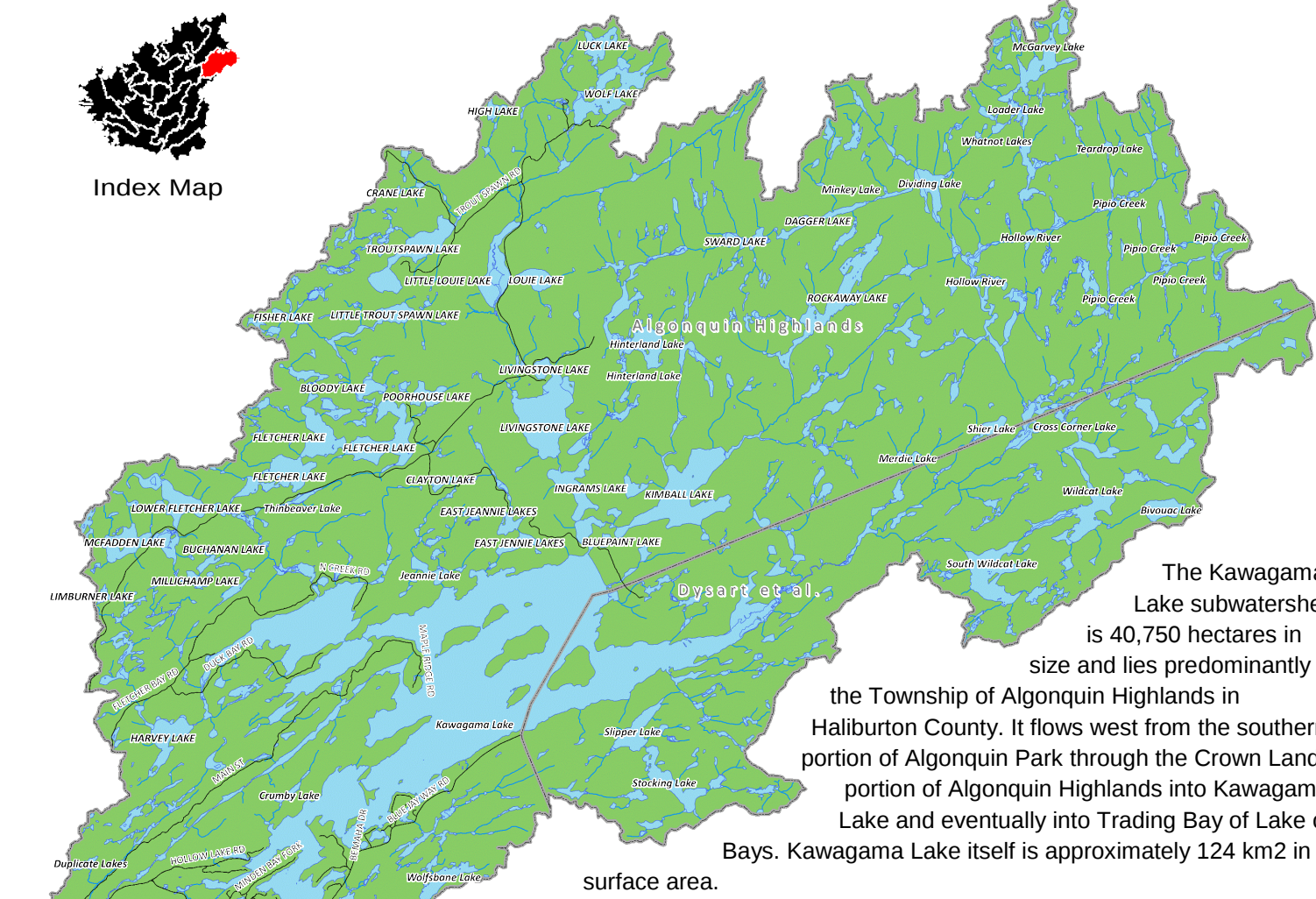
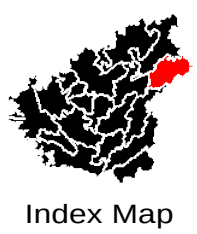


KAWAGAMA LAKE SUBWATERSHED

Grades		
Land: A	Water: A	Wetland: —



The Kawagama Lake subwatershed is 40,750 hectares in size and lies predominantly in the Township of Algonquin Highlands in Haliburton County. It flows west from the southern portion of Algonquin Park through the Crown Land portion of Algonquin Highlands into Kawagama Lake and eventually into Trading Bay of Lake of Bays. Kawagama Lake itself is approximately 124 km² in surface area.

