

SANDY LAKE, BEDFORD
A UNIQUE NATURAL RESOURCE WORTHY OF OUR PROTECTION
2017

An Information Package prepared by the Sandy Lake Conservation Association, prepared for shoreline property owners, with thanks to the Friends of Cox Lake.

(Much of this document is taken verbatim with permission from COX LAKE A UNIQUE NATURAL RESOURCE WORTHY OF OUR PROTECTION, An Information Package prepared by the Friends of Cox Lake, July 2007)



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

Introduction

The land close to the shoreline, and the shoreline waters provide essential habitat for wildlife and aquatic creatures.

Despite considerable development in its watershed over many years, Sandy Lake, Bedford, which is part of the **Sandy Lake/Marsh Lake/Jack Lake/Sackville River Corridor**, continues to be an outstanding natural resource on the edge of the Halifax metropolitan area. This is largely because groups of residents have worked to protect the lake and area, again and again, for over 40 years.

Sandy Lake itself is a jewel worthy of our protection. Action must continue to be taken to ensure that the lake, its shoreline, and watershed are not degraded, especially now that we have learned that a large area to the west of Sandy Lake, which was once zoned to become a Regional Park, is now at risk from development for housing. We all have something to learn and something to gain by guarding the lake and the area's unique features.

The purpose of this information package is to present some background information on the natural features and history of Sandy Lake, briefly summarize the major environmental issues, discuss the need for lake shore buffer zones, summarize existing regulations, 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.

Facts about Sandy Lake

Sandy Lake is a relatively small lake of about 64 Hectares. It is a deep lake with low acidity, likely due to the springs which pass through limestone deposits. Some wetlands are present, especially around the inlet streams. It is part of the Sackville River watershed, along with Marsh Lake and several rivers and streams, such as Peverill's Brook and Johnson Brook. Lands west of Jack Lake are part of Sandy Lake's watershed. There are several streams and smaller tributaries entering the lake. Three principle ones cross the western lands that are at risk of development.

The outlet of Sandy Lake, Peverill's Brook, is located on the northwest tip and flows north into Marsh Lake. From there, it continues to the Sackville River which empties into the Bedford Basin. This entire waterway was once filled with Atlantic Salmon. Salmon and sea trout can still be found in Sandy Lake. The water level in Sandy Lake varies seasonally on the order of 0.5 m. Highest levels usually occur after heavy rains in spring and fall while lowest levels occur in late summer.

At the present time, most of lakeshore is still in a natural state. There are about six year round residences and several seasonal cottages on the southeast side. In the mid-1970's Farmer's Dairy was built behind the south side of Sandy Lake with the intention of using the lake for effluent disposal. Once the consequences to the lake were understood, the dairy instead built two containment/treatment ponds. Until the dairy arrived, lake dwellers either walked to Hammonds Plains through paths, or accessed their properties by boat. Now the properties are accessed through the dairy parking lot. The dairy has been appreciated as a good corporate citizen.

The lake has two sections, divided by a narrow point of land that juts into the lake. Like much of the Acadian Forest around the lake, this peninsula contains an old growth hemlock stand.

There is a supervised public swimming park, called Lions Club Beach, at the end of Smith's Road. It is an off-leash dog walking area as well. Vehicles park some distance from the beach, and park users take a pleasant, short, walk through a treed path to reach the beach.

Since 1971 the entire area of Sandy/Jack/Marsh lakes and the Sackville River Corridor were intended to become a Regional Park. This unique natural park goal has yet to be achieved, but efforts continue.

Sandy Lake is surrounded by mature Acadian Forest, which is a balanced, old growth forest, different from much of Nova Scotia forest and from the Boreal Forests of other parts of Canada. Wildlife is abundant in and around the lakes and in the deep forest. Beaver colonies are present near the inlet streams and on Peeverill's Brook. Osprey are abundant, and their nests can be seen along the power line on the northwestern side of the lake. Barred owls, ermine, fox, deer, mink, cranes, and many bird, reptile, plant and lichen species have been identified.

One unique feature of Sandy Lake is the presence of nesting loons. Their mournful wails and air-piercing calls are true symbols of the Canadian wilderness. However, these magnificent birds are very sensitive to development and are in decline in numerous lakes due to loss of nesting habitat, acid precipitation, toxic chemicals, and from nests being flooded by powered watercraft.

