake Sustainable Lake Plan

Final Draft July 18, 2021

Second Edition: September 18, 2021



Acknowledgements

- Committee:** The Otter Lake Sustainable Lake Plan Committee
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- Second Edition** The 2020-21 Board of Directors undertook to update the Lake Plan.
- Directors:** Otter Lake Landowners' Association Directors, past and present, support this initiative (since 2006)
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Executive Summary

The aim of the Otter Lake Sustainable Lake Plan is to:

1. Identify the qualities that make Otter Lake a desirable place for people to live or visit and the challenges that put those qualities at risk;
2. Recommend a series of actions that will help to ensure the sustainability of the lake, the lands, the natural ecosystem and the way of life that we value; and
3. Serve as a reference and guide to support continued activity for the stewardship of the lake.

The Otter Lake State-of-the-Lake document (revised March 2021), which contains historical and factual data gathered from government agencies, commercial operators and residents provides the foundation upon which the Lake Plan is built.

Lake plans are increasingly viewed as the best tool for improving lake stewardship, promoting community involvement and providing input to municipal official plans. The process for developing our Plan (Original Edition) involved surveys, workshops and meetings with community stakeholders which led to identification of the key issues, goals, objectives and actions. The Otter Lake Sustainable Lake Plan is meant to be a living document to be revisited and updated at regular intervals. This has resulted in the Second Edition: September 18, 2021 of the Sustainable Lake Plan. The success of the Lake Plan relies on awareness, education and responsibility of residents and stakeholders.

The preparation of the original Plan was the first step ... the important work of implementation of most the actions contained in the original lake plan has been completed, many of which are ongoing actions to ensure the health of Otter Lake. This Second Edition: September 18, 2021 contains some new goals, objectives and actions. We encourage everyone to continue to be engaged in its recommended activities.

“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed it’s the only thing that ever has.”

Margaret Mead

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1.0 INTRODUCTION

1.1 About the Plan

The Otter Lake Sustainable Lake Plan Committee, was established by the Directors of OLLA in the Fall of 2014, to take on the large task of putting together the Lake Plan and State-of-the-Lake Report. Limited access to funding precluded using professional services to coordinate and develop the Otter Lake project. The committee, through research and borrowing from the many lake plans that exists in Ontario, decided on a format that provides a concise yet comprehensive document that can easily be updated.

The Lake Plan is meant to be used as a guide for lake stewardship both on an individual basis as well as for group/committee efforts. Specifically, the purpose of the Otter Lake Sustainable Lake Plan is to:

- Develop a strategy that outlines ways to maintain and improve the health of the Otter Lake Watershed;
- Develop such a strategic plan in cooperation with landowners, users and visitors of Otter Lake, as well as government and non-government organizations having a vested interest in the Otter Lake Watershed;
- Motivate, educate and engage residents to become involved in the health of the Otter Lake Watershed;
- Make recommendations to the municipalities concerning official plans, zoning by-law policies and environmental concerns;
- Adopt a watershed approach to managing the health of the Otter Lake ecosystem.

The Lake Plan is a living document and must be reviewed and updated on a regular basis (semi-annually for the first two years and then at least every 3 years) to reflect new and ongoing issues that affect the health of Otter Lake and its surrounding wetlands. The 2015 publication of the original edition of the Lake Plan represented the first phase and addresses the key topics identified in the surveys. The additional topic of Climate Change and Other Environmental Issues has been included in this Second Edition (September 18, 2021) of the Sustainable Lake Plan.

The Lake Plan clearly sets out the vision, values, goals, objectives and recommended actions based on input from property and community stakeholders. The Plan reflects and builds upon the background material collected for the State-of-the-Lake Report (revised March 2021).



1.2 Preparing the Plan

The Original Edition: July 25, 2015 was a result of many hours of work by the Sustainable Lake Plan Committee which began its work in March 2015. (Please refer to the Original Edition for a more complete explanation of the process.)

This Second Edition: September 18, 2021 of the OLLA's Sustainable Lake Plan was undertaken by the 2020-21 OLLA Board of Directors. This is a living document that requires updating to reflect new and ongoing issues that affect the health of Otter Lake and its surrounding wetlands. The suggested timeframe for updating the plan is 2-3 years, however, in reality for a volunteer organization this can be a difficult goal to attain. Also the Covid-19 pandemic of 2020-21 seriously curtailed many activities, and the updating of the Sustainable Lake Plan was no exception.

The OLLA Board of Directors determined that it was necessary to add a new goal – Climate Change & Other Environmental Issues – to the Second Edition of the Lake Plan. A complete review of the original Lake Plan was also carried out by the 2020-21 directors resulting in changes to reflect the current status of many of the action items. Five drafts were prepared prior to the final draft being provided to the Rideau Valley Conservation Authority and the Township of Rideau Lakes. The final draft of the Second Edition was released to the membership with the 2021 AGM Agenda Package and was presented at the virtual AGM on September 18, 2021.

Note: A document dated July 15, 2021 and entitled *Summary of Action Items of the Original Edition Lake Plan (July 25, 2015)* contains a list of all action items of the original edition with notations on the status and outcomes. This document is intended to be an historical record and is available on OLLA's website.



Original 2015 Otter Lake Sustainable Lake Plan Committee

1.3 Characteristics of Otter Lake

Otter Lake is a small lake, situated in Leeds/Grenville County, and within the Township of Rideau Lakes in the heart of the Rideau Lakes Area. The lake lies close to Highway 15 between the villages of Lombardy and Portland and is east of Big Rideau Lake, however, Otter Lake is not part of the Rideau Canal System. It is part of the Otter Creek/Hutton Creek Complex which is an area with a large north-eastern drainage pattern towards the mid part of the Rideau River. This is distinctly different from neighboring Bass Lake which drains to the north-west into the Lower Rideau Lake.

Otter Lake lies within the upper reaches of the Otter Creek catchment within what the Rideau Valley Conservation Authority (RVCA) refers to as the Middle Rideau Subwatershed. Otter Lake is one of only two lakes in the Middle Rideau. The Otter Creek catchment drains 91.1 km² of land.

Otter Lake is located on a limestone plain which abuts the Frontenac Axis of the Canadian Shield. As a result, there are features around the lake which show the hard igneous rocks typical of the shield and also the soft light brown limestone typical of the area. Plant and animal life are quite sensitive to changes in acid levels and limestone tends to buffer the effects of acid rain which drifts in from the industrial areas of the US and Canada to the southwest. Otter Lake is about 5.3 km long and covers 572 hectares. The catchment area draining into the lake is about 36 square km. The total shoreline length is about 20 km. The lake is 124 meters above mean sea level and is part of the Rideau River drainage basin. There are several parent streams flowing into Otter Lake and one primary outlet (Otter Creek) which meanders about 33 km before flowing into the Rideau River south of Smiths Falls.

Otter Lake is also fed by numerous springs although little is known about the volume or source of these springs. It is likely that the springs are recharged from area wetlands. Overall, the water in Otter Lake replenishes about every four years by surface runoff, inflow streams, precipitation and springs. Water exits the lake through Otter Creek and by surface evaporation during the summer months.

There are also numerous natural wetland areas around the lake that are important habitat for a variety of aquatic life. Most of these wetlands are classified as "Locally Significant" however some have not yet been evaluated or classified. Wetlands to the east of Otter Lake are classified as "Provincially Significant" and represent an example of "linked wetlands" which allow a more diverse population of wildlife.

Because Otter Lake lies more or less in a north/south direction, there are often some spectacular sunrises and sunsets that can be viewed from property owners' docks, balconies and decks. Otter Lake has several islands. Most of the larger islands are privately owned with cottages, however the smaller ones, many of which are mere granite outcroppings, make for excellent picnic spots.

