Skeleton Lake Plan and Stewardship Program

August 2014

Skeleton Lake
Cottagers Organization

Table of Contents

Executive Summary and Recommendations

Introduction

Skeleton Lake Cottagers Organization (SLCO) undertook this planning effort with the following purposes in mind:

- to provide itself with a Lake Plan for the achievement of its mission; and,
- to provide municipal planning authorities with documentation identifying the values and the features that the property owners of the Skeleton Lake watershed have a common interest in preserving
- to identify specific stewardship actions Skeleton Lake stakeholders, and the SLCO, can take in implementing the plan's mission.

The Plan was to reflect the values and vision of the watershed property owners. To accomplish this a four step process was followed:

step 1. Conduct a property owners' survey;
step 2. Create a vision statement ("A Sense of Place") based on the survey results;
step 3. Identify the major issues and develop strategies based on stakeholder consultation; and
step 4. Complete a final drafting and consultation on the Plan, followed by the publication and distribution of the Plan.

Over the four year period during which this Plan was prepared, there was on-going consultation with the community. In 2010 a survey was sent to all of the property owners in the Skeleton Lake watershed. The return rate of the survey was 33%, providing a reliable source of information leading to the development of the Vision, Objectives and Strategic Directions outlined in this Plan. In addition to presentations at Annual General Meetings of the SLCO in 2010, 2011 and 2012, two public workshops were held in 2011 in which participants contributed to the identification of issues, objectives and considerable background information. Sub-committees were formed to research specific areas of interest and prepare supporting documentation. A Steering Committee, appointed by the Board of Directors, then prepared the first draft of this document. As a result of the 2013 AGM presentation of a preliminary draft and subsequent Board meetings, a special editing committee was struck to finalize the Lake Plan and Stewardship Program for Skeleton Lake.

Individual property owners, SLCO, and planning authorities, will need to work effectively together over the next several years to achieve a successful implementation of this Plan. The Strategic Program contained in the Lake Plan responds to concerns of stakeholders with respect to the three individual elements of the ***A Sense of Place*** document.

Strategic Initiatives

Two Strategic Initiatives, grouped together, simplify the many recommendations detailed in the Plan.

Two Strategic Initiatives

1. **Skeleton Lake Plan**
2. **Establish A Two-Part Stewardship Program**
   - **A. Watershed**
   - **B. Community Culture**

The following describes the Two Strategic Initiatives:

1. Skeleton Lake Plan

The SLCO is to take actions necessary to ready the SLCO to lead an effective implementation of the Lake Plan and its associated recommendations on a watershed-wide basis. The current Plan is the first version of an on-going **Lake Plan**, and is viewed as an "evolving document" which the SLCO may revise periodically as it acquires further information related to the Plan's strategic initiatives. The SLCO should also establish itself as the communicator for, and representative voice of, the majority of watershed property owners in matters of their common interest. In order to do this, the following actions should be undertaken:

1. Formally request that local municipalities provide to the SLCO, notice of planning applications affecting land use within the Skeleton Lake watershed pursuant to the provisions for Notice under the Planning Act.
2. Provide information regarding planning applications on the SLCO website.
3. Formally request that the Township of Muskoka lakes and the Town of Huntsville lot creation policies and yard, setback and lot coverage provisions for shoreline development be harmonized for Skeleton Lake using a best practices approach.
4. Seek recognition of the Lake as a Source Water under the Clean Water Act.
5. Provide copies of this Plan to the area municipalities for inclusion in their Official Plans. This information includes more detailed natural features mapping, for identification of significant cultural and geologic landscapes that should be provided a higher level of protection.
6. Request recognition of the features as an Earth Science ANSI by the Province and District.
7. Request that the steep rock cliffs on the Lake, such as the Devil's Face, be recognized as Significant Cultural Landscapes in local planning policy.
8. Encourage greater limitations on lot creation and land uses such as aggregate extraction within the watershed.
9. Provide more detailed wetland mapping to the Provincial, District and local governments.
10. Request policies and legislation to protect all wetlands in the watershed.
11. Monitor both municipal agendas for matters of common interest to watershed residents as expressed in this Plan, and notify the membership.
12. Attend meetings and communicate with municipal authorities as required to represent the common interests expressed in this Plan.
13. Request that our political representatives on the municipal councils communicate with the SLCO with respect to decisions that impact Skeleton Lake and, in the case where decisions are made that deviate from the Official Plan, describe the Council's rationale for deviating from approved policies.
14. Track Council decisions and inform members of the SLCO on how council candidates voted on issues and views on Skeleton Lake planning issues so that SLCO members may hold them accountable at election time.
15. Request that the Town of Huntsville and Township of Muskoka Lakes implement site alteration by-laws for major alterations to grading, drainage and vegetation for all lands within 300m of the shoreline and 100m of any inflowing watercourse
16. Advocate on behalf of and in support of property owners with respect to municipal taxation policy and other government fees so as to encourage property owners to retain their larger properties and thereby avoid the unintended intensification of development on the Lake that may occur as a result of such policies and fees.

2. Establish Stewardship Programs

A. Watershed Stewardship

The following actions should be taken by the SLCO to establish an on-going Stewardship program for the Skeleton Lake watershed:

1. On a regular basis, inform cottagers/residents on results of the SLCO water quality monitoring program, including trends in data and any remedial actions that should be taken in response to water quality concerns.
2. Make available to cottagers/residents, via newsletters, pamphlets, website and workshops a range of information on lake stewardship actions that can be taken by individuals, or by the Lake community acting together.
3. Develop and provide to those who rent cottages a poster that can be displayed in a prominent place and clearly identifies "do and don'ts" for renters who may have little knowledge of appropriate, or inappropriate, actions with respect to water quality, noise, boating practices, etc..
4. Initiate a regular dialogue with municipalities on the results of the SLCO water quality monitoring program.
5. Provide stewardship information pamphlets at key water access points and marinas.
6. Encourage and sponsor community involvement in remedial efforts to preserve the valued aspects of the Lake.
7. Encourage educational institutions to undertake further analysis of wetlands and water quality in the watershed.
8. Appoint a SLCO Director of Stewardship to establish programs, including a volunteer committee, with an appropriate budget.

B. Community Culture Stewardship

To build on our rich history and preserve a sense of community, the SLCO should take the following actions:

1. Undertake and publish a detailed history of Skeleton Lake.
2. Create and market a map showing the significant features of the lake.
3. Develop a greater sense of a community culture of stewardship through on-going educational programming and distribution of information.
4. Strengthen the SLCO through increased membership and recruitment of volunteers.
5. Build a stronger watershed identity by better publicizing, and coordinating events, improving communications through the use of technology, and providing additional opportunities for social interaction amongst members.
6. Discourage the use of fireworks except for civic holidays.
7. Promote a culture that respects the right to peace and quiet.
8. Encourage residents to shop locally and support local businesses.
9. Encourage local property maintenance businesses to consider low impact landscaping, avoiding invasive species and use of high nutrient soils and fertilizers.

The SLCO should review these initiatives annually and present a report at the Annual General Meeting regarding implementation of the initiatives and priorities for the following year.

Chapter 1: DEVELOPMENT OF THE PLAN

The Plan's Mission:

> ***To ensure the preservation and stewardship of Skeleton Lake and its surrounding watershed by ensuring that the Lake maintains all of its many unique qualities for generations to come.***

Purpose

The purpose of the Plan is two-fold: To create a Lake Plan and a Stewardship Program.

The Lake Plan provides specific information and recommendations that go beyond the more general policy framework of the official plans of the local municipalities (Townships of Huntsville and Muskoka Lakes) and the District of Muskoka. The Lake Plan may be used as guidance by these authorities in planning land use, and/or updating their own planning documents. The Stewardship Program identifies specific actions to be taken by Lake residents, and their representative organization in implementing the plan's mission.

Introduction

There has been a lake association on Skeleton Lake for many decades. The latest re-organization in 1989 resulted in the incorporation of the Skeleton Lake Cottagers Organization (SLCO) and was established with a sense of community and an interest in lake stewardship. The goal was to provide opportunities for community members to socialize together and, most importantly, to preserve the Lake's uniqueness for their own enjoyment and that of future generations of their families. The SLCO has had a continuous presence on the Lake since then.

In 2008, the SLCO became interested in the efforts of several lake organizations in the District to put together lake plans for their lakes as part of the District and local municipal planning processes. Municipal governments are required to have an Official Plan that governs land use and development, including waterfront areas within their jurisdictions. Individual lakes have been encouraged to create lake plans to set out specific requirements unique to their own lakes. A problem in 2008 on nearby Three Mile Lake, involving an algae bloom that rendered the entire lake virtually unusable, was a major contributor to the SLCO's interest in developing a lake plan. A local planning consultant was contacted, and at the 2009 Annual General Meeting (AGM) the membership viewed a presentation given by that consultant and one of his clients – the Kawagama

Lake Association – of a plan they had completed. Interest was high and following the presentation, the SLCO membership approved a Lake Plan Steering Committee and gave the Board the go-ahead to prepare a project proposal for the development of a lake plan. The Steering Committee met over the ensuing months and made several key decisions related to the scope, timetable, and cost of the Plan.

Some of the key decisions taken included:

- The Plan would follow the overall approach developed by the Federation of Ontario Cottagers Associations – published on their website. This would limit the need for outside consultants.
- Input to the Plan would be sought from all property owners in the watershed area, businesses servicing the watershed, and municipal governments with jurisdiction over Skeleton Lake.

The SLCO Board presented the proposal to the membership at the AGM in 2010. The membership approved **A Sense of Place** – a statement of the Plan's vision – and gave authority to proceed with the Plan development. To help defer costs anticipated with developing the lake plan, a Lake Plan Fund was created so SLCO members could donate monies when submitting their membership fees. Due to the enthusiastic response, the Fund has covered Plan expenses prior to adopting and publishing the Plan, making it unnecessary to use SLCO membership operating funds.

In addition to presentations at three SLCO Annual General Meetings, two public workshops were held in 2011 in which participants contributed to the identification of issues, objectives and considerable background information. Sub-committees were formed to research areas of interest and prepare supporting documentation. The Steering Committee then prepared a first draft of this document. As a result of the 2013 AGM and subsequent Board meetings a special editing committee was struck to finalize the Skeleton Lake Plan and Stewardship Program document.

Approach to Building the Plan

Given that the priority for the Plan was to reflect the values and vision of the watershed property owners, the following four steps were undertaken:

Step I: Property Owners Survey

In the spring of 2010 a questionnaire was mailed to property owners within the Skeleton Lake watershed area using an address list manually extracted from current tax rolls of the two municipalities: Town of Huntsville and the Township of Muskoka Lakes. The questionnaire's purpose was to collect data that would allow the SLCO to create a vision of the Lake based on the input of the stakeholders. It asked respondents what they valued most about the Lake, and the degree and direction of any changes they had noticed over their time on the Lake. Thirty-three percent of the surveys mailed were completed, which is considered excellent for a survey of this type.

Step 2: Create Vision Statement – *A Sense of Place*

Volunteers tallied the survey results and the Steering Committee analyzed the data. A Community Workshop validated the results of the survey and its interpretation. This material was used to prepare ***A Sense of Place,*** a document that would serve as the vision statement for the Lake Plan. Three key elements defined the vision (1. Water quality, 2. Natural Heritage, and 3. History, culture, recreation & community). A fourth element, "4. Development and land use" was added to the vision because of its potential impact on all the other elements. This fourth element was a result of "anecdotal" input received in the open-ended question of the Survey and also from discussions, workshops, and forums where respondents indicated a desire to follow a land development plan that avoided the type of intensive development often seen on the "larger" Muskoka Lakes. For each of the four elements the vision sets out goals to be achieved. The ***A Sense of Place*** document was approved at the AGM in August of 2011. It is summarized in Chapter 2, and may be seen in its entirety at: www.skeletonlake.ca

Step 3: Identify the Major Issues and Develop Strategies

The team iterated through a process of stakeholder consultations in: workshops, focus groups, and interviews with concerned individuals; research and data gathering; formulating strategies; and drafting parts of the plan.

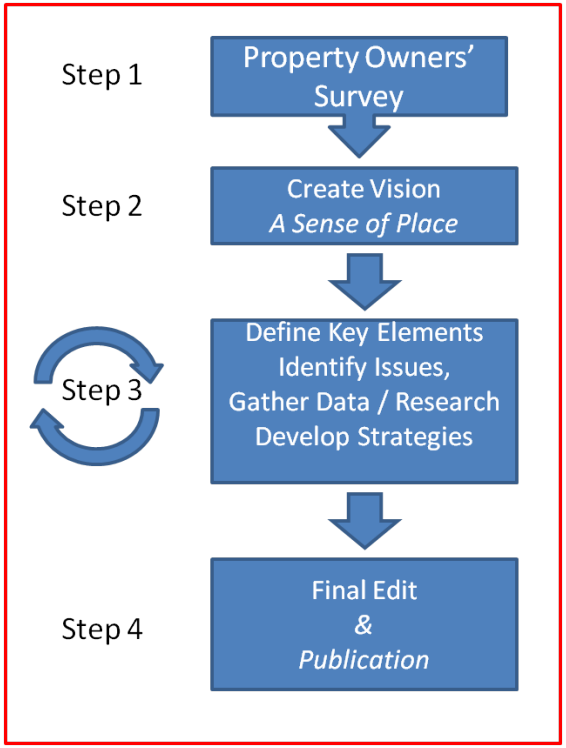


Figure 1 .1 Planning Methodology

Step 4: Final Editing and Publication of the Plan

In this final step, the pieces of the draft plan underwent a final editing phase to give the document a homogenous writing style and appearance. The Final Draft was then vetted with the stakeholders and SLCO directors. Final corrections were made by an Editing Committee and then sent to a professional editor to prepare the document for publication and distribution.

For the Plan to be realized, it must be acted upon. As noted in ***Chapter 6: Development and Land Use***, official plans, provincial policies, zoning by-laws, lake plans and open meetings, can never guarantee that new development will be acceptable to all. There are many conflicting interests at work. Good planning helps, but in the end it is the actions of individuals that own or develop the properties that will ultimately have the greatest impact on the watershed's future. To succeed, the Plan must reach these people and shape their development and stewardship decisions.

Chapter 2: A SENSE OF PLACE – OUR VISION FOR THE LAKE

The term "sense of place" has been defined and used in many different ways, by many different people. It is most often used in relation to those characteristics that make a place special, or unique, that fosters a sense of authentic human attachment and belonging. Our collective sense of place defines that which is important to us and creates a focus for something worth caring about. The ***A Sense of Place*** document expresses the collective vision of the Skeleton Lake watershed based on the feedback obtained through the 2010 Vision Survey, as well as community workshops plus discussions at several AGMs and Board meetings of the SLCO.

The first question of the Vision Survey asked respondents to rate in order of importance the features, or activities, that drew them to Skeleton Lake. The results, summarized in Table 2.1, indicate that those features rated as "very important" or "important" to a high percentage (greater than 70%) of respondents, can be grouped into three elements: i) water quality (a class by itself), ii) natural heritage (scenic views, peace and quiet, natural shorelines, etc.) and iii) history, culture, community and recreation. A key factor with the potential to impact on all of these high-value elements is further development (or land use) on the Lake. Therefore subsequent chapters of the plan will focus on: Chapter 3: Water Quality; Chapter 4: Natural Heritage; Chapter 5: History, Community, Culture and Recreation; and Chapter 6: Development and Land Use.

Of the 21 features listed in question #1, only 3 features got less than 50% rating in terms of being "very important" or "important" for what respondents said drew them to the Lake. They were "winter activities" (34.3%), "other nearby tourist/recreational activities" (30.0%) and the lowest score was "hunting" (6.8%) and indeed had the highest "of no importance" rating of 81.7%. It is also notable that of the top 7 features with over 90% approval rating, 6 were linked to the physical desirability of the Lake. No analysis was done to determine if the status of the respondent (e.g. permanent vs. seasonal, lakefront vs. watershed) significantly influenced the observed response patterns of the respondents.

Table 2.1: Ranking of Features that Drew Respondents to Skeleton Lake*				
Valued Feature	**No. responding of 249 answering the question**	**% of responders rating question "Very Important"**	**% of responders rating question "Important"**	**% of responders rating question either "Very Important" or "Important"**
Water Quality	247	98.8%	0.8%	99.6%
Scenic Views	244	77.9%	19.7%	97.5%
Peace and Quiet	247	68.4%	27.9%	96.4%
Natural Shorelines	245	69.4%	25.7%	95.1%
Swimming	245	76.6%	18.4%	95.1%
Family	243	77.0%	17.7%	94.7%
Forest Cover	238	59.2%	33.6%	92.9%
Night Sky	246	57.3%	32.1%	89.4%
Non-powered boating	242	45.9%	41.7%	87.6%
Watch birds/wildlife	243	39.9%	46.5%	86.4%
Walking, hiking	241	35.3%	42.3%	77.6%
Investment value	244	36.5%	40.6%	77.0%
Lake history/culture	242	25.2%	46.7%	71.9%
Photography	239	20.1%	35.1%	55.2%
Fishing	245	29.8%	24.5%	54.3%
Socializing	240	13.8%	40.4%	54.2%
Availability of services	235	16.2%	37.9%	54.0%
Power boating	240	16.7%	33.3%	50.0%

*** features from Question #1 of SLCO Vision Survey**

Water Quality

Water Quality has always been at the very top of the list of the features most valued by stakeholders of the Lake. It was no surprise therefore, that 98.8% of responders to the Vision Survey stated that it was "very important" – far ahead of the next most-valued feature.