Popular activities in the summer include fishing, canoeing, kayaking, sailing, birdwatching, hiking, and swimming. Occasionally a speed boat will circle the lake. ATV users need to avoid using the shoreline as a route. Driving along the water's edge can cause serious damage to the lake and wildlife. Winter activities include skating, skiing, and ice fishing.

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 at this early stage of development 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. 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. Recent episodes of turbidity have been observed in the western end of the lake, presumably caused by the cutting of 200 acres of Acadian Growth trees in 2013. A mass of black, rotting, wood chips is very evident at the main tributary's entrance to the lake at the time of writing.

Clearing trees from sloped areas near the 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.

- Nutrients

Nutrients are compounds of nitrogen and phosphorous which are required by aquatic plants. Like other undeveloped lakes in Nova Scotia, nutrient levels in Sandy Lake are presumed to be naturally low and therefore the water is relatively clear, conditions known as oligotrophic. Some studies have concluded the lake may instead be in the lower end of the mesotrophic range, which indicates human activities on the lake are already causing lake stress. As seen in other lakes, as development continues in the watershed, nutrient levels will increase. Sources include septic field drainage, animal feces, and lawn and garden fertilizers. 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. There has been a noticeable increase in aquatic vascular plants such as reeds in recent years. It is important that septic tanks in the watershed, including as far away as the Lucasville Road, 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. Salt concentrations in Sandy Lake at the present time are relatively low. However, the dairy parking lot may pose the greatest source of salt contamination at this point.

- Micro-organisms

Low levels of micro-organisms (e.g. bacteria, protozoa, viruses, etc.) occur naturally in the waters of Sandy Lake. 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). The lake is part of the city's swimming area testing program.

- Litter

Litter (e.g. plastic, Styrofoam, glass, wood, etc.) is caused by human carelessness and is commonly seen along the shore line. 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. If the dairy were to pave its parking lot, the runoff into the lake could damage the lake.

- 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. Sandy Lake appears to be holding its own for now, unlike many lakes in the Halifax area which are "brownwater" lakes that have little life.

- **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.

Water Quality Data

Sandy Lake has been the subject of several testing programs through universities and the municipality. As mentioned, the lake has been at risk several times from human activities and the local residents and municipality have worked to right the errors. Several cottages and homes still use the lake as a water supply. We are seeking updated measurements of lake water quality and will add them to a future version of this document.

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 and 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. They require no maintenance. Natural buffer zones 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.

The developer who cut 200 acres of forest beside Sandy Lake in 2013 did leave buffers around the lake and streams, although some were very narrow, as little as 8 feet in some places. Trees are so important to preserve, for many reasons, that 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 implement such a by-law, although groups and individuals have been pointing out the need.

Regulations

Sandy Lake is part of a long-recognized formation of unique lakes, rivers, marshland and Acadian Forest, known as the Sandy Lake/Jack lake/Marsh Lake and Sackville River Corridor. Several formal studies have identified the particularly unique value of this area. Regulations are in place to help protect the area.

Currently, there is a by-law which helps prevent more development of the Sandy Lake shoreline. 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.

All areas below the high water mark (which in Sandy Lake is highest in spring and fall) 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.

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 the case of Sandy Lake, 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 overall the health of the Sandy Lake ecosystem. It will also protect long term financial investments in water front property.

Recommendations

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

- Utilize docks and swim platforms rather than creating sand beaches or removing vegetation for access.

- 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 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.
- If you are deciding what kind of watercraft to buy, remember that muscle- or wind-powered craft are much more environmentally friendly. They are quiet, don't create waves and don't require fossil fuels.
- If you do operate a motorize craft, be a responsible operator, 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. Also be very careful in fueling.

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 and 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 Sandy 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).

The Sandy Lake Conservation Association (SLCA)

The Sandy Lake Conservation Association is an association of local residents who wish to preserve the natural habitat of Sandy Lake for the benefit of all today as well as for future generations. Some of the members have lived in the area all their lives and have an intimate knowledge of the lake and its history. Go to www.sandylake.org for more on Sandy Lake and area.

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. Once again, the Sandy Lake Conservation wishes to thank these Cox Lake document authors 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:



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

A Lake with a healthy future:



Photo: 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)*