Despite its relative small size, Otter Lake holds a large volume of water and is quite deep, up to 36 m at its deepest location. This means that the lake is one of the last lakes in the Rideau Lakes region to freeze in winter. As a result, in late November and often most of December the lake is home to a large variety of water fowl. Loons, Goldeneyes, Mergansers and even the occasional Trumpeter Swan will use the lake as a stopover point during their migration south for the winter.

The common loon is a frequent summer visitor arriving in early May and often staying until late November. The lake is home to about six loon pairs that nest in many of these wetlands. Hatching usually occurs towards the end of June or early July and while the young loons are natural swimmers, they cannot dive so they have to be fed by their parents. In addition to loons, mergansers can sometimes be found sitting on docks. Canada geese often stop off at Otter Lake to raise their large families. The geese family has to stay until the young are able to fly and they love to eat juicy fresh grass close to the shore. The lake is also home to many great blue herons who

mostly spend their time in and around wetlands. While generally a rather timid bird, one may occasionally stay long enough on a dock to be photographed. There is an abundance of wildlife on land too. Deer are frequently sighted on cottage access roads and even in property owners' yards. The occasional black bear has also been sighted though not as yet photographed. Raccoons are frequent visitors all year round.

As depicted in the two aerial photos, there has been a degree of naturalization of the catchment basin between 1953 and 1991. Farmland has gradually been abandoned and shrub and tree cover has replaced open fields.



Otter Lake 2005 [Composite image created from Google Earth satellite images]



Otter Lake 1953 [Composite image created from aerial photos courtesy of RVCA and MNR]

2.0 VISION and VALUES

The Vision of the Otter Lake Sustainable Lake Plan has been guided by what was heard from the community members who responded to surveys or participated in meetings and workshops.

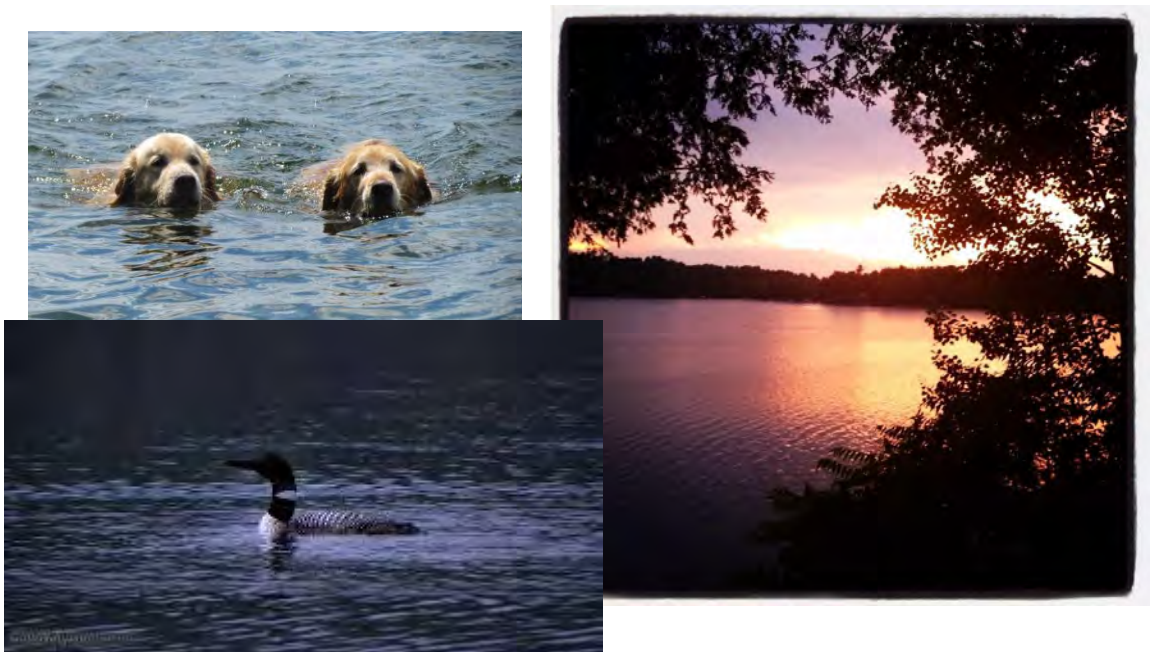
Our vision for the future of our lake is ...

A place where water quality, fish and wildlife habitat, natural beauty, recreational opportunities and peace and tranquility is maintained and improved for present and future generations to enjoy.

The values identified as “very important” by property owners in the 2015 survey, upon which the vision statement is based, are:

❖ Water Quality	94.55%
❖ Swimming	70.91%
❖ Peace and Quiet	60.91%
❖ Wild Life and Bird Viewing	40.00%
❖ Natural Shorelines	39.09%
❖ Sailing, Paddling	39.09%
❖ Fishing	16.36%
❖ Power Boating	12.73%

Future surveys will be conducted to ensure that the values of Otter Lake Residents are accurately reflected.



3.0 GOALS, OBJECTIVES and ACTION

3.1 Water Quality

Goal – Water quality in Otter Lake and its watershed will be protected and enhanced.

Monitor Water Quality

Water quality testing is an important diagnostic tool to help residents of Otter Lake determine the health of the lake. Surveys in 2006 and 2015 have indicated that water quality is the number one concern for Otter Lake residents.

Overview of Factors that Influencing Water Quality

Recreational water quality can be expressed in terms of how clear the water appears. Water clarity is influenced by the amount of soil sediment and phytoplankton, or microscopic algae, present in the water. Clarity is measured by a simple visual test using a Secchi Disk, a 20 centimeter black and white disk attached to a measured line. The disk is then lowered into the lake until it is no longer visible and the depth recorded.

Nutrients & Bacteria

Information on water quality is gained through analysis of samples for nutrients, specifically phosphorus and nitrogen, which gives an indication of how much nutrient and energy is available for the growth of algae and aquatic plants.

Nitrogen is an important and essential nutrient in aquatic ecosystems. In addition to fertilizers, agricultural waste and wastewater contribute nitrogen into lakes. In large amounts, ammonia and nitrates can be toxic to aquatic organisms. Total Kjeldahl Nitrogen (TKN) which is what is measured, determines the concentration of all forms of nitrogen in the lake. While there currently are no guidelines for acceptable levels of TKN, according to RVCA, TKN in water bodies not influenced by excessive organic inputs typically range from 100 to 500 µg/L.

Phosphorous is generally recognized as the limiting nutrient in freshwater ecosystems and the major nutrient contributing to eutrophication in lakes. Since phosphorous is the principal source of energy for all living organisms the amount of phosphorous in the environment will determine how fast an organism grows and proliferates. Phosphorus is therefore the principal limiting factor in the growth of algae, meaning that algae growth will occur in greater amounts as more phosphorus is added to a lake. It should be born in mind that a conventional septic system cannot do much with phosphorous. Most of the phosphorous that enters a septic system from phosphorous containing detergents will emerge intact, enter the water table and eventually, the lake. Phosphorus levels below 5 µg/L are typical of **oligotrophic** lakes that generally are clear and deep with few nutrients. Such lakes are typically found in the northern regions of Ontario. Phosphorous levels above 20 µg/L are typical of **eutrophic** lakes that are laden with nutrients which lead to excessive algae and plant growth. **Mesotrophic** lakes are in between these two extremes and are typical of the lakes found in our region of Ontario.

Bacteria are present in all lakes, they will be found in the feces of the wildlife (fish, waterfowl, beavers, etc.) that inhabit the lake. Coliforms are bacteria found in the large intestine of humans and other mammals and are usually present in soil. While some strains of coliforms do produce toxins, most are not harmful to humans. Some such as *Escherichia coli* (*E. Coli*) do produce pathogenic toxins. Therefore levels of *E. Coli* are often used as indicators of possible contamination by fecal matter. Thus high *E. Coli* levels in lakes or rivers can be an indication of septic pollution. The recommended safety level of *E. Coli* in a lake for recreational safety is not more than 100 colony-forming units (cfu) per 100ml of water. *E.coli* at any level is unacceptable for drinking water, therefore some form of treatment and purification is necessary for anyone who draws water from the lake for drinking purposes.