The 2010 Lake System Health Monitoring Program Year End Report prepared by The District of Muskoka, shows Skeleton Lake as having the best results of all the measured lakes. Protecting this superior Skeleton Lake water quality must be a priority in planning for the future. The water is so clear that one can see objects at depths of up to 12 metres in the water. The deep, clear water makes the Lake ideal for swimming, diving, water-skiing, windsurfing, scuba diving, and a variety of other water sports. The large open body of water provides a safe venue for power boating, sailing, and paddling. Sheltered portions are ideal for canoeing, kayaking, and non-powered boating of all kinds.

Based on the SLCO Vision Survey (question #7), 43.4% of respondents reported that they "pumped from Lake" in order to obtain their drinking water and another 4.0% used a dug well, versus a drilled well (10.8%). While most people treat their water to different degrees, given the high degree of people using the Lake as a water source, it is recommended that the Lake be considered as a Source Water under the Clean Water Act. Implementation of source water protection within the watershed would include a prohibition of certain land uses and activities that could potentially contaminate the water supply.

Planning goals of the SLCO must be to protect the superior water quality of Skeleton Lake, and ensure that the SLCO has the necessary programs in place to measure and identify change in water quality in time to sustain this goal.

Natural Heritage

The term natural heritage encompasses many elements that, in combination, create an environment that makes Muskoka one of the most desirable tourist destinations in the world. Due to its geologic history, the natural heritage features of Skeleton Lake include various ecological zones and diversity of plants and animals.

The opportunity to enjoy the natural heritage features of the Skeleton Lake watershed area is second only in importance to water quality in the minds of watershed property owners, as indicated in results from the survey of watershed property owners, shown in Table 2.1. Excluding water quality, of the top ten features, seven refer to the natural heritage of the Lake.

The Vision Survey demonstrated (question#2b, see Table 2.3) that most respondents (52.4%) felt Skeleton Lake water levels had remained "unchanged" while 16.9% thought that they had gotten "much better" or "better". But 30.7% answered that water levels were "much worse" or

"worse". However, when asked (question #8) if "… the fluctuation in water levels during the year (is) a concern for you?" the responses were fairly evenly split between "yes" (51.3%) and "no" (48.7%). There seems to be some consensus that the construction of the fixed weir to control the outflow from the west end of the Lake in Simolean Bay had brought more stability in water levels and was generally a good move. This would seem to indicate that remediation efforts for problems related to water levels should largely be adaptive in nature, and focused on individual action by property owners. The SLCO can play some role in disseminating information on affordable technology that may be emerging to help individuals deal with fluctuations in water levels.

Planning goals of the SLCO must, therefore, include: a) specific goals for the preservation of all of the natural heritage features that enable the pursuits mentioned above, and b) preserving habitats that sustain the diversity of the wildlife.

History, Community, Culture and Recreation

The Skeleton Lake Watershed has a rich history as a community that provided occupation, recreation and enjoyment for families since the days of the first land-holders and earliest seasonal visitors.

The Lake is free of the high-density condominium and time-share type development now seen on many of the larger Muskoka Lakes and remains primarily dominated by private cottage lots, mainly seasonal (87%) but with an increasing number of permanent homes (13%). The turn-over of properties on the Lake is not as frequent as it is on other Muskoka Lakes. Almost half (49.6%) of the residents have been on the lake for more than 40 years, and 80% of the survey respondents indicated that they had been on the Lake for more than 20 years. This has resulted in a deeply shared cultural value among the property owners.

There exists a "family-focused "culture on the Lake with the "cottage" serving as the focal point for today's extended families. Every summer the family gets together at the cottage to relive the memories, and to play, enjoy the swimming, the boating, the campfires in the evenings, and most of all, just being together again. Cottage communities have grown up, clustered around the access roads serving the Lake. Recreational activity plays a vital role by keeping "the cottage" an attractive destination for all generations. Table 2.1 lists a number of recreational activities among the most valued features of Skeleton Lake.

Planning goals of the SLCO must include: a) provisions to collect, conserve and share the rich Lake history b) strengthening "Community" culture and involvement by building a stronger lake association c) protect the public accessibility to the points of interest around the Lake wherever possible.

Development and Land Use

Most of Skeleton Lake's developed shoreline reflects modern standards (e.g. frontage and setback limits) plus natural features have largely been preserved. These natural features continue to dominate the landscape and human "built form" generally blends with nature.

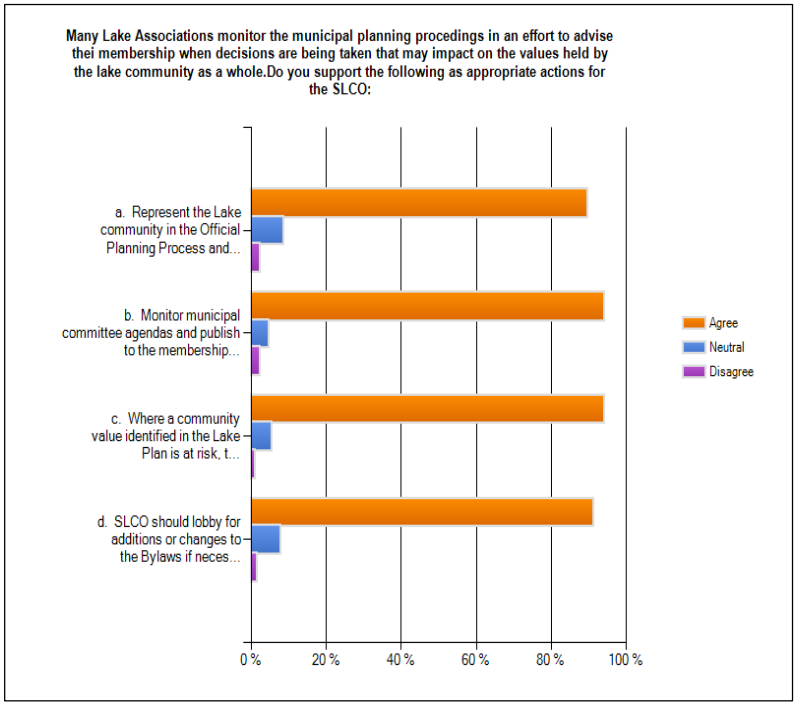


Table 2.2

Responses to question #13 of the Vision Survey shown in Table 2.2 show an over whelming support for an active SLCO in monitoring the development and land use on the Lake. In the freeform comments section of the survey, property owners indicated that this smaller scale and traditional built-form character should be preserved.
To make their point, they used words like the following:

"Love the lake and don't want too much development - keep it the way it is or better"

"… the key to maintaining the existing character and quality of the lake will be prohibiting future resort, timeshare, fractional ownership, or similar high-density re-development"

"I would not like to see Skeleton Lake turn into another Lake Muskoka"

Development, like change, is inevitable and it would be unrealistic to expect that the Lake can remain just as it is today on into the future. The Vision survey indicated that current property owners prefer a conservative pace of development, unlike that of the "Big Muskoka Lakes", which have increasingly been characterized by commercial development, higher density and a proliferation of condo-type residential units. There is a sense that both new development and redevelopment need to be carefully controlled, particularly with respect to shoreline construction and urban-style landscaping that comes at the expense of the native trees and vegetation that make up the much-valued natural shorelines and habitats, and that contribute to protecting the unique water quality.

Planning goals of the SLCO must therefore include: a) programs to educate owners in stewardship best practices that improve upon, rather than take away from, the valued elements; b) strengthening the collective voice of the Lake residents through a strong Lake association; c) building stronger relationships with the municipalities and ensuring they are aware of SLCO goals and Lake plans.

Respondents in the Vision Survey were asked to indentify changes they perceived to have occurred over the years that they had been on the Lake (see Table 2.3). For many of the 16 categories, respondents felt things were mainly "unchanged", but a noticeable tendency toward things getting worse is observed. The most positive change seems to be concerning local road conditions. However, with respect to valued elements, identified in **A Sense of Place,** respondents were relatively negative on where the Lake was perceived to be going. Water quality, noise levels, forest cover and natural shoreline, fish and wildlife all had significant worse ratings. The worst change on the Lake would appear to concern power boats. Clearly there is a need to be vigilant to protect what is valued, and a need for more comprehensive, and longer term, data collection in order to accurately track the direction of changes over the longer term, especially in water quality and people behavior issues while engaged in enjoying themselves on and at the Lake.

Table 2.3: Extent to which Skeleton Lake has changed (Survey ques. #2)

Potential change item	No. responding (of 240 who answered)	% rating item "Much Better" or "Better"	% rating item "Unchanged"	% rating item "Much Worse" or "Worse"
Water quality	234	9.4%	43.6%	47.0%
Water levels	231	16.9%	52.4%	30.7%
Day time noise levels	235	5.5%	43.8%	51.5%
Night time noise levels	235	5.5%	63.8%	31.1%
Night skies	235	4.7%	71.1%	24.3%
Forest cover and natural shoreline	235	3.4%	51.5%	45.1%
Abundance of fish	218	4.6%	36.7%	58.7%
Abundance of birds and wildlife	231	8.2%	60.6%	31.2%
Abundance of natural plants/flowers	225	5.3%	74.2%	20.4%
Wildlife habitat	226	6.2%	61.1%	32.7%
Boat traffic	235	5.5%	31.5%	63.4%
Boat wake issues	235	1.7%	42.6%	55.7%
Traffic on access roads	233	1.7%	53.2%	45.5%
Parking conditions	228	2.2%	80.3%	18.0%
Road conditions	234	35.0%	46.6%	18.8%
Theft/vandalism	230	5.2%	77.0%	17.8%

How the Plan would be implemented

In the survey of stakeholders, respondents were asked a question (#13) aimed at determining what they thought would be appropriate roles for the SLCO in terms of interacting with the municipal planning process. Question #13 asked respondents the extent that they would support the SLCO getting involved in Municipal Planning proceedings:

1. Represent the Lake community in the Official Planning process and subsequent revisions
2. Monitor municipal committee agendas and publish … planning decisions pending … affecting Skeleton Lake.
3. Where a community value identified in the Lake Plan is at risk, the SLCO should consult with the membership and develop a position representing the community.
4. SLCO should lobby for changes to By-laws, if necessary, to preserve the Community Values identified in the Lake Plan.

Only 6% of respondents objected to any of the suggested roles for the SLCO, while 91%-94% voted in favor of the SLCO playing a more active role. The lowest score (88%) applied to the SLCO representing the community in the planning process, which we interpret as an indication that some people would rather participate directly. A number of property owners expressed the opinion that the Lake Plan should not become another layer of bureaucratic regulation that tries to restrict the freedom of owners to make their own decisions regarding changes to their properties. We interpret this to mean there is a feeling that there is sufficient protection available in the present planning system provided it is applied consistently.

Another question (question #14) asked stakeholders whether they would "Support" or "Do not support" the SLCO offering various stewardship programs (see Table 2.4). It would appear that stakeholders generally support the notion of the SLCO being active, indeed proactive, in promoting good Lake Stewardship programs.

Table 2.4: Support SLCO's Encouragement of Good Lake Stewardship (Survey ques. #14)	Support	Do Not Support	No. of responses
Water Quality Monitoring and Improvement	99.6%	0.4%	247
Reducing Pollution of all kinds (light,litter,noise)	95.1%	4.9%	247
Fishery and Wildlife Habitat	92.8%	7.2%	235
Natural Shoreline Restoration	90.8%	9.2%	240
Safe Boating	88.7%	11.3%	239
Forest Management	86.1%	13.9%	231
Community Development and Recreation	85.8%	14.2%	233
Water Safety/Lifesaving/Swimming	82.6%	17.4%	239

Chapter 3: WATER QUALITY

What is meant by "water quality" and why is it so important?

The term "water quality" refers to a large set of characteristics of water that we can see, smell, or measure in some way. These characteristics indicate the degree to which the water is pleasant to our senses, safe to drink or swim in, and suitable as habitat for fish and other living things. Thus, these water quality characteristics are at the heart of our enjoyment of life in Muskoka.

Among the hundreds of characteristics that determine water quality, a small number are commonly measured because they are relatively easy to measure and provide useful information relating to the "swimmable – drinkable – fishable" nature of water. These include physical characteristics such as temperature and clarity, chemical characteristics such as phosphorus, calcium and dissolved oxygen concentration, and biological characteristics such as the number of coliform bacteria and the type and quantity of algae present.

Physical Characteristics

Clarity

Water clarity refers to water's ability to transmit visible light. Greater clarity means that objects are visible at greater distances through the water. Clarity is determined by a number of factors, including the presence of natural dissolved organic carbon which colours the water, dust which may be deposited on the water by the wind, pollen which enters the water on a seasonal basis, sediment which enters water through erosion, and the presence of algae. In Muskoka generally, and Skeleton Lake in particular, algae are the main determinant of lake clarity. Growth of algae is promoted by higher water temperatures and by chemical nutrients, principally phosphates. (see chemistry section).

Clarity is measured using a small black and white Secchi disk that is lowered into the water to determine the maximum depth at which the disk is visible. Secchi disk readings in Skeleton Lake range from approximately 8 to 12 metres, with a ten-year average of 9.4 metres. (1) These are the highest readings (i.e. highest clarity) seen in Muskoka, where most lakes have

Secchi disk readings of between 2 and 6 metres. Skeleton Lake is one of the clearest lakes in Ontario. Some long-term cottagers and residents indicate that clarity has decreased over the last 50 years. Lakes with Secchi depth measurements over five metres are considered oligotrophic, or unenriched. Those with a Secchi depth measurement falling between three and five metres are termed mesotrophic, or moderately enriched, while lakes with a Secchi depth measurement below three metres are called eutrophic and are considered enriched. (1)

Temperature

The temperature of water overall is determined mainly by climatic factors but these are being influenced by human actions on a global scale. Water temperature in a specific near-shore location may be influenced by human actions such as clearing of vegetation which shades the shoreline. Increasing water temperature generally increases the rate of biological growth in the lake, particularly the growth of algae. Increasing temperature also reduces the amount of dissolved oxygen in water, making it less suitable for some species of fish.

Lake temperature variation with season and depth includes the phenomenon of "turnover". Water reaches its greatest density at 4 degrees C. When the upper level of the lake reaches this temperature due to cooler air temperature in the fall the heavier water sinks and the warmer water from deeper in the lake floats up to the surface. This helps to maintain the higher oxygen levels essential to fish deep in the lake. The variability of temperature with season, depth and other factors means that any meaningful measurement and interpretation of temperature data must be done as part of a well organized data collection program.

Water temperature data for Skeleton Lake in 2010 indicates that temperatures in May can vary from approximately 5°C at depth to 15°C at the surface. (1) In August, temperatures can vary from 7C at depth to 22C at the surface. Such temperature profiles generally indicate an oligotrophic lake suitable for fish species such as trout.

Chemical Characteristics

Phosphorus

Phosphorus is the key nutrient limiting the growth of algae in Muskoka lakes. This means that as phosphorus levels increase algae will increase. This will reduce clarity (lower Secchi disk readings) due to suspended algae and may result in increased green "slime" on rocks around the shoreline. In extreme cases (though unlikely in Skeleton Lake due to the Lake's cool water temperature, low nutrient loading, etc.), a bloom of blue-green algae (cyanobacteria) can occur, colouring a lake and making the water toxic to fish and mammals, including humans.

Phosphorus can enter the lake naturally via sediment and precipitation but also through human activities via septic system seepage, phosphorus-based cleaning agents, and surface runoff which may contain lawn or agricultural fertilizers. (1) A decrease in natural vegetative cover of the shoreline can allow increased phosphorus input via water runoff.

Water samples are taken and submitted for phosphorus concentration analysis by a laboratory, such as the Dorset Environmental Sciences Centre. The 10-year average phosphorus level for Skeleton Lake has been reported as 4.1 micrograms per litre (ug/L), one of the lowest levels in Muskoka, where most lakes have phosphorus levels in the range of 5 —10 ug/L. (1) The low level of phosphorus in Skeleton Lake is consistent with the high Secchi disk (clarity) readings. Lakes with phosphorus concentrations below 10 ug/L are considered oligotrophic or unenriched.

The District of Muskoka has set a threshold for phosphorus that is 1.5 times the background phosphorus concentration for each individual lake. Skeleton Lake has a background phosphorus concentration of 3.0 ug/L, and so its threshold is 4.5 ug/L, not much higher than the current 10-year average level. (1)

Calcium

Calcium is a nutrient that is required by all living organisms. For example, water fleas (Daphnia) and crayfish need calcium to maintain their exoskeletons, and are very sensitive to declines in calcium concentrations in water. The reproduction of most species of Daphnia is jeopardized at calcium concentrations of less than 1.5 mg/L. Out of a large group of Ontario lakes studied, 35% have calcium concentrations less than 1.5 mg/L and many lakes on the Precambrian shield in Ontario are nearing or have crossed the 1.5 mg/L threshold (2). Testing in 2008 indicated a calcium concentration of 2.5 mg/L in Skeleton Lake.