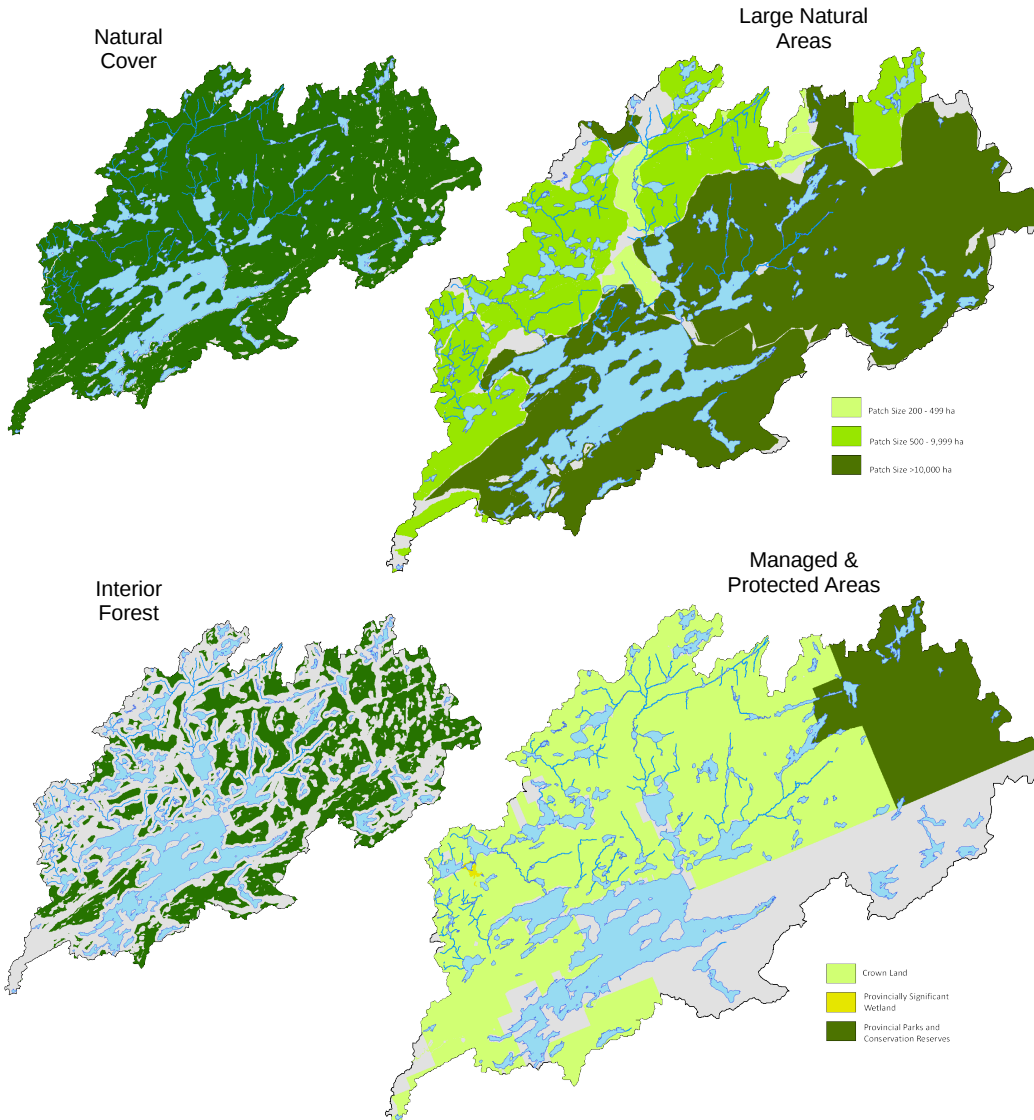
Less than 2% of the subwatershed is developed with 61% of the land being Crown land. There are no major urban areas within the subwatershed and shoreline residential development comprises most of the land use. 14% of the subwatershed is protected through provincial parks, crown nature reserves, or local land trusts.

There are 43 other lakes over 8 hectares in size in the subwatershed. There are three dams on the system, one on Fletcher Lake, one on Livingston Lake and one at the outflow of Kawagama Lake. There is also an automatic water level gauge on Kawagama Lake.

This report card describes the health of the land, water and wetlands of the Kawagama Lake subwatershed and is part of the larger report **The 2010 Muskoka Watershed Report Card** that is posted on the MWC website www.muskokaheritage.org/watershed.