Dissolved oxygen (DO) is a measure of how much oxygen is dissolved in the water and the amount of oxygen available to living aquatic organisms. Without DO a lake would be totally without any aquatic life. The amount of dissolved oxygen in a lake can tell us a lot about its water quality. Although water molecules contain an oxygen atom, this oxygen is not available to aquatic organisms living in natural waters. A small amount of oxygen, up to about 14mg/L can dissolve in water. Oxygen enters a lake from the atmosphere by wave action and from inflow streams. This dissolved oxygen is breathed by fish and zooplankton and is needed by them to survive. However, the concentration of dissolved oxygen in lakes is affected by temperature and has a well-defined seasonal cycle. Cold water can hold more dissolved oxygen than warm water. In winter and early spring, when the water temperature is low, the dissolved oxygen concentration is high. In summer and fall, the water becomes stratified with a layer of warm water at the surface and colder water at the bottom, the dissolved-oxygen concentration drops significantly below this separation between warm and cold water (known as the hyperlimnion). Even though this water is cold atmospheric oxygen cannot reach these depths. Cold water fish such as all species of trout live in the cold water below the hyperlimnion and will not survive if DO levels fall below 4mg/L.

From aerial photography and satellite imagery OLLA has determined that developmental pressure appears to be higher on Otter Lake compared to other lakes in the Rideau Lakes area. Otter Lake has a shoreline of length of approximately 20km with at least 295 cottages, homes and commercial properties.

By systematic testing and monitoring over time, it is possible to evaluate if water quality is improving or declining. By selective testing at strategic sites water quality indicators can help determine the source or cause of contamination.

In recent years, there has been attention given to the sensitivity of a water body....or how it reacts to the stress arising from an environmental impact such as nutrient loading, therefore, each waterbody may respond differently so assessing the sensitivity of a lake can help planners determine the carrying capacity, ore development load, of a particular lake. Cataracqui Region Conservation Authority is establishing a protocol for this kind of assessment which may be rolled out in the future.

OLLA has an on-going water quality monitoring program, notably bacteria, phosphorous and nitrogen content and dissolved oxygen are tested for at least 3 to 5 times during the year at a number of test sites. RVCA also has an on-going water quality monitoring program and they have their own sampling sites on Otter Lake, some of which are identical to OLLA's. The location of the major OLLA test sites on Otter Lake are shown in Figure 1. Sites 05A, 05B and 06 represent the locations with the greatest water depth. The Table in Figure 2 shows the results obtained from water samples taken at these sites by both OLLA and RVCA in 2016. Results from subsequent years have been very similar. Therefore an average phosphorus level of 10 ug/L and an average Secchi depth of 5.5 metres the lake remains on the borderline between oligotrophic and mesotrophic. The low E. coli values at virtually all sites tested indicates that the overall health of the lake is excellent.

Through the efforts of the Township of Rideau Lakes Lake Associations Committee (RLLAC), of which OLLA is a member, water quality documents will also be published on the Township's website on a lake-by-lake basis. This new initiative is an indication of the increasing understanding about the importance of water quality at the municipal level.

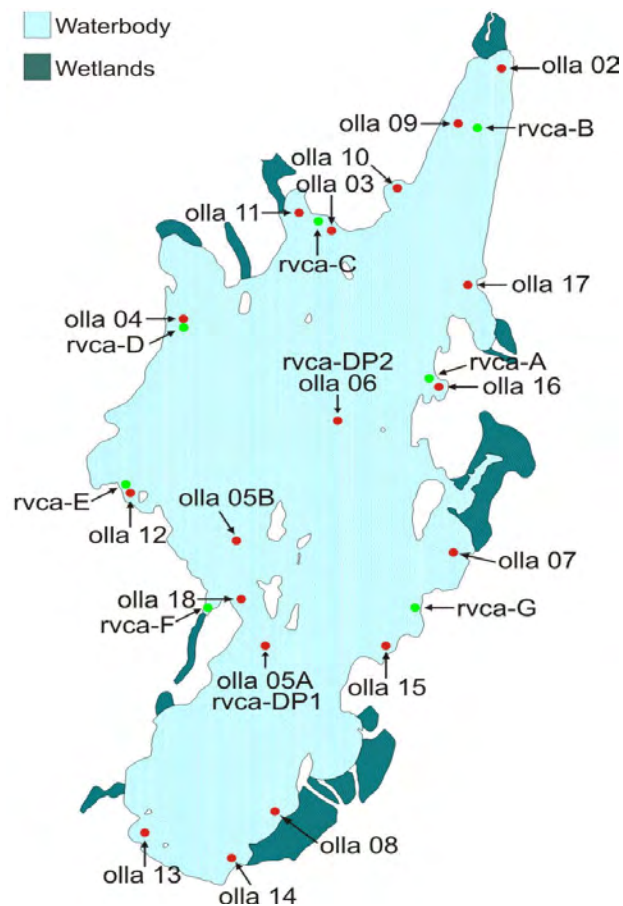


Figure 1: Water Quality Testing Sites (OLLA & RVCA)

Water Quality Data - OLLA + RVCA																		
RVCA ID	OLLA ID	Total Coliform (cfu/100 ml)			E. Coli (cfu/100 ml)			Total Kjeldahl nitrogen (µg/l)				Total Phosphorous (µg/l)				Secchi Disk (meters)		
		Jun	Jul	Aug	May	Jul	Aug	May	Jul	Aug	Oct	May	Jul	Aug	Oct	May	Aug	Oct
	OLLA 02																	
RVL-26C	OLLA 03		2	2					440	690			12	21				
RVL-26D	OLLA 04		90	10		2	0		360									
RVL-26DP1	OLLA 05A							300	380	710	570	3	9	15	9		5.45	7.0
	OLLA 05B																	
RVL-26DP3	OLLA 06							340	290	660	500	3	5	12	7		5.50	7.0
	OLLA 07		30			0			350				8					
	OLLA 08																	
RVL-26B	OLLA 09		2	2					390	1290			8	23				
	OLLA 10								320	300			7	8				
	OLLA 11																	
RVL-26E	OLLA 12									890				19				
	OLLA 13																	
	OLLA 14																	
	OLLA 15									280				5				
RVL-26A	OLLA 16									540				12				
	OLLA 17								540				8					
RVL-26F	OLLA 18					2	2		380	690			9	10				
Average		31.00			1.20			509.55				10.14				6.24		
Std. Error		29.34			0.41			50.69				1.11				0.33		
	RVCA																	
	OLLA																	

Figure 2: Typical results of water testing

OLLA does not have the sophisticated (and expensive) equipment required to measure DO. However, RVCA does perform measurements of water temperature and DO usually 4 times per year in May, July, August and October at our two deep water sites – OLLA 5A and OLLA O6. Typical results obtained as a “trout” lake. The DO levels we experience at present would indicate that the lake would support species of trout if they were introduced.