Declining populations of organisms such as Daphnia and crayfish, which feed on algae, is one possible cause of increased algal growth. (3)The decline in calcium concentrations in Ontario lakes is likely the result of a number of factors including acid rain, climate change and forest management practices. (2)

Biological Characteristics

Coliform Bacteria

Coliforms are a group of bacteria commonly found in the environment. They are associated with decaying plant, or animal, material and animal fecal material. Most coliforms are not harmful to humans but their presence in water indicates that the water may have been contaminated by more harmful organisms. Escherichia coli (E. coli) are members of the coliform group that are found only in the intestines of mammals, including humans. Their presence in water indicates recent fecal contamination, which in turn indicates the possible presence of disease-causing human pathogens such as bacteria, viruses and parasites. Most strains of E. coli bacteria are harmless in themselves to cottagers, but certain strains, such as E. coli O157:H7 can cause serious or fatal illness. (4) Total coliforms and E. coli in particular, are widely used as indicators of possible water contamination because testing is simple and inexpensive relative to testing for a range of human pathogens.

E. coli can enter water in runoff from land contaminated with animal feces from pets or wildlife, in runoff containing manure from farm animals , in seepage containing human fecal material from poorly designed or operated (or non-existent) septic systems, and from direct deposit of fecal material by aquatic animals or birds. Testing for coliforms involves carefully taking water samples from the lake, refrigerating the samples, and testing within a day or so of sample collection. A simplified testing kit and protocol is available for use by individuals or lake organizations without the need for sending samples off to a commercial or government laboratory. (5)

Total coliform and E. coli testing has been conducted for many years by the Skeleton Lake Cottagers Organization in conjunction with the Muskoka Lakes Association. The table 3.1 contains results of such testing for the year 2012. When interpreting these results, the following should be kept in mind.

- Total coliform and E. coli results can vary greatly over time for any one sample point, depending, among other things, on recent precipitation and runoff, presence of animals in or near water, and wave action and currents.
- Ontario's drinking water quality criteria target is 0 total coliform and 0 E. coli per 100 ml of sample, while the recreational water quality target is less than 100 E. coli per 100 ml as a geometric mean of at least five samples. (6)

Viewed in this context, results for Skeleton Lake indicate a generally very good level of water quality. However, where high E. coli levels above the minimum detectable limit of <3 (for this test method) are observed repeatedly there is reason to look more closely at what the problem may be. A first step may be repeat testing to verify that the results are not just isolated incidents.

Table 3.1: Results of Total coliform and E. coli testing done by SLCO in 2012*

Sampling Location	Total Coliform (counts/100 ml)					E. coli (counts/100 ml)				
	May 26	July 5	Aug 7	Sept 1	Sept 22	May 26	July 5	Aug 7	Sept 1	Sept 22
Wilson's Bay	<3	127	36	328	123	3	3	<3	5	5
Newport Beach N.	3	33	206	587	52	<3	<3	<3	<3	<3
Beaman's Bay	3	11	25	87	136	<3	<3	<3	3	<3
Simolean Bay (Ramah)	5	2424	106	375	166	3	3	<3	3	11
Simolean Bay **(High Lake)	33	46	289	434	166	3	5	<3	<3	3
Camp Kwasind	<3	15	119	451	94	3	<3	3	<3	3
High Lake		59	166	30	151		<3	3	<3	<3

*SLCO Water Quality Testing Results during 2012

Algae

Algae are tiny free-floating (phytoplankton), or attached (periphyton), plants that are found in lakes and rivers. They contain chlorophyll so carry out photosynthesis. Algae form the base of most aquatic food chains and are a valuable and critical component of a healthy aquatic environment. (3)

Large numbers and a diversity of types of algae are normally present in healthy water bodies. However, under certain conditions excessive algae growth can occur, and this can impair the appearance, smell and taste of the water. Blooms of certain types of blue-green algae, or cyanobacteria, release toxins that can harm humans as well as animals. Dead algae from a bloom can sink and decompose at the bottom of a lake, depleting oxygen that is needed by fish.

Reasons for excessive growth of algae can include one or more of the following:

- Increased availability of nutrients such as phosphorus
- Increased temperature
- Increased sunlight
- Decreased flushing of algae by less water entering and exiting a water body
- Decreased numbers of organisms such as Daphnia and Crayfish that feed on algae
- Decreased parasitism by bacteria and fungi

Currently there is no organized program for routine sampling of the types and numbers of algae in Skeleton Lake. It is therefore not possible to present factual data that supports, or conflicts with, anecdotal evidence that more algae are in the Lake. However, a study underway in 2013, under the Canadian Water Network, should provide information on what appears to be a widespread increase in algae in the Muskoka Lakes. (7)

Who is Responsible for Monitoring and Regulating Water Quality and Related Activities?

The District Municipality of Muskoka

The District Municipality of Muskoka (DMM), which gets its responsibility and authority directly from provincial legislation, is responsible for developing policy for lakes, as detailed in its Official Plan (8) and bylaws, and providing district services such as the management of hauled sewage lagoons. (9) Area Municipalities, which in the case of Skeleton Lake include the Town of Huntsville and the Township of Muskoka Lakes, are responsible for local official plan policy, land use zoning and subdivision, building and septic system permits and inspection, and by-law enforcement.

Ontario Government

The Ontario Ministry of Natural Resources (MNR) is responsible for water levels and alterations to shorelines that may lead to impacts on lakebeds or wetlands and wildlife. Permits for work of this nature are issued under the Public Lands Act. (10)

The Ontario Ministry of the Environment (MOE), through the Clean Water Act, is responsible for assessing, then reducing, or eliminating, threats to water. (11) The Environmental Protection Act prohibits the discharge of contaminants or any approved contaminant which exceed legal limits

into the environment. It requires that all spills and contaminants be reported to the Spills Hotline and then be cleaned up. The Ministry of the Environment has authority to establish liability for environmental damage. (12)

The MOE partners with the Federation of Ontario Cottagers Association (FOCA) on province-wide, volunteer-based water quality monitoring via the Lake Partners Program. Volunteers monitor water clarity directly via Secchi disk readings and take water samples for analysis of total phosphorus concentration by the MOE's Dorset Environmental Science Centre. This information allows the early detection of changes in the nutrient status and/or the water clarity of over 600 of the province's inland lakes due to the impacts of shoreline development, climate change, and other stresses. (13) (14)

Federal Government

The federal Department of Fisheries and Oceans is responsible for fish and fish habitat. Responsibilities are outlined in the Federal Fisheries Act. No one may carry out any project that results in harmful disruption, or destruction, of fish habitat without authorization under the Act. (15)

Current Monitoring Programs

District Municipality of Muskoka

The DMM has been monitoring water quality in Muskoka lakes since 1980 under its Lake System Health Program, which aims to establish a long-term record of water quality parameters so that trends can be identified. Currently 193 sites on 164 lakes are monitored on a rotational basis. In addition to phosphorus and Secchi depth measured under the Lake Partners Program, the Dorset Environmental Sciences Centre monitors for pH, conductivity, alkalinity, calcium, nitrogen, dissolved oxygen and temperature. With the exception of phosphorus, which is monitored only in May, most parameters are sampled in May and August. The results are reported annually and detailed data summaries for each lake can be obtained from the DMM.

Lake Partners Program

Under the Lake Partners Program mentioned previously, Secchi disk readings for clarity, and samples for analysis of total phosphorus, are taken from Skeleton Lake each year in May. Reports may be viewed on-line or by contacting the Dorset Environmental Sciences Centre.

SLCO Water Quality Program

For more than 10 years, SLCO has monitored total coliform and E. coli at a number of sites on Skeleton Lake. Under the current program, samples are taken at least five times per year at six locations on Skeleton Lake and one location on High Lake. Sampling locations remain consistent as much as possible to provide long-term records from which trends can be identified. However the set of locations is allowed to evolve slowly to provide some coverage for areas of the Lake where data is scarce. The total number of samples is kept to approximately seven for time and budget reasons

The SLCO water quality monitoring program is managed locally by trained volunteers with knowledge of the Lake and an interest in protecting it. It is relatively low in cost, and analyzes many samples at many locations throughout the May – October time period. The SLCO water samples are analyzed on Skeleton Lake by volunteers using the "coli plate method". This is the same method used by the Muskoka Lakes Association (MLA) in their water quality program and the sampling procedures are also identical. This makes the results themselves directly comparable with the large MLA data set, although the statistical methods used to summarize results may vary. The "Coli plate" method is less precise, and also far less costly, than the method used by the Ministry of Health for analysis of drinking water, but provides a reasonable estimation of coliform concentrations for purposes of monitoring likely input of contaminants into the Lake. However, interpretation of coliform data for surface water is difficult. For example, the presence of E. coli in surface water indicates that the water has been contaminated with fecal matter and that it may contain human pathogens, making it unsafe for drinking and, at high levels, unsafe for swimming. However, it does not indicate whether that matter is from a faulty septic system or animal feces that have been washed into the water.

Apart from the potential problem of fecal material entering the lake, the SLCO water quality program does not provide data that would identify trends in the overall health of the Lake. Such data would indicate for example whether the Lake was becoming a more, or less, suitable environment for the growth of plants, algae, fish or the biota that fish eat. Parameters involved could include pH, dissolved oxygen, temperature, alkalinity, phosphorus, nitrate and calcium, as well as the types and abundance of algae and other biota. The sampling currently done by the District of Muskoka, the province and the Dorset Environmental Sciences Centre will provide some of this data, but these programs are very broad and may not provide as much detail as desirable for Skeleton Lake.

The current SLCO Water Quality Monitoring Program is highly dependent on one individual, assigned by the SLCO Board of Directors, to complete all planning, procurement, sampling, analysis and record-keeping. This limits the potential scope of the program and also leaves it vulnerable to unforeseen limitations in the time available to the person in charge.

What can we do at the local level?

Skeleton Lake has extremely good water quality. Skeleton Lake is fed by springs and small streams and this is less threatening than contaminants entering via major rivers or streams. However, the quality can decline quickly because the lake water is not replaced rapidly. Threats to water quality are generally within the shoreline areas and a watershed that does not extend very far from the Lake itself. This means that those residing, or cottaging, on or near the Lake have a relatively high degree of control over water quality. The following describes stewardship actions that can be taken by residents/ cottagers: 1) as individuals and 2) collectively via the Skeleton lake Cottagers' Organization.

Individual stewardship actions

Control Runoff

Shoreline vegetation provides protection from surface runoff that would otherwise carry contaminants, including phosphorus, into the water by:

- Slowing down the flow of water so that smaller amounts of soil and contaminants are picked up;
- Increasing the rate of infiltration of water into the soil, thus reducing the amount flowing directly into the lake
- Physically trapping or chemically absorbing some contaminants (for example phosphorus).
- A key time to consider the role of shoreline vegetation in controlling runoff is during construction activities. It is at this time that natural soils will be most exposed and vulnerable to erosion.

Measures that can be taken to Control Runoff (16)	
During Construction	• Minimize the amount of land cleared, leaving natural vegetation where possible; • Ensure that trees and shrubs are marked and protected from damage • Insist that your contractor develop and implement an erosion control plan. This plan must include: ○ Silt fencing downhill from disturbed areas ○ Dyking or ditching uphill to direct runoff away from disturbed areas ○ Use only clean fill materials ○ Cover fill piles to protect against rainfall water runoff
Over the longer term	• Leave a buffer zone of natural vegetation between your residence and the shoreline. • Avoid planting non-native species; • Seed or landscape areas as soon as possible after any disturbance; • Avoid pathways that take a straight path to the water, especially if there is a steep slope. A winding path will be less subject to erosion.

Ensure Proper Design, Operation and Maintenance of Septic Systems

•Design

Septic systems can be a major source of bacteria, nutrients and chemical contaminants entering the Lake. These substances can be the cause of reduced clarity due to suspended algae, algae "slime" on rocks, algae blooms, high fecal coliform bacteria counts, fish mortality due to depleted oxygen etc. According to questions #5 and #6 in the Vision Survey, 86% and 87% of respondents had a septic system to deal with sewer and "grey water" respectively. As density of development on the Lake increases, it is essential that the impact of each septic system be minimized. This requires proper design, operation and maintenance of septic systems.

If your septic system was installed before 1980, or if you don't know how old it is, there is a good chance that:

- There never was an adequate septic system installed and your septic waste is entering the Lake with little or no treatment
- Your septic tank is (was) made of steel and has for some time been leaking badly, allowing waste to enter the Lake;
- Your septic leaching bed and surrounding soil has become plugged and/or saturated and is no longer adequately trapping contaminants before they enter the Lake.
- Current loads on your septic system are much higher than what the system was originally designed for.

To deal with these possibilities, have your system inspected by a licensed professional. If deficiencies are found he/she will be able to recommend a suitable design and location for a new system. Note that the water most at risk from an inadequate septic system is that immediately adjacent to you cottage. The problem will not go away by itself and ultimately the municipality will require you to provide evidence that you have an adequate system, and require remedial work if you do not.

Have your septic system inspected by a licensed professional

•*Operation*

A septic system depends on healthy bacteria to function properly. The following are actions that will help to main the health of the system: (16) (17) (18)

- Question additives marketed as "cleaners", "starters", or "enhancers". These are not necessary and can sometimes harm your system;
- Use basket strainers in all sinks, showers and tubs to catch hair and food scraps. Hair is a major problem for septic systems.
- Use a lint filter on a washing machine.
- Don't use a garburator
- Never use caustic toilet bowl cleaners or drain cleaners which can kill bacteria in the septic tank;
- Never allow paint, solvents, kerosene, antifreeze, gas, oil, coffee grounds or prescription drugs to enter the septic system.

•*Maintenance*

Pumping your tank on a regular basis is the most important step you can take to ensure the health of your septic system. The frequency of pump-outs will depend on the capacity of your system and how it is used, but pumping every 3 to 5 years is appropriate in many cases.

Newer septic systems will be equipped with an effluent filter that prevents solids from flowing into, and plugging, the leaching bed. Effluent filters should be checked and cleaned as necessary (a garden hose is convenient) every 3 months. Effluent filters can also be inexpensively retrofitted to most existing septic tanks.

Minimize Water Use

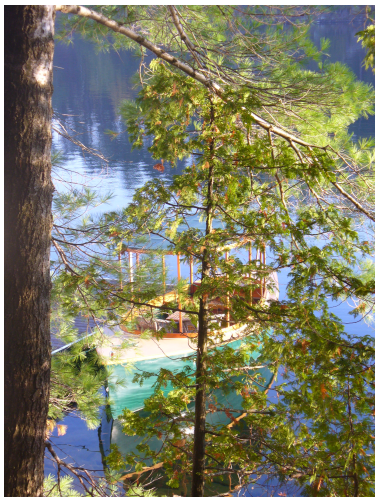
One of the most important operational actions you can take is to minimize water use and thus reduce the flow to the septic system. The liquid sent to the septic system, which is mainly water, is the main "driver" forcing contaminants through the system and ultimately into the Lake. Lowering water use reduces this force and allows the septic system to do its job effectively. Conserving water doesn't mean doing without; it's about reducing waste. There is an abundance of literature on reducing water use.

Key Considerations for Reducing Water Use (16) (18)

- Low flush toilets are the single most effective way to reduce water waste in the bathroom. They can reduce indoor water use by 30%;
- Follow the old-fashioned advice of "if its yellow let it mellow, if its brown flush it down";
- Low flow showerheads provide effective spray while reducing water use by up to 50%;
- Use short bursts of water when brushing teeth instead of letting the tap flow;
- Fix leaky faucets right away;
- Use a front-loading washing machine.

Avoid Practices Which Directly Add contaminants to the Water

For all cleaning chores, but particularly near the water, avoid using detergents containing phosphates or nitrates (eg. ammonia). Numerous environmentally safe alternatives are available. (16)



- Avoid washing boats in, or near, the water.
- Avoid gardens and lawns at the shoreline – leave a shoreline buffer zone of natural vegetation.
- Never use fertilizers, herbicides or pesticides within 30 m of the shoreline.
- Use care not to spill oil or gas when refueling boats;
- Take care to keep wood preservatives and stains from entering the lake.
- Do not use soap or shampoo in the lake.
- Do not bathe pets in the lake.
- Clean up after your pets ("stoop & scoop")

Recommendations - Stewardship Actions by SLCO

Recommendations for SLCO Water Quality Monitoring

In consideration of the importance of water quality, the value of a robust and long-term data set, the cost of monitoring and the various organizations involved in monitoring, the following recommendations are made in relation to monitoring:

- Ensure that at least one individual from the organization continues to submit water samples and Secchi readings as part of the Lake Partners Program;
- Continue to collaborate with MLA on its water quality monitoring program;
- Seek out opportunities to increase the amount and scope of water quality sampling in Skeleton Lake by partnering with universities, research centers and local government on new or existing research programs;
- Develop/expand the SLCO long-term water quality monitoring program such that it:
    - Is designed in consultation, and coordinated, with organizations to benefit from their experience, knowledge and resources;
    - Tests for well-known, and used, indicators of water quality so results can be shared and compared with those from other lakes;
    - Incorporates new parameters where appropriate to better reflect trends in the health of the Lake;
    - Builds a long-term data base that enables the identification of trends in water quality;
    - Is based on volunteer effort so as to engage the Lake community and minimize costs.
- Increase the recruitment and training of volunteers for water quality monitoring.