Land

Grade **A**



The Kawagama Lake subwatershed is relatively large and is comprised of many small lakes. Over 60% of the subwatershed is Crown land and is dominated by mixed forest vegetation with little development. The development pattern has resulted in a large undisturbed area that supports many of the large mammals native to Muskoka/Haliburton, such as bear and moose. These natural areas are also important to support local biodiversity and to help purify the air, maintain good water quality and provide a carbon sink.

40% of the subwatershed is privately owned and it will be important to maintain a strong private land stewardship program to ensure that the long-term health of the subwatershed is maintained as development occurs. Private land stewardship activities such as participation in MFTIP, CLTIP, and donations to land trusts is encouraged to maintain the values enjoyed in this subwatershed.

Both healthy riparian areas and interior forests are important to support local wildlife and maintain good water quality.

Indicator	Kawagama Lake		Muskoka Watershed		Indicator Description
	%	Grade	%	Grade	
Natural Cover	98	A	94	A	Natural cover is defined as lakes, wetlands, forests, rock barrens and other natural systems.
Large Natural Areas	93	A	79	B	Areas of natural cover that are 200 ha or greater.
200 - 499 ha	3		7		
500 - 9,999 ha	27		52		
>10,000 ha	64		20		
Interior Forest	53	B	58	C	Interior forest is defined as a forested area with a 100-metre forested buffer surrounding it.
Managed & Protected Areas	75	A	48	A	Protected areas are defined as lands within national or provincial parks, Crown conservation reserves, Crown land, and land held by land trusts. Managed areas are defined as lands under the Managed Forest Tax Incentive Program or Conservation Land Tax Incentive Program, or have a conservation easement held by a reputable conservation organization.
Parks & Protected Areas	14		17		
Crown Land	61		26		
Private Stewardship	0		5		
Riparian Area	No Data	-	68	B	Riparian area is defined as the shoreline of a lake or river plus an area 20 metres inland from the shore.

The Kawagama Lake subwatershed flows from the highlands in Algonquin Park to Trading Bay on Lake of Bays.

Total phosphorus is an indication of the nutrient level of waterbody. A background or undeveloped level of total phosphorus has been determined for each lake. Scientists indicate that a lake may become unhealthy with an increase in phosphorus greater than 50% from that background level. This is considered the threshold for that lake. There are no lakes that are Over Threshold in the Kawagama Lake subwatershed for a total of 0% of the total water surface area in the subwatershed.

Shoreline vegetation protects waterbodies from nutrients and toxic chemicals that can contribute to water quality issues. It also protects the lake edge from erosion caused by waves and ice. The shoreline zone provides critical habitat for fish and other animals, helping to maintain a natural balance in sensitive aquatic ecosystems. Only 4.44% of the shoreline of lakes in the Kawagama Lake subwatershed have been altered.

In Muskoka there are no notable point sources of industrial contamination in lakes and rivers. Most industrial contamination is generally a result of air pollutants traveling long distances and being deposited in local lakes. In inland lakes on the Canadian Shield, mercury in fish is the most significant contaminant.

Mercury levels in lakes does not pose a significant human health threat, however, wildlife like loons are more sensitive. Loons eat fish that are 4 to 10 centimeters in size. If fish in a particular lake do not reach the 0.033 ppm standard until the fish is over 10 centimeters, then loons will not be impacted. Otherwise, there could be a possible neurological impact. There are insufficient data available to determine the impact of mercury on fish in the Kawagama Lake subwatershed.

Indicator	Kawagama Lake		Muskoka Watershed		Indicator Description
	%	Grade	%	Grade	
% Surface Area Over Threshold	0	A	4.9	B	This is a measure of recreational water quality as phosphorus is generally the limiting nutrient in algae production.
% Natural Shoreline	96	A	91	B	This is a measure of fish habitat. Many fish species require overhanging vegetation, rock shoals, and aquatic vegetation found in undisturbed sites.
Mercury Levels in Fish Less Than 10 cm in Size	N/A	No Data	N/A	B	Mercury levels in lakes do not pose a significant human health threat, however, wildlife like loons are less tolerant to mercury and may be impacted in some cases.