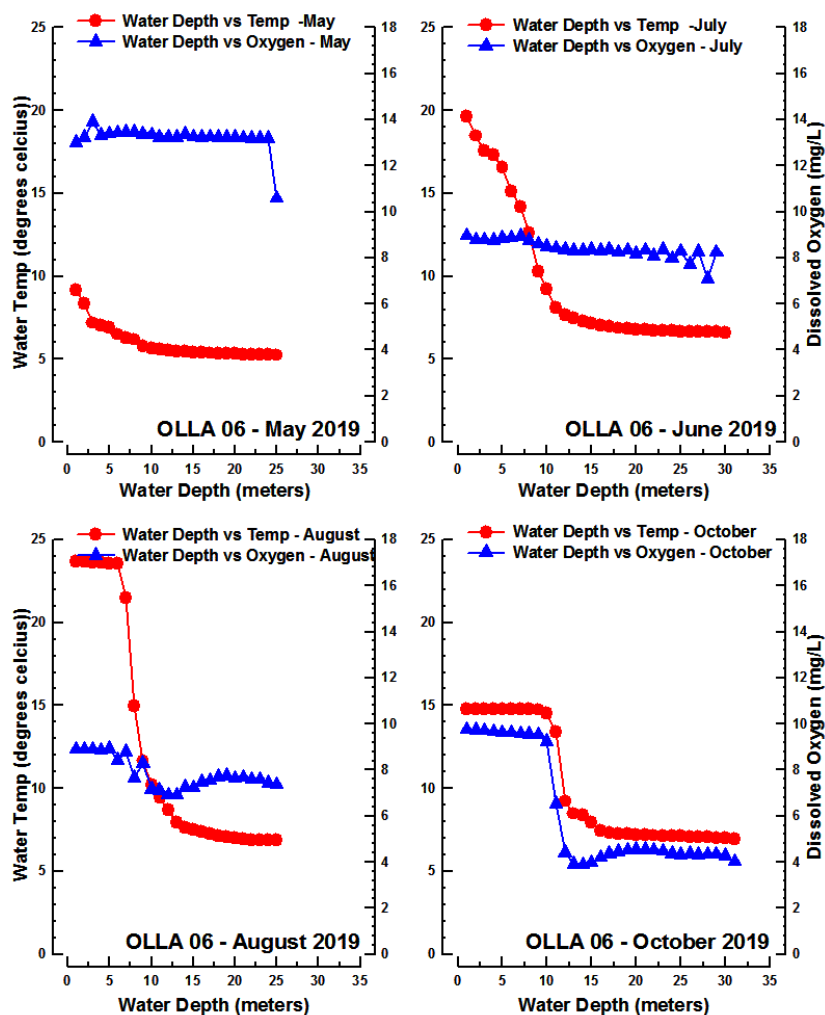


Figure 3: Typical Results of Temp/DO Data

Objective #1
Monitor water quality.

Actions

1. Continue monitoring E. coli levels, the aim being that there will be no net increase in levels over time, with OLLA's target being less than 5 cfu/100 ml at all sites tested.. Note: As stated in the Overview Cottages using untreated lake water for human consumption should be advised the Ontario Drinking Water Quality Standard is 0 CFU/100ml. The Provincial Water Quality Objective of 100 CFU/100ml is used to assess the suitability of natural waters for recreational use.
2. Continue monitoring Nitrogen levels, the aim being levels remain in the acceptable range of between 200 – 500 µg/L at all sites tested.

3. Continue monitoring Phosphorous levels in the hope that they remain on average at around 10 micrograms/L as they have done for the past 5 years.
4. Continue to monitor water quality, for E.coli, Nitrogen, and Phosphorous, 3 to 5 times per year at the test sites in conjunction with Rideau Valley Conservation Authority (RVCA).
5. Seek expert advice and take appropriate actions should there be any consistently high water quality results
6. Continue to obtain temperature and dissolved oxygen data from RVCA in order to monitor the health of Otter Lake's fish population and aid in restocking the lake with species of trout.

Educate Otter Lake Community & Visitors

Maintaining and improving the water quality of Otter Lake will rely on the actions of the property owners (on the lake as well as in the watershed) and lake users. Best practices for managing one's property, including streams, shorelines and septic systems, should be provided to the community to better understand what individuals can do to improve water quality.

Objective #2
Educate Otter Lake community & visitors about the lake's water quality and how to maintain and improve it.

Actions

1. Report water quality results back to the community (newsletters, website, OLLA AGM).
2. Develop and deliver an awareness program on: the impacts of fertilizers, pesticides, gasoline, poorly maintained on-site sewage systems, and other matters relating to water quality.
3. Promote existing stewardship programs to the lake community to protect and enhance shorelines and protect water quality.

Reduce Nutrient Inputs

The most significant water quality concerns are associated with the input of nutrients to the lake, particularly phosphorous. Nutrients in the lake act in a similar way to those applied to a garden – they encourage plant growth. Prime sources include faulty on-site sewage systems, use of fertilizers on lawns, and runoff from lawns and farm fields. Phosphorous levels should be carefully monitored, and actions should be taken to reduce human inputs wherever possible.

Objective #3
Reduce the input of nutrients into the lake.

Actions

1. Recommend that all new commercial and residential development and redevelopment uses sewage treatment systems that reduce or eliminate phosphorous to the greatest extent possible.
2. Work with the Township of Rideau Lakes to provide financial assistance to landowners for repair or upgrades to their systems.
3. Promote existing stewardship programs to the lake community to protect and enhance shorelines and protect water quality.



3.2 Water Levels

Goal – Measure, record and communicate water levels to Rideau Valley Conservation Authority (RVCA)

Background

Water in Otter Lake is supplied from an extensive drainage area (10,000 acres or more) via at least 10 small parent streams most of which feed into the lake via its numerous wetland areas. Because Otter Lake abuts the Smiths Falls and area limestone plain there are also several natural springs, the location of which and the volume of water they produce are unknown. However, Otter Lake has only a single outlet, Otter Creek, which meanders about 33 kms before flowing into the Rideau River at Kilmarnock, south of Smiths Falls.

The natural fluctuation of water levels is normal and does not have a negative effect on the natural environment. Fluctuations in water levels are necessary for the regeneration of shoreline and wetland habitats around the lake. Despite the environmental benefits flooding can cause shoreline erosions and compromise sewage systems.

OLLA has measured water levels since 2004 and as can be seen in Figure 4, water levels in Otter Lake do fluctuate significantly between spring and fall. RVCA has estimated a 1:100 yr. flood level of 125.50 MASL, a water level that has never (as yet) been reached and a 1:2 yr. flood level that has been exceeded 5 times since OLLA has been recording water levels.

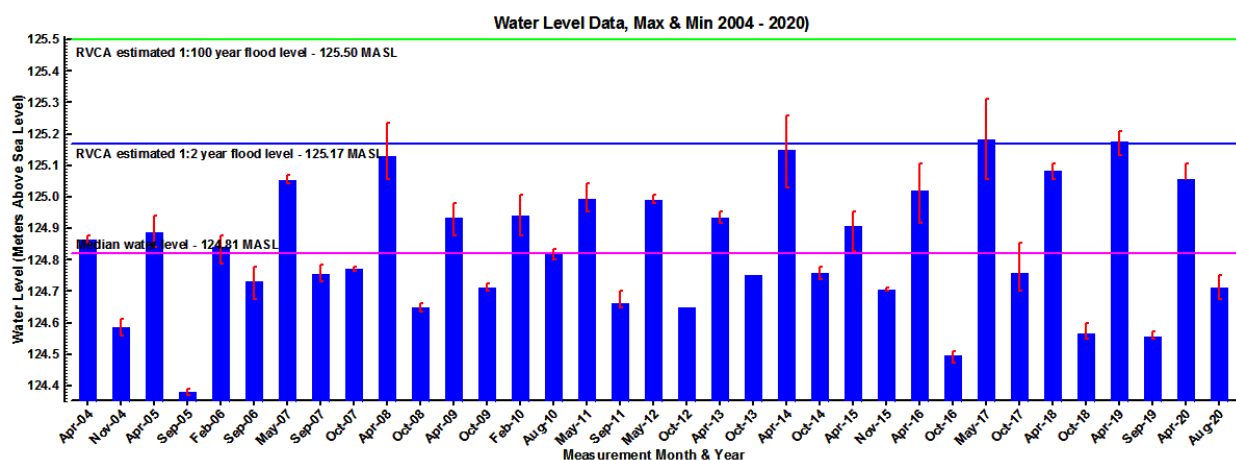


Figure 4: Maximum and minimum water levels.