Recommendations for Other Actions by SLCO on Water Quality

- Initiate a regular dialogue with municipalities on the results of the SLCO water quality monitoring program and encourage municipalities to investigate and act on situations where water quality appears to be threatened by development in proximity to the Lake.
- On a regular basis, inform cottagers/residents on results of the SLCO water quality monitoring program, including trends in results and any remedial actions that should be taken in response to results.
- Make available to cottagers/residents, via newsletters, pamphlets, website and workshops a range of information on Lake stewardship actions that can be taken by individuals or by the Lake community acting together.
- Develop and provide to those who rent cottages a poster that can be displayed in a prominent place and clearly identifies “do and don’ts” for renters who may have little knowledge of appropriate or inappropriate actions with respect to water quality.
- Help organize periodic septic tank pump outs for water access properties.

Chapter 4: NATURAL HERITAGE

Skeleton Lake has some on the highest and most spectacular shoreline cliffs in the Muskoka region. The shoreline is varied, characterized by high ridges running up to the water's edge on the South and East sides of the Lake and emerging again on the North and West sides of the Lake. Shorelines are made up of large fallen boulders at the foot of the cliffs, bedrock outcrops, glacial tills, pebbles, and in other places, fine sand beaches.

The Lake bottom mirrors the shore: bedrock to smooth stones, to large expanses of fine sand. In the northeast corner of the Lake at Newport Beach, a shallow bottom, covered by fine sand, offers an exceptional swimming area several hundred metres wide and extending far out into the Lake at depths that do not exceed a few feet. The lack of weeds and vegetation on the Lake bottom makes swimming and diving extremely pleasurable experiences. The large open expanse of water provides cottagers on the surrounding shorelines with a panorama of scenic vistas, sunrises, sunsets, and vast nighttime expanses of star-filled sky so magnificent as to be almost overwhelming.

The watershed area that surrounds the Lake is largely undeveloped, comprised of forest- covered hills and valleys, full of wetlands and small lakes. They are accessed only by a network of paths and trails, barely marked, and known only to those who have "gone before". They offer adventurous hikers a true wilderness experience and an opportunity to discover and study a host of unusual plants, birds, and animals.

Geologic History

Skeleton Lake itself dominates the watershed it occupies with its 2075 hectare surface area, most of which is open water. Positioned at 281m above sea level, Skeleton Lake is high enough in the surrounding rock of the Precambrian Shield that no rivers flow into the Lake; and a single outlet, the Skeleton River, flows out into Skeleton Bay, Lake Rosseau. Small surface streams flow into the Lake (see Figure 4.2) but the Lake's inflow is largely due to subterranean streams. Skeleton Lake is the largest open body of water in the Muskoka lakes. Water levels are controlled by a fixed weir dam located in the southwest corner of the Lake in Simolean Bay. It is therefore considered a 'closed lake' –one can't get anywhere from here by boat. This aspect of the Lake creates a special cultural and natural environment.

The Lake is deep - 32m average depth and 65m at its deepest point – and its total volume is 6.64 million cubic metres. Its great depth and largely circular shape is attributed to its likely origin as an impact crater left after a meteorite fell to earth during the Paleozoic Era, 541 - 252 million years ago. The topography, or rather bathymetry (beneath the water line), forms a nearly circular depression 3.6 km in diameter with very steep sides plunging down to 70m depth. This circular shape is similar to a crater that cuts across the otherwise undisturbed linear ridge and valley topography of the Precambrian basement, which itself has a topographic relief of approximately 30 metres above the water line.

Geologic mapping in the vicinity has uncovered two rock types pertinent to this hypothesis. First, along the north shore is a narrow band of relatively low density breccia (a fragmented rock zone) that appears to have formed in *situ* from the older surrounding rocks; this may be characteristic of the walls and floor of an impact structure. Second, south of the lake in the down-ice glacial direction, cobbles of limestone have been identified in glacial deposits [Beaumont Bay Carbonates Area]; this most likely represents glacial scouring and re-deposition of preserved remnants of the Ordovician limestone from at depth beneath the lake.

This unique geologic history has resulted in two Areas of Natural and Scientific Interest (**ANSI**) being identified by the Province as meriting recognition within the Earth Science database.

Skeleton Lake Earth Science ANSI

According to the MNR Earth Science database, Skeleton Lake Meteor Crater ANSI contains Neohelikian, gneisses and migmatites which have been fractured and disrupted by a Middle Ordovician meteor impact. The diameter of the impact crater is 3.6km. Shock breccias in the original crater wall exist. Limestone erratics occur.

The Beaumont Bay Carbonates site covers 220 ha, lies to the south of Skeleton Lake, and is traversed by the present day Highway #141. A kame moraine deposit is situated within the portion of the area south of the highway that contains small erratic of Ordovician limestone. This deposit is locally significant in that it can be used to confirm the direction of past glacial ice movement, and help to date the crater that formed the Lake. No other source of this type of limestone exists between this site and Lake Nipissing.

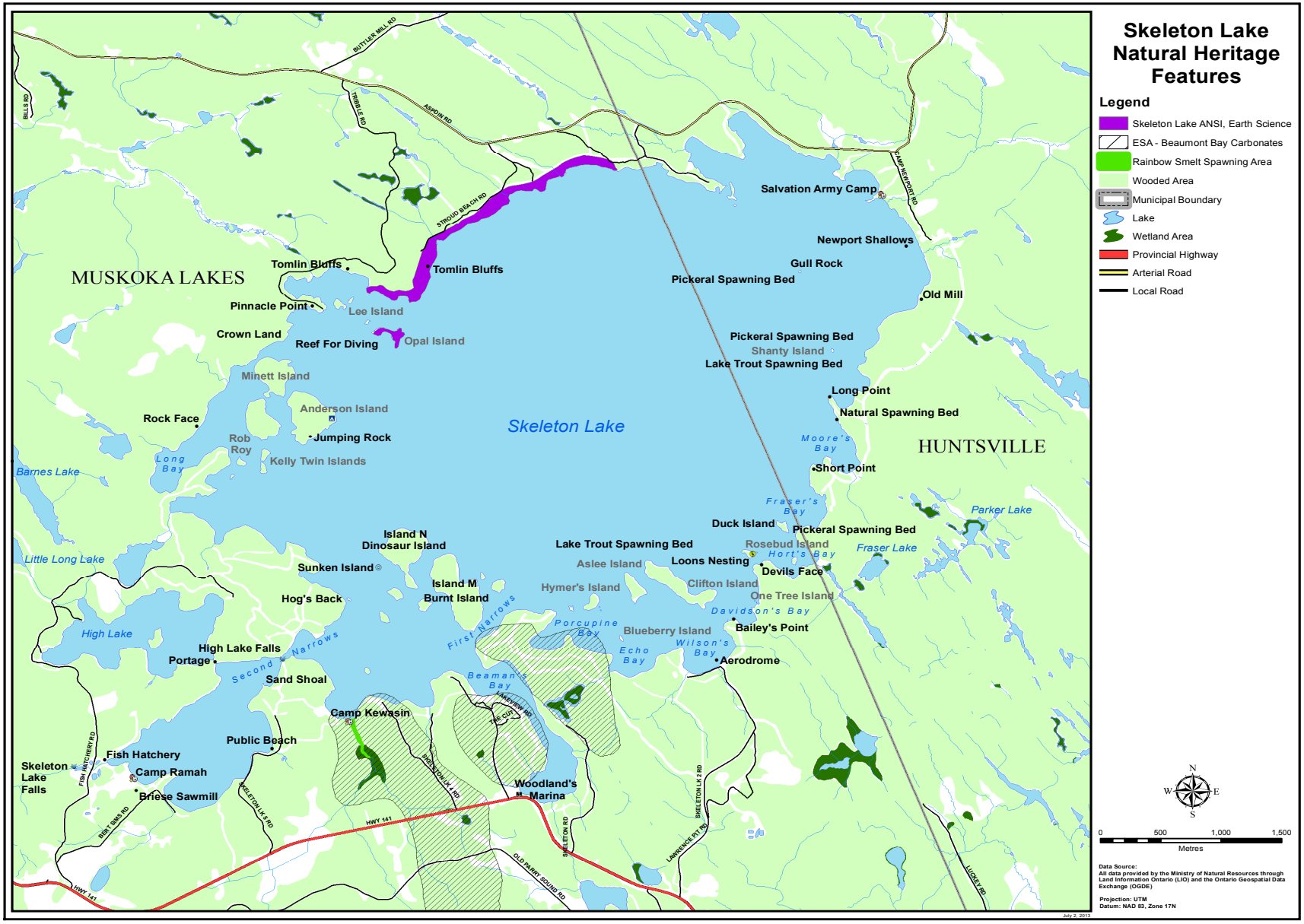


Figure 4.1: Skeleton Lake Natural Heritage Features

Other Unique Features

Skeleton Lake has some of the highest and most spectacular shoreline cliffs in the Muskoka region. There are many significant granite cliffs and outcrops around the Lake that create a dramatic and unique landscape. Based on these earth science features it is deemed Skeleton Lake should be designated entirely as an Earth Science ANSI. Such a designation would provide additional planning protection for these features.

Ecological Zones in the Watershed

The total number of native plant species related to the size of the area is higher than expected for Muskoka. It supports a diversity of landform features supporting a variety of upland, wetland, and steep slope vegetation communities.

Forested Areas

Muskoka is located in the Great Lakes-St. Lawrence Forest region. This region is a transitional zone between deciduous forests of the south and coniferous boreal forests of the north. Specific types of vegetation and species found throughout the watershed vary according to the underlying soils. Much of the area was forested in the early 1900's with most of the highly valued white pine cut down to build Muskoka.

Forest cover in the watershed is incredibly varied due to soil depth and composition. Hemlock and balsam trees dominate in areas with high groundwater and organic soils. The white pines can be seen growing out of virtually no soil in exposed bedrock areas. The deeper sandy soils are predominated by upland deciduous species, such as red oak and sugar maple, which grow after the earlier succession species such as white birch and poplar.

Forest cover contributes to the biodiversity of the watershed as different species inhabit different forest types. The most significant forest habitat occurs 100 metres from the edge of the forest. These areas have minimal human impacts and enable natural ecosystem processes to occur. Protecting these areas will greatly assist in maintaining the natural characteristics of the watershed. Other important natural vegetation features include cedar trees near the shoreline that provide critical food for deer in the winter. Shoreline cedars have the appearance of evenly trimmed branches– the result of winter deer feeding. Dense hemlock groves also provide critical deer wintering habitat. These areas provide enough cover to keep deer warm during severe cold and provide enough hemlock for food. Where these areas exist in the watershed, they should be protected from development, tree removal and site alteration.

Wetlands

A wetland is any land saturated with water long enough to waterlog soil and promote the growth of water loving or water tolerant plants. Wetlands can vary in size. They can be large areas along lakes and rivers, they can be connected by streams, or they can be small poorly drained depressions in the earth. Four main types of wetlands are found in the Skeleton Lake watershed area:

- Marshes – most common type of wetland, often created by beaver activity;
- Swamps - areas with streams, rivers or a lake present causing a high water table and even flooding at times;
- Fens - occur infrequently in this area and only where there is underlying limestone to buffer and allow vegetation to grow; and
- Shallow open waters – transition areas between shore and lakes where water depth is less than 2 meters and the water temperature is uniform

Wetlands are critical for much wildlife. Some nationally and provincially significant plants can only survive in wetlands.

The Skeleton Lake watershed has 525 hectares of wetland, which covers 5.7% of the sub watershed. Skeleton Lake's wetlands are important for the health of the Lake. Aside from providing important habitat they help maintain and improve water quality, aid in flood control, and protect shorelines from erosion. Wetlands trap sediments which would otherwise fill watercourses and they control and store surface water and recharge groundwater. The wetlands provide us with recreation year round. They provide important habitat for fish populations and opportunities for bird watching and hunting.

In Ontario, only wetlands that have been identified as being Provincially Significant are fully protected from development. The Provincially Significant designation only occurs after a three-season detailed survey of the wetland. The Province does not have the resources to undertake these studies. Given the unique water quality in Skeleton Lake all of the wetlands within the watershed should be given the greatest protection possible by having them designated Provincially Significant.

Lake Levels

The water level of Skeleton Lake has long been an issue, as it pits the interests of people who want higher water levels (e.g. greater water depth – marinas, people with shallow shorelines) versus people who own property that is susceptible to high water flooding. The spring flood of 2013 caused an abnormal amount of damage to lakefront structures and shoreline, and pointed to the need for historical records of the Lake water levels at regular intervals (e.g. monthly) to assess the adequacy of current water level management methods. The Lake water level is presently managed mainly by the fixed weir at the outflow from Simolean Bay, owned by the MNR.

Surface Water

Skeleton Lake and its watershed are important contributors to the surface water resources of Muskoka. The watershed includes 6 smaller lakes, 64 ponds and 80 wetlands that store, filter and feed surface water into the main Lake through 34 small streams that enter the Lake at the points marked on Figure 4.2. Details as to the number of small lakes, ponds and wetlands associated with each of these streams can be found in Table 4.1. The continued health of every one of these stream systems is of vital interest to all Lake stakeholders.

The quality of water held in six smaller lakes present in the watershed is important to Skeleton Lake because it receives their outflow. The six lakes are: High Lake, Barnes Lake, Little Long Lake, Frasers Lake, Mud Lake, Cherry Isle Lake and Nutt Lake. The outflow from these lakes enters Skeleton Lake from stream systems included in Table 4.1 and Figure 4.2. With no river feeding into the Lake, the water in the Lake takes a longer time to replace itself (estimated to be around 20 years). This is a very slow "turnover" compared to most lakes because Skeleton Lake is almost 100% spring fed.

Table 4.1 Stream Systems (number in category at location on map, Figure 4.2)

Map Number		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Lakes and Ponds		Outlet	4	0	0	1	0	13	1	6	0	12	0	5	0	7	2	3
Wetlands			3	0	1	0	1	12	5	3	0	11	1	4	0	5	0	2
Map Number		**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**
Lakes and Ponds		0	4	0	0	0	0	1	1	0	0	1	0	0	0	1	1	1
Wetlands		0	15	0	0	0	0	2	6	0	0	2	1	0	1	4	0	1

***see Figure 4.2 Surface Water Sources and Wetlands**

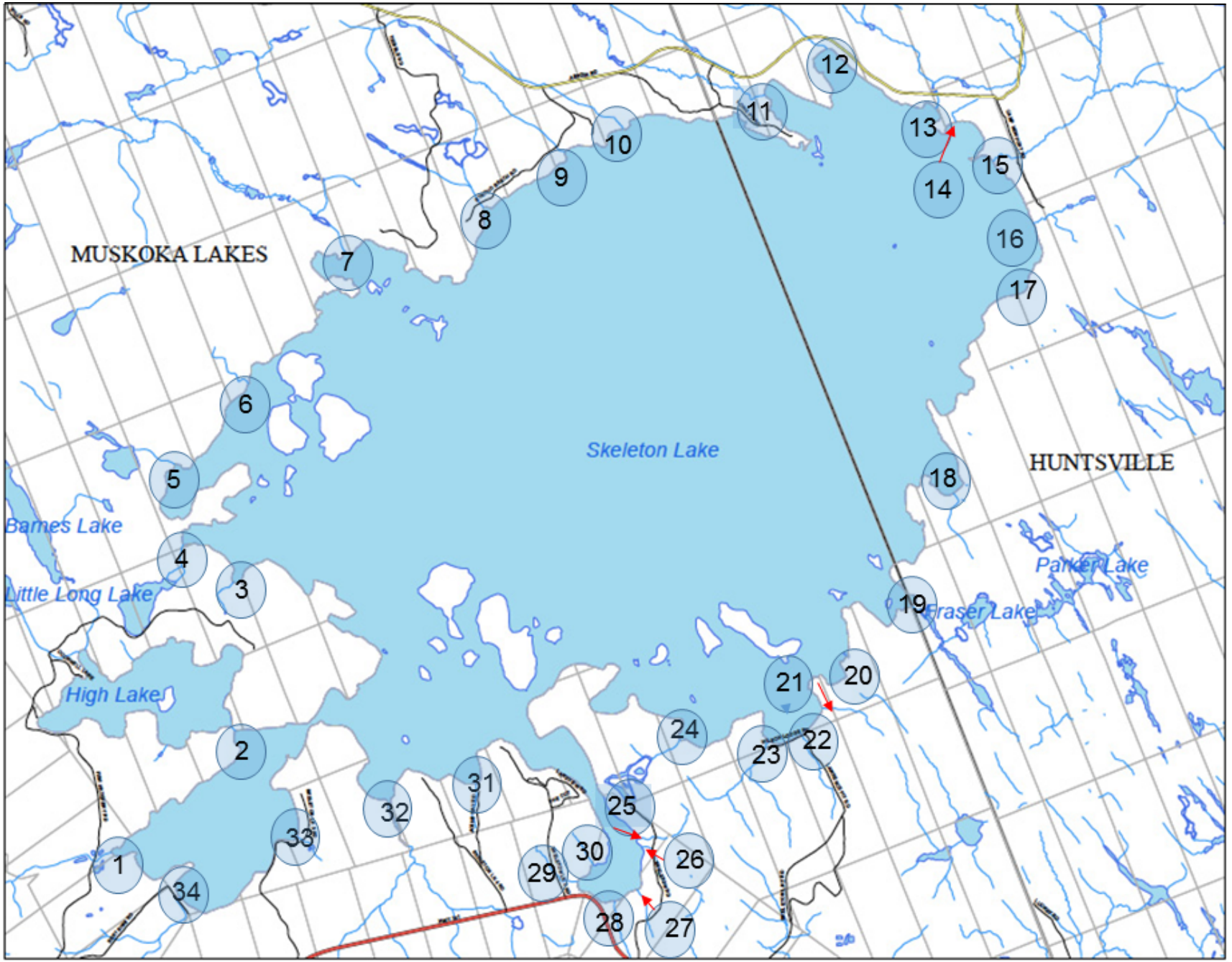


Figure 4.2: Surface Water Sources and Wetlands

The Littoral Zone

This zone extends from the normal high-water mark to the point on the lakebed where sunlight can no longer penetrate. On Skeleton Lake this zone can be more than 14m deep. This zone contains the most important ecological activity in the Lake. It also includes the interface between the land and the habitat for fish, aquatic plants and animals. Plant species that thrive in this zone may be any of three types:

- *Emergent*: cattails and blue flags (extend above the water),
- *Floating:* (whether rooted –like the water Lily- or free floating - like duckweed), and;
- *Submerged*: tape grass, bladderwort, etc.