Wetlands

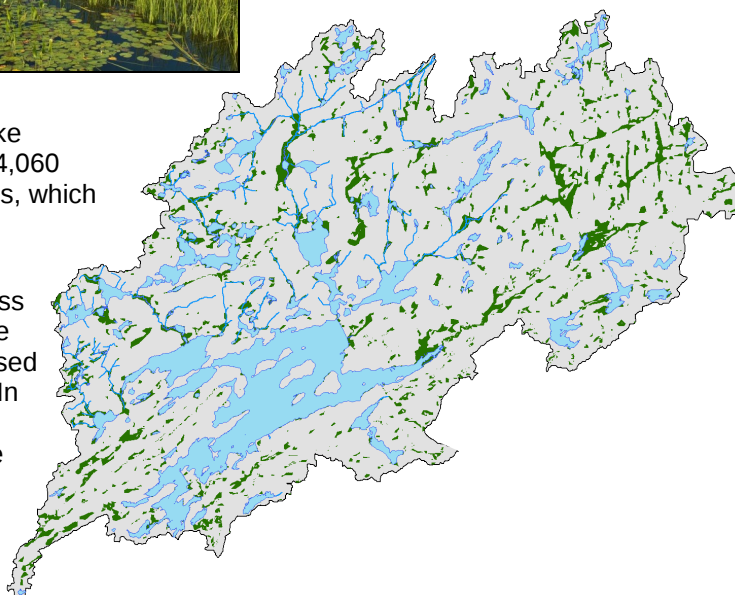
No Grade

Wetland Values

- Control and storage of surface water and recharge groundwater;
- Maintain and improve water quality, aid in flood control, and protect shorelines from erosion;
- Trap sediments which would otherwise fill watercourses;
- Support and initiate complex food chains;
- Provide important habitat
- Support species at risk;
- Provides fish populations;
- Provide active and passive recreational opportunities, including canoeing, bird watching, hunting and fishing.

The Kawagama Lake subwatershed has 4,060 hectares of wetlands, which covers 10% of the

A value of no net loss of wetlands from the 2010 level will be used as the benchmark. In future report cards, wetland area will be measured as a deviation from current wetland area.



A changing climate

The biggest unknown in watershed health is the impact of climate change. What will climate change mean in Muskoka?

Warmer summers will see increased evaporation of water from lake surfaces and increased transpiration of water by wetlands and forests, meaning less runoff, less water, lower lake levels, and longer periods of drought. Warmer winters will see more winter thaws and winter rains potentially leading to more flooding. If the snowpack is reduced due to mid-winter thaws then less snow pack remains for the spring run-off, which could result in an earlier onset of drought and lower water levels.

Warmer lakes will likely lead to:

- less habitat for lake trout
- more algae blooms and possibly blue-green algae blooms

Warmer temperatures will likely:

- allow a greater range of insects and disease in our forests, such as the Mountain Pine Beetle
- allow more invasive species, such as ticks that carry lyme disease
- result in more smog days and result in human health impacts
- eliminate winter recreation although summer recreation may be enhanced
- extend the growing season

More severe weather events will likely:

- damage large tracts of commercially important forests
- overload municipal infrastructure
- result in more damage to agricultural crops

Drier conditions will likely lead to more drought.

Rapid change in habitat conditions will likely reduce biodiversity.



Get involved and be a watershed steward

When all is said and done, the fate of sustainable management of a watershed lies in the hands of grass-roots residents as they go about their day-to-day business. It is the citizens of the watershed who must generate the interest and enthusiasm to create, continue and expand local projects which lead to positive actions and results.



1. Maintain large natural areas

- Practice sustainable forestry
- Use existing roads and rights of way for access and utility corridors
- Reduce cleared areas in the rural area

2. Retain shorelines in a natural state

- Maintain a wide natural buffer of plants and trees around shorelines of lakes, rivers and streams
- Obey speed signs in erosion sensitive low wake areas
- Reduce grassed lawns in the waterfront area and minimize the use of fertilizer
- Pick up after pets
- Plant native species

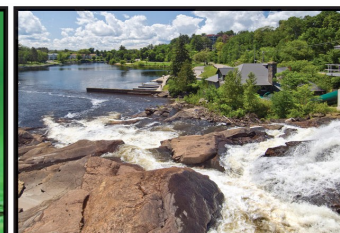
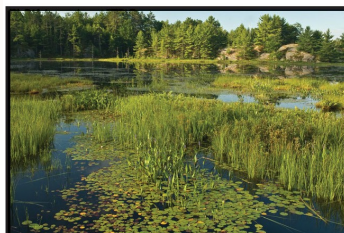


3. Protect wetlands

- Leave wetlands alone
- Keep recreational vehicles out of wetlands
- Learn about wetland values

4. Reduce your carbon footprint

- Plant native trees
- Reduce your use of electricity
- Improve energy efficiency of your home and vehicle
- Reduce waste



Muskoka
WATERSHED COUNCIL

The Muskoka Watershed Report Card is produced by the Muskoka Watershed Council. The mission of the Muskoka Watershed Council is to *champion watershed health*.

For the full background report, visit www.muskokaheritage.org/watershed.