Measuring and Recording Water Levels

OLLA does not undertake any effort, either alone or in concert with any other party, to control or manipulate the water level on Otter Lake. Data gathered by OLLA is provided to RVCA as part of their mandate to monitor water levels. Otter Lake water levels data can be found on the RVCA website as well on OLLA's website.

Influencers on Water Levels

Water levels are influenced by several factors, including all types of precipitation, ambient temperatures, wind, culvert head-loss, downstream creek features and potentially the impact of beaver dams in key locations affecting inflow and outflow creeks. RVCA has stated that lakes, like Otter Lake, can lose 1 to 2 cm, per day. On summer days, when temperatures are at or above 30°C, evaporation rates on lakes can be as high as 2.5 cm/day. Climate change could have more of an impact on water levels as weather trends change. A natural rock ridge (depicted in Figure 5) has a variable effect on stream flow. Hydrologists have analyzed the influence of the ridge on lake water levels and results have been conflicting or at least inconclusive.

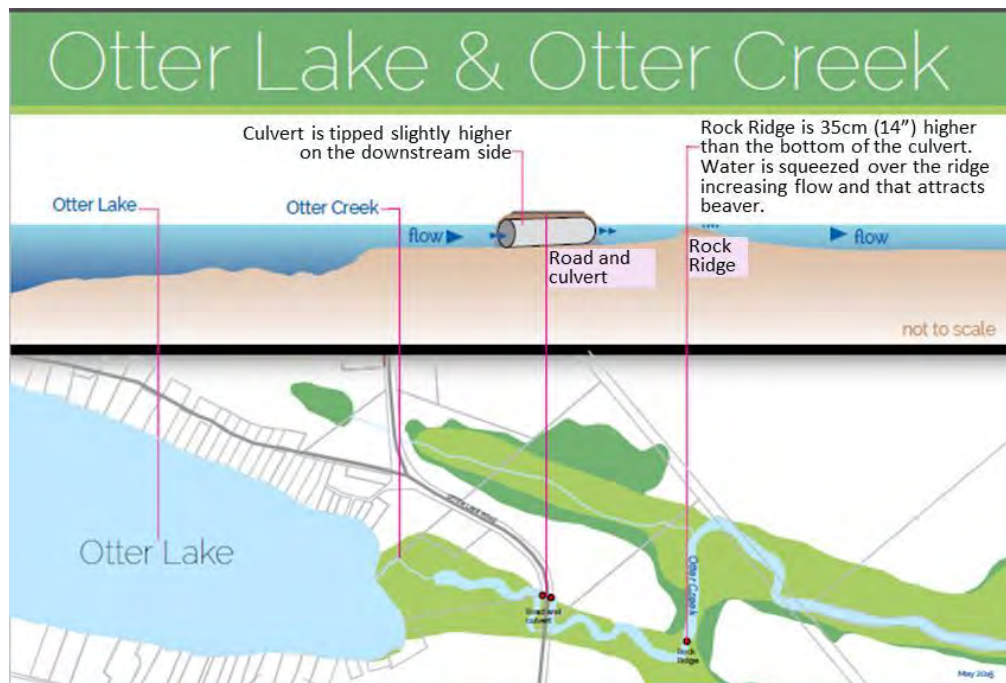


Figure 5: Otter Lake Outflow Creek and Culvert [Source: RVCA]

Objective #4

Measure, record and communicate water levels data.

Actions

1. Continue to measure and record water levels on Otter Lake and communicate data to RVCA and post data on OLLA website.
2. Maintain a standard measuring location on the lake in conjunction with RVCA.
3. Maintain a policy of non-interference with respect to water levels and continue to leave to the forces of nature the natural flow of water into and out of Otter Lake.
4. Do not support any form of beaver management.

Educate Lake Community

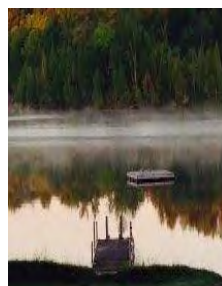
To ensure all landowners have an understanding and knowledge regarding the water levels monitoring program, it is important that the community receives current data.

Objective #5

Educate the community about water levels.

Actions

1. Continue to report water levels to the community on a regular basis (using OLLA website and newsletters).



3.3 Shoreline Health & Protection

Goal – Encourage the re-naturalization and retention of natural shorelines.

Re-naturalize Shorelines

Natural buffers of shrubs and trees can help filter water, reducing excess nutrients and particles from entering the lake. Excess nutrients can contribute to unwanted growth of aquatic vegetation or algae. Particles and eroding soils can reduce water clarity; and, over time, the settling particles can increase the rate of sedimentation, causing the lake to become shallower and changing the overall lake environment. Healthy shrubs and trees, with various heights, leaves, berries, fruits, and flowers, provide essential sources of food and shelter for so many species of wildlife. The shoreline environment – the very link between land and water – is used by over 90% of all life at some point during their lives. Ultimately, keeping our shorelines healthy keeps our lakes healthy.

In addition to protection and enhancing natural shoreline on the lake it is also important to maintain wood structure in the water. Forested lakeshores also provide essential complex habitat through the perpetual process of shoreline trees falling into the water. In terms of shoreline protection, wood structures in the water provide the following benefits:

- Protects shorelines by providing a barrier from wind and wave erosion.
- Absorbs wave energy produced by wind and power boats.
- Reduces sedimentation of the water caused by shoreline slumping due to bank erosion.
- Allows detritus to collect and settle on the lake or creek bed providing the substrate structure required for native aquatic vegetation to establish and outcompete invasive species.

The RVCA Shoreline Naturalization Program is an established program that provides cost sharing and hands-on assistance to any waterfront property owner in the Rideau Watershed looking to naturalize their shoreline. The program provides project design, management and implementation, purchases plants and required tending materials on behalf of the landowner, the benefits of which are as follows:

- Complimentary on-site visits with qualified staff that provide simple, cost-effective advice on “how to” protect your shoreline.
- Subsidized prices for native shoreline plants.
- Project planning and support including:
 - Development of shoreline planting plans and species lists
 - Ordering, shipping and handling of plants and tending materials
 - Planting advice and/or assistance-- full project management from start to finish
- Shoreline naturalization workshops, talks and project assistance for community or lake groups.

In 2016 Watersheds Canada, at OLLA’s request, conducting a shoreline assessment of all properties on Otter Lake. Each landowner received their own individual, confidential assessment report and OLLA received a summary assessment report which is available on OLLA’s website. The summary report noted that the assessment found the Otter Lake has 52% of developed or damaged shoreline while the objective is 25%.

Objective #6
Re-naturalize altered shorelines and encourage the retention of natural shorelines.

Actions

1. Consider a follow-up to the shoreline assessment program, as offered by Watersheds Canada “Love Your Lake”, to provide property owners with an assessment of the condition of their shoreline, and recommendations for improvement.
2. Continue the education program to inform landowners about the value and importance of natural shorelines, utilizing available RVCA pamphlets and leveraging tools such as Watersheds Canada’s: Shoreline Self-Assessment, and Action Checklist
3. Continue to partner with RVCA to promote the RVCA’s Shoreline Naturalization Program.

3.4 Aquatic Plants

Goals – Identify, monitor and, control (where possible) aquatic plant species.

Aquatic Indigenous Plants

Aquatic plants and algae provide many important services to the lake environment, including oxygenating lake water, taking up available nutrients, filtering sun radiation, providing food sources and habitat for fish, amphibians, waterfowl, reptiles and invertebrates. Root systems of aquatic plants also aid in shoreline and lake bottom stabilization, removing sediment from the water and reducing the effects of wave action. Excessive vegetation growth and algal blooms can be detrimental to the lake ecosystem and can have aesthetic and recreational impacts affecting lake enjoyment. The State-of-the-Lake Report lists eight aquatic plants found to exist in Otter Lake in 2005. Field surveys conducted by RVCA, MOECC and MNRF since 1930 can be found in Appendices 1, 2 and 3 of the State-of-the-Lake Report.