These plant species provide a number of ecological functions. They provide shelter for young fish and amphibians in their early stages of life and provide food for animals including moose. They also reduce erosion and sedimentation in the immediate shoreline area, and absorb phosphorus, nitrates and other chemical compounds, in essence purifying the water. Unfortunately, many shoreline owners treat vegetation as undesirable and remove the vegetation, even covering it with imported sand, to provide a beach-like swimming environment. While such work may be technically illegal since it damages fish habitat, the Department of Fisheries and Oceans and Ministry of Natural Resources do not have the resources to enforce the regulations. Prevention of the destruction of these critical habitat areas is very important.

The natural rock rubble that covers much of the littoral zone provides important fish habitat for bass, lake trout and pickerel. Disruption of the natural rock rubble, especially in the early summer can destroy fish habitat and is therefore technically illegal. The Fisheries Act provides for the protection of fish habitat. Under this Act, no one may carry out any projects that result in the harmful alteration, disruption or destruction of fish habitat unless authorized by Fisheries and Oceans Canada. The rock rubble provides excellent material for building rock cribs for docks. However, the Ministry of Natural Resources encourages the importation of natural stone rather than disruption of the natural stone in the littoral zone.

Riparian Zone

This is an area that extends between the high water mark and approximately 30 metres inland. It is often referred to as the 'ribbon of life' due to the high diversity of plants, animals, birds, amphibians and fish in this area and the important ecological relationship between them. A healthy, naturally vegetated riparian zone is essential for: preventing erosion of the shoreline, filtering storm runoff water; providing shade and lowering water temperature in the littoral zone during the hot days of summer; and providing food, shelter, and nesting habitat for many of the bird and animal species that depend on this zone for access to, or from, the Lake. Municipalities have recognized the importance of these functions to the waterfront ecosystem by requiring a setback of 30 m for structures – other than docks and boathouses – and banning the

unnecessary disturbance of vegetation within 15 m of the shoreline. As with many regulations designed to protect the environment, controlling the removal of vegetation and site alteration on the riparian zone is very difficult.

Many people have expressed concern about the impact of geese on their properties, largely due to goose excrement. Removing natural trees and shrubs on the shoreline and replacing that vegetation with grass attracts geese. Their diet is primarily grass and they are very attracted to fresh green grasses in the spring. Replacing grass with natural vegetation in the first 5m will also discourage geese from landing.

Human Impact on Ecological Zones

What we do	What it does
Removal of emergent and submergent vegetation	Destroys fish habitat, encourages erosion and sedimentation, removes food source for birds and animals, reduces ecological functions.
Remove rock rubble	Destroys fish habitat and nesting areas.
Remove natural vegetation in riparian zone	Reduces natural filtration process, increases overland flow and sedimentation thereby impacting water quality and reducing habitat.
Build decks, patios and buildings	Increases rate of runoff in rain, causing erosion and sedimentation. Reduces filtration effect of vegetation. Reduces riparian habitat and biodiversity.
Plant grass and non-native plants	Requires maintenance, including fertilizers, herbicides and pesticides thereby impacting water quality. Attracts geese which deposit excrement to lawns. Introduces invasive species.
Introduce invasive species	Alters the ecological balance and competition for habitat.
Removal of trees	Reduces shading effect of shoreline, which is important for fish and other aquatic life. Impacts the natural shoreline vegetation.

Native Plant Species

There is a wide diversity of plant species found in the watershed, so many in fact that a whole separate background report was prepared[i] detailing the species most commonly found. Figure 4.3 is abstracted from that report and shows the important and frequently encountered species that populate the different zones.

Native plant species are best able to withstand the range of temperatures and weather conditions found in Muskoka. They can often be quite beautiful in their own right and provide a basis for maintaining the healthy functioning of the zone.

Trees and Forest Management

Trees are a very important biodiversity feature within the watershed. Sixty percent of the Skeleton Lake watershed is in natural cover – mainly mixed forest – and 64% of it is privately owned. This forest provides important social, economic, environmental and communal benefits to the residents. The Ontario Ministry of Natural Resources has the mandate to manage this resource in a sustainable manner so that these benefits continue to flow to future generations.

Forests provide benefits:

- Social
  - Surrounding woods are an essential part of "being at the cottage".
  - The strength, stature and endurance of a tree can create a calming experience and often trees are planted to provide a living memorial to a loved one who has passed on.

- Communal
  - Trees provide privacy, enhance the scenery, and screen the community from objectionable views.
  - Trees can be used to direct the flow of traffic by their placement in the landscape.
  - They provide habitat for birds and wildlife that add interest for the residents.

- Environmental
    - Trees are especially important in the Riparian zone as they provide shade and cool the water that they overhang and make it habitable for many smaller aquatic species
    - They act as a carbon sink, absorbing carbon dioxide and releasing oxygen, contributing to air quality
    - They deflect the radiation of the sun and cool the ground beneath them
    - They are effective wind breaks, absorb rainfall, sleet and runoff, all essential to preventing damage to the environment.
    - They are especially valuable for repairing areas damaged by erosion or by development

- Economic
    - They are an important source of fuel.
    - They provide a livelihood to some residents in the watershed.
    - They are essential to several important industries as raw materials.
    - Their presence on a lot may increase property values by 5-20%.
    - They increase in value as they increase in size. [ii]

Stakeholders mentioned two features as being very important within their vision for preserving the Natural Heritage. Both are heavily dependent on healthy trees. Forest Cover was deemed "important" or "very important" by 93% of respondents, and Natural Shorelines was deemed important or very important by 95% of them (data from question #1 of the Vision Survey).

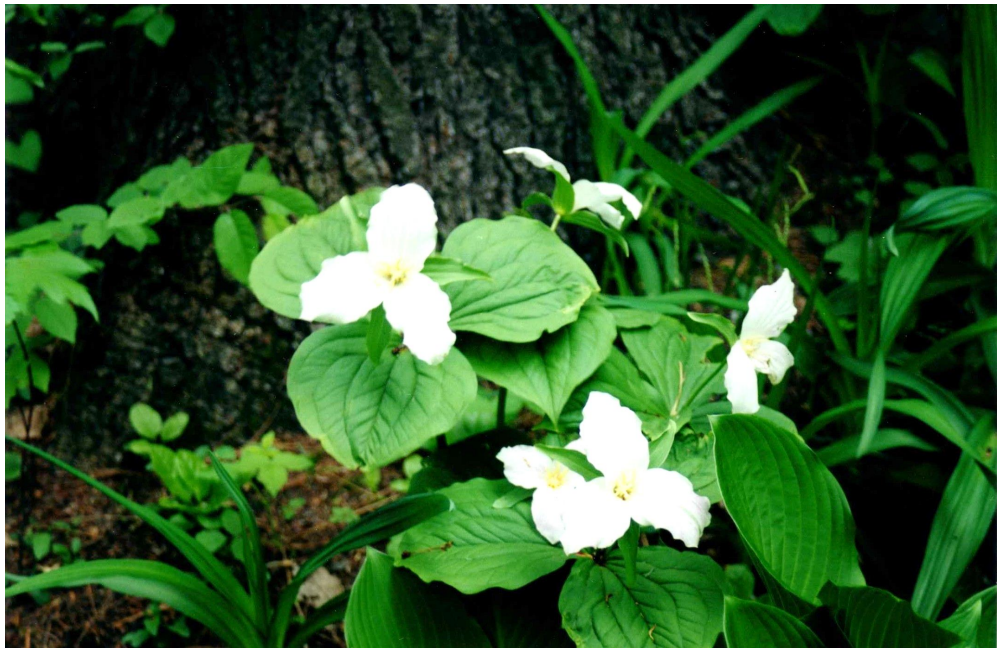
Forest Management

The MNR has a direct mandate to manage the forests on Crown Land, and it attempts to influence the actions of the owners of private land to manage their forests in a sustainable manner through the use of information and incentive programs such as: The Managed Forest Tax Incentive Program and through tax incentives for Conservation Easements. At the municipal level they provide a framework for the protection of the resource within the planning process. Ultimately, however, private land owners are responsible for making the

decisions as to management of their private forests.

Trends and concerns

- Invasive species continue to threaten trees in the watershed. "A number of non-native plants, insects, and diseases threaten Ontario's forests and are considered invasive[iii]. Some of the species (e.g., Beech Bark Disease, Emerald Ash Beetle, and dog strangling vine) are very invasive and already are established in our forest. Global warming threatens to bring an even greater number of non-native species (e.g. Kudzu – Japanese Knotweed) northward to threaten our forests.



- Only 16% of the Skeleton Lake watershed is Crown Land where the *2009 – 2019 Forest Management Plan* (French – Severn Forest section) provides assurance that a sound management plan is in place. Most of the rest is in private hands and only 9% of that land is under current active private land management. Therefore it will be most important to maintain a strong private land stewardship program to ensure the long term health of the watershed.

- Although local municipalities have put By-Laws in place to govern tree-removal in the waterfront zone, tree replacement agreements put in place under site plan control may not be followed up by inspections after the fact to be sure they have been honoured.

Figure 4.3 identifies several of the trees, shrubs, and herbs most often found growing naturally in the riparian zones in our watershed. They are always a good choice when planting or landscaping within your buffer zones.

Figure 4.3: Trees and Shrubs by Type and Habitat Zone

Trees




Riparian and Wetland Zones		Upland Zone	
Balsam Poplar	*Populus balsamifera* L.	American Elm	*Ulmus americana*
Eastern Hemlock	*Tsuga Canadensis*	Ash	*Fraxinus americana*
Eastern White Cedar	*Thuja occidentalis*	Balsam Fir	*Abies balsamea*
Eastern White Pine	*Pinus strobes*	Beech	*Fagus grandifolia*
Silver Maple	*Acer saccharinum*	Black Cherry	*Prunus serotina*
Tamarack	*Larix laricina*	Black Spruce	*Picea mariana*
Trembling Aspen	*Populus tremuloides*	Sugar Maple	*Acer saccharum*
Red Maple	*Acer rubrum*	Red Pine	*Quercus rubra*
Mountain Ash	*Sorbus decora*	Red Oak	*Betula alleghaniensis*
White Birch	*Betula papyrifera*	Yellow Birch	
Willow	*Salix ×sepulcralis* Simonkai		

Shrubs




Bog Laurel	*Kalmia polifolia*	Northern Wild Raisin	*Viburnum cassinoides*
High Bush Cranberry	*Viburnum trilobum Rhododendron*	Pussy Willow	*Salix discolor*
Labrador Tea	*groenlandicum*	Red Osier Dogwood	*Cornus stolonifera*
Meadowsweet	*Chamaedaphne calyculata*	Speckled Alder	*Alnus incanassp. rugosa*
Staghorn Sumac		Sweetgale	*Myrica gale*
Leatherleaf			

Watershed Local Natural Heritage Areas

Skeleton River and Waterfalls

The river and falls are the central attraction of the Township of Muskoka Lakes' Fish Hatchery Park and hiking trail. The river provides habitat for speckled and rainbow trout and a variety of other small fish species. A varied clay cliff on the mid-stretch of the river below the second falls was formed when the area lay beneath Lake Algonquin in the glacial period.

Fish Hatchery weir

A fixed weir situated at the outflow from Skeleton Lake into the Skeleton River regulates the Lake level. It is managed by the MNR and flows and water levels are managed in accordance with the Muskoka River Water Management Plan

High Lake Falls and Portage

A stream flows out of High Lake over a low point in the bedrock forming the natural outflow from that lake, cascading downwards for a short distance towards Skeleton Lake below. A path exists beside the stream that is traditionally used by hikers to access High Lake from Skeleton Lake, and also for portaging canoes and other small craft between the two lakes for fishing.

Devil's Face

The Devil's Face, named after an eerie face-like feature on the sheer side of the cliff bedrock, rises nearly 60 m from the Lake surface. This very sheer cliff is very likely a "Crag and Tail" formed by a glacier pushing over a high ridge in the bedrock as it moved towards the southwest, breaking off large chunks of rock on the downward slope. The resulting cliff has become a feature of high interest on the Lake. A trail leads up the side of the cliff a short distance back from the water's edge along the foot of the cliff. The trail provides access to the top and serves as the "traditional" access to a lookout point offering an extraordinary view of the entire lake. It also provides a natural nesting habitat for raptors like Osprey in dead trees that overlook the lake.

Small Uninhabited Islands

The Lake has several small uninhabited rock outcroppings spread around its shores forming small islands. These have become valued places for swimmers to rest, waterfowl to nest, and fish to congregate. Most are scenic in their own right and because of their shape, their vegetation, or the birds and fish that inhabit them, many have become almost iconic attractions much valued by local residents. Uninhabited islands (often non-public) mentioned as valued and enhancing the Lake, include:

- Cheboygan Island
- Claire Island
- Gull Rock
- Hog's Back
- One Tree Island
- Ramah Island
- Rock Island
- Sailor's Rest
- Shanty Island

Inhabited Islands

There are approximately 23 inhabited islands that have between 1 and 25 separate cottage lots. The island cottages are all water access (i.e. no bridges or causeways) and rely on the two marinas currently existent on the Lake.

Wildlife, Birds and Fish

Viewing wildlife in its natural setting makes life on Skeleton Lake quite special. Of 255 stakeholders surveyed, 243 answered the question #1 on the value they put on observing wildlife: 86.4% rated this as "important" or "very important" while only 13.6% rated it as " less important" or "of no importance".

Wildlife, Birds and Fish

The diversity of the ecological zones represented in the watershed result in an incredible diversity of wildlife, birds and fish. The following lists have been compiled based on observations of area residents.

Wildlife

- Black Bear
- Porcupine
- Rabbit
- Mink
- White Tailed Deer
- Otter
- Grey Squirrel
- Mouse
- Red Fox
- Beaver
- Weasel
- Fisher
- Moose
- Muskrat
- Flying Squirrel
- Mole
- Eastern Wolf
- Groundhog
- Ermine
- Brown Bat
- Raccoon
- Red Squirrel
- Chipmunk
- Grey Wolf

Birds

- Nuthatch
- Barred owl
- Cedar Waxwing
- Pine Warbler
- Belted Kingfisher
- Raven
- Barn Swallow
- Cooper's Hawk
- Yellow Shafted Flicker
- Canada goose
- Mourning dove
- Downy Woodpecker
- Eastern phoebe
- Whippoorwill
- Ring Billed Gull
- Pine grosbeak
- Northern Saw-whet Owl
- Ruffed grouse
- Black and White Warbler
- Crow
- Great Blue Heron
- Tree Swallow
- Broad winged Hawk
- Purple finch
- Turkey Vulture
- Red tailed hawk
- Hairy woodpecker
- Cardinal
- Mallard
- Common Loon
- Cormorant
- Herring Gull
- Bay breasted Warbler
- Bufflehead
- Great Crested Flycatcher
- Chickadee
- Wood Thrush
- Palm Warbler
- Goldfinch
- Blue Jay
- Redstart
- Yellow Warbler
- Tree Sparrow
- Robin
- Double Crested Cormorant
- Rose-breasted Grosbeak
- Great grey owl
- Yellow Rump Warbler
- Black Poll Warbler
- Common Merganser
- Spotted Sandpiper
- Red Eyed Vireo
- Eastern Peewee
- Least Flycatcher
- Wild turkey
- Pileated Woodpecker
- Ovenbird
- Veery
- Ruby Throated Hummingbird

Fish

When it was first inhabited, Skeleton Lake was providing enough fish to support a population of about 100 people. That is clearly not the case today.

