

APPENDIX T

YOUR LAKE A NATURAL RESOURCE WORTHY OF PROTECTION November 2019

An Information Package for shoreline property owners prepared by the Sandy Lake Conservation Association with permission from the primary source: COX LAKE A UNIQUE NATURAL RESOURCE WORTHY OF OUR PROTECTION, An Information Package prepared by the Friends of Cox Lake, July 2007



Photo: Skyline Studios

All residents share a common interest in protecting their lake and their investment in lakeside property. This package presents information on how this can be done by the community working together.

Introduction

The shoreline, the waters, and the land close to the shoreline provide essential habitat for terrestrial and aquatic wildlife and plant life. Deliberate action and decisions ensure that lakes, their shorelines and watershed are not degraded. We all have something to learn and something to gain by guarding a lake and area.

The purpose of this paper is to present some background information on lakes, the need for lake shore buffer zones, summarize existing regulations in Halifax Regional Municipality, offer recommendations for action that property owners can take to protect the lake, and discuss the need for monitoring. It is written for developers and new property owners, but existing property owners should find it useful as well.

Environmental Issues

Looking into the future, the most important environmental issues that need to be addressed are summarized as follows:

- **Sediment**

Perhaps the most important environmental issue, when development is a possibility, is sedimentation. Removal of vegetation during construction exposes soil to erosion. Eroded soil is carried by surface runoff

to streams and lakes. The initial impact is to create muddy water, a condition which can last for days to months depending on the grain size of the sediment particles. Turbidity is an eye-sore and interferes with recreational use, but it also blocks out sunlight which interferes with the production of food and oxygen necessary for lake organisms to survive. It also can block the gills of fish. With time, the sediment either leaves the lake through the outlet or settles to the bottom. Sedimentation usually takes place near the point of entry. The net effect of sedimentation is to reduce water depth and create a mucky bottom which is not very pleasant for swimming and encourages the growth of rooted aquatic plants. In the long term, sedimentation reduces the lake's lifetime.

- **Storm water runoff**

Clearing trees from sloped areas near a lake risks fast-flowing rainwater that creates gullies and washes additional sediment, debris, and warmer water into the lake. Planting grasses, shrubs and trees will help. Diverting the flow to the side and slowing the water down by placing boulders in gullies may help in the short run.

Hard-surface driveways, roofs, and parking lots all increase harmful runoff into lakes. The challenge is to control the speed and volume of surface water flowing into lake, and the accompanying pollution that flows along with it. There are ways to prevent harm while also creating a very good driving surface. Lake dwellers and nearby businesses are encouraged to look into these options before adding hard surfacing. Often among the pollution are the materials that can be prevented, such as those listed below.

- **Nutrients**

Nutrients are compounds of nitrogen and phosphorous which are required by aquatic plants. When nutrient levels are low and therefore the water is relatively clear, it is a healthy lake - conditions known as oligotrophic. When human activities on the lake cause the lake quality to decline, depending on the degree of stress, it may be called Mesotrophic, or even Eutrophic, which is worse. Sources include septic field drainage, animal feces, and lawn and garden fertilizers.

As development continues in a lake's watershed, nutrient levels will increase. Nutrient enrichment in lake water and sediment, known as eutrophication, stimulates the growth of aquatic plants, both planktonic algae and rooted aquatic vascular plants, which can be a nuisance to swimmers and boaters and cause numerous problems.

It is best if septic tanks in the watershed, often quite far away from a lake itself, be well maintained and pumped at least every two years.

- **Salt**

Road salt is used extensively in winter to remove ice and snow from local streets. Much of what is applied eventually makes its way into lakes. Rivers entering lakes also often show signs of salt "browning".

- **Micro-organisms**

Low levels of micro-organisms (e.g. bacteria, protozoa, viruses, etc.) occur naturally in lake waters. However, they can be increased by swimmers, animal feces and leakage from septic fields. Some micro-organisms can cause illness if ingested. Public health standards have been set for drinking water and contact sports (i.e. swimming).

- **Litter**

Litter (e.g. plastic, Styrofoam, glass, etc.) is caused by human carelessness and is commonly seen along

lake shore lines. Not only is it an eye-sore but it can also create hazards for both humans and wildlife.