	Actions
Objective #7 Recognize the value of indigenous aquatic plants.	<ol style="list-style-type: none"> 1. Continue to promote good stewardship practices and provide education and awareness about importance of phosphate-free detergents, regular septic maintenance and fertilizer-free properties via newsletters, website, presentations and workshops. 2. Continue to provide information on targeted, effective and approved aquatic plant removal when required. 3. Continue to work with RVCA and other partners to assist in determining causes and effects of new or unusual growth of aquatic plants in Otter Lake.

Aquatic Invasive Plants

Plants that have been introduced from other geographical areas and other parts of the world may be considered “invasive species” if they threaten the natural environment, economy or society. Invasive species are not naturally occurring in local ecosystems and therefore can have drastic effects when introduced resulting in disrupting food webs, altering and degrading habitat, introduce parasites and disease, and lead to species at risk by pushing out native species that share the same habitat. Invasive species are the second biggest threat to biodiversity after habitat loss.

Prior to 2015 there had been no comprehensive study of aquatic invasive species (AIS) in and around Otter Lake. In 2015 the RVCA provided a staff member and two summer students to conduct a survey of all aquatic plants in Otter Lake (both indigenous and invasive). A map of the findings is available on the OLLA website. This survey resulted in identifying a small amount of European Frogbit, an invasive aquatic plant that can have devastating effects. Every summer since 2015, with the invaluable help of dedicated volunteers and assistance from RVCA, a concerted effort has been made to eradicate European Frogbit from Otter Lake. Considerable success has been realized as the amount of this invasive species in Otter Lake is much reduced. Unfortunately the main feeder stream to Otter Lake, Barker’s Creek (near the boat launch) contains a good deal of European Frogbit which will require an ongoing monitoring and annual removal in this area to keep it contained and from migrating into Otter Lake to a degree that it would have detrimental effects on the health and enjoyment of Otter Lake.

Of great concern is the occurrence of blue-green algae, and in particular the kind that is toxic that can cause harm to humans and in some cases kill small animals. This type of algae would also have great detrimental impact on use of the water (swimming, drinking & fishing) as well as the potential to negatively affect property values in the case of recurring blooms. While a blue-green algae bloom can be a naturally occurring event, the severity and frequency of blooms are increased by human and animal waste and fertilizers. It is therefore of the utmost importance that all property

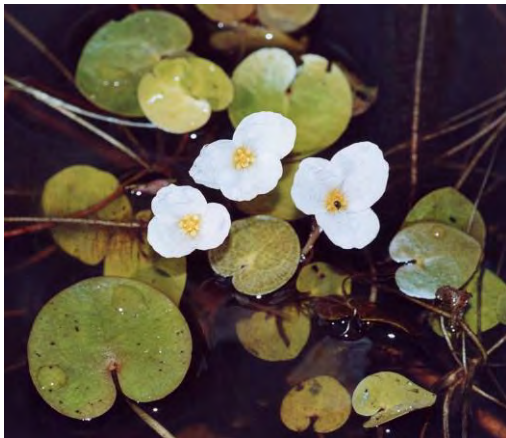
owners keep their septic systems in good working order and understand that owning property on a lake brings with it a different kind of property maintenance. Continued inventories of AIS should be conducted and education programs provided to help understand how to control the spread of AIS.

In 2005 Invasive Phragmites (European Common Reed) was identified as the most prolific invasive species and in 2021 is considered the single most expensive invasive plant for Ontario Municipalities to control, costing about \$3 million a year. It will negatively impact our wetlands and waterfronts if we don't take action. Early detection and rapid response to small patches in our area will prevent spread. Stands of these tall plants can be seen in abundance along roads and highways. To date this invasive species has not been seen along the shores of Otter Lake. It is very important to continue to monitor the lake for any sightings and to take action to remove it as it spreads easily, grows quickly and can cause lower water levels as it transpired water fast than native vegetation.

Objective #8
Protect against
introduction of
aquatic invasive
species (AIS).

Actions

1. Continue to encourage landowners to report any new or changes in aquatic plant growth.
2. Continue to participate in the EDDMaps AIS Monitoring System provided by MNRF and OFAH for early detection, management and possible eradication.
3. Continue to enlist the assistance of RVCA, the Township of Rideau Lakes and other partners to identify and control aquatic invasive species as necessary.
4. Ensure signs about responsibility to eliminate spread of AIS continue to be posted at boat launch area off Hwy 15.
5. Continue to provide educational information about aquatic invasive species and the pathways for introduction via OLLA newsletters, website, public workshops, meetings and pamphlets.



3.5 Fish & Wildlife

Goal – Maintain healthy habitat and populations of fish and wild life in and around Otter Lake.

Otter Lake contains several populations of fish including small and large mouth bass, northern pike, catfish, brown bullhead and a variety of “pan-fish”, such as sunfish, pumpkinseed, perch and rock bass. Recent steps have been taken by OLLA volunteers to attempt to quantify the lake trout population and available habitat. Lake trout and splake were part of Ministry of Natural Resources and Forestry (MNRF) stocking initiatives for Otter Lake until 2003 when it was decided by MNRF that lake temperatures and deep water oxygen content in Otter Lake were not suitable for sustaining cold-water fish such as lake trout. With our recent water temperature and oxygen levels data showing well above 4 micro grams of oxygen at 25-30 meters depth, the oxygen levels appear to be sufficient to support our current lake trout population and potential lake trout restocking initiatives. In 2020 MNRF stocked 7000 splake in Otter Lake, the first such stocking since 2003.

The forested lakeshores and natural wetland areas around Otter Lake are habitats for a variety of insects, fish, turtles, amphibians, birds and other wildlife. The lake is currently home to about six loon pairs that nest in many of these wetlands. Great blue herons are often seen in and around our lake and wetlands and groups of Canada geese, mergansers and other water fowl raise their families on Otter Lake each year. Although a variety of wildlife species such as deer, fox, otters, mink and beavers have been seen around Otter Lake, there is limited knowledge of the extent of wildlife species and population levels in the Otter Lake watershed.

OLLA completed a couple of fish and wildlife enhancement projects in the past few years. In 2017 and 2018, OLLA partnered with Rideau Valley Conservation Authority (RVCA) to enhance the overall fish habitat in Otter Lake by submerging a total of 35 brush bundles adjacent to 24 fish spawning locations around the lake. Their purpose is to provide protected areas for fish to recover from spawning and for smaller fish to hide from predators. OLLA also built and supplied 40 tree swallow bird nesting boxes to interested landowners for installation on their properties to help boost local bird populations. In 2020 OLLA began a project to identify fish spawning areas on the lake. Volunteers went around the lake identifying suitable spawning areas for various fish species and mapped the results. OLLA made a request to MNRF to visit Otter Lake in 2021 to validate the data collected and assess the suitability for restocking lake trout and to learn ways to protect and enhance the spawning grounds for lake trout. Efforts to move this project along will continue, including engaging with Carleton University. Other projects will be undertaken whenever need is identified and validated.



Forested lakeshores provide essential complex habitat through the perpetual process of shoreline trees falling into the water. This continuous recruitment of trees creates a wood-based physical structure in the littoral zone that is common on all pristine water bodies. Insects, fish, turtles, amphibians, birds, and other animals have also evolved with this abundance of near shore wood and it is essential to their life cycles. In addition to the benefits to shoreline protection, the benefits to aquatic ecosystems include:

Food Source

- Wood complexes are an important food source for invertebrates.
- Small fish feed on the abundance of invertebrates that are found around these structures.
- Larger fish, waterfowl and shorebirds all benefit from the abundance of invertebrates and small fish feeding around woody structures in the littoral zone.

Cover

- Cover from predators is essential for many fish and animals to successfully complete their life cycle.
- The nooks and crannies of wood complexes offer critters safety from predators while at the same time concentrating prey to make predators more efficient.
- Wood provides the structure on which many species must lay or attach their eggs, therefore these complexes provide quality spawning and nesting habitat.

Diversity

- Wood complexes in the littoral zone provide unique edge habitat along the shoreline.
- Edge habitats contain more species diversity and higher concentrations of species than the adjoining habitats themselves will have.
- Turtle species will use the wood to bask which is an important function for them as it helps them digest their food and the females to develop their eggs.

Objective #9 Protect fish and wildlife through education and partnerships.

Actions

1. Request the Ministry of Natural Resources and Forestry (MNRF) to conduct a fish population assessment for Otter Lake.
2. Identify fish spawning areas in Otter Lake and Otter Creek. Partner with MNRF on a suitable fish stocking program.
3. Educate shoreline owners and visitors about fish habitat requirements, spawning schedules and near-shore and in-water activities that can disturb or destroy fish habitat and spawning sites, as well as the importance of re-naturalization of shorelines.
4. Educate shoreline residents about best management practices to deal with species such as Canada Geese (e.g. replace grass areas with native ground cover and shrubs).
5. Work with Township of Rideau Lakes to ensure that amendments to the official plan and zoning by-laws protect the natural areas and healthy habitats for fish and wildlife in the Otter Lake watershed.



3.6 On-site Sewage Systems and Effects on Water Quality

Goal – To Minimize Environmental Impact Through Education and Monitoring

Numbers and types of systems on and near Otter Lake

Poorly constructed and maintained sewage systems pose a risk of nutrient and bacterial contamination of the lake and groundwater. In the last 20 years there have been rapid developments in sewage system technology especially for small lots and problem sites. Advanced tertiary treatment options offer the benefit of discharging cleaner effluent into the soil, and eventually to the water, compared to that from a standard leaching bed. There are also options available to mitigate the amount of phosphorus that is released from a sewage system such as the use of high mineral, low calcareous soil for the leaching bed. The 2007 re-inspection program conducted by the Mississippi-Rideau Septic Office, which included Otter Lake, has determined that there is a 56% deficiency rate. Most of these deficiencies are minor and correctable, however 5% of systems had completely failed. It follows that support and education for residents may be an appropriate mechanism to improve the collective performance levels.

In 2018 OLLA distributed 'Septic Smarts' to all residents, a brochure about proper septic construction and maintenance. Concurrently, a survey was performed to quantify the various types of septic systems in use around Otter Lake. The survey revealed that standard septic tank/leaching bed combinations are the most numerous (about 86%) with an increasing number of tertiary systems (5%) and holding tanks (8%).

In 2019 the Township of Rideau Lakes deployed a mandatory septic inspection program. Waterfront communities are targeted first with Otter Lake scheduled for 2021. This program will be conducted on a rotating bases throughout the Township. Any remedial or replacement requirements as a result of an inspection is between the landowner and the township.

	Actions
Objective #10 Continue to educate and inform residents about proper septic system construction and maintenance.	<ol style="list-style-type: none"> 1. Summarize and report on township mandatory inspection results. 2. Continue regular phosphorus and coliform bacteria testing and reporting with a focus on specific areas of the lake which may be at risk for septic pollution 3. Where possible, engage experts to inform residents on relevant septic issues such as supply and install, maintenance and water quality effects. 4. Engage with government partners to deliver materials and information on an ongoing basis. 5. Encourage residents to install enhanced treatment systems where possible. 6. Encourage residents to practice good land stewardship practices that reduce septic contamination of the lake and ground water.

Water quality impacts from septic systems

Collectively, small contributions of phosphorus from septic systems can lead to visible water quality issues such as algae growth and a decrease in water clarity. Longer term effects such as a decrease in dissolved oxygen can result in stress to fish populations and promote the release of phosphorus from lake-bottom sediments. Close monitoring over time can detect upward trends in nutrient levels which can be useful to determine potential impact from development. Bacteria testing can be useful to locate problem areas where point-source contamination is occurring. RVCA regularly samples at test sites on the lake and in Otter Creek. OLLA compliments these tests with a range of sampling at different sites.

3.7 Encourage Sustainable Development

Goal – Waterfront Development with Minimal Impact

To investigate and encourage the use of existing and new planning tools by Municipal and Provincial agencies and to increase the use of 'best practices' in planning in order to minimize the impact on water quality. The Provincial Policy Statement (PPS) requires municipalities to guide development in a manner that protects water resources. This can be done through a variety of development policies available to municipal planners. The Township Official Plan is the planning document that is intended to capture the intent of the PPS and the Township Zoning Bylaw spells out in more detail how development decisions are made. The Township delegates environmental assessment to the RVCA and the CRCA. These agencies employ environmental planners who utilize a detailed site-assessment mechanism to assess the potential environmental impact of a proposed development.

The Municipality is not bound by the recommendations of the RVCA and CRCA however. The current Official Plan does not entrench environmental recommendations as a mandatory approval hurdle prior to issuing a development or building permit.

Lake survey data from OLLA and the MNRF indicate that cottage and home residential development has increased from 209 in 1974 to 295 in 2014. Trailer numbers in the 4 trailer park resorts have increased from 101 in 1974 to 195 in 2005. In 2021 the number was approximately 300. Also there is a trend towards seasonal cottages being converted to permanent homes.

In a 2014 Report by Hutchinson Environmental Consultants, it is recommended that existing site-assessment protocol be supplemented with the use of lake capacity, recreational capacity data, and lake sensitivity ratings, in the overall determination of a lake's capacity for development. OLLA is committed to encourage the municipality and government agencies to calculate the development and recreational capacities, and sensitivity ratings for Otter Lake and use these tools to develop good planning policy and decisions.

Various capacity models have been implemented in other Ontario municipalities. Planners and the scientific community recognize that lake capacity models have limitations. They are not capable of predicting with scientific certainty, what the development capacity of a lake will be. However most feel that a 'Lake Impact Assessment' is a useful tool that can be used in making planning decisions that prevent the creation of "over capacity" lakes. Where lakes are classified by sensitivity to nutrient loading or some appropriate set of parameters, planners can create policy that is more site-specific and direct development where it may be less harmful. Through the Rideau Lakes Lake Association Committee, a recommendation was brought forward to assess each Township lake separately and complete a water quality report annually. These lake-specific reports will be posted on the municipal website and are for the benefit of residents and planners alike. Currently a sensitivity rating system is being development for the Cataraqui Region Conservation Authority which is intended to be used in all areas of the Township of Rideau Lakes. Once completed, the water quality reports will include nutrients and bacterial levels, water clarity (secchi depth), sensitivity, and temperature regime.

Actions

Objective #11 Encourage the use of Capacity Systems and/or Lake Classification Systems

1. Work with RVCA and MNRF to investigate and evaluate the use and success of capacity and sensitivity.
2. Monitor how the RVCA site assessment program as defined in: *The Assessment of Municipal Site Evaluation Guidelines for Waterfront Development in Eastern Ontario's Lake Country, 2014 (Hutchinson Environmental Consultants)* is used to review development applications in the Township at Municipal Planning Committee meetings.
3. Work with the Township to ensure that appropriate development standards are established, maintained and monitored, to ensure that new development and redevelopment will protect or restore water quality.

3.8 Social & Recreational

Goal – A sense of community, active lake stewardship and respective behavior will be encouraged

Responsible Recreational Boating

Boating is an integral recreational activity on the Otter Lake – whether it is motorized or not, or whether it is to fish, tow skiers or tubers, or take pleasure cruises. In recent years, motorboats have been increasing in size and horsepower, and sometimes this has resulted in higher noise levels. There are some users who may not recognize the effect of their activity, including the impact of large wakes on shorelines and vessels moored at docks, as well as on non-motorized boats such as canoes and kayaks. Others may not be aware of legal requirements for boating, such as the legal speed limit of 10 km/h within 30m of shore [Canada Shipping Act; Boating Restrictions Regulations]. Excessive boat speeds and unsafe operation of any vehicle may endanger lives and the natural environment, including loon chicks and nesting habitats.