MNR fish management for Skeleton Lake is for lake trout. This is for the main part of the Lake. However, a significant part of the Lake at the south end is not lake trout habitat. This part may be looked at as a separate management area for another species, such as pickerel or bass. Bass are not a priority for MNR fish management.

A survey conducted by the MNR in 1994 noted that the lake trout population was falling. Beginning in 1996, harvest controls were implemented, including a 40-55 cm slot limit for lake trout with a limit of one line for ice fishing. The lake trout population is considered to be healthy. The decline in fishing success is due to the current fishing regulations.

There have been two habitat improvement projects that involved building spawning shoals for lake trout. White limestone rocks of 3-6" diameter were dumped into the water to form a spawning bed some 15 years ago. One is near Shanty Island; the second is off Clifton Island. The MNR does not feel that any additional spawning enhancement is necessary.

The following fish species have been identified in Skeleton Lake;

- Lake Trout
- White Sucker
- Walleye
- Whitefish
- Small Mouth Black Bass
- Shiners
- Large Mouth Bass
- Ling Cod
- Perch
- Lake Herring
- Rock Bass
- Rainbow Smelt

Human Impact on Wildlife, Birds and Fish

What we do	What it does
Activity in interior habitat	Reduces habitat for large animals such as moose, deer, bear, and cougar.
Permit pets to roam freely	The presence of cats will significantly reduce birds, chipmunks and squirrels. Dogs will chase deer and moose away from the area.
Keeping fish outside of permitted slot size	Will reduce a self-sustaining fishery. MNR is no longer stocking Skeleton Lake.
Damage shoreline nesting sites	Large wakes damage nests and eggs/young birds – especially Loons.
Altering shoreline vegetation and natural rock rubble	Removes fish spawning grounds, reduces water quality and eliminates food for other species.
Introduce invasive vegetation species	Overtakes habitat of native species and alters the ecological balance.
Introduce invasive species to water	Alters the ecological balance and competition for habitat.

Invasive Species

The following species have been identified as threats to the Skeleton Lake ecosystem.

- Zebra Mussels
- Rusty Crayfish
- Purple Loosestrife
- Spiny Water flea
- Water Milfoil
- Giant Hogweed

Lake Plan Strategic Actions for Protecting Natural Heritage

In order to achieve our Mission with respect to Natural Heritage, the SLCO will complete the following:

- Request recognition of the features as an Earth Science ANSI by the Province and District.
- Request that the steep rock cliffs on the Lake such as Devils Face be recognized as Significant Cultural Landscapes in local planning policy.
- Request that municipalities adhere to their Official Plan with respect to lot creation and land use, such as aggregate extraction, but with a clear preference for fewer severances and a compatible land use.
- Provide more detailed wetland mapping to the Provincial, District and local government.
- Request policies and legislation to protect all wetlands.
- Encourage educational institutions to undertake further analysis of wetlands in the watershed.
- Seek recognition of the Lake as a Source Water under the Clean Water Act.

Stewardship Objectives and Actions for Natural Heritage

OBJECTIVES	ACTIONS
Recognize and protect the Significant Geologic and Earth Science Features that define the unique character of the Lake	• Identify and provide detailed description of the significant features. • Do not deface the features by painting names or drawings on them. • Educate residents and visitors about the significance of these features. • Celebrate the unique features that you cherish on the Lake, so family/friends will learn to take an interest in and want to protect these for the future
Preserve large areas of Interior Habitat in the watershed	• Limit tree cutting activities within 300 m of the shoreline. Leave some dead trees standing and fallen in place. Don't 'clean-up' the forest. • Minimize and be environmentally sensitive when constructing, or up-grading, roads. Limit the clearing along roads. Use environmentally sound practices and avoid spraying chemicals on roads near water. Monitor your contractor to ensure they follow all of the municipal requirements for roads. • Cluster buildings structures and site alterations on the lot to the greatest extent possible.
Protect all wetlands regardless of classification	• Do not drain natural wetlands or change the natural drainage. • Provide improved mapping of wetlands.
Preserve the natural vegetation at the shoreline	• Do not remove the natural vegetation. Sensitively trim tree branches to obtain a better view. • Replace commercial grass with local natural species. Rehabilitate the shoreline where possible. • Use permeable materials so rainwater soaks into the soil and does not create damaging runoff erosion for decks and patios within 30 m of the shoreline. • Do not remove the vegetation in the water. • Do not import sand to create a beach on the waterfront. • Construct dock cribs so they have a minimal lake bottom impact, ideally with imported clean stone.
Preserve fish and wildlife habitat	• Do not let cats or dogs roam unsupervised. • Keep your distance from nesting areas. • Do not create a large wake behind your boat within 30 m of the shoreline. • Follow the fish slot rules. Catch and release. Do not empty live bait into the lake or inflowing streams. • **Before** boating on Skeleton Lake wash your boat hull and bilge if it has been in a different water body.

Chapter 5: HISTORY, CULTURE, RECREATION & COMMUNITY

Due to the degree of interest shown during the community consultation process, the SLCO has decided to proceed with producing a separate publication that specifically recounts the early history and current cultural developments on the Lake. The following is therefore only a brief summary of what is anticipated.

The Skeleton Lake watershed has a rich history as a community that provided occupation, recreation and enjoyment for families since the days of the first land-holders and earliest seasonal visitors. Indeed its very name points to the important role that the Lake has played in the lives of first nations peoples. A frequently quoted legend concerning how the Lake got its name relates the story of an Indian band that was moving through the Skeleton Lake watershed. According to the legend a child was too ill to continue moving and so was going to be left behind as the band had to keep on the move to survive. The child's mother would not abandon the child and so both mother and child were left behind. When the band returned the next season all that remained of the two was their skeletons. So the Lake became known not only for the skeletons but also for the loyalty and love displayed.

Skeleton Lake is surrounded by four townships. The townships were largely unsuited for agriculture, due to the scouring glaciers that left thin, sandy soils with much granite rock outcropping. In general, farming was a marginal existence and settlers relied on logging in the winter months to provide for their families. Area sawmills required local logging crews in the winter months and so the two communities, farming and logging, were dependent on one another. Early agriculture and lumbering had developed a very basic support system that included roads, local sawmills, grist mills, small communities with general stores, supplies, and black smiths. For the local settlers, Skeleton Lake had always been a source of food with its lake trout fishery. Ministry of Natural Resources fish records mention that the people from Lancelot, a small village near current Utterson, fished the Lake for trout. By the 1930's, four lodges existed on the Lake, part of the early recreation industry. They were then followed by seasonal cottagers.

Parry Sound Road provided very early access to Skeleton Lake and early development of the Lake centred on the south end around the community of Ullswater. Luckey Road and SL Road # 1 serviced a number of farms on the Raymond side of the Lake and the latter road reached the Lake and provided access to Wilson's Lodge on Clifton Island in 1919. Raymond is mentioned in the 1930's as the general store that serviced the area. In 1931, the section of Hwy 141 that passes by Beaman's Bay was built, bypassing a stretch of the Old Parry Sound Road.

The west side of the Lake in Cardwell Twp had no settlements close to the Lake. In 1879 Skeleton Lake, in the vicinity of the shore line, was sparsely settled. The Stroud Beach Road serviced a couple of farm lots close to the Lake and later the Tomelin Bluffs, later Tribble Road and a road to Long Point followed.

Sites of Historic and Cultural Interest on Skeleton

By the late 1880's, Skeleton Lake shared part of the new tourism in the Muskokas. The first resort is thought to be Newport House (around 1890), followed by Wilson's Lodge on Clifton Island in 1919. The following is a brief description of the early commercial operations on the Lake.

1) Craigellachie

A lodge, known as Craigellachie on Clifton Island, was the original Wilson's Lodge. It was built in 1919 by Robert and Louisa Wilson. They operated the lodge until 1926 when they moved to the mainland and built what most of us remember as Wilson's Lodge. Craigellachie Lodge consisted of three main buildings, a dining building facing the main lake where the dock was located, a recreation building on the Wilson's Bay side, and in between, a large sleeping building with six bedrooms. There were also two separate cabins.

2) Wilson's Lodge

Wilson's Lodge started on Clifton Island in 1919 as a seasonal operation. Each winter, Robert and Louisa Wilson moved back to their home farm, near Utterson. In 1926, they purchased property on the mainland and established a year round home and resort, the one known as Wilson's Lodge. For many years the lodge was the focal point for that section of the Lake, both socially and for services to the Lake. The lodge operated until 2008, when a fire damaged and destroyed a number of buildings including the main lodge. It continues to operate as a waterfront landing for many water access property owners and limited cottage rentals.

3) Newport House

Newport House was built around 1890. The lodge consisted of a 3 storey building with cabins along the beach. It was operated as a guest lodge but was forced to close around 1960. The property laid dormant until the Salvation Army purchased it around 1974 and transformed it to a summer youth camp. Today the camp, Newport Adventure Camp, comprises 40 acres, and is a summer camp for young children.

4) Simolean Beach Lodge, Camp Winnebago, Camp Ramah.*

The south end of the lake had easy access off the Parry Sound Road and was the location for several of the early lodges and camps, centering on the land and sawmill site where the lake exits to the Skeleton River. Herbert "Bert" Sims purchased 350 acres of land in 1926 and established Simolean Beach Lodge. Bert Sim's legacy is the naming of Simolean Bay, Sim from his surname and Lena from his wife's first name.

The property was rented out for two years to an American group who operated it under the name Muskoka Hunting and Fishing Camp. In 1935, Sadie and Joe Danson started Camp Winnebago. The Dansons operated Camp Winnebago for almost 30 years. In 1939, the Ontario Government bought 19 acres of land from the Dansons in order to build a fish hatchery, acquiring most of the cleared area that was used for outdoor camp activities. Camp Winnebago was sold in 1959 to Camp Ramah which is operated as a children's summer camp by the Jewish Theological Society of Canada.

*** Simolean is by times spelled Simoleon. The correct spelling was suggested by Simolean Bay residents and was used by Chuck and Janine Morris in their history, "Simolean Bay - A Slice of Paradise".**

5) Camp Cheboygan and Camp Kwasind

About 1932, Tobias Olsen sold land to Blythe Thomas who started Camp Cheboygan, a camp for boys. When Blythe joined the Air Force in 1942, he sold the camp to the Baptist Convention of Ontario, who renamed it Camp Kwasind. It is said that Kwasind is Ojibway for Skeleton. It still operates today as a children's summer camp and participates in the Toronto Star Fresh Air Fund for underprivileged children.

6) Fish Hatchery.

In 1938, The Ontario Department of Game and Fisheries purchased 18 acres including the current dam site where the Lake empties into the Skeleton River and where the small falls would feed the rearing ponds by gravity. The hatchery was closed in 1992 due to provincial budget cutbacks. In 1993, with local pressure, the property was purchased by The Township of Muskoka Lakes to use as a park.

Current Economic Activity on the Lake

Today, Skeleton Lake is mainly a cottage community, commercially serviced by three summer camps for children. There are also two marinas that offer full services. The marinas are vital to water access cottagers offering gasoline, car and space leasing, boat dock space leasing, boat launch ramps, boat storage, engine repairs, and many other services.

Troy Cove Marina is a family run business located in Wilson's Bay and provides community meeting space in the former dance hall above the store.

Woodland Marine on #141

Troy Cove Marina

Skeleton Lake Marina was located in Beaman's Bay. The marina is now owned by Woodland Marine Muskoka which has two sites servicing Skeleton Lake, one on Hwy 141 and one at Beaman's Bay. Woodland Marine operates another site in Windermere on Lake Rosseau.

These commercial enterprises provide very important services to the community. Over the past decade a number of waterfront commercial businesses in Muskoka have closed. If these businesses are to continue to be sustainable, it is necessary for the waterfront community to support them.

Woodland Marine

Recreational Activities

Fishing and Hunting

The popularity of lake trout fishing, particularly ice fishing has declined substantially. Fishing was one of the less commonly stated reasons for being drawn to the Lake (54.3% compared to "non-powered boating" at 87.6%, or even just the "peace and quiet" at 96.4%). It is reported that years ago the Lake might have had 100 winter fish huts, now there are perhaps only 10. The allowable size of a harvested fish is managed by slot size. Slot size protects fish breeding age classes and allows the smaller and the largest fish to be harvested. In Skeleton Lake, due to the slot size restrictions most fish have to be released. The varied conditions of the shoreline and littoral zone provide habitat for a variety of fish including small mouth bass, pickerel, and large mouth bass. The lake is not renowned for fishing due to its great depth and relatively clear bottom.

Notably, hunting was the least commonly chosen activity that drew people to the Lake (6.8%) and had the absolutely highest negative rating (81.7%) of a long list of potential cottage activities.

Boating

Boating is one of the primary recreational activities enjoyed by cottagers in Muskoka. The 2010 survey provided some interesting data on boating on Skeleton Lake.

- There is an average of 4.3 boats per cottage (data from ques.#9 of the Vision Survey)

considerably less than the 6.6 per cottage on the large Muskoka lakes (based on MLA surveys).

- The distribution of boats by type of boat is as follows:
    - 52.8% of the boats are Kayaks, rowboats or paddleboats.
    - 11.5% are sailboats or windsurfers.
    - 9.6% are inboard or stern-drive boats.
    - 2.8% are outboards greater than 100 HP.
    - 18.7% are outboards less than 100 HP.
    - 4.5% are PWCs.

Over 64% of the boats on the Lake are reported as non-powered. This statistic differentiates Skeleton Lake from the popular idea that the Muskoka lakes are known for - power boating. It helps define a different culture with respect to boating, which was further emphasized by the Vision Survey (question #1), where respondents chose "power boating" as one of the lesser reasons for being drawn to the Lake.

Unfortunately the Vision Survey only had a question on the type of boats respondents had, and not on typical summer activities involving their use - such as water skiing, sailing/boarding, canoeing, kayaking, scuba diving (notably the Lake is preferred to test divers because of its depth and clarity).

The SLCO organizes an annual sailing race, usually drawing about 20 participants. The long reach of the open Lake and the large islands make sailing Skeleton Lake both a pleasure and a challenge.

Public Access to the Lake

Public dock on Beaman's Bay

Public lake access exists at 6 points in the watershed (see Figure 4.1)

- A municipal public boat launch with parking for a number of vehicles beside Skeleton Lake Marina. (see photo to the right)
- A substantial municipal dock in Wilson's Bay adjacent to Wilson's Lodge.
- A municipally operated public beach and picnic area in Simolean Bay.
- A public access point with a dock on Bert Sims Road.
- A public access to High Lake off Fish Hatchery Rd.
- A municipally operated public access and picnic area off Camp Newport Rd.
- This public access is supplemented by the two marinas which offer commercial boat launching and docking services.

Public dock at Wilson's Lodge circa 1980

Public access points were deemed to be sufficient to meet long term future needs by 8.2% of the Vision Survey respondents with 11.6% suggesting that the facilities be "improved" while 8.3% would like to see them "decreased". There is not yet a properly constructed public boat ramp on the Lake, and parking facilities exist at only one of the public docks. Sanitary and changing facilities at public picnic and swimming areas consist of "porta-potties" at best. There are not any facilities for washing down boat hulls in a manner that will not pollute the Lake. There is no lake access to the Fish Hatchery Park. Further, there are no notice boards for the posting of warnings with respect to invasive species. All of these issues should be brought to the attention of the respective municipal governments.

On the other hand, concerns about greater public access focus on use of the Lake and surrounding watershed by people who have no long-term investment in the Lake environment and may not share the cultural values of the property owners. Persons who are not regular users of the Lake may not have the same appreciation for the pristine environment, water quality and peaceful enjoyment of the waterfront. These concerns may be addressed through providing information at public access points that will educate and encourage good stewardship by day-users of our common resource.

Hiking Trails

Raymond Trail

The Raymond Trail follows the historic colonization route from the old Parry Sound Road to Skeleton Lake. The trail, with moderate hills, passes through field and forest. In places, one can still see the logs of the corduroy road, laid down to help settlers over the boggy sections. The trail wanders through dense hemlock stands that are a favorite habitat of deer, especially during the winter, and through hardwoods that are brilliant during the autumn. The route bypasses a large gravel pit and an abandoned hunt camp, ending at Skeleton Lake Road 2. At this point there is a choice of returning the same way or travelling a similar distance along Skeleton Lake Road 2 to Highway 141 and back to the starting point. Alternatively, one can turn right, where a short walk takes you down the hill to the public wharf on Skeleton Lake.

Skeleton Lake Trail

On the former fish hatchery property, the trail winds past the hatchery ponds, which have now been naturalized, and follow the river, which flows from Skeleton Lake to Lake Rosseau. The trail passes by several habitats: meadows, deciduous forests, flood plain forests, river shorelines and wetlands. Skeleton Lake Trail also includes views of small waterfalls and rapids. Interpretive signs offer information and illustrations on different habitats, flora and fauna of the area, with advice on conservation techniques that individuals can use to preserve the natural heritage of Muskoka.

Community Culture – What Residents Value

The following cultural values reflect data collected from the 2010 survey of property owners in the watershed and public consultation workshops held with residents in 2010 and 2011. The cultural values include some of the physical and biological features identified in previous sections of this Plan. Although there was no survey question specifically on social event participation, it is noteworthy that events, such as the Regatta, the Family Day activities, the fish derby, are highly anticipated annual events, that serve to unite the Lake community. In the past the Lake held dances, corn roasts and a golf tournament, but even though the events change as the volunteer base and tastes change, the Lake has long had a rich social life.

Community

The 2010 Vision survey revealed a strong focus on the family and the community by the respondents. The Lake is free of the high density condominium and time-share type development now seen on many of the larger Muskoka lakes and remains primarily dominated by private cottage lots, mainly seasonal (87%), but with an increasing number of permanent homes (13%) – see Figure 6.1: Lot Classification Map. Turnover of cottage properties is low, often with the property being in the same family for many generations. As original cottage families become more extended, there has been a trend to purchase neighboring cottages rather than expanding existing ones. The above may explain why there tends to be relatively few listings on the Lake.

According to the Vision Survey almost half (49.6%) of the residents have been on the Lake for more than 40 years, and 80% indicated that they had been on the Lake for more than 20 years. Many of the original seasonal cottages have been replaced with year round homes. The Lake community is relatively close-knit. This has resulted in deeply shared cultural values among the property owners. The 2010 survey of property owners showed that attitudes towards development are conservative with many respondents expressing a preference for discouraging intensive development and not to follow the pattern of development of the larger Muskoka Lakes.

Natural Shoreline

The shoreline of the Lake is dominated by natural features, forests, and rock outcroppings. There are a few examples of shoreline vegetation having been removed, creating an urbanized landscape. Maintaining the dominance of the natural landscape respects the community culture and the environment.

Dark Night Skies

Dark Night Skies ranked high in terms of the number of responses from stakeholders, with 89.4% valuing it as “very important” or “important” in terms of the Lake features that drew them to the Lake (see Table 2.1).

In recent years, the number and size of waterfront homes has increased. Existing cottages have been expanded and shoreline structures such as docks and boathouses added. The lighting associated with these structures may result in glare and light trespass that is annoying to neighbours, and interferes with the dark night sky valued so highly by many for star-gazing and night-time navigation.

The problem has been compounded by the lack of mechanisms for regulating outdoor lighting and by insurers who insist on bright, highly visible lighting to warn passing boaters away from such structures as boathouses.

The Muskoka Heritage Foundation and the Muskoka Lakes Association have developed "Sensible Waterfront Lighting Guides" for distribution to waterfront residents. Site Plan Control under the Planning Act and by-laws under the Municipal Act are tools that municipalities can and should use to encourage responsible action during development that will preserve the night sky for all.

Peace and Quiet

Almost all respondents to the Vision Survey (96.4%) indicated a significant value in peace and quiet (see Table 2.1). While respecting the right to have fun and occasionally celebrate special events, respect for the right to peace and quiet is of significant importance. In a waterfront environment sound travels a considerable distance. Revellers unaware of this phenomenon may not appreciate the extent to which their noise can disturb others. While there are noise by-laws in both Muskoka Lakes and Huntsville, enforcement in a remote area like Skeleton Lake requires improvement.

Fireworks have been identified as a major concern by stakeholders. Often residents and visitors to the Lake use fireworks on occasions other than public celebrations such as Victoria Day and Canada Day. Concerns about fireworks extend beyond noise issues to potential fire hazard and the potential for water pollution resulting from casings landing in the lake and leaching chemicals. It has been suggested that restrictions on the sale and use of fireworks on the Lake be imposed by the respective municipalities.

Only a few louder boats operate on Skeleton Lake. Perhaps this is due to a long term culture of such craft not being socially acceptable. It is also likely influenced by the fact that there is no navigable access to other lakes and that the marinas largely service local boat operators. Most boat owners on the Lake appear to have chosen below water exhaust for engines and therefore their boats operate more quietly. However, there have been instances of very noisy boats being brought to the lake for day use.

Even moderate noise levels from some boats and personal watercraft (PWC) can be extremely disturbing when they are operated for long periods of time in one location, for example pulling persons on skis, boards or tubes, or doing stunts on PWC's. Owners of these craft should ensure that their enjoyment of such activities does not take place over extended periods of time in one location unless they are very far from shore. Sound travels far greater distances over water than over land and is magnified at night when other noise is reduced. Amplified music at the shoreline, or even the sound of many people talking near the shore, can be disturbing for more than a kilometer away over the water at night. Out of consideration for the peace and quiet of large numbers of people, music and parties should move indoors after 11:00 at night.

Community Culture Stewardship Strategy

The following table identifies Objectives and Actions aimed at achieving the Mission with respect to Culture and Community.

OBJECTIVES	ACTIONS
Preserve our Cultural History	• Undertake a project to collect, capture and securely store past, present and future information of historical interest, with a view to its publication in various forms for the benefit of future Lake property owners.
Ensure Commercial Sustainability of Commercial Services	• When at the cottage, shop locally. • Avoid importing goods and services from other areas. • Advise local businesses on how they can provide goods and services that you need.
Improve the Fishing in Skeleton Lake	• Follow slot rules. Catch and release carefully. • Follow Stewardship actions related to Natural Features. • Become involved in future SLCO habitat improvement activities.
Be a Conscientious Boater	• Exhaust under water and ensure the engine is properly tuned to avoid polluting the Lake. • Avoid operating boats or PWC for extended periods of time in any one part of the lake • Be careful when filling boats to avoid polluting spills • Keep a safe distance and give the right of way to non-powered craft. • Obey speed limits and wake restrictions - 10 KMPH within 30 m of the shoreline. • Keep a lookout for water skiers and other boats and slow down/stay away from swimmers • Be careful that boats do not harm wildlife, especially avoid wakes near shore nesting sites.
Preserve the Dark Night Sky	• Use lighting only where necessary. Do not light up the wilderness. • Replace high-wattage bulbs with lower-wattage bulbs. • Use dimmer switches and timers. Use full cut-off fixtures. Avoid the use of flood lights. • Direct light fixtures away from the water. • To avoid water hazards at night, consider solar reflectors or reflector tape instead of lights.
Respect the Right to Peace and Quiet	• Do not play amplified music close to the shoreline or after 11:00 at night. and avoid disrespectful language any time • Do not use power equipment near the water early in the morning or at night. • Limit your use of fireworks that illuminate the sky to a very few specific occasions such as Victoria Day and Canada Day. • Teach your guests and children to respect neighbors' right to peace and quiet.

SLCO Strategic Actions – Culture

In order to implement the Mission of this Plan the SLCO should undertake the following:

- Undertake a project to prepare a detailed history of Skeleton Lake.
- Strengthen the Organization through increased membership and the recruitment of volunteers.
- Develop a greater sense of a community culture of "stewardship" through on-going education and distribution of available information.
- Build a stronger watershed identity by better publicizing and coordinating events, improving its communications and use of technology, and providing additional opportunities for social interaction amongst its members.
- Provide stewardship information pamphlets at key water access points and marinas.
- Discuss the sale of fireworks with local businesses.

Chapter 6: DEVELOPMENT AND LAND USE

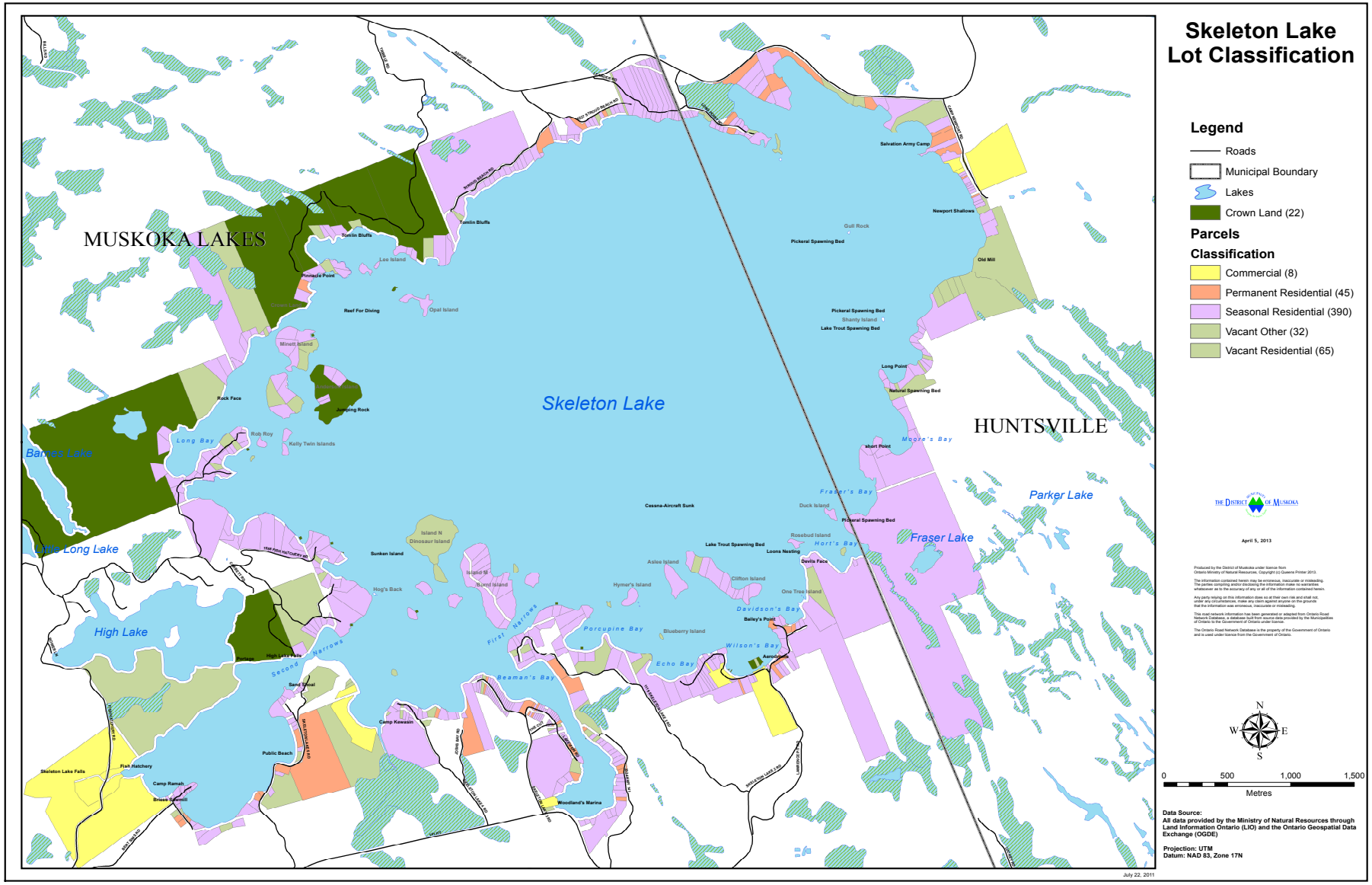
The residents of the Skeleton Lake watershed have indicated that they place a high value on the moderate pace of development which has allowed the Lake to develop its own unique character, somewhat different from the larger lakes, and to retain most of the features that brought them here in the first place. Change, however is inevitable. In creating any plan to manage that change it is important that the Plan considers the community. Most residents of the Lake will say that the Lake should remain just as it was when they arrived here. But time does not stand still, and change will happen as original owners leave, new owners redevelop the old lots, and new lots are created in response to the continuing demand for high quality recreational properties.

New development may be accompanied by benefits in addition to downside effects. The environment may benefit through environmentally-friendly technologies and materials and reduction in pollutants. The community may benefit through increased economic activity which may persist for many years. Therefore, proper planning must focus on the "total effect" and pursue the goal of ensuring the changes that come with future development will provide a "net positive" outcome when viewed from the community perspective while also being conscious of the individual interests of property owners.

Skeleton Lake – Present Land Use and Development Character

Skeleton Lake is characterized by a significant number of developed residential lots, unevenly spread around its shore, as shown in the accompanying Figure 6.1: Lot Classification Map.

The Lake remains primarily dominated by private cottage lots, mainly seasonal but with an increasing number of year-round homes (13%). The Lake is free of the high density condominium and time-share type development now seen on many of the larger Muskoka Lakes. The 2010 Vision survey indicated that attitudes towards development are conservative. Many respondents expressed a wish to discourage intensive development – which they view as "urbanization"- in the foreseeable future, preferring not to follow the pattern of development on the larger lakes.


Skeleton Lake
Lot Classification
Legend
Roads
Municipal Boundary
Lakes
Crown Land (22)
Parcels
Classification
Commercial (8)
Permanent Residential (45)
Seasonal Residential (390)
Vacant Other (32)
Vacant Residential (65)
MUSKOKA LAKES
HUNTSVILLE
Skeleton Lake
Barnes Lake
Little Long Lake
High Lake
Fraser Lake
Parker Lake
Tomlin Bluffs
Lee Island
Pinnacle Point
Reef For Diving
Opal Island
Minett Island
Rock Face
Jumping Rock
Rob Roy
Kelly Twin Islands
Long Bay
Salvation Army Camp
Newport Shallows
Gull Rock
Pickerel Spawning Bed
Old Mill
Shanty Island
Lake Trout Spawning Bed
Long Point
Natural Spawning Bed
Moore's Bay
short Point
Fraser's Bay
Duck Island
Rosebud Island
Hort's Bay
Loons Nesting
Devils Face
Aslee Island
Clifton Island
One Tree Island
Davidson's Bay
Bailey's Point
Wilson's Bay
Aerodrome
Echo Bay
Porcupine Bay
Blueberry Island
Hymer's Island
Cessna-Aircraft Sunk
Island N
Dinosaur Island
Sunken Island
Island M
Burnt Island
Hog's Back
First Narrows
Second Narrows
Beaman's Bay
Sand Spoal
Camp Kewasan
Public Beach
Fish Hatchery
Skeleton Lake Falls
Camp Ramah
Briese Sawmill
Woodland's Marina
THE DISTRICT OF MUSKOKA
April 5, 2013
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Data Source:
All data provided by the Ministry of Natural Resources through Land Information Ontario (LIO) and the Ontario Geospatial Data Exchange (OGDE)
Projection: UTM
Datum: NAD 83, Zone 17N
July 22, 2011

Figure 6.1

Built Form

Cottages on the Lake display a wide variety of ages, sizes, styles, and situations. An unscientific 2012 visual survey of 435 cottages from the Lake, revealed that about 20 per cent appear to have been built since 1985, 60 per cent appear to have been built in the 25 years between 1960 and 1985, and 20 per cent have likely been in existence for more than 50 years. The general trend has been from very small, simple and rustic seasonal cottages in the early years, to more modern, better-built structures reflecting the trend toward building larger, more visible, year-round structures on larger frontage lots that dominate today's development.

Trends in shoreline development

Easily developed lands are already developed

In approximately 80 years of development of the shoreline throughout Muskoka, the easiest lands to build on were developed first. Much of what remains to be developed are lands that are more difficult to access, or lands that are more difficult to build on (eg. have steep slopes or sensitive shorelines). Historically the cost to develop these properties precluded interest in developing these lands. However, now with such a limited supply of shoreline, the value of the land has increased dramatically making all shoreline development on Muskoka lakes financially viable even if it involves the undertaking of significant alterations to the existing terrain. The environmental impact of major terrain alteration needs to be carefully controlled. In addition, the visual impact of significant alterations to the shoreline needs to be considered in order to maintain the character of these areas.

Additional pressure for road access will also occur as approximately a quarter of waterfront lots do not have road access.

Redevelopment of existing cottages into large year-round homes

Increasingly smaller cottages are being replaced by large year-round homes. In the Muskoka/Parry Sound area most of the building permits for new cottages, or homes, on the waterfront areas have been issued for major renovations or complete replacement of existing cottages. As a result, the by-law provisions for rebuilding in the two municipalities affecting Skeleton Lake (Town of Huntsville and Township of Muskoka Lakes) enable very large buildings to be built in relatively close proximity to the shoreline. This has had a significant impact on the visual character of the shoreline, despite the fact that many of the new larger shoreline homes are very attractive architecturally. Respondents to public consultations for the Lake Plan have raised concerns about the continuing "urbanization" of the natural shoreline areas.

Redevelopment offers the opportunity to improve water quality, if the redevelopment application can be tied to septic system upgrades, enhanced setbacks or shoreline vegetation improvements.

Increased intensity of use

Since many of the newer cottages or homes are built to current four-season standards, winter use is now much more feasible. While the "shoulder seasons" are still slower from an economic and a use-intensity perspective, winter use has increased and is likely to continue to increase. This fact is supported by the Vision Survey. Climate change may also enable longer habitation of seasonal buildings. In April 2012, there were three weekends with temperatures above 20 C.