- **Toxic wastes**

Toxic wastes include such things as gasoline, oil, and pesticides which usually reach lakes in runoff from lawns, gardens, driveways, storage sheds and streets. It is best to use non-toxic laundry soaps and avoid use of chemicals such as chemical cleaners and bleach.

- **Acid-precipitation**

Acid-precipitation has had a negative effect on many lakes in Nova Scotia, especially along the south shore. Salmonid fish (i.e. trout and salmon) are unable to breed if the pH drops below 5.

- **Wildlife habitat**

Wildlife needs suitable habitat for breeding, nesting, feeding and resting. It can be negatively affected by excessive wash and noise created by motorized water craft. Wildlife habitat needs to be protected from pollutants and from overdevelopment of lake shore properties. For example, property owners need to resist adding sand to their lakeshore.

Water Quality Data

When water quality decline is evident, it can still be reversed if protective action is taken, as described in this article.

Lake Shore Buffer Zones

Landowners can protect the health of the lake and its ecosystem through careful management of human activities. One very effective management tool that has been widely and successfully used in Nova Scotia, and other parts of Canada and the US, is the establishment of buffer zones of natural vegetation along streams and around lakes. Such buffer zones cost almost nothing to construct. Often the only action needed is to leave the existing vegetation in a natural state. If land has been cleared on the waterside, it is still possible to return vegetation to the site and thereby return protection to the lake. Our local trees, shrubs and plants are well adapted in our environment and do a good job intercepting sediment and nutrients. Natural buffer zones, which are important to integrate into cottage sites, offer many environmental benefits which include:

- Maintaining a zone of natural habitat around streams and lakes encourages and supports wildlife.
- Views of undisturbed natural vegetation across a water body provide aesthetic pleasure for both residents and visitors.
- If publicly owned, buffer zones provide public access to lakes and can be developed with proper care into park (beaches, walking trails, picnic tables, etc.) without disturbing their natural function.
- Most importantly, buffer zones play a very valuable role in protecting streams and lakes from pollution and therefore help to maintain acceptable water quality for recreational use.
- They require no maintenance. In fact the more they are left untouched, the better. Trees and undergrowth are so important to preserve, and for many reasons. Fallen branches and undergrowth support the health of soils and trees. They conserve moisture and conserve nutrients that might otherwise be leached from the soil. They provide support for wildlife. Consequently, many

jurisdictions in North America have by-laws that require a permit to cut even a single tree of a specified diameter. Halifax has yet to create such a by-law, although groups and individuals have been pointing out the need.

Regulations

All areas below the high water mark belong to the Province of Nova Scotia. Any shoreline alterations (i.e. moving boulders, infilling, building retaining walls, etc.) require a water rights permit granted by the Provincial Department of Environment.

There are some by-laws which help prevent more development of lake shorelines. Check your area for protective by-laws. Some examples are:

The 2016 Bedford land-use By-law (in place since 1982) requires a minimum of five acres on a public road which was a public road on or before October 9, 1991, in order to build a house or cottage.

In addition, a Land Use By-Law exists for the Beaver Bank, Hammonds Plains and Upper Sackville area of HRM. Section 4.18 deals with Water Course Setbacks and Buffers. The major points are summarized as follows:

- No development permit shall be issued for any development within 20 m (66 feet) of the ordinary high-water mark of any watercourse (i.e. lake, stream, wetland, etc.).
- Where slopes are greater than 20%, the buffer zone shall be increased by 1 m for each additional 2% of slope to a maximum of 60 m (198 feet).
- Within this buffer zone, no excavation, infilling, tree, stump and other vegetation removal or any alteration of any kind shall be permitted.
- Applications for a development permit for a building or structure must be accompanied by plans showing the required buffers, existing vegetation limits, contours, and other appropriate information.
- However, some provision is made, within certain limits, for the construction of decks, walkways and wharves.

Any questions on the interpretations of these HRM regulations should be referred to the HRM Planning Office in Sackville. Their phone number is 869-4375.

Information on the permitting of shoreline alterations can be obtained from the Provincial Department of Environment and Labour in Bedford at 424-7773.