The results of the 2006 survey of landowners indicated that many aspects of recreational boating on Otter Lake were of considerable concern.

In 2017 OLLA published the document “Boating on Otter Lake – Did You Know” and it is available on the OLLA website. Also in June 11, 2017 an informal survey was conducted of the number of watercraft on Otter Lake with the following observations: 274 power boats, 29 sailboats and 343 canoes/kayaks, etc. for a total of 646 boats.

Objective #12
Encourage responsible and respectful boating behaviour

Actions

1. Continue to promote safe and responsible boating on Otter Lake through further communications and publications whenever necessary as well as post information prominently on OLLA's website.

Objective #13
Quantify recreational boat and personal watercraft use.

Actions

1. Continue to monitor recreational boating as follow up to the informal count of the number of watercraft on Otter Lake on June 11, 2017.

Noise and Light Pollution

The peace and tranquility of cottage country is very important to many cottagers day and night.

There are times on a Saturday morning it is more like being in a subdivision in the city than at the lake with the lawnmowers, weed trimmers and other motorized equipment in use. With a more natural landscape we all enjoy less noise as well as less work when getting away to the cottage for the weekend.

The quiet and darkness of the shorelines is an important social component of cottagers' enjoyment of the lake as well. Excessive and unnecessary lighting detracts from natural ambiance of the lake and results in reduced visibility of the star scape. Unnatural lighting also affects sensitive lake biological systems, such as disrupting feeding and breeding behaviours of nocturnal and crepuscular species, for example bats, moths, walleye.

Retaining and enhancing dark skies are an essential element of the character of the lake and should be encouraged. Some owners may not be aware how far the floodlights, at the corner of their cottage is reflecting light out across the lake.

In 2017 OLLA published the document “Night Skies on Otter Lake ... Did You Know” and is available on OLLA's website.

Objective #14
Retain and enhance dark skies.

Actions

1. Continue to promote awareness of the importance of best practices to help maintain a dark night sky.
2. Continue to request owners of local cell phone towers to install light deflectors or some other means to minimize impact on area residents and effect on dark skies.
3. Continue to work with Township of Rideau Lakes on better process for notifying community when new cell phone towers are being planned for the area and allowing for input.

Sense of Community

Many lake communities in Ontario hold events to promote a greater sense of community. Some of these events are used to raise money for specific projects, charities, etc.

OLLA hosted its first annual Family Day on June 7, 2015 at Camp Otterdale. This social event provided an opportunity for landowners to meet and mingle in an informal, fun atmosphere, as well as have an opportunity to become better informed on important matters concerning Otter Lake. Two more Family Days were held in 2016 and 2017. A dock sale (a yard sale on the lake) was held on August 11, 2018. No events were planned for 2019 and 2020 was the year of the Covid-19 pandemic which precluded any social events.

Objective #15
Promote a sense of community among Otter Lake landowners.

Actions

1. Every year OLLA Directors to discuss what community events could happen in the current or following year (depending on degree of preparation required) and to solicit volunteers to organize the event(s).
2. Encourage members to be community minded and to submit suggestions to the OLLA Board for consideration.
3. Promote OLLA membership and greater participation at the AGM.
4. Continue to monitor developments that may impact the community (mail delivery, road names, garbage collection, etc.)



3.9 Climate Change & Environmental Issues

Goal – To mitigate climate change and preserve the environment.

Climate change is a long-term shift in global or regional climate patterns. Often climate change refers specifically to the rise in global temperatures from the mid-20th century to present. Precipitation has already increased in Eastern Ontario and may continue to increase. Most of the increase will occur in the winter and spring with the summers becoming hotter and with less precipitation. Lake water temperatures have increased 1.2°C since 1921 and are predicted to increase another 3°C in the decades ahead.

Climate change can affect water temperature and increase runoff into the lake through changes in frequency and severity of storms and flooding. The cumulative effects of the events can have a direct impact on the chemical and biological health of the lake.

To mitigate climate change means reducing greenhouse gas emissions. In addition to energy and transport, other polluter sectors such as industry, waste, cities, agriculture and forestry play an important role in climate protection.

Environmental issues are defined as problems with the planet's systems (air, water, soil, etc.) that have developed as a result of human interference or mistreatment of the planet.

Environmental protection is a practice of protecting the natural environment on the individual, organizational or governmental levels, for the benefit of both the environment and humans.

Studies show that 50-70% of climate solutions begin at the local level. The decisions individuals make affect the environment and in turn, the climate. Climate Change Mitigation refers to efforts to reduce or prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behavior.

"A single grain of rice can tip the scale." Therefore no action is too small. Some can even save you money. Lakefront landowners can help locally and in turn globally by following the Federation of Ontario Cottagers' Association (FOCA) recommended actions.

Objective #16
To encourage Otter Lake property owners to take action.

Actions

1. Keep your shoreline natural and enhance it if possible. A naturalized shoreline is generally considered the best multi-purpose approach to protecting the lake's edge. Protect the shoreline by replanting areas that lack vegetation and maintain those areas that already exist to reduce the negative effects of over-ground runoff into the lake
2. Keep aquatic plant populations intact. Aquatic plants support the insects that fish eat, and are a primary food and habitat source for birds. In addition, aquatic plants help stabilize loose sediment and are an effective natural breakwater keeping waves from eroding the shoreline.
3. Maintain and improve your waterfront property's health and biodiversity. Enhance biodiversity on your property leaving rock piles, fallen tree limbs and brush piles untouched so they can function as a wildlife habitat. Re-vegetate bare grounds near streams, rivers and lakes and encourage native species of flowers, shrubs and trees to limit your maintenance work and provide shelter to native species.
4. Manage pests and disease. Understand which insects, diseases and invasive species might be expected at your waterfront property and be on

the lookout for them with regular monitoring to enable early intervention and easier management.

5. Reduce greenhouse gases by having less lawn to mow or use electric mower, reducing number of trips to town whenever possible, ensure your gas powered engines are in optimal running condition or replace with new, more clean technology models.
6. Stay informed. It is important to stay informed and attuned to developments in science, research and incentive programs that may affect you and your waterfront property.

Objective #17
Liaise with municipal
government and
local agencies.

Actions

1. Encourage Township of Rideau Lakes and Rideau Valley Conservation Authority to factor in climate change in every decision, especially with regard to approval of developments and enforcement of shoreline requirements.



4.0 IMPLEMENTING THE SUSTAINABLE LAKE PLAN

The preparation and publication and implementation of the original plan was the first, second and third steps of an ongoing process. The important work of implementation of many of the actions items happened due to the dedication of the OLLA Directors (past and present), the many volunteers that helped on some of the projects from 2015-2020, and our partnerships with the Rideau Valley Conservation Authority and the Township of Rideau Lakes.

OLLA has now published the Second Edition (September 18, 2021) of the Sustainable Lake Plan and will continue implementing the action items with the help of our Otter Lake community and partners.

Everyone is encouraged to engage (or re-engage) as individual stewards of the lake, promote the importance of OLLA and encourage membership, as well as participate in OLLA activities.

Volunteers are the life breath of OLLA and are needed to carry out new and ongoing initiatives identified in the Lake Plan. Please contact OLLA at info@otterlake.org to lend your support.

For more information and updates on the Lake Plan please go to <http://www.otterlake.org>



5.0 List of Documents Relevant to Sustainable Lake Plan

Note: The following documents are available on the OLLA website, www.otterlake.org

- ✓ Summary of Action Items dated July 25, 2021 which is an historical document related to the Otter Lake Sustainable Lake Plan – Original Edition (July 25, 2015)
- ✓ State-of-the-Lake Report for Otter Lake, updated version March 1, 2021.
- ✓ 2006 Survey Results of all Landowners
- ✓ 2015 Survey Results of all Landowners