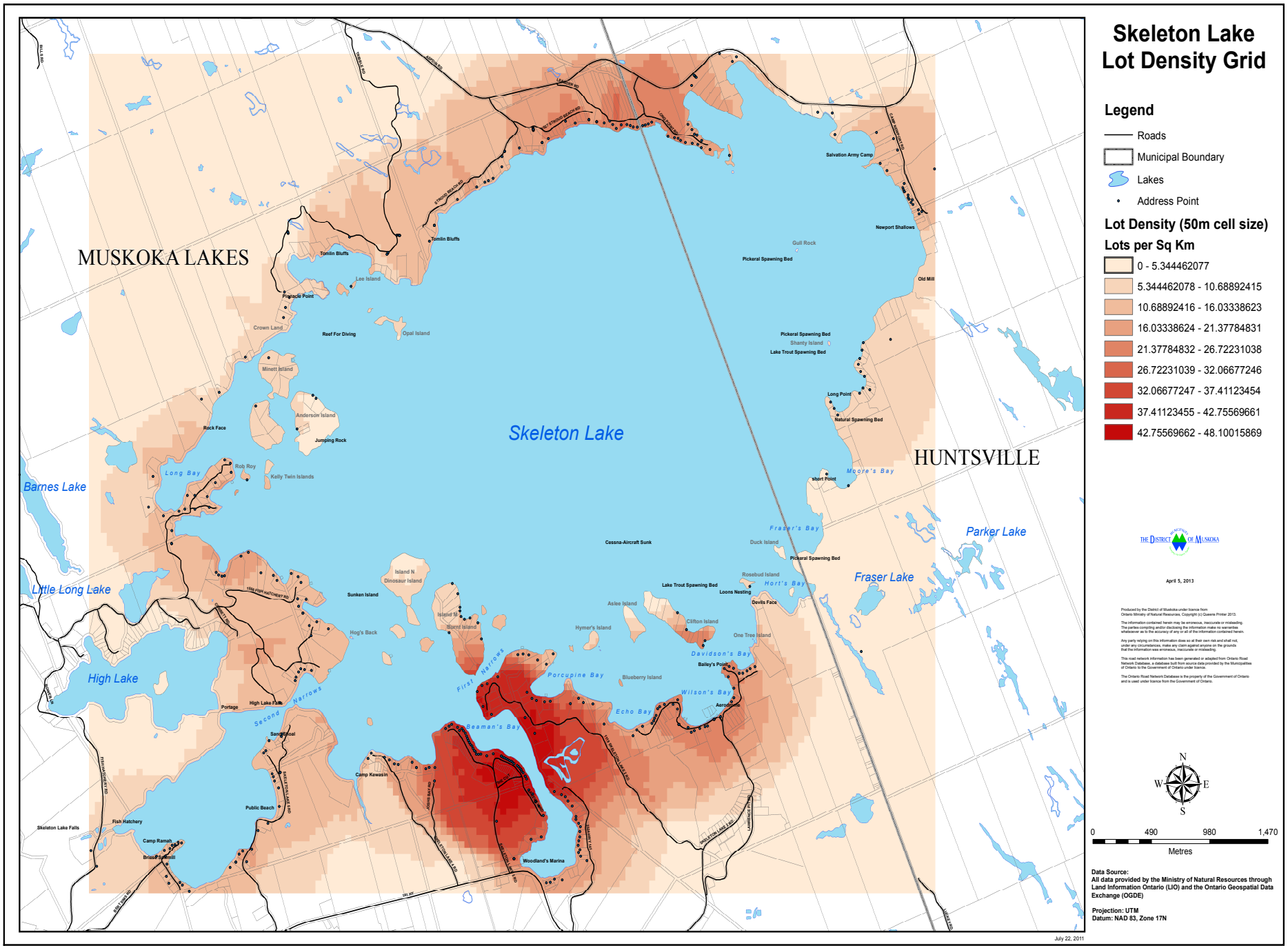
The aging of cottage owners results in increased intensity of use when mature children and grandchildren continue to visit the cottage. The Vision Survey showed a significant number of families with three or four generations using the cottage. There is continued demand for sleeping cabins, habitable second storey boathouses and other outbuildings that enable a greater intensity of the use of shoreline properties.

The high real estate values in the area have also spawned increased shared ownership of individual cottages among families or friends. It is anticipated that there will be an increasing trend to sharing cottages in the same manner as time-share condominiums on an individual property basis. This will increase the intensity of use of those properties.

Redevelopment of smaller commercial properties

Resorts are an integral part of cottage country and make it possible for non-property owners to take part in the lake experience. Many cottagers tend to forget that among the first developments on "their" lakes were resorts – they are part of the landscape.

Until recently, many of the tourist resorts in the area were family owned smaller operations catering to short-term tourists. In Muskoka, many of these properties have or are being purchased by corporations for developing time-share condominiums or fractional ownership recreational homes. The developments tend to increase the density of development as well as the intensity of the use. The impacts associated with this typically higher intensity use include: environmental impact on water quality and habitat, as well as social impact related to noise, boat traffic, car traffic, and lighting (See following Lot Density Map).



Skeleton Lake Lot Density Grid

Legend

- Roads
- Municipal Boundary
- Lakes
- Address Point

Lot Density (50m cell size)

Lots per Sq Km

- 0 - 5.344462077
- 5.344462078 - 10.68892415
- 10.68892416 - 16.03338623
- 16.03338624 - 21.37784831
- 21.37784832 - 26.72231038
- 26.72231039 - 32.06677246
- 32.06677247 - 37.41123454
- 37.41123455 - 42.75569661
- 42.75569662 - 48.10015869

THE DISTRICT OF MUSKOKA

April 5, 2013

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Data Source:
All data provided by the Ministry of Natural Resources through Land Information Ontario (LIO) and the Ontario Geospatial Data Exchange (OGDE)

Projection: UTM
Datum: NAD 83, Zone 17N

Land Use Planning

Land use planning in Ontario follows a defined hierarchy where Provincial policies and regulations are required to be implemented by the District of Muskoka and subsequently further detailed by the area municipalities. Skeleton Lake is entirely within the District of Muskoka but lies partially within the Town of Huntsville and partially within the Township of Muskoka Lakes.

The District of Muskoka Official Plan establishes broad policies and guidelines for land use and development throughout the District. Huntsville and Muskoka Lakes also have Official Plans. These Plans must be consistent with the District Plan and provide a further level of detail regarding future land use within each municipality. Official Plans provide guidelines on how land development should occur in the municipality. They are not law, but all planning decisions such as Zoning By-law Amendments, Minor Variances and plans of subdivision or single lot creation by consent must conform to the policies of the Plan.

Fortunately the District of Muskoka has the most detailed policies related to land development and water quality in the Province, and perhaps the Country. Development in Muskoka must undergo a rigorous development process that requires the completion of Environmental Impact Studies, Site Evaluation Reports and development controls such as Site Plan control, even for small scale developments. While this system may seem frustrating to individuals and small scale developers, it provides a significant level of protection for our environment and especially our water quality. On-going monitoring of the effectiveness of the current development approval system by the District ensures that environmental impacts are minimized to the greatest extent possible.

One area of concern that has been identified through the public consultation process is the control of grading and tree cutting. Reductions in staffing levels at the Ministry of Natural Resources and the Department of Fisheries and Oceans have left enforcement of site alteration activities largely in the hands of local municipalities. Site alteration can have considerable impact on the environment and the landscape that is so valued by area residents. It can also have impacts on water quality as a result of increased siltation from disturbed sites, particularly where streams are involved. Work done on a property prior to any application for development may fall within a “gap” in current municipal by-laws, which apply mainly to permits issued subsequent to applications made to develop a property. Municipalities are encouraged to implement site alteration by-laws that would require major alterations to grading, drainage, and vegetation to be approved by the municipality prior to works being undertaken. Such by-laws should not limit reasonable uses of private land.

Large Scale Developments

New Commercial developments, significant expansions to, or changes to existing commercial properties require an Amendment to the Huntsville or Muskoka Lakes Official Plan. This process requires a rigorous environmental and planning review, including public notification and meetings.

Resort and condominium development were identified as key concerns by members of the Association in the 2010 survey. One of the Strategies outlined in this Plan is for the SLCO to request that both municipalities give notification of applications which come before them for development on the Lake. Under the provisions of the Planning Act the Town of Huntsville and Township of Muskoka Lakes are required to provide such notice of applications and public meetings for development proposals. This will enable the Organization to review proposals, provide comments to the appropriate municipality and participate in the development review process, including, if necessary, participating in OMB Hearings. It is not the intent of the Organization to question the ability of local governments to consider the interests of the shoreline residents, but rather to ensure that the objectives outlined in this Plan are fulfilled to the greatest extent possible.

Development on Waterfront Lots

Given the municipal planning structure in Muskoka, there are few issues with the planning policies and regulations imposed by the Town of Huntsville and Township of Muskoka Lakes. Key issues such as a second storey on boathouses, preservation of vegetation on the shoreline and maintaining the character of the shoreline are well addressed in the Official Plans and Zoning By-laws of both municipalities. There are, however, subtle differences in the regulations affecting shoreline development between the two municipalities. These are summarized below.

Figure 6.3 Summary of Regulations relating to shoreline development in Town of Huntsville and Township of Muskoka Lakes (as of June 2014)

Town of Huntsville	Township of Muskoka Lakes
Minimum frontage – new waterfront lots: 60 m.	Minimum frontage – new waterfront lots: 60 m or 90 m if slope> 40%.
Buildings and structure are to be set back 20 m (66 ft) from the shoreline. In sensitive areas 30 m.	Buildings and structure are to be set back 20 m (66 ft) from the shoreline. In sensitive areas 30 m.
Vegetation in the 15 m buffer is to be maintained in a natural state.	Vegetation in the 15 m buffer is to be maintained in a natural state.
Maximum building height 9.0 m.	Maximum building height 9.1 m.
NA	Maximum building size 700 sq m.
Maximum lot coverage 10% within 90 m (300 ft) of shoreline.	Maximum lot coverage 8% within 60 m (200 ft) of shoreline (Category 2 Lake).
Cumulative width of docks and boathouses 25% of frontage or 15 m (50 ft).	Cumulative width of docks and boathouses 12 % of frontage or 22.9 m (75 ft).
Maximum dock length 15 m (50 ft).	Maximum dock length 21m (66 ft).

It is noted that there is a significant discrepancy in the municipal policies for lot creation on the shoreline. In Muskoka Lakes, the minimum lot frontage for a new lot, measured as a straight line across the shoreline of a lot, is 90 metres (295 ft). In Huntsville this minimum frontage is only 60 metres (197 ft). This could result in the density of development of the eastern side of the Lake being considerably higher over time. It is also noted that the zoning regulations allow for larger buildings and more lot coverage in Huntsville.

One of the areas containing the lowest density of development on the Lake, at this time, is the southwestern shoreline in Huntsville (located in the former geographic township of Stephenson). The historic low density in the area is largely the result of poor road access. Recent improvements to the private road system in these areas could result in increased development. Sometimes there are local agreements to limit development, as with the north shore of Simolean Bay.

The Stewardship Strategy includes providing input into the on-going process of updating planning regulations that affect the watershed. Consistent regulations throughout the shoreline would assist in maintaining the character of the waterfront. It is therefore recommended that a consistent minimum lot frontage of 90 metres be applied throughout the Skeleton Lake shoreline. In addition, lot coverage and maximum building sizes should be included in the Huntsville By-law. These changes would result in less disruption of the critical shoreline vegetation and environment and distribute development at a lower density so that the natural features of the landscape continue to dominate over human built features.

The SLCO should also continue to monitor development applications in the watershed to ensure that the policies that have been developed to protect the watershed are implemented and any agreements executed are carried out in full. The SLCO does encourage shoreline property owners to bring buildings and shoreline up-grades to modern standards, as long as these meet the planning guidelines meant to protect the environment and the common interests of other shoreline property owners.

Increasing Costs of Ownership

Skeleton Lake has a long tradition of large tracts of land and expanses of shoreline being held in families over generations. Many of these owners have intentionally kept their lands in a natural, undeveloped state. However, shoreline owners have indicated that rising taxes and other cost burdens related to holding onto undeveloped property is causing them to reconsider doing so. This will lead to increased pressure for lot creation, turnover and subsequent development, with associated impacts on water quality and other desirable aspects of the lake.

Significant Features

Among the most highly valued characteristics of Skeleton Lake are the significant natural and landscape features around the Lake. Provincial and local planning authorities do not have the resources to identify these features at the same level of detail as the Lake residents themselves. The following table identifies those features based on the public consultation process during the development of this Plan.

Sensitive Areas, Natural & Cultural Features	
Fish habitat	Devil's Face
Waterfowl habitat	Elephant Rock, Gull Rock, Shanty Is.
Deer wintering areas	Hogs Back, One Tree Is.
Skeleton Lake ANSI	High Lake Portage
Beaumont Bay Carbonates (MHA)	Weir at Lake outlet
Fish Hatchery Park and Walking Trail	Upper & Lower Falls on Skeleton River
Govt. Wharf (Skeleton Lake Rd 2)	Public Boat Ramp (Beamans Bay)
Public Beaches (Simolean Bay, Newport)	Raymond Hiking Trail

These locally significant natural features and cultural landscapes should be identified in the Huntsville and Muskoka Lakes official plans in order to provide a higher level of protection. The identification of these features in local planning documents would require larger lots to be created in those areas, environmental impact studies to be completed and additional development control (Site Plan Control) for any development to be approved in the areas within, or adjacent, to those features.

Stewardship Strategy – Land Use and Planning

The key Objective related to Land Use is to continue to become more involved in the land use and planning process at the District of Muskoka, the Town of Huntsville and the Township of Muskoka Lakes. While individual planning concerns should be addressed by the neighbouring property owners, the SLCO can provide its members with information, and where appropriate, representation before local municipal councils. The SLCO should however not become involved in neighbour disputes, or present positions on development proposals, that do not represent the interests and values of SLCO members in general, as interpreted by the Board of Directors.

In order to implement the Mission of this Plan the SLCO will undertake the following tasks:

- Provide copies of this Plan to the area municipalities for consideration when updating their Official Plans. This information will include more detailed natural features mapping, identification of significant cultural and geologic landscapes that should be provided a higher level of protection.
- Formally request Notice of planning applications affecting land use within the watershed pursuant to the provisions for Notice under the Planning Act.
- Provide information regarding planning applications on the SLCO website.
- Formally request that the Township of Muskoka Lakes and the Town of Huntsvile lot creation policies and yard, setback and lot coverage provisions for shoreline development be harmonized for Skeleton Lake using a best practices approach.
- Request that the Town of Huntsville and Township of Muskoka Lakes implement site alteration by-laws for major alterations to grading, drainage and vegetation for all lands within 300m of the shoreline and 100m of any inflowing watercourse.
- Advocate on behalf of and in support of property owners with respect to municipal taxation policy and other government fees so as to encourage property owners to retain their larger properties and thereby avoid the unintended intensification of development on the Lake that may occur as a result of such policies and fees.

Conclusion

The SLCO undertook this planning effort with the following purposes in mind:

- to provide the Organization with a Lake Plan to guide actions and decisions that will achieve the Mission;
- to provide municipal planning authorities with documentation identifying the values and the features that the property owners of the Skeleton Lake sub watershed have a common interest in preserving and expect their elected representatives to help protect; and
- to identify stewardship actions that Skeleton Lake watershed owners can do to protect their enjoyment of their Lake

Appendix I: Lake Plan Donors

The SLCO gratefully acknowledges the following individuals who made financial contributions supporting the development of the Lake Plan

Bruce & Anne Allen	Art & Jane Insley
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Appendix II: Lake Plan Contributors

The following people devoted considerable time and effort researching topics and drafting sections of the Lake Plan:

Special mention: Al Marshall (chaired numerous meetings, collected and organized vast amounts of data)

Melissa Hincks, Nicole Hincks and Holly Simpson (entered original Survey data)

Gord Johnston (SLCO Past-President) and Jennifer May (Director) got the Lake Plan started

Water Quality: Geoff Ross (Chair, Water Quality Working Group)

Margaret Detlor, Georgina Winlow, John Stoklos, Paul Smith, Mike Derbyshire, Ardyn Todd

Natural Heritage: Andrea Ross (Chair, Natural Heritage Working Group)

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Brandon Derbyshire, Jane Derbyshire, Mike Derbyshire,

Jim Dyment, Paul Kitchen, Al Marshall, Jim Reed, Geoff Ross

Skeleton Lake Plan Steering Committee chairs:

Jeff Crocker, Al Marshall

APPENDIX III: Lake Plan Editorial Team

Jeff Crocker

Jim Dyment

Al Marshall

Paul Pieper (Editor-in-chief)

Geoff Ross

APPENDIX IV: 2013/14 Skeleton Lake Cottage Organization Board of Directors

Ken Auden – Lake Partners

Lou-enne Bartolomeu - Secretary

Jeff Crocker

Timolin Daniel

Cary Deloye

Doug Dougherty – President

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Sherril Johnson - Recreation

Teddene Long – Vice President, Governance

Al Marshall IT Communications

Scott May - Planning

Paul Pieper - Treasurer

Kathi Poupard - Newsletter

Geoff Ross – past President

Paul Smith - Membership

Sandi West – Water Quality Testing

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