In some instances, these lake protection buffer zones are owned and managed by the municipality. Numerous examples of this occur in Dartmouth. However, in many cases the buffer zones are owned by the individual property owners who therefore have the responsibility of maintaining them.

As stated above, the purpose of this information package is to provide information that can be used by property owners in discharging this responsibility. Positive action by all property owners will help maintain the beauty of individual properties and the overall health of a lake's ecosystem. It will protect private landowners' long term financial investments in water front property, and will protect the wildlife that lives in and around the lake.

Recommendations

Recommendations for lake protection are summarized as follows. These apply to existing homes and cottages, as well as new developments, should they occur.

- Utilize docks and swim platforms rather than creating sand beaches or removing vegetation for access.
- If damage has occurred, consider re-establishing aquatic plants along the shore, and shoreline shrubs and trees in the buffer zone.
- Most importantly, obey Section 4.18 of the HRM Land Use By-Law which stipulates the requirement for a 20 m (or greater if steep slope) lake protection buffer zone within which there can be no excavation, infilling, tree, stump and other vegetation removal, or any alteration of any kind.
- Be sure to obtain the necessary approvals and permits before starting any work.
- Keep the footprint of your home, driveway, yard and septic field as small as possible so that you can retain a maximum of the natural vegetation on your lot. Keep your lot well-treed. Never clear cut (except what is necessary of course for house, driveway, etc.).
- Re-grading of lots should be kept to a minimum.
- Schedule construction and landscaping work on your lot so that only a small area of soil is exposed at any given time. Backfilling of foundations should be done as soon as possible. All exposed areas should be stabilized with straw, seeded, or sodded as quickly as possible to reduce soil erosion into the lake.
- The use of heavy equipment should be carried out in such a manner as to prevent sediment from entering buffer zones and water courses. Driveways should be stabilized with gravel as soon as possible.
- Streets should not be used to store fill or excavated material and should be cleaned regularly.
- Give clear instructions to your contractors and monitor their work.
- All excavated material (i.e. from driveways, footings, foundations, septic fields, etc.) should be covered with polyethylene, tarps, or other suitable material to prevent erosion and be piled as far from the lake as possible.
- Any water pumped from foundation exactions should be treated on site and not disposed into the buffer zone or lake.
- Design and construct any paths to follow natural contours as much as possible. A path straight down a steep slope can lead to erosion.
- There is no need to use fertilizers in the buffer zones since they are to be left in natural vegetation. However, be very prudent in the use of fertilizers and weed killers on both lawns and gardens outside of the buffer zone. Follow directions carefully for best doses and application times. Don't over use them. Remember that fertilizers are very soluble and amounts not used by plants will quickly find their way into the lake where they will stimulate the growth of nuisance vegetation. Also don't forget that HRM has a pesticide by-law.
- Where older shore line developments do not have the 20 m buffer zone required today, consider replanting open areas with native species of shrubs and trees.
- Don't dump toxic waste such as oil, paint, and pesticides, etc. on your property as they will end up in time in the lake. Cleanup any spills as quickly as possible.
- Maintain your septic system. Extend its life by avoiding tank additives and minimizing water consumption. Periodically have the tank pumped and contents removed.
- If you are deciding what kind of watercraft to buy, remember that muscle-powered or wind-powered

- craft are much more environmentally friendly. They are quiet, don't create waves or use fossil fuels.
- If you do operate a motorize craft, remember to watch your wake and steer clear of loons and other wildlife, also of occupied shoreline such as swimming areas and docks. When loons are nesting, avoid creating waves that could drown baby loons. Be very careful not to spill fuel.
- Transport Canada's Vessel Operation Restriction Regulations (VORR) Local Authorities Guide states that in Nova Scotia inland waters boat speed is limited to 10km/hr within 30M (98'5") of shore. And there is a Boating Safety Information line (1-800-267-6687) that may be helpful.

A large number of very useful recommendations are also offered by the Waterfront Living Program sponsored by numerous environmental organizations and government departments. These are found on their website at www.livingbywater.ca. Of particular interest are those dealing with the maintenance of septic systems. More detail on loons can be found on the Bird Studies Canada website at www.bsc-eoc.org. An excellent summary of lakeshore protection can be found at: https://www.michigan.gov/documents/deq/Wateredge_340005_7.pdf

"If buying property, look for shoreline and lake bottom that match your desires. Don't expect to change it into something it isn't." (*The Water's Edge: Helping fish and wildlife on your lakeshore property*, Michigan Department of Natural Resources and Environment)

Monitoring

The effectiveness of lake management measures is best evaluated by monitoring lake water and habitat quality on regular basis and sharing the results with neighbours, advisory bodies such as Our HRM Alliance, and regulatory agencies. Residents are encouraged to have the water off their property (or from the tap) tested for coliform bacteria. This can be done for a modest cost at the Environmental Services Laboratory in the Queen Elizabeth II Health Sciences Centre at 5788 University Avenue in Halifax. For details, call 473-8466.

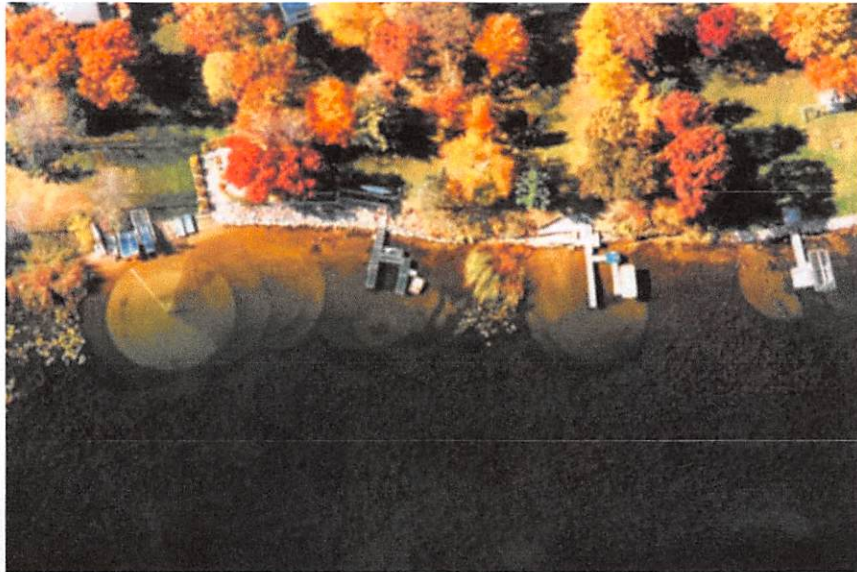
Reporting Violations

If anyone sees any apparent violations, they should immediately question the person doing the work. The operator of a chain saw or back hoe can do irreparable damage in a matter of minutes. The operator may not have been given clear instructions or may be unaware of the regulations in force. A second course of action is to contact the developer or owner as soon as possible and express your concern. Remind them that everyone shares the responsibility of protecting the lake and that their actions are eroding the value of everyone's property. The third course of action is to call the HRM Planning Office in Sackville (869-4375).

Authors of general information about lake preservation in this paper include professional aquatic scientists who have studied environmental issues while employed by Dalhousie University, the Provincial Department of Environment and Labour, and the Federal Department of Fisheries and Oceans. Two have also served as members of the Dartmouth Lakes Advisory Board.

Thank you to the Cox Lake document authors of COX LAKE A UNIQUE NATURAL RESOURCE WORTHY OF OUR PROTECTION for their generosity, their professional input, and much of the text in this document. Also, thank you to the Michigan Department of Natural Resources and Environment for their clear and informative paper: The Water's Edge: Helping fish and wildlife on your lakeshore property, https://www.michigan.gov/documents/deq/Wateredge_340005_7.pdf

A lake at extreme risk:



A Lake with a healthy future:



Photos: The Water's Edge: Helping fish and wildlife on your lakeshore property

"Overdeveloped shorelines can't support the fish, wildlife, and clean water that are so appealing to the people attracted to the water's edge." *(The Water's Edge: Helping fish and wildlife on your lakeshore property, Michigan Department of Natural Resources and Environment)*

The care and efforts of lake residents can preserve the natural habitat and lake area for the benefit of all today as well as for future